GX Developer Version 8

Operating Manual

MITSUBISHI

MELSOFT

*O*peration

*M*aintenance

*P*rogramming
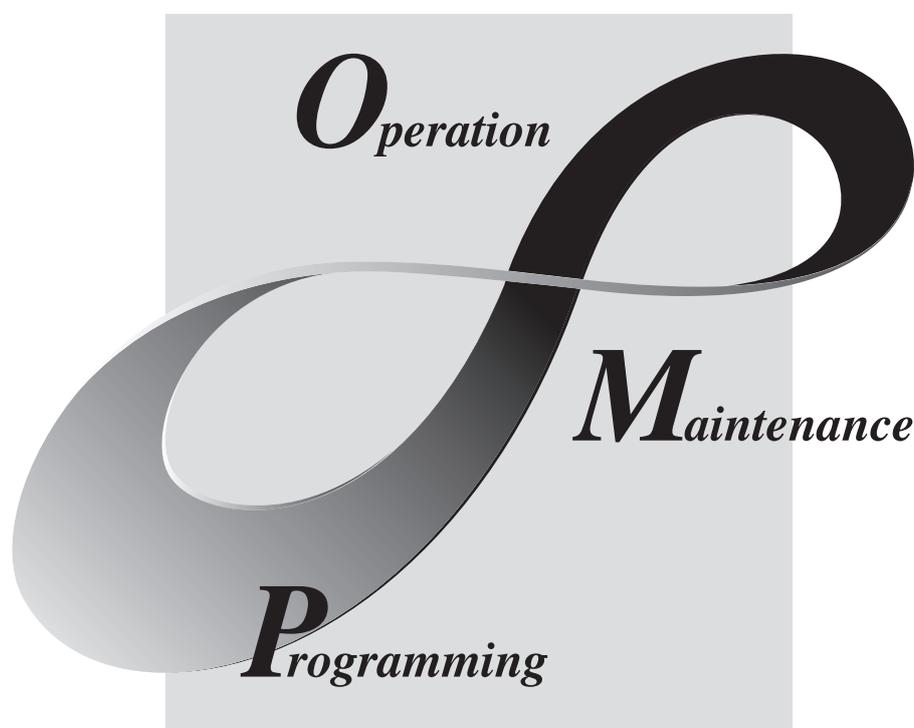
MELSOFT
Integrated FA Software

SW8D5C-GPPW-E

• SAFETY PRECAUTIONS •

(Always read these instructions before using this product.)

Before using this product, thoroughly read this manual and the relevant manuals introduced in this manual and pay careful attention to safety and handle the products properly.

The precautions given in this manual are concerned with this product. For the safety precautions of the programmable controller system, refer to the User's Manual for the CPU module.

In this manual, the safety precautions are ranked as "⬦ DANGER" and "⚠ CAUTION".

⬦ DANGER	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Note that the ⚠CAUTION level may lead to serious consequences according to the circumstances. Always follow the precautions of both levels because they are important for personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

[Design Precautions]

⬦ DANGER

• When data change, program change, or status control is performed from a personal computer to a running programmable controller, create an interlock circuit outside the programmable controller to ensure that the whole system always operates safely.
Furthermore, for the online operations performed from a personal computer to a programmable controller CPU, the corrective actions against a communication error due to such as a cable connection fault should be predetermined as a system.

[Startup/Maintenance Precautions]

⚠ CAUTION

• The online operations performed from a personal computer to a running programmable controller CPU (program change when a programmable controller CPU is RUN, forced I/O operation, operating status change such as RUN-STOP switching, and remote control operation) have to be executed after the manual has been carefully read and the safety has been ensured.
When changing a program while a programmable controller CPU is RUN (Online program change), it may cause a program corruption in some operating conditions. Fully understand the precautions described in Section 16.9 before use.
• Note that exchangeable modules online (while the power is on) are restricted and each of the modules has its predetermined replacement procedure. For details, refer to the online module change section in the manual of the module supporting the function.

Revisions

Print Date	＊Manual Number	Revision
Mar., 2003	SH(NA)-080373E-A	First edition
Jul., 2003	SH(NA)-080373E-B	Addition Section 2.5.7, Section 16.9, Appendix 4 Correction Section 5.1, Section 15.1, Section 16.2.1, Section 16.2.3, Section 16.3.1
Oct., 2003	SH(NA)-080373E-C	Addition Section 6.4.8, Section 6.4.16, Section 7.3.6, Section 7.3.8, Section 7.3.16, Section 17.11.1 to 17.11.2 Correction Section 1.1, Section 2.1, Section 2.4, Section 3.4, Section 5.1.3, Section 7.3.9 to 7.3.15, Section 7.3.17, Section 9.4.3 to 9.4.4, Section 11.2, Section13.1, Section15.5, Section16.1.1, Section 17.6, Section 17.10 to 17.11, Section 20.2, Section 22.3.4, Appendix 8, Appendix 13
Jun., 2004	SH(NA)-080373E-D	Model Addition Q12PRHCPU, Q25PRHCPU Addition Section 1.1, Section 1.2, Section 2.6.8, Section 4.15.1, Section 4.16, Section 13.2.3, Section 13.4, Section 14.5.17, Section 15.11, Section 16.1.4, Section 16.4, Section 18.1, Section 18.7, Section 19.1.1, Section 19.2.1, Section 22.3.2, Appendix 9, Appendix 12.4, Appendix 13 Correction Section 2.1, Section 2.4, Section 2.5.1 to 2.5.7, Section 3.5, Section 5.1, Section 13.1, Section 13.1.2, Section 13.2.2, Section 13.3, Section 14.4 to 14.5, Section 15.3 to 15.4, Section 16.1.1 to 16.1.3, Section 16.2.1, Section 16.2.3, Section 16.2.4, Section 16.3.1, Section 16.3.4, Section 16.5.2, Section 16.9, Chapter 17, Section 17.5.1, Section 18.2.1, Section 18.6, Section 19.2.2, Section 19.2.3, Section 20.2, Section 21.1.3, Section 21.2, Section 21.2.8, Section 21.4.9 to 21.4.10, Section 21.5 to 21.6, Chapter 22, Section 22.2.3, Section 22.3.2, Section 22.3.5, Section 22.4.1, Appendix 4, Appendix 7.3, Appendix 10
Sep., 2004	SH(NA)-080373E-E	Addition Section 2.1, Section 2.4, Section 2.5.9, Section 6.1.1, Section 6.3, Section 7.1, Section 16.1.1, Section 16.3.1,Section 16.9.1, Section 16.9.2, Appendix 9, Appendix 13, Appendix 14 Correction Manuals, Section 2.5.6, Section 9.7, Section 16.1, Section 16.3.4, Section 16.5.2, Section 18.2.1, Section 20.4, Section 21.2.8, Appendix 8

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Dec., 2004	SH(NA)-080373E-F	Addition Section 2.5.10, Section 16.2.5 Correction Abbreviations and Terms in This Manual, Section 2.1, Section 16.1.1, Section 18.6, Section 21.2.8, Section 22.3.3, Appendix 4
Apr., 2005	SH(NA)-080373E-G	Addition Section 2.5.11 Correction Abbreviations and Terms in This Manual, Section 1.2, Section 2.1, Section 2.4, Section 3.1, Section 4.15.1, Section 4.16, Section 9.1, Section 9.1.6, Section 9.1.7, Section 9.2, Section 11.2, Section 13.1, Section 13.1.1, Section 13.1.2, Section 15.2, Section 15.7, Section 15.11, Section 16.1.1, Section 16.2.1(1), Section 16.2.1(2), Section 16.2.4, Section 16.3.1, Section 16.9.3, Section 17.5.1, Section 17.11, Section 17.11.1, Section 17.11.2, Section 18.6, Section 19.1.1, Section 19.1.2, Section 19.1.3, Section 20.2, Section 20.4, Section 21.5, Section 21.6, Chapter 22, Section 22.2.3, Section 22.3.5, Section 22.4.1, Section 22.4.3, Appendix2.2, Appendix 4, Appendix 9, Appendix12.2, Appendix 13
Jun., 2005	SH(NA)-080373E-H	Correction Abbreviations and Terms in This Manual, Section 2.1, Section 2.2, Section 4.15.1, Section 4.16, Section 5.1, Section 9.2, Section 16.1.3(1), Section 16.2.5, Section 16.9.3, Section 22.3.5, Appendix 4
Aug., 2005	SH(NA)-080373E-I	Correction Section 1.1, Section 4.8, Section 4.14, Section 15.11, Section 16.9, Section 16.9.1, Section 16.9.3
Nov., 2005	SH(NA)-080373E-J	Addition Section 2.5.12, Section 2.5.13, Section 3.12, Section 3.15, Section 15.2 Correction Section 15.11, Appendix 9, Appendix13
Dec., 2005	SH(NA)-080373E-K	Addition Section 2.2, Section 2.4, Section 2.5.14, Section 6.4.7, Section 6.4.8, Section 17.11.2, Appendix 9, Appendix13
Mar., 2006	SH(NA)-080373E-L	Addition Section 1.2, Section 2.5.15, Section 4.2, Section 4.15.1, Section 5.1.8, Section 13.2.2, Section 18.6, Appendix 8, Appendix 9, Appendix 13
May, 2006	SH(NA)-080373E-M	Addition Section 4.14, Section 6.1.2, Section 6.2.5, Section 15.3, Section 15.4, Section 15.5, Section 16.1, Section 16.7, Appendix 13

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Sep., 2006	SH(NA)-080373E-N	Model Addition QS001CPU Addition Section 2.5.15 Correction Section 1.2, Section 2.1, Section 4.2, Section 4.14, Section 4.15.1, Section 5.1.8, Section 6.1.2, Section 6.2.5, Section 9, Section 13.2.2, Section 15.3, Section 15.4, Section 15.5, Section 15.12, Section 16, Section 16.7, Section 17, Section 18.6, Appendix 8, Appendix 9,
Oct., 2006	SH(NA)-080373E-O	Correction Chapter 2, Section 6.1.2, Section 9.2, Chapter 13, Section 14.4, Section 14.5.2, Section 14.5.9, Section 14.5.15, Section 15.4, Section 16.2.2(1), Section 16.2.2(2), Section 16.2.5, Section 16.5.2, Appendix 13
Jan., 2007	SH(NA)-080373E-P	Model Addition Q03UD, Q04UDH, Q06UDH Addition Abbreviations and Terms in This Manual, Section 1.1, Section 2.4, Section 2.5.10, Section 2.5.17, Section 4.1, Section 5.1.3, Section 5.1.4, Section 6.3, Section 6.4.15, Section 6.4.16, Chapter 13, Section 14.2, Section 14.5.11, Section 15.4, Section 15.12, Section 15.15, Chapter 16, Section 17.7, Section 17.8, Section 17.10, Section 17.11, Section 18.1, Section 18.2.1, Section 19.1.1, Section 19.2.1, Section 20.2, Section 21.1.3, Section 21.2.1, Section 21.2.2, Section 21.2.3, Section 21.2.4, Section 21.3, Section 21.5.9, Section 21.5.10, Appendix 1, Appendix 4, Appendix 7.3, Appendix 9, Appendix 13 Section 16.10 changed to Section 16.11 Section 21.3 to 21.6 changed to Section 21.4 to 21.7
Apr., 2007	SH(NA)-080373E-Q	Model Addition Q02U Addition Abbreviations and Terms in This Manual, Chapter 1, Section 2.2, Section 2.4, Section 2.5.18, Section 4.1, Section 6.2.11, Section 6.4.1, Section 6.4.15, Section 6.4.16, Chapter 13, Section 14.6, Chapter 16, Section 17.5.1, Section 17.5.2, Section 17.6, Section 17.11, Section 18.1, Section 21.3, Appendix 2, Appendix 4, Appendix 9, Appendix 13

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Jul., 2007	SH(NA)-080373E-R	Addition Section 6.2.11, Section 6.4.6, Section 16.3.1 Correction Section 3.1, Section 6.4.15, Section 16.1.4, Section 17.11.2, Section 21.2.4, Section 21.3, Section 21.4.1, Section 21.6 Section 6.4.6 to 6.4.17 are changed to Section 6.4.7 to 6.4.18.
Oct., 2007	SH(NA)-080373E-S	Addition Section 13.2.2, Appendix 13 Correction Section 3.3.3, Section 5.1.3, Section 5.2.2, Chapter 6
Jan., 2008	SH(NA)-080373E-T	Model Addition Q13UDHCPU, Q26UDHCPU Addition Abbreviations and Terms in This Manual, Section 2.5.19, Section 16.2.5(1), Section 16.2.5(2),Appendix 9, Appendix 13 Correction Section 2.1, Section 2.2, Section 2.4, Section 4.14, Section 4.18, Section 5.2.2, Section 15.16, Section 16.1, Chapter 17, Section 19.1.1
Mar., 2008	SH(NA)-080373E-U	Addition Section 2.5.20 Correction Section 13.2, Section 13.3, Section 16.1.2, Section 21.2.2, Section 21.2.3, Section 21.2.4, Section 21.3, Section 21.5.1, Section 21.5.2, Section 21.5.3, Section 21.5.4, Section 21.5.5, Section 21.5.6, Section 21.5.9, Section 21.5.10, Appendix 1.4, Appendix 2.1.3, Appendix 2.2, Appendix 2.3, Appendix 2.5, Appendix 2.6, Appendix 9, Appendix 13

Print Date	∗Manual Number	Revision
Apr., 2008	SH(NA)-080373E-V	Model Addition Q02PH, Q03UDE, Q04UDEH, Q06PH, Q06UDEH, Q13UDEH, Q26UDEH Addition Section 2.5.21, Section 18.2, Section 21.5.5, Section 21.5.6, Appendix 15 Correction Abbreviations and Terms in This Manual, Chapter 1, Section 2.2, Section 2.4, Section 3.1, Section 13.1.2, Section 13.2, Section 14.5.9, Section 14.5.10, Section 14.16, Section 15.4, Section 15.5, Section 15.11, Section 16.1.2, Section 16.1.3(2), Section 16.1.4, Section 16.2.1, Section 16.9.1, Section 16.9.2, Section 16.10, Chapter 17, Section 21.1.3, Section 21.2, Section 21.3, Section 21.5.1, Section 21.5.2, Section 21.5.3, Section 21.5.4, Section 21.6, Appendix 1, Appendix 2, Appendix 4, Appendix 9, Appendix 10, Appendix 13 Section 18.2 to 18.7 changed to Section 18.3 to 18.8 Section 21.5.5 to 21.5.10 changed to Section 21.5.7 to 21.5.12
May, 2008	SH(NA)-080373E-W	Addition Section 2.5.22, Appendix 12.5 Correction Section 4.14, Section 13.1.2, Section 16.3.1, Section 17.5.1, Appendix 4, Appendix 9, Appendix 13, Appendix 15
Jun., 2008	SH(NA)-080373E-X	Model Addition FX3G Addition Section 2.5.23 Correction Abbreviations and Terms in This Manual, Section 1.1, Section 1.2, Section 2.1, Section 2.5, Section 3.12, Section 4.14, Section 4.15, Section 4.16, Section 6.2.1, Section 9.1.6, Section 9.1.7, Section 9.2, Section 11.2, Section 13.1.2, Section 15.9, Section 15.13, Section 16.1.1, Section 16.1.2, Section 16.2.4, Section 16.2.5, Section 16.3.1, Section 16.9.1, Section 16.9.4, Section 17.5.1, Section 18.7, Section 19.1.1, Section 19.1.2, Section 19.1.3, Section 20.4, Chapter 22, Appendix 4, Appendix 9, Appendix 12.2, Appendix 13

Print Date	＊Manual Number	Revision
Dec., 2008	SH(NA)-080373E-Y	**Model Addition** Q00UJ, Q00U, Q01U, Q10UDH, Q10UDEH, Q20UDH, Q20UDEH **Addition** Section 2.5.24, Section 3.18, Section 16.13 **Correction** Abbreviations and Terms in This Manual, Section 1.1, Section 2.1, Section 2.4, Section 3.1, Section 3.4, Chapter 6, Section 6.2.1, Section 6.4.2, Section 6.4.9, Section 13.1, Section 13.1.1, Section 13.1.2, Section 13.2.2, Section 15.2, Section 15.3, Section 15.6, Section 15.15, Section 16.3.1, Section 16.3.2, Section 16.5.1, Section 16.8.1, Section 16.9.2, Section 16.9.3, Section 17.6, Section 17.8, Section 17.9, Section 18.1, Section 18.3.1, Section 20.2, Section 21.1.3, Section 21.4, Section 21.6, Appendix 2.3, Appendix 4, Appendix 9, Appendix 10, Appendix 12.1, Appendix 13, Appendix 15 Section 6.4.18 changed to Section 6.4.17 Section 7.3.18 changed to Section 7.3.17
Apr., 2009	SH(NA)-080373E-Z	**Addition** Section 2.5.25 **Correction** Section 2.1, Section 3.18, Chapter 5, Section 10.3.1(1), Section 10.3.2(1), Section 10.3.3, Section 10.5, Section 13.1, Section 13.1.2, Section 15.2, Section 21.1.3, Section 21.5.1, Section 21.5.11, Appendix 4, Appendix 8, Appendix 9, Appendix 12.5, Appendix 13

Japanese Manual Version SH-080356-AE

INTRODUCTION

Thank you for choosing the Mitsubishi MELSOFT series Integrated FA software.
Read this manual and make sure you understand the functions and performance of MELSEC series
programmable controller thoroughly in advance to ensure correct use.
Please make this manual available to the end user.

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Chapter 12 SETTING DEVICE INITIALIZATION VALUES 12- 1 to 12- 2

Chapter 13 SETTING THE PARAMETERS 13- 1 to 13- 37

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Manuals

The following lists the manuals for this software package.
Refer to the following table when ordering manuals.

Related Manuals

Manual Name	Manual No. (Model Code)
GX Developer Version8 Operating Manual (Startup). Describes the system configuration, installation method, and start-up procedure of GX Developer.	SH-080372E (13JU40)

GX Developer Version8 Operating Manual (SFC).
   Describes the editing and monitoring operations of the SFC functions using GX Developer.
                  (Sold separately.)
	SH-080374E
	(13JU42)

GX Developer Version8 Operating Manual (MELSAP-L). Describes the editing and monitoring operations of the MELSAP-L format SFC functions using GX Developer. (Sold separately.)	SH-080375E (13JU43)

GX Developer Version8 Operating Manual (Function Block).
   Describes the editing and monitoring operations of the function blocks using GX Developer.
                  (Sold separately.)
	SH-080376E
	(13JU44)

GX Developer Version8 Operating Manual (Structured Text)
   Explains creating structured text (ST) program and printing out using GX Developer.
                  (Sold separately.)
	SH-080367E
	(13JU37)

Structured Text (ST) Programming Instruction Manual
   Intended for beginners, i.e., those who create structured text program for the first time.
   Explains basic operations and functions using sample programs.   (Sold separately.)
	SH-080368E
	(13JF69)

GX Developer Version8 Operating Manual (Safety Programmable Controller)
   Explains the added and updated GX Developer functions to support a safety Programmable Controller (QSCPU)
                  (Sold separately.)
	SH-080576ENG
	(13JU53)

How the manual describes the explanation is shown below.

Items which are set in the section are explained.

Indicates the A series, QCPU (A mode), and Motion Controller (SCPU).

Indicates the QnA series and QCPU (Q mode).

Indicates the QSCPU.

Indicates the FX series.

19.2.2 Deleting the passwords

A	Q/QnA	QS	FX
×	○*	×	×

*: Compatible with the QCPU (Q mode).

○: The function is available.
×: The function is unavailable.

Indicates the restriction on the item denoted by asterisk.

[Purpose]
Deletes the passwords which have been set in the files within the PLC. (Q series only)

[Operating Procedure]
Select [Online] → [Password setup] → [Delete password].

The desired window opens by selecting the items in the specified order.

[Dialog Box]

Password clearance
The password of the following files is set. Password will be cleared.

1) → Target memory   Program memory/Device memory

	Data type	Data name	Password
1	Program	MAIN	

2)

The dialog boxes set in the section are explained.

Characters that can be used in password
4 characters. Numbers and A-Z, a-z. Case sensitive.

3) → Batch Settings...   Execute   Close

[Description]

The contents of the items and buttons are explained. The numbers correspond to those specified in the window shown under the title of [Dialog box].

1) Target memory
Set the memory whose passwords will be deleted.

2) Password
Set the passwords currently registered.

3) Batch settings
Batch-deletes the passwords and registration conditions.

Batch Settings

a) → Range   1 - 3
b) → Password

Registration condition   Write protect

UK   Cancel

a) Range
Set the range where the passwords and registration conditions will be batch-deleted.

b) Password
Set the password currently registered.
Take care to differentiate between the upper- and lower-case characters.

POINT

If the same data name exists in the project, the password of the project data will also be deleted.

This gives the information related to the topic discussed and also the helpful information.

Symbols used in this manual, and the contents and examples of them are shown below.
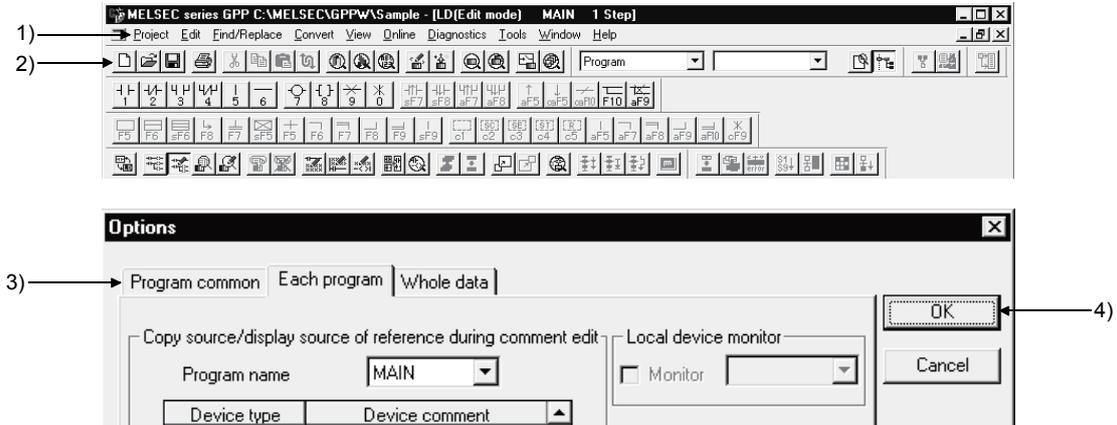
No.	Symbol	Contents	Example
1)	[ ]	Menu name of menu bar	[Project]
2)	▣	Icon in toolbar	🖨
3)	<< >>	Tab name of dialog box	<<Program common>>
4)	▭	Command button in dialog box	OK button

The functions that cannot be operated on GX Developer are grayed (masked) and cannot be selected. There are the following reasons why they are not selectable.

(1) The programmable controller used does not have the functions
For example, when the A1SCPU is chosen as the PLC type, it does not have the STEP-RUN function and therefore [Online] → [Debug] → [Debug] cannot be selected.
To see if your programmable controller has the operable functions, check the specifications in the programmable controller user's manual or the like.

(2) The functions cannot be selected because they cannot be used with the currently operated function
For example, when the monitor screen is open, PLC type change, connection setup, PLC data attribute change, data coupling, parameter check and all parameter clear cannot be performed.

Generic Terms and Abbreviations

This manual uses the abbreviations and terms listed in the following table to explain the GX Developer Software Package and programmable controller module. In addition, the following table lists the names of modules whose names must be indicated explicitly.

Generic terms and abbreviations	Description
GX Developer	Generic product name of the product types SW8D5C-GPPW-E, SW8D5C-GPPW-EA, SW8D5C-GPPW-EV and SW8D5C-GPPW-EVA.
GX Developer Version n (SWnD5C-GPPW-E)	When limited to the major version (n denotes the version number).
GX Developer Version n (SWnD5C-GPPW-E) or earlier	When limited to earlier than the major version (n denotes the version number).
GX Developer Version n (SWnD5C-GPPW-E) or later	When limited to later than the major version (n denotes the version number).
GX Simulator	Generic product name of the product types SWnD5C-LLT-E, SWnD5C-LLT-EA, SWnD5C-LLT-EV and SWnD5C-LLT-EVA. (n denotes any of versions 0 to 6).
PX Developer	Generic product name of the product types SWnD5C-FBDQ-E, SWnD5C-FBDQ-EA (n denotes the version number).
Windows Vista®	Generic term for Microsoft® Windows Vista® Home Basic Operating System, Microsoft® Windows Vista® Home Premium Operating System, Microsoft® Windows Vista® Business Operating System, Microsoft® Windows Vista® Ultimate Operating System and Microsoft® Windows Vista® Enterprise Operating System.
Windows® XP	Generic term for Microsoft® Windows® XP Professional Operating System and Microsoft® Windows® XP Home Edition Operating System.
Basic model QCPU	Generic term for Q00JCPU, Q00CPU and Q01CPU.
High Performance model QCPU	Generic term for Q02 (H) CPU, Q06HCPU, Q12HCPU and Q25HCPU.
Universal model QCPU	Generic term for Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q03UDECPU, Q04UDHCPU, Q04UDEHCPU, Q06UDHCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q13UDHCPU, Q13UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q26UDHCPU and Q26UDEHCPU.
Built-in Ethernet port QCPU	Generic term for Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU , Q20UDEHCPU and Q26UDEHCPU.
Process CPU	Generic term for Q02PHCPU, Q06PHCPU, Q12PHCPU and Q25PHCPU.
Redundant CPU	Generic term for Q12PRHCPU and Q25PRHCPU.
Safety CPU	Generic terms for QS001CPU.
ACPU	Generic term for programmable controller available with MELSEC-A. Including MOTION (SCPU). (However, GX Developer does not support A1, A2, A3, A3H, A3M, A52G, A73, A0J2 and A3V.)
QCPU (A mode)	Generic term for Q02(H)-A and Q06H-A.
QnACPU	Generic term for programmable controller available with MELSEC-QnA.
QCPU (Q mode)	Generic term for Q00J, Q00UJ, Q00, Q00U, Q01, Q01U, Q02(H), Q02PH, Q02U, Q03UD, Q03UDE, Q04UDH, Q04UDEH, Q06H, Q06PH, Q06UDH, Q06UDEH, Q10UDH, Q10UDEH, Q12H, Q12PH, Q12PRH, Q13UDH, Q13UDEH, Q20UDH, Q20UDEH, Q25H, Q25PH, Q25PRH, Q26UDH and Q26UDEHCPU.
QSCPU	Stands for a safety CPU module (QS001CPU).
FXCPU	Generic term for programmable controller available with MELSEC-F (The target programmable controllers are FX0, FX0S, FX0N, FX1, FX, FX2, FX2C, FX1S, FX1N, FX2N, FX2NC, FX3G, FX3U and FX3UC.)
AnNCPU	A1NCPU, A2NCPU(S1), A3NCPU
AnACPU	A2ACPU(S1), A3A
AnUCPU	A2UCPU(S1), A2USCPU(S1), A2ASCPU(S1), A2ASCPU-S30, A2ASCPU-S60, A2USHCPU-S1, A3U, A4U

Abbreviation/Generic Term		Description/Target Module
A series		For GX Developer PLC type selection by ACPU.
QnA series		For GX Developer PLC type selection by QnACPU.
Q series		For GX Developer PLC type selection by QCPU (Q mode).
FX series		For GX Developer PLC type selection by FXCPU.
GPPA		SW ☐ SRXV-GPPA, SW ☐ IVD-GPPA
GPPQ		SW ☐ IVD-GPPQ
MEDOC		MELSEC-MEDOC
FXGP(DOS)		SW1PC-FXGPEE/AT
FXGP(WIN)		SW0PC-FXGP/WIN-E
SFC		Generic term for MELSAP2/MELSAP3/MELSAP-L.
C24		Computer link Module, Serial Communication Module
Computer link Module	For A series	A1SJ71C24-R2, A1SJ71C24-R4, A1SJ71C24-PRF, A2CCPUC24(-PRF), A1SCPUC24-R2
	For AnU	AJ71UC24, A1SJ71UC24-R2, A1SJ71UC24-R4, A1SJ71UC24-PRF
Serial communication Module	For QnA series	Generic term for AJ71QC24, AJ71QC24-R2, AJ71QC24-R4, AJ71QC24N, A1SJ71QC24, A1SJ71QC24-R2, AJ71QC24N-R2, AJ71QC24N-R4, A1SJ71QC24N and A1SJ71QC24N-R2, A1SJ71QC24N1, A1SJ71QC24N1-R2.
	For Q series	Generic term for QJ71C24, QJ71C24-R2, QJ71C24N, QJ71C24N-R2 and QJ71C24N-R4.
Modem interface Module		Generic term for QJ71CMO and QJ71CMON.
CC-Link IE controller network module		Generic term for QJ71GP21-SX and QJ71GP21S-SX.
MELSECNET/H network module		Generic term for QJ71LP21, QJ71LP21-25, QJ71LP21S-25, QJ71LP21G, QJ71BR11, QJ72LP25-25, QJ72LP25G, QJ72BR15, QJ71NT11B.
MELSECNET/10 network module		Generic term for AJ71QLP21, AJ71QLP21S, AJ71QLR21, AJ71QLP21G, AJ71QBR11, AJ71LP21, AJ71LR21, AJ71LP21G, AJ71BR11, A1SJ71QLP21, A1SJ71QLP21S, A1SJ71QLP21GE, A1SJ71QLR21, A1SJ71QBR11, A1SJ71LP21, A1SJ71LP21GE, A1SJ71LR21, A1SJ71BR11, AJ72QLP25, AJ72QLR25, AJ72LP25G, AJ72QBR15, AJ72LP25, AJ72BR15, AJ72LP25G, AJ72LP25GE, AJ72LR25, A1SJ72QLP25, A1SJ72QLR25, A1SJ72QBR15.
Ethernet module		Generic term for E71, QE71, Q series-compatible E71.
E71		Generic term for AJ71E71-S3, A1SJ71E71-B2-S3, A1SJ71E71-B5-S3, AJ71E71N-B2, AJ71E71N-B5T, A1SJ71E71N-B2, A1SJ71E71N-B5T, AJ71E71N-T, A1SJ71E71N-T, AJ71E71N-B5, A1SJ71E71N-B5, AJ71E71N3-T, A1SJ71E71N3-T.
QE71		Generic term for AJ71QE71, AJ71QE71-B5, A1SJ71QE71-B2, A1SJ71QE71-B5, AJ71QE71N-T, A1SJ71QE71N-T, AJ71QE71N-B5, A1SJ71QE71N-B5, AJ71QE71N-B2, A1SJ71QE71N-B2, AJ71QE71N-B5T, A1SJ71QE71N-B5T, AJ71QE71N3-T, A1SJ71QE71N3-T.
Q series-compatible E71		Generic term for QJ71E71, QJ71E71-B2, QJ71E71-B5 and QJ71E71-100.
CC-Link module		Generic term for AJ61BT11, A1SJ61BT11, AJ61QBT11, A1SJ61QBT11, QJ61BT11 and QJ61BT11N.
Ethernet board		Ethernet PC card, Ethernet I/F board
G4 module		AJ65BT-G4(-S3) peripheral device connection module
A6TEL		A6TEL modem interface module
Q6TEL		Q6TEL modem interface module
MELSECNET/10 board		Generic term for A70BD-J71QLP23, A70BD-J71QLP23G, A70BD-J71QLR23, A98BD-J71QLP23, A70BD-J71QBR13 and A98BD-J71QBR13.
MELSECNET/H board		Generic term for Q80BD-J71BR11, Q80BD-J71LP21-25 and Q80BD-J71LP21G.
CC-Link IE controller network board		Generic term for Q80BD-J71GP21-SX and Q80BD-J71GP21S-SX. Abbreviation for CC-Link IE controller network interface board.
Ethernet board		Generic term for Ethernet PC card and Ethernet interface board.
CC-Link board		Generic term for CC-Link Ver.1 board, CC-Link Ver.2 board.
CC-Link Ver.1 board		Generic term for A80BDE-J61BT11, A80BDE-J61BT13.
CC-Link Ver.2 board		Generic term for Q80BD-J61BT11N.

Abbreviation/Generic Term	Description/Target Module
CPU board	A80BD-A2USH-S1 programmable controller board
CC-Link	Control & Communication Link
CC-Link bridge module	AJ65SBT-CLB CC-Link - CC-Link/LT bridge module
PLC	PROGRAMMABLE CONTROLLER
Personal computer	Personal computer compatible with Windows® 95/98/Me/2000 and Windows NT® Workstation 4.0.
Execute program	A program created in the label program and compiled. A program executable via the programmable controller.
Actual device	The term "actual device" is used in this manual to differentiate a program created under a label name and one that has been compiled. (A compiled program to which device has been assigned.)
GSV	Q173CPU/Q172CPU Programming Software SW6RN-GSV13 Q173CPU/Q172CPU Programming Software SW6RN-GSV22P
Safety project	Project for a safety Programmable Controller created with the GX Developer.
PC CPU module	MELSEC-Q series compatible PC CPU module (CONTEC CO. LTD. make)
ST	Structured text language.
FB	Function block language.
GOT	General name for Mitsubishi Graphic Operation Terminal GOT1000 series, GOT-A900 series and GOT-F900 series.

1. GENERAL DESCRIPTION

1

Product Outline and Features

Outline

This section explains GX Developer (unless otherwise specified, the product name represented GX Developer will hereafter be its English version 8).
GX Developer is a software package having the following functions.

1. Program creation
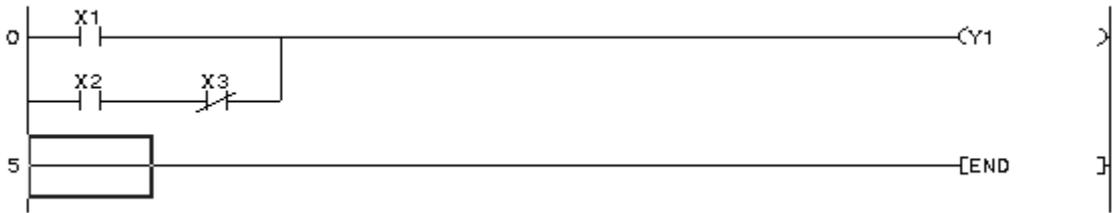
2. Writing and reading to/from programmable controller

Writing

Reading

Programmable controller
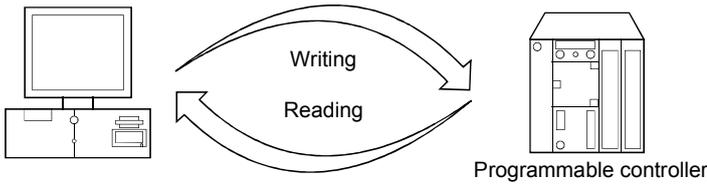
3. Monitoring (example: device batch monitoring)
   The circuit monitor, device monitor, and device registration monitor can be used for monitoring.

Device	+F E D C	+B A 9 8	+7 6 5 4	+3 2 1 0	
D01	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
D02	0 0 0 0	0 0 0 0	0 0 1 0	0 1 0 1	37
D03	0 0 0 0	0 0 0 0	1 0 0 1	0 0 0 0	144

4. Debugging
   The created sequence program is written into programmable controller to test that the written sequence program operates normally.
   In addition, newly developed GX Simulator✶1 (unless otherwise specified, the product name represented GX Simulator will hereafter be its English version 7) can be used to debug the program on a single personal computer.

Programmable
controller

Programmable
controller
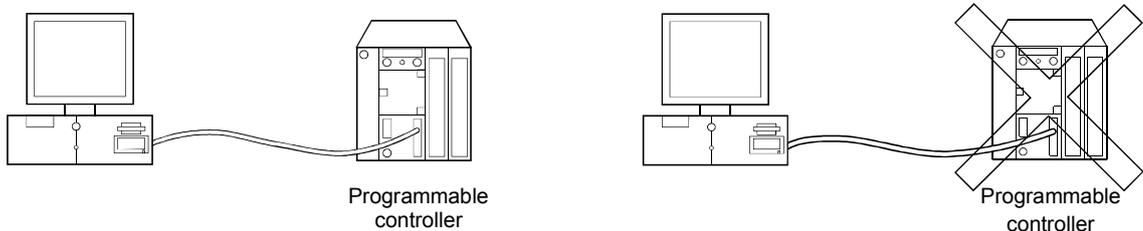
5. Diagnostics PLC
   The current error status, error status or error log can be displayed to shorten the time required for error recovery.
   Also, system monitoring (QCPU (Q mode) only) provides in-depth information on the special functions. Therefore, if an error occurs, recovery work can be done in much shorter time.

   ✶: The GX Simulator is an independent function and may be purchased separately.

Features

GX Developer has the following features.

1. Common software
   GX Developer can create the data of the Q series, QnA series, A series (including the motion controller (SCPU)) and FX series, with their setting operations common, and is abbreviated to GPPA. Note that this does not apply to the A6GPP/A6PHP-compatible software package. Data can be converted into an SW ☐ -GPPQ GPP function software package (hereafter abbreviated to GPPQ) format file and edited on GPPA or GPPW.
   When the FX series is selected, data can be converted into a DOS version programming software (hereafter abbreviated to FXGP(DOS)) or SW0PC-FXGP/WIN programming software (hereafter abbreviated to FXGP(WIN)) format file and you can edit data on FXGP(DOS) or FXGP(WIN).

2. Advantages of Windows are utilized for dramatic improvements in operability
   Comment data created on Excel, Word or the like can be copied or pasted for data diversion.

3. Standardized programs
   (1) Label programming
       By using label programming to create sequence programs, you can create standard programs with labels without being conscious of device numbers.
       The programs created by label programming can be compiled for use as an actual program.
   (2) Function block (hereafter abbreviated to the FB)
       The FB is a function developed to improve the efficiency of developing sequence programs. The ladder blocks of a sequence program that are used repeatedly for sequence program development are converted into components to facilitate sequence program development. Also, the conversion of ladder blocks into components prevents sequence program inputting mistakes when they are utilized for other sequence programs.
   (3) Macros
       By naming any ladder patterns (macro names) and registering them to a file (macro registration), merely entering simple instructions allows the registered ladder patterns to be read and the devices to be changed for data diversion.

4. Wide range of programming languages
   GX Developer is compatible with various programming languages and includes the relevant functions such as relay symbol language, logic symbolic language, MELSAP3(SFC), MELSAP-L and function block. Furthermore, structured text (hereinafter termed as ST language) has been newly added to the above compatible languages.
   Features of ST language
    (1) High-level programming equivalent to advanced computer language such as C language
        ST language can be used to describe the conditional statements for selection branch and iterative statements for the control based on repetition syntaxes as advanced computer language such as C language, which enables user-friendly programs to be created.
    (2) Easy description of operation processing
        With ST language, operation processing that is too complicated to describe in list or ladder form, can be described easily and clearly. ST language is suitable for the case requires high quality of program visibility such as complicated arithmetic operation or comparison operation.

5. Ease of setting access to another station
   As the connection target can be specified graphically, you can set access to another station easily if a complicated system has been configured.

6. Connection with programmable controller in any of various methods
   (1) Via serial port
   (2) Via USB
   (3) Via CC-Link IE controller network board, MELSECNET/10(H) board
   (4) Via CC-Link board
   (5) Via Ethernet board
   (6) Via CPU board
   (7) Via AF board

7. Fully useful debugging functions
   (1) Use of the GX Simulator ensures much easier debugging.
       (a) There is no need to make connection with the programmable controller.
       (b) There is no need to create a pseudo sequence program (debugging program).
   (2) Containing the explanations of CPU errors and special relays/special registers, Help is useful when an error has occurred online or when you want to know the contents of the special relays/special registers during programming.
   (3) If an error occurs during data creation, the corresponding message is displayed to indicate the cause of that error, substantially reducing data creation time.

1.1 Functions Lists

The GX Developer functions are listed below.

The functions are divided into normally common functions (project, online, diagnosis, tool, window, help) and functions for objects to be edited and set (edit, search/replacement, conversion, display).

In addition, there are executable and inexecutable functions depending on the CPU series.

"○" in the table indicates the function that is usable when GX Developer is installed as monitoring-only GX Developer.

(1) List of common functions
    Fixed functions independent of the type of the object being edited or set

Project (Common functions)			Only for monitoring	Refer To
New project		Creates a new project.		4.1
Open project		Opens an existing project.	○	4.2
Close project		Closes an open project.	○	4.3
Save		Saves the project.	○	4.4
Save as		Names and saves the project.	○	4.5
Delete project		Deletes an existing project.		4.6
Verify		Verifies data between projects.	○	4.7
Copy		Copies data between projects.		4.8
Edit data				
	New	Adds data to a project.		4.9
	Copy	Copies data in a project.		4.10
	Delete	Deletes data in a project.		4.11
	Rename	Renames data in a project.		4.12
	Change program type	Change the program type in the project.		4.13
Change PLC type		Changes the PLC type.		4.14
Import file				
	Import from GPPQ format file	Read a GPPQ file.		4.15.1
	Import from GPPA format file	Read a GPPA file.		4.15.1
	Import from FXGP(WIN) format file	Read a FXGP(WIN) file.		4.15.1
	Import from FXGP(DOS) format file	Read a FXGP(DOS) file.		4.15.1
	Import from Melsec Medoc format file (Print out)	Import from Melsec Medoc format file.		4.15.2
	Import from Melsec Medoc format file	Import from Melsec Medoc format file.		4.15.3
Export file				
	Export to GPPQ format file	Write a GPPQ files.		4.16
	Export to GPPA format file	Write a GPPA files.		4.16
	Export to FXGP(WIN) format file	Write a FXGP(WIN) files.		4.16
	Export to FXGP(DOS) format file	Write a FXGP(DOS) files.		4.16
Macro				
	Registration macros	Registration macros.		5.3.1
	Macro utilize	Macro utilize.		5.3.2
	Delete macros	Delete macro instruction from the file.		5.3.3
	Macro reference path	Set the macro instruction reference path.		5.3.4

(To the next page)

POINT
• For added and updated functions to support the QSCPU, refer to the GX Developer Version 8 Operating Manual (Safety Programmable Controller).

Project (Common functions)			Only for monitoring	Refer To
Function Block				
	Diversion	Diversion FB on ladder program.		(FB)
	Rename	Rename the FB.		(FB)
	FB change module address	This will exchange the address of the buffer memory access instruction.		(FB)
Printer setup		Changes the printer settings.	○	14.1
Print		Prints data.	○	14
Start new GX Developer session		Restarts GX Developer.	○	4.17
Exit GX Developer		Exits GX Developer.	○	4.18
Online (Common functions)				Refer To
Transfer setup		Designates a programmable controller destination from GX Developer.	○	16.1
Read from PLC		Reads data from PLC.	○	16.3
Write to PLC		Writes data to PLC.		16.3
Verify with PLC		Verifies data with PLC data.	○	16.4
Write to PLC (Flash ROM)				
	Write the program memory to ROM	Writes program memory data to the standard ROM/IC memory card (ROM).		16.5.1
	Write to PLC (Flash ROM)	Writes data to the standard ROM/IC memory card (ROM).		16.5.2
Delete PLC data		Deletes PLC data.		16.6
Change PLC data attributes		Changes PLC data attributes.		16.7
PLC user data				
	Read PLC user data	Reads user data from the PLC.	○	16.8.1
	Write PLC user data	Writes user data to the PLC.		16.8.2
	Delete PLC user data	Deletes user data of the PLC.		16.8.1
Monitor				
	Monitor mode	Sets the circle edit screen in monitor mode.	○	17.1
	Monitor (Write mode)	Sets the circuit (monitor write) mode.		17.3
	Start monitor (All windows)	Starts monitoring all open windows.	○	17.2
	Stop monitor (All windows)	Stops monitoring all open windows.	○	17.2
	Start monitor	Restarts the stopped monitor.	○	17.1
	Stop monitor	Stops the monitor.	○	17.1
	Change current value monitor (Decimal)	Displays the current device value of the circuit monitor in decimal form.	○	17.4
	Change current value monitor (Hexadecimal)	Displays the current device value of the circuit monitor in hexadecimal form.	○	17.4
	Local device monitor	Switches the execute/non-execute of the local device monitor.	○	17
	Device batch	Monitors devices in batch mode.	○	17.5
	Entry data monitor	Entry data mode.	○	17.6
	Buffer memory batch	Monitors the buffer memory in batch mode.	○	17.5
	Monitor condition setup	Sets the monitor execution conditions.	○	17.7
	Monitor stop condition setup	Sets the monitor stop conditions.	○	17.7
	Program monitor list	Monitors a program list.		17.8
	Interrupt program monitor list	Lists the interrupt programs.		17.9
	Scan time measurement	Measures the scan time.	○	17.10
	Entry ladder monitor	Entry the ladder block.	○	17.12
	Delete all entry ladder	Delete all entry ladder.		17.13

Online (Common functions)			Only for monitoring	Refer To
Debug (ladder)				
	Device test	Turns on or off the device or changes the value.		18.1
	Executional conditioned device test			
		Register executional conditioned device test	Registers the executional conditioned device test.		18.2.1
		Check/disable executional conditioned device test	Checks/disables the executional conditioned device test.		18.2.2
		Batch disable executional conditioned device test	Disables the executional conditioned device test by batch.		18.2.3
	Forced input output registration/cancellation	This will register the forced input output of device X/Y.		18.3
	Debug	Executes/disables the debugging function.		18
	Skip execution	Makes settings for skip.		18.6
	Partial execution	Makes settings for partial execution.		18.4
	Step execution	Makes settings for step execution.		18.5
Trace				
	Sampling trace	Execute sampling trace.	○	17.11
Remote operation		Operates the PLC remotely.		18.7
Redundant operation		Performs redundant operation		18.8
Program memory batch transfer		Batch-transfers the contents of program cash memory to program memory.		16.10
Latch data backup operation				
	Backup	Batch-saves data such as the contents of device memory and error history to the standard ROM.		16.11.1
	Delete backup data	Deletes backup data in the standard ROM.		16.11.2
PLC module change				
	Create backup data	Creates backup data in the memory card.		16.13.1
	Restore	Restores backup data in the memory card.		16.13.2
Keyword/Password (Q series)				
	Register keyword	Registers or changes the keyword.		19.1.1
	Delete keyword	Cancels the keyword.		19.1.2
	Disable keyword	Unlocks access by keywords.	○	19.1.3
Clear PLC memory		Clears the PLC memory cassette or device memory.		20.1
Format PLC memory		Formats the PLC memory.		20.2
Arrange PLC memory		Arranges the data area within the PLC memory.		20.3
Set clock		Sets the internal timer of the PLC.	○	20.4
Diagnosis (Common functions)				Refer To
PLC Diagnostics		Diagnoses the PLC.	○	21.1
Ethernet diagnostics		Diagnoses Ethernet.	○	21.5
CC IE Control diagnostics		Diagnoses CC-Link IE controller network.	○	21.3
MELSECNET diagnostics		Diagnoses MELSECNET/ II, 10, and H.	○	21.2
CC-Link / CC-Link/LT diagnostics		Diagnostics the CC-Link or CC-Link/LT.	○	21.4
System monitor		Monitors the system status of the PLC.	○	21.6
Online module change		Changes module during online.		21.7

Tool (Common functions)		Only for monitoring	Refer To
Check program	Checks the program.	○	15.1
Confirming project memory size	Confirming project memory size		15.2
Marge data	Links data.		15.3
Check parameter	Checks the parameter.	○	15.4
Transfer ROM			
Read	Reads data from ROM.	○	15.8.1
Write	Writes data to ROM.		15.8.1
Compare	Compares data with ROM data.	○	15.8.1
Write to file	Writes ROM data to files.		15.8.2
Delete unused comments	Delete the comments which isn't used at program.		15.9
Clear all parameters	Deletes parameters.		15.5
IC memory card			
Read IC memory card	Reads data from the IC memory card.	○ *1	15.6.1
Write IC memory card	Writes data to the IC memory card.		15.6.2
Start ladder logic test	Starts the ladder logic test.		15.15
Set TEL data			
Connection	Connect the line for A6TEL/Q6TEL.	○	22.4.1
Disconnect	Disconnect the line.	○	22.4.4
TEL data	Set the report data of A6TEL or Q6TEL.	○	22.3.3
AT command	Entry the modem.	○	22.3.2
Call book	Set the call book.	○	22.3.1
Intelligent function utility			
Utility list	Shows the utility names required to edit the intelligent function unit parameters.	○	15.7
Session	Starts the intelligent function utility.	○	15.7
FB support function			
Protocol FB support function	Protocol FB support function is started.	○	15.18
Customize keys	Changes key assignments for circuit symbol input.	○	15.10
Change display color	The display color is changed.	○	15.11
Options	Sets the options.	○	15.12
Create start-up settings file	Creates a file to save initial settings of the project.	○	15.14
Starting CC-Link Configurator	Starts CC-Link Configurator.	○	15.17
Window (Common functions)			Refer To
Cascade	Cascades windows.	○	15.13
Tile vertically	Tiles the windows vertically.	○	15.13
Tile horizontally	Tiles the windows horizontally.	○	15.13
Arrange icons	Arranges the icons in the lower part of the window.	○	15.13
Close all Windows	Close all open windows.	○	15.13
Help (Common functions)			Refer To
CPU error	Displays the description of each CPU error code.	○	15.16
Special relay/register	Displays the description of special relays or registers.	○	15.16
Key operation list	Displays the description of each key operation.	○	15.16
Product information	Displays product information (such as version number).	○	15.16
Connect to MELFANSweb	Connect to MELFANSweb.	○	15.16

＊1: Disabled for Do not use label

(2) Ladder editing function list
The following functions can be performed to edit the ladders and operation outputs/transition conditions.

Edit (Ladder editing functions)		Only for monitoring	Refer To
Undo	Reverses the last operation.	○ *2	6.2.9
Restore after ladder conversion	This will change the ladder under editing, back to the status after ladder conversion.		6.2.10
Cut	Moves the selected data to the Clipboard.	○ *2	3.3.1
Copy	Copies the selected data to the Clipboard.	○	3.3.2
Paste	Pastes the contents of the Clipboard at the cursor position.	○ *2	3.3.1
Insert line	Inserts a row at the cursor position.		6.2.5
Delete line	Deletes a row at the cursor position.		6.2.5
Insert row	Inserts a column at the cursor position.		6.2.5
Delete row	Deletes a column at the cursor position.		6.2.5
Insert NOP batch	Inserts NOP before a circuit block at the cursor position.		6.2.6
Delete NOP batch	Deletes all NOPs in the program at a time.		6.2.7
Draw line	Inserts a line.		6.2.2
Delete line	Deletes a line.		6.2.4
Change TC setting	Changes the setting value of the timer or counter.		6.3
Read mode	Sets the circuit screen in the read mode.	○	6
Write mode	Sets the circuit screen in write mode.		6
Read mode (All windows)	Sets all program screens in the read mode.	○	6
Write mode (All windows)	Sets all program screens in the write mode.		6
Ladder symbol			
Open contact	Inserts ⊣⊢ at the cursor position.	○ *3	6.2
Close project contact	Inserts ⊣/⊢ at the cursor position.	○ *3	6.2
Open branch	Inserts ⊔⊔ at the cursor position.	○ *3	6.2
Close project branch	Inserts ⊔/⊔ at the cursor position.	○ *3	6.2
Coil	Inserts ─◯─ at the cursor position.	○ *3	6.2
Application instruction	Inserts ─[ ]─ at the cursor position.	○ *3	6.2
Vertical line	Inserts │ at the cursor position.		6.2
Horizontal line	Inserts ── at the cursor position.		6.2
Delete vertical line	Inserts ╳ at the cursor position.		6.2
Delete horizontal line	Inserts ⤫ at the cursor position.		6.2
Rising pulse open contact	Inserts ⊣↑⊢ at the cursor position.	○ *3	6.2
Falling pulse open contact	Inserts ⊣↓⊢ at the cursor position.	○ *3	6.2
Rising pulse open branch	Inserts ⊔↑⊔ at the cursor position.	○ *3	6.2
Falling pulse open branch	Inserts ⊔↓⊔ at the cursor position.	○ *3	6.2
Rising pulse close contact	Inserts ⊣↑⊢ at the cursor position.	○ *3	6.2
Falling pulse close contact	Inserts ⊣↓⊢ at the cursor position.	○ *3	6.2
Rising pulse close branch	Inserts ⊔↑⊔ at the cursor position.	○ *3	6.2
Falling pulse close branch	Inserts ⊔↓⊔ at the cursor position.	○ *3	6.2

*2: Enabled for ladder registration monitoring.
*3: Enabled as a search function.

Edit (Ladder editing functions)			Only for monitoring	Refer To
	Invert operation results	Inserts ⎯╱⎯ at the cursor position.	○ ＊3	6.2
	Convert operation results to rising pulse	Inserts ↑ at the cursor position.	○ ＊3	6.2
	Convert operation results to falling pulse	Inserts ↓ at the cursor position.	○ ＊3	6.2
Documentation				
	Comment	Edits the comment at the cursor position.		9.4.4
	Statement	Edits the statement in the ladder at the cursor position.		10.3.1(1)
	Note	Edits the note in the ladder at the cursor position.		10.4.1(1)
	Statement/Note block edit	The statement and note under the program is edited by the batch.		10.5
Search/Replacement (Ladder editing functions)				Refer To
Find device		Searches for a device.	○	6.4.1
Find instruction		Searches for an instruction.	○	6.4.2
Find step No.		Searches for a step number.	○	6.4.3
Find character string		Searches for a character string in comment, note, or statement.	○	6.4.4
Find contact or coil		Find contact or coil.	○	6.4.5
Find comment		Searches for a device comment.	○	6.4.6
Replace device		Searches for and replaces a device.		6.4.8
Device block replacement		Replaces multiple devices at a time.		6.4.9
Replace instruction		Searches for and replaces an instruction.		6.4.10
Change open/close contact		Searches for and replaces a contact a with a contact b.		6.4.11
Replace character string		Searches for and replaces a character string in comment, note, or statement.		6.4.12
Change module start address		Replaces the module start I/O No. of buffer memory address instructions.		6.4.13
Replace statement/note type		Searches for and replaces the type of a character string between statement and note.		6.4.14
Cross reference list		Finds whether the device is being used by a contact or coil.	○	6.4.16
List of used devices		Finds where the device is used.	○	6.4.17
Conversion (Ladder editing functions)				Refer To
Convert		Converts the program.		8.1
Convert (All programs being edited)		Converts the programs (not converted yet) in all windows.		8.2
Convert block (Online change)		Converts the program and writes it during run.		16.9

(To the next page)

＊3: Enabled as a search function.

Display (Ladder editing functions)		Only for monitoring	Refer To
Comment	Displays or hides comments.	○	3.8
Statement	Displays or hides statements.	○	3.9
Note	Displays or hides notes.	○	3.10
Device Label	Displays or hides device names.	○	3.11
Macro instruction format display	Provides display in the user macro instruction format.	○	5.3
Display current monitored values			
Show	Always displays the lines of currently monitored values.	○	3.12
Hide	Always hides the lines of currently monitored values.	○	3.12
Show only during monitor	Displays the lines of currently monitored values only during monitoring.	○	3.12
Comment format			
4 × 8 characters	Shows comments in 4 × 8 or 2 × 8 characters.	○	3.13
3 × 5 characters	Shows comments in 3 × 5 characters.	○	3.13
Alias display format			
Displayed instead of device	Displays the machine name at the device name display position.	○	3.14.1
Displayed with device	Arrange and displays the machine name above the device name.	○	3.14.2
Number of comment lines			
1 line	Device comment is displayed by 1 line.		3.15
2 lines	Device comment is displayed by 2 lines.		3.15
3 lines	Device comment is displayed by 3 lines.		3.15
4 lines	Device comment is displayed by 4 lines.		3.15
Toolbar	Displays of hides the toolbar.	○	3.4
Status bar	Displays of hides the status bar.	○	3.5
Zoom			
50%	Displays a circuit reduced to 50%.	○	3.6
75%	Displays a circuit reduced to 75%.	○	3.6
100%	Displays a full-size circuit.	○	3.6
150%	Displays a circuit magnified to 150%.	○	3.6
Auto	Displays a circuit according to the screen size.	○	3.6
Project data list	Displays or hides the project data list.	○	3.7
Cross reference window	Displays where the specified device or label is used.	○	3.18
Instruction list	Switches program circuit display and list display.	○	6
Set the contact			
9 contacts	Display 9 contacts at the line of ladder.	○	3.16.1
11 contacts	Display 11 contacts at the line of ladder.	○	3.16.2
Elapsed time	Displays the elapsed time.	○	22.4.1

(3) Device comment editing function list
The following functions can be performed to edit device comments.

Edit		Only for monitoring	Refer To
Clear all (all devices)	Deletes the comments or device names of all devices.	○	9.5.1
Clear all (displayed devices)	Deletes the displayed comments or device names.	○	9.5.2
Setup comment	Sets the common comments or comments by program.	○	9.6
Setup comment range	Sets a comment range.	○	9.7

(4) Device memory setting function list
The following functions can be performed to set the device memory.

Edit		Only for monitoring	Refer To
Clear all (all devices)	Deletes data of all devices.	○	11.3.1
Clear all (displayed devices)	Deletes the data of displayed devices.	○	11.3.2
FILL	Sets all data to the specified value.	○	11.4
Finding data	Finding data.		6.4.6
Replacing data	Replacing data.		6.4.14

(5) Label programming function list
The following functions are available for label program editing.

Editing (Functions for local label variable/global label variable editing)		Only for monitoring	Refer To
Insert line	Inserts a line at the cursor position.		5.1.3
Add line	Adds a line under the cursor position.		5.1.3
Delete line	Delete a line from the cursor position.		5.1.3
Delete Auto External (Au)	Delete all Auto External.		5.1.5
Delete all	Delete all variables.		5.1.6
Auto device setting	Setting auto device.		5.1.4
Global variable setting	Setting global variable.		5.1.3
Import the device comment	Import the device comment (local label variables only).		5.1.7
Export the device comment	Export the device comment.		5.1.8
Display (Functions for label program editing)			Refer To
Display device program	Switches the display/non-display of the device display screen.		5.1.10
Device program display mode			
Below	Display the zoom or the device screen at below.		5.1.10
Right	Display the zoom or the device screen at right.		5.1.10
Display step synchronization	Display step synchronization between label program and device program.		5.1.10
Conversion (Functions for label program editing)			Refer To
Convert/Compile	Compile the label program.		5.1.9
Convert/Compile (All programs being edited)	Compile the all the not compiled label programs.		5.1.9
Convert/Compile (All programs)	Compile the all label programs.		5.1.9
Convert/Compile (Online change)	Convert/Compile the program and writes it to the PLC.		5.1.9
Tool			Refer To
Sort			5.1.3
Label order	Sort by label.		5.1.3
Device/Constant order	Sort by Device/Constant.		5.1.3
Device type order	Sort by Device type.		5.1.3

(6) SFC editing function list
The following functions can be performed to edit SFC.
For details, refer to the GX Developer Version6 operating manual (SFC manual).

Edit (SFC editing functions)		Only for monitoring
Insert line	Inserts a row at the cursor position.	
Delete line	Deletes a row at the cursor position.	
Insert row	Inserts a column at the cursor position.	
Delete row	Deletes a column at the cursor position.	
Edit the line		
	Vertical line	Writes a vertical line.	
	Selection divergence	Writes selective branch.	
	Simultaneous divergence	Write a parallel branch.	
	Selection convergence	Writs a selective coupling.	
	Simultaneous convergence	Writes a parallel coupling.	
Delete the line	Deletes the selective/parallel branch or selective/parallel coupling.	
Change TC setting	Changes the setting value of the timer or counter.	
Read mode	Sets the circuit screen in the read mode.	○
Write mode	Sets the circuit screen in write mode.	
Read mode (All windows)	Sets all program screens in the read mode.	○
Write mode (All windows)	Sets all program screens in the write mode.	
Step attribute		
	Normal	Set the normal.	
	Stored coil	Set the stored coil (SC) type.	
	Stored operation (without transition check)	Stored operation (without transition check) [SE] type.	
	Stored operation (with transition check)	Set the stored operation (with transition check) [ST] type.	
	Reset	Set the reset [R] type.	
SFC symbol		
	Step	Inserts ☐ at the cursor position.	
	Block START step (with END check)	Inserts ☐ at the cursor position.	
	Block START step (without END check)	Inserts ☐ at the cursor position.	
	Jump	Inserts ↳► at the cursor position.	
	End step	Inserts ⊥ at the cursor position.	
	Dummy step	Inserts ✕ at the cursor position.	
	Transition	Inserts + at the cursor position.	
	Selection divergence	Inserts ⌐ at the cursor position.	
	Simultaneous divergence	Inserts ≡ at the cursor position.	
	Selection convergence	Inserts ⌐ at the cursor position.	
	Simultaneous convergence	Inserts ≐ at the cursor position.	
	Vertical line	Inserts │ at the cursor position.	
Documentation		
	Comment	Edit comment.	
Block information	Set the block information.	

Search/Replacement (SFC editing functions)		Only for monitoring
Find device	Finds device.	○
Find instruction	Finds instruction.	○
Find step No./block No.	Finds the step number.	○
Find character string	Finds character string.	○
Replace device	Replaces a device.	
Device block replacement	Replaces multiple devices at a time.	
Replace instruction	Replaces an instruction.	
Change open/close contact	Replaces open/close contact.	
Replace step No.	Replace the step number.	
Replace character string	Replaces a character string.	
Change module start address	Replaces the module start I/O No. of buffer memory address instructions.	
Cross reference window display	Displays where the specified device or label is used.	○
Conversion (SFC editing functions)		
Cross reference list	Finds whether the device is being used by a contact or coil.	○
List of used devices	Finds where the device is used.	○
Convert (All programs being edited)	Converts the programs (not converted yet) in all windows.	
Convert (block)	Convert the block data.	
Convert block (all block)	Convert the all block.	
Display convert error	Display the convert error.	
Display (SFC editing functions)		
Display comment of step and TR	Displays the step and transition comment.	○
Display label of step and TR	Displays the step and transition label.	○
Row of SFC	Set the row number of SFC diagram.	○
Zoom setting		
Below	Display the zoom ladder of list at below.	○
Right	Display the zoom ladder of list at right.	○
Split	Display the zoom ladder of list.	○
Set the contact at right		
5 contacts, 11 contacts	You can select "5 contacts" or "9 contacts" when "Right" is specified for Zoom partition.	○
9 contacts, 11 contacts	You can select "9 contacts" or "11 contacts" when "Bellow" is specified for Zoom partition.	○
Review SFC	Review SFC.	○
Display block list	Display block list.	○
MELSAP-L format	Change the SFC view format.	○
Display the reference window	Display the reference window.	○
Online (Common functions)		
Debug (SFC)		
Device test	Sets the device value.	
Block brake	Block brake.	
Step brake	Step brake.	
Block run	Block run.	
Step run	Step run.	
1 step run	1 step run.	
Block forced stopping	Block forced stopping.	
Step forced stopping	Step forced stopping.	
Reset stored step	Reset stored step.	
Run all block	Run All Block.	

(7) Functions applicable for ST edition
The following table explains the functions applicable for ST edition.
For more information, refer to GX Developer operating manual (structured text).

Edit (ST editing function)		Only for monitoring
Auto device setting	Setting auto device.	
Global variable setting	Setting global variable.	
Select function	Select the function.	
Select label	Select the label.	
All select	Select all the text.	
Search/Replacement (ST editing function)		
Find	Finds the string.	○
Find downward	Finds the character string downwards.	○
Find upward	Finds the character string upwards.	○
Replace	Replaces the character string.	
Bookmark setting/release	Set/Release the bookmark.	○
Bookmark list	Displays the bookmark list.	○
Find bookmark downward	Finds the bookmark downwards.	○
Find bookmark upward	Finds the bookmark.	○
Release all bookmarks	Releases all the set bookmarks.	○
Line jump	Jumps to the specified location.	
Conversion (ST editing function)		
Convert/Compile	Convert/Compile program.	
Convert/Compile (All programs being edited)	Convert/Compile all unconverted program.	
Convert/Compile (All programs)	Convert/Compile the all programs.	
Convert/Compile (Online change)	Convert/Compile the program and writes it to the PLC.	
View (ST editing function)		
Label information	The device assigned to the label of a cursor position is displayed in the form of a tool.	○
Function parameter	An parameter is displayed in the form of a tool tip at the time of a function input.	○
Open Function Block	Open the Function Block.	○
Online (ST editing function)		
Debug	Starts/Ends debug function.	
ST debug execution	Performs break execution/I line execution.	
Break point setting/cancellation	Sets/Clears break points.	
Break point list	A list that displays the set break points.	
Cancel all break points	Clears all the set break points.	
Tool (ST editing function)		
ST editor setting	Sets the ST editor.	○
Window (ST editing function)		
Divide into two	Divides the window and display.	○

1.2 FX Series Programming

This section describes the main differences between the GX Developer operating environment and FX-dedicated programming software (DOS® version, Windows® version) operating environment and the points to be noted.

Target programmable controller:
FX0, FX0S, FX0N, FX1, FX2, FX2C, FX1S, FX1N, FX2N, FX2NC, FX3G, FX3U and FX3UC series
In the selection of PLC type, select FXU/FX2C for FX, FX2 and FX2C
Refer to Chapter 2 for details on the system configuration and connection method.

Operating Environment
- Differences of main terms

	GX Developer (SW2D5□-GPPW or later)	FX
Program file [*1]	"Project name" (In units of folders (directories) called project.)	"Program file name" (Program files are created in any folders (directories) for management.)
Comment [*2]	"Statement"	"Circuit comment"
	"Note"	"Coil comment"
Parameter	The item names of the setting screen differ slightly. Refer to Chapter 13 for details.	

∗1: For details of project specification, refer to Section 3.2.
∗2: The number of characters that can be input and character type differ slightly (Refer to Appendix 11).

- Differences in operations
  Step ladder instructions (STL, RET) are displayed in different ways (refer to Section 6.1.2).

  Monitor display may be partially different (refer to Appendix 11).

  Application instructions using the FNC. No. are not available.

  Although FX series operates in the sequence program with no End instructions, END instructions are forceful input in GX Developer.

• Common items and others
 Items that are available for only A series or QnA series are disabled and
 displayed in gray in the GX Developer operation screens.

 Partial execution, step run, and step run debug functions cannot be used when
 FXCPU is connected. However, these debug functions can be used for
 debugging with a single personal computer when the GX Simulator is connected
 (refer to Chapter 18 for details).

 The program conversion function is provided for conversion from A to FX series
 and vice versa (refer to Section 4.14 and Appendix 4 for details).

 The GX Developer FX series allows users to create only one program file.
 Because A series or QnA series allows users to create multiple program files,
 this manual may use screen examples including multiple program files when
 describing the function. However, when FX series is selected, only the main
 program is displayed on the screen.

 The connection cable and RS-232/RS-422 converter for FX series may be
 different from those for A or QnA series PLC (refer to Chapter 2 for details).

 GX Developer is cable of reading from or writing to FXGP(DOS) and
 FXGP(WIN) files basically. However, this does not apply to the FX3G, FX3U,
 FX3UC series and some files (refer to Section 4.15 to 4.16 and Chapter 9 for
 details).

 SFC program of FX series is displayed as STL and RET instructions on the
 circuit edit screen of the GX Developer since the program is described as the
 step ladder instructions.
 It is possible to edit on the circuit (refer to Section 6.1.2).

1.3 Basic Key Specifications

The following table summarizes the purposes of the keys used with the GX Developer.

Key Name	Purpose
Esc	Closes the window, interrupts execution, and selects instructions.
Tab	Enters a tab code and switches the target to which the cursor must be moved quickly.
Ctrl + Tab	
Ctrl	Used in a combination with a alphanumeric key or a function key.
Shift	Selects a character at the Shift position.
Caps Lock	Switches upper-case and lower-case letters.
Alt	Selects the menu.
Back space	Deletes a character to the left of the cursor position.
Enter	Enters a carriage return.
Page Up	Scrolls up the circuit or list by page. (Scrolls a screen in plus direction.)
Page Down	Scrolls down the circuit or list by page. (Scrolls a screen in minus direction.)
Insert	Enters a space character at the cursor position.
Delete	Deletes a character at the cursor position. (Clears all settings.)
Home	Moves the cursor to the home position.
⇑⇓⇐⇒	Moves the cursor or scrolls the circuit or list in unit of lines. (⇑⇓)
Ctrl + Home	Moves circuit the cursor to step 0 in the mode.
Ctrl + End	Moves the cursor to the End instruction in the circuit mode.
Scroll Lock	Inhibits scroll-up and scroll-down.
Num Lock	Uses the Ten-key pad for numeric key input only.
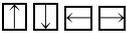
2. SYSTEM CONFIGURATION

The following figures show system configuration to connect personal computer with programmable controllers.

2.1 Connection from the USB/Serial Port

2

The following system configuration is made up by connection from the serial port.
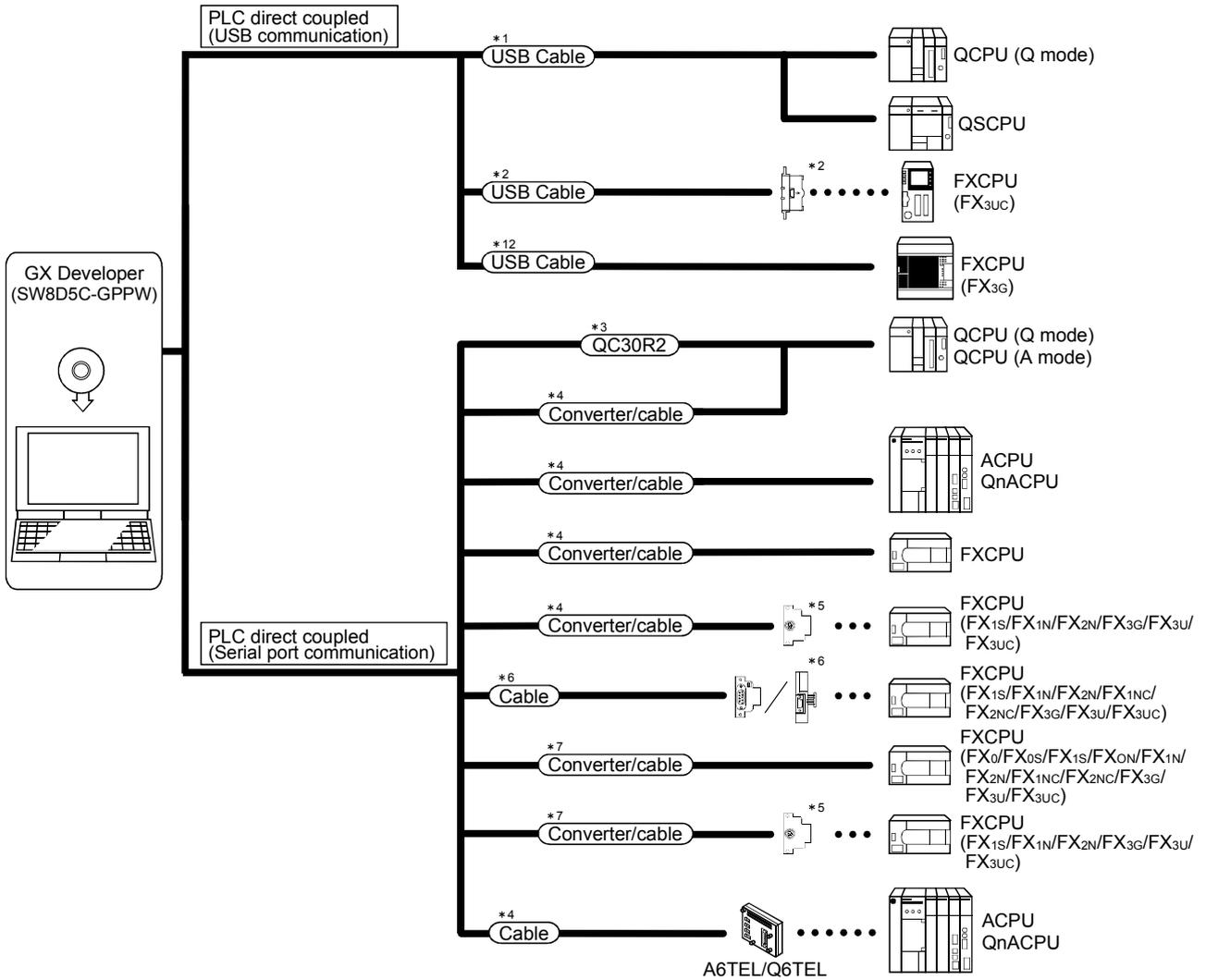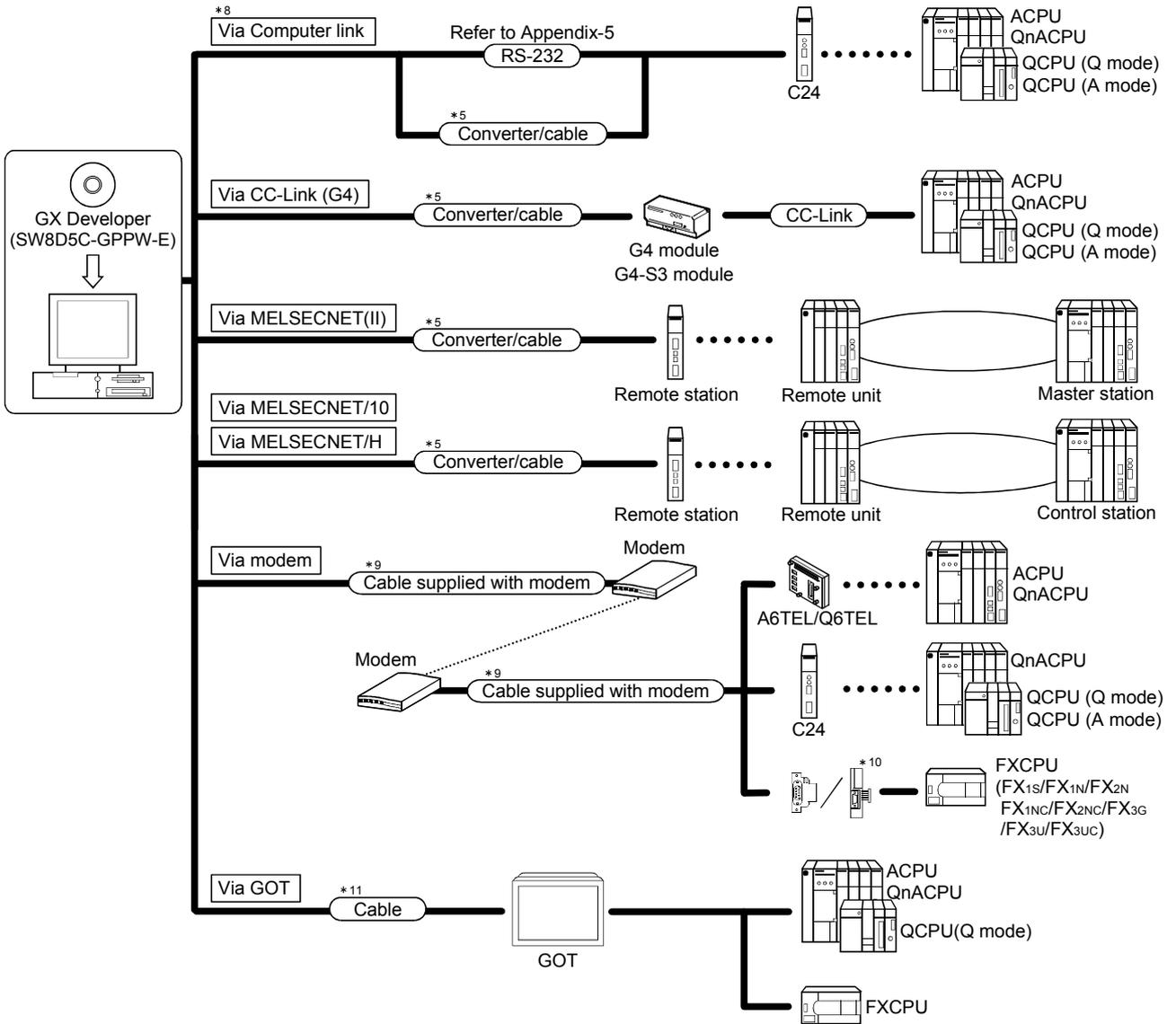
∗1: About the USB cable (QCPU (Q mode) compatible)
    (1) Usable with Windows® 98, Windows® Me, Windows® 2000, Windows® XP or Windows Vista® in which USB driver has been installed.
    (2) Unusable for Windows® 95, Windows NT® Workstation 4.0.
    (3) The USB cable can be used for connecting a single programmable controller; cannot be applied to the following configurations.

<Incompatible configurations>
• One computer installed with several USB ports is connected to several QCPU (Q mode).

• One computer is connected to several QCPU (Q mode) though USB hub.
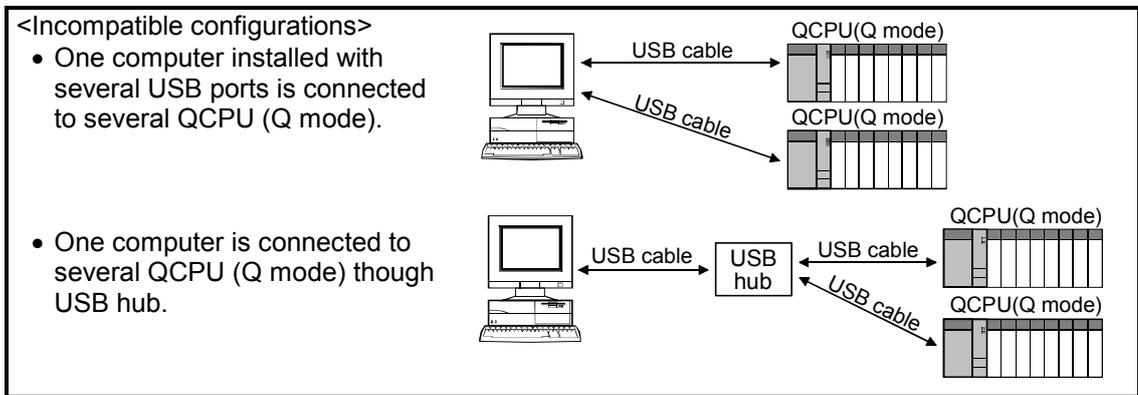
    (4) Use the USB cable which conforms to the USB Standard Rev. 1.1.
    (5) Refer to POINT in Section 16.1 for precautions for and restrictions on using the USB cable to make communications.

∗2: USB cable and function expansion board (FX3U, FX3UC compatible)
    (1) System configuration

FX3U-USB-BD   USB cable (packed)
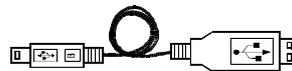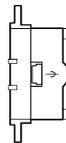
    (2) If "Operate communication setting" is checked on the [PLC System (2)] tab in the [PLC Parameter] dialog box, the corresponding port cannot be used for communication with the programmable controller. In this case, write the setting, where the above setting has been removed, from the built-in programming port of the programmable controller.
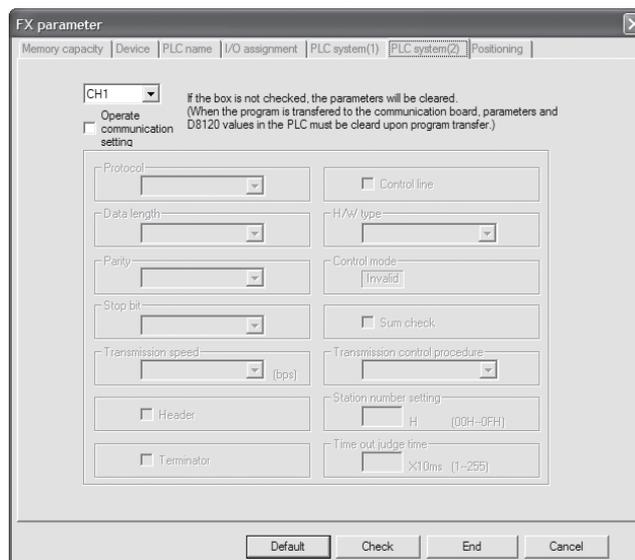
When the PLC type of the project is the FX3U(C), the channel specification (CH1/CH2) combo box is displayed. Set to CH1 and check the settings.

(3) When Windows® 98, Windows® Me, Windows® 2000 Professional, Windows® XP, or Windows Vista® is used, the USB cable and function expansion board are available if the driver on the CD-ROM packed with the FX-USB-AW or FX3U-USB-BD has been installed.
Note that the USB driver differs from the one for the built-in USB port of the FX3G. Install the driver according to a connected device. GX Developer Version8.72A or later stores a USB driver for the FX-USB-AW and FX3U-USB-BD to its installation location, "Easysocket\FXOptionDrivers".

(4) The USB cable and function expansion board are unavailable for Windows® 95 or Windows NT® Workstation 4.0.

(5) On GX Developer, set the serial COM port number by choosing [Online] - [Target setup].

(6) For the precautions and restrictions on use of the FX3U-USB-BD, refer to the manual packed with the FX3U-USB-BD.

∗3: About the cable (QCPU (Q mode), QCPU (A mode) compatible)
For communication in 115.2/57.6kbps
Fast communication cannot be made if the Personal computer used is not compatible with the communication speed of 115.2/57.6kbps.
If a communication error occurs, reduce the transmission speed setting and restart communication.

The following cable has been confirmed by Mitsubishi Electric that it will work properly.

Using the cable of Mitsubishi Electric make

RS-232 cable
QC30R2 (when Personal computer connector is D-sub, 9-pin)
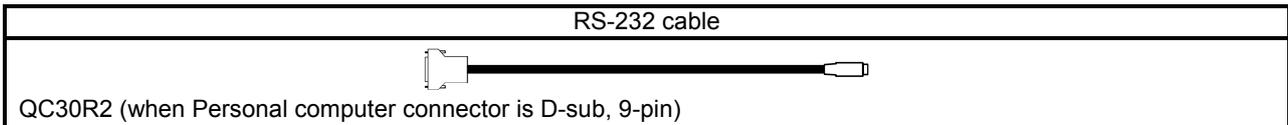
＊4: About the converter/cable (ACPU, QnACPU, FXCPU compatible)

(1) Using the products of Mitsubishi Electric make

Personal computer side (RS-232 cable)	RS-232/RS-422 converter	Programmable controller side (RS-422 cable)
F2-232CAB-1 (when Personal computer connector is D-sub, 9-pin)	FX-232AW FX-232AWC FX-232AWC-H (FX series only)	For ACPU, QnACPU, FX1/FX2CPU/FX2CCPU FX-422CAB (0.3m) FX-422CAB-150 (1.5m) For FX0/FX0S/FX0N/FX1S/FX1N/FX2NFX2NC/FX3G/FX3U/FX3UC CPU FX-422CABO (1.5m)
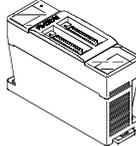
- How to identify compatibility of the F2-232CAB and F2-232CAB-1 cables with the ACPU and QnACPU
  Check the indication of the model label attached to the cable.

Incompatible products	Compatible products (with indication of F/FX/A)
F2-232CAB Y990C＊＊＊＊ →	F2-232CAB(F/FX/A) Y990C＊＊＊＊
F2-232CAB-1 Y990C＊＊＊＊ →	F2-232CAB-1(F/FX/A) Y990C＊＊＊＊
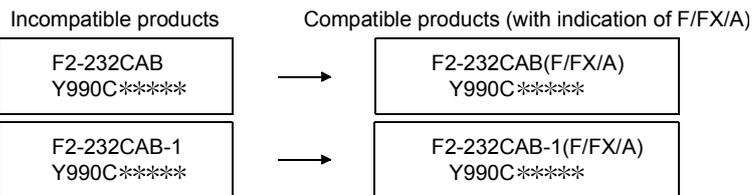
- When using the A6TEL/Q6TEL as a converter, use any of the RS-232 cables shown in the above table.
- When the FX-232AWC-H is used for connection with the FX3U and FX3UC, the transmission speed 9.6kbps, 19.2kbps, 38.4kbps, 57.6kbps or 115.2kbps is available.
  When the FX-232AWC or FX-232AW is used for connection, select either the transmission speed 9.6kbps or 19.2kbps.
- When connecting to the FX series, be sure to use the devices shown in the above table.

Example of connection between DOS/V personal computer and QnAPU by FX-232AW(C)

DOS/V personal computer　　　　　　＊1　　FX-232AW(C)　　　　QnACPU

AC30N2A
F2-232CAB-1　　　　　　　　　　FX-422CAB(-150)

＊ : Depending on the used cable, a straight cable (connector) for conversion between D-sub 9-pin ↔ D-sub 25-pin may be separately necessary.
Prepare conversion cables as necessary according to the instructions of the used DOS/V personal computer.
(RS-232 cables for connection of DOS/V personal computer and converter shown above)
AC30N2A　　　(D-sub 25-pin ↔ D-sub 25-pin)
F2-232CAB-1 (D-sub 9-pin ↔ D-sub 25-pin)

＊5: Function expansion board

Series	Function expansion board
FX3U, FX3UC (FX3UC-32M-LT, FX3UC-32MT-LT-2)	FX3U-422-BD
FX3G	FX3G-422-BD
FX2N	FX2N-422-BD
FX1S, FX1N	FX1N-422-BD

If "Operate communication setting" is checked on the [PLC System (2)] tab in the [PLC Parameter] dialog box, the corresponding port cannot be used for communication with the programmable controller. In this case, write the setting, where the above setting has been removed, from the built-in programming port of the programmable controller.
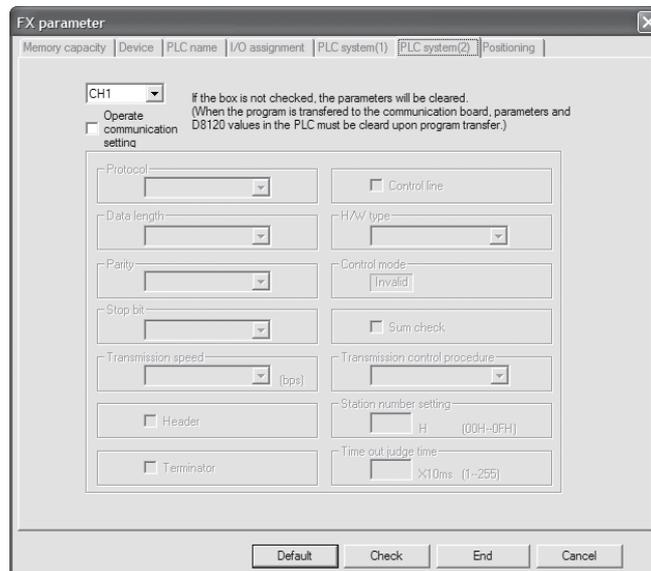
When the PLC type of the project is the FX3G or FX3U(C), the channel specification (CH1/CH2) combo box is displayed.
Set to CH1 and check the settings.

∗6: RS-232 cable and function expansion board (special adaptor)

Serial port shape of personal computer	Series	Required function expansion board and special adaptor	RS-232 cable
D sub 9 pin	FX3U, FX3UC	FX3U-232-BD	FX-232CAB-1
		Function expansion board (FX3U-***-BD) + FX3U-232ADP	
	FX3G	FX3G-232-BD	FX-232CAB-1
		FX3G-CNV-ADP+FX3U-232ADP	
	FX2N	FX0N-232ADP + FX2N-CNV-BD	F2-232CAB-1
		FX2N-232-BD	FX-232CAB-1
		FX2NC-232ADP + FX2N-CNV-BD	
	FX1NC, FX2NC	FX0N-232ADP	F2-232CAB-1
		FX2NC-232ADP	FX-232CAB-1
	FX1S, FX1N	FX0N-232ADP + FX1N-CNV-BD	F2-232CAB-1
		FX1N-232-BD	FX-232CAB-1
		FX2NC-232ADP + FX1N-CNV-BD	
D sub 25 pin	FX3U, FX3UC	FX3U-232-BD	FX-232CAB-1
		Function expansion board (FX3U-***-BD) + FX3U-232ADP	
	FX3G	FX3G-232-BD	F2-232CAB-1
		FX3G-CNV-ADP+FX3U-232ADP	
	FX2N	FX0N-232ADP + FX2N-CNV-BD	F2-232CAB
		FX2N-232-BD	FX-232CAB-1
		FX2NC-232ADP + FX2N-CNV-BD	
	FX1NC, FX2NC	FX0N-232ADP	F2-232CAB
		FX2NC-232ADP	FX-232CAB-1
	FX1S, FX1N	FX0N-232ADP + FX1N-CNV-BD	F2-232CAB
		FX1N-232-BD	FX-232CAB-1
		FX2NC-232ADP + FX1N-CNV-BD	

- *** of the function expansion board (FX3U-***-BD) indicates 232, 485, 422, USB or CNV.
- In the FX3UC series, only the FX3UC-32MT-LT and FX3UC-32MIT-LT-2 are connectable.

If "Operate communication setting" is checked on the [PLC System (2)] tab in the [PLC Parameter] dialog box, the corresponding port cannot be used for communication with the programmable controller. In this case, write the setting, where the above setting has been removed, from the built-in programming port of the programmable controller.

When the PLC type of the project is the FX3G or FX3U(C), the channel specification (CH1/CH2) combo box is displayed.

- FX3U and FX3UC series
  When using the FX3U-232-BD or the first FX3U-232ADP connected to the FX3U-CNV-BD, set CH1 and check the settings.
  When using the FX3U-232ADP connected to other than the FX3U-CNV-BD or the second FX3U-232ADP connected to the FX3U-CNV-BD, set CH2 and check the settings.
- FX3G series (14-point and 24-point types)
  When using the FX3G-232-BD or the first FX3U-232ADP connected to the FX3G-CNV-ADP, set CH1 and check the settings.
- FX3G series (40-point and 60-point types)
  When using the FX3G-232-BD or the first FX3U-232ADP connected to the FX3G-CNV-ADP, set CH1 and check the settings. At this time, when using the second FX3U-232ADP connected to the FX3G-CNV-ADP, set CH2 and check the settings.
  When using the FX3G-232-BD and the FX3U-232ADP connected to the FX3G-CNV-ADP, set CH1 and check the settings for the FX3U-232ADP. Besides, set CH2 and check the settings for the FX3G-232-BD.
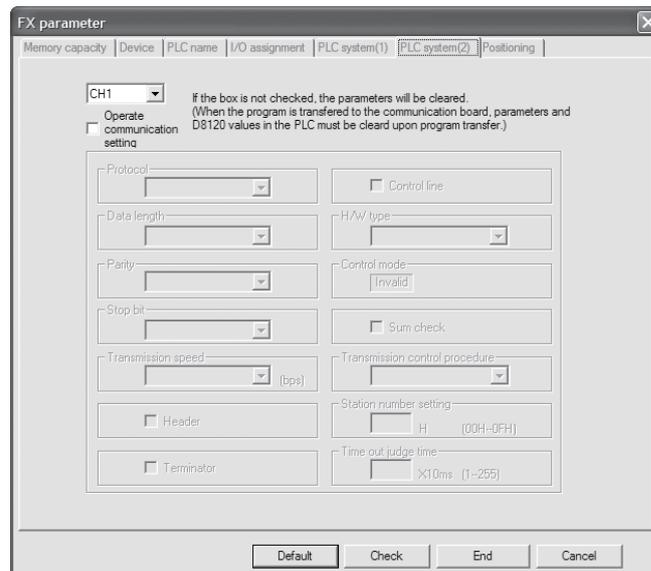
∗7: Converter/cable (FXCPU compatible)

(1) System configuration

FX-USB-AW   USB cable (packed)

(2) When Windows® 98, Windows® Me, Windows® 2000 Professional, Windows® XP, or Windows Vista® is used, the converter/cable is available if the driver on the CD-ROM packed with the FX-USB-AW or FX3U-USB-BD has been installed.
Note that the USB driver differs from the one for the built-in USB port of the FX3G. Install the driver according to a connected device. GX Developer Version8.72A or later stores a USB driver for the FX-USB-AW and FX3U-USB-BD to its installation location, "Easysocket\FXOptionDrivers".

(3) The converter and cable are unavailable for Windows® 95 or Windows NT® Workstation 4.0.

(4) On GX Developer, choose [Online] - [Transfer setup] and set the serial COM port number.

(5) For the precautions and restrictions on use of the FX-USB-AW, refer to the manual packed with the FX-USB-AW.

∗8: Computer link
The program that uses V, Z (Indexing) cannot be monitored if routing through a computer link module when A Series is used.

∗9: Routed through modem
Use the straight cable supplied with the modem.

∗10:Function expansion board (special adapter)

Programmable controller side connector shape of modem-equipped cable	Series	Required function expansion board and special adaptor
D sub 9 pin	FX3U, FX3UC	FX3U-232-BD
		Function expansion board (FX3U-***-BD) + FX3U-232ADP
	FX3G	FX3G-232-BD
		FX3G-CNV-ADP+FX3U-232ADP
	FX2N	FX2N-232-BD
	FX1NC, FX2NC	FX2NC-232ADP + FX2N-CNV-BD
		FX2N-232-ADP
	FX1S, FX1N	FX1N-232-BD
		FX2NC-232ADP + FX1N-CNV-BD
D sub 25 pin	FX2N	FX0N-232ADP + FX2N-CNV-BD
	FX1NC, FX2NC	FX0N-232-ADP
	FX1S, FX1N	FX0N-232ADP + FX1N-CNV-BD

• *** of the function expansion board (FX3U-***-BD) indicates 232, 485, 422, USB or CNV.
• In the FX3UC series, only the FX3UC-32MT-LT and FX3UC-32MIT-LT-2 are connectable.

Set "Modem initialized" on [PLC system (1)] tab dialog box in [PLC parameter] according to the modem actually used. For more information, refer to chapter 22.
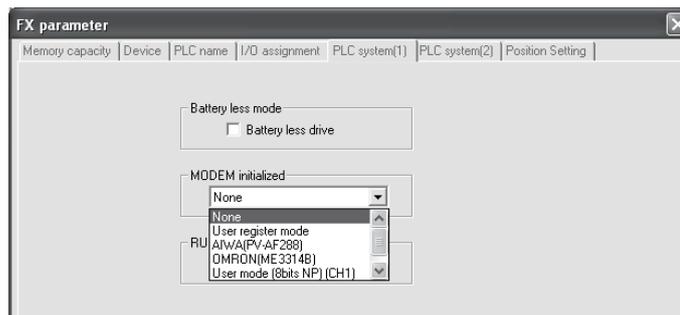
∗11:Via GOT

Using the transparent function of the GOT allows access to the programmable controller via the GOT.

For details, refer to Section 16.2.5 and the following manuals.

- GOT1000 Series Connection Manual
- GOT-A900 Series User's Manual (Connection System Manual)
- GOT-F900 Series Hardware Manual [connection]

∗12: USB cable (compatible with the FX3G)

(1) The USB cable is usable with Windows® 98, Windows® Me, Windows® 2000 Professional, Windows® XP, or Windows Vista® on which a USB driver has been installed.

Note that the USB driver differs from the one for the FX-USB-AW and FX3U-USB-BD. Install the driver according to a connected path.

(2) For details on cables, refer to FX3G Series User's Manual - Hardware Edition.

(3) For Windows® 98, Windows® Me, Windows® 2000 Professional, Windows® XP, and Windows Vista® , GX Developer Version 8.72A or later can be used.

(4) Windows® 95 and Windows NT® Workstation 4.0 are not compatible with the cables.

(5) Select [Online] → [Transfer setup] → "USB (Built-in port)" in GX Developer.

POINT

- Before handling the RS-422 interface conversion cable/converter, please read its specifications, precautions, etc. carefully in the manual of the corresponding product and handle it correctly.
- When disconnecting or reconnecting the conversion cable/converter that receives 5VDC power from the RS-422 interface, switch power off on the programmable controller side before starting work.
- When disconnecting or reconnecting the peripheral device or conversion cable that does not receive 5VDC power from the RS-422 interface (whose power is supplied from an external power supply), be sure to use an earth band or touch a grounded metal object, etc. before starting work to discharge static electricity from the cable, human body, etc. After that, handle it in the following procedure.
  1) Switch power off on the personal computer side.
  2) Power off the conversion cable/converter. When it has an FG terminal, ground it.
  3) Connect/disconnect the conversion cable/converter between the personal computer and programmable controller.
  4) Power on the conversion cable/converter.
  5) Power on the personal computer.
  6) Start up the software package.
- When connecting a personal computer to a programmable controller CPU with a USB/RS-232 conversion cable, refer to manuals of each cable for checking the COM port number.

2.2 Connection from the Interface Boards

The following system configuration is made up by connection from the interface boards.
Refer to the corresponding board manuals for the way to connect the boards and install the drivers.
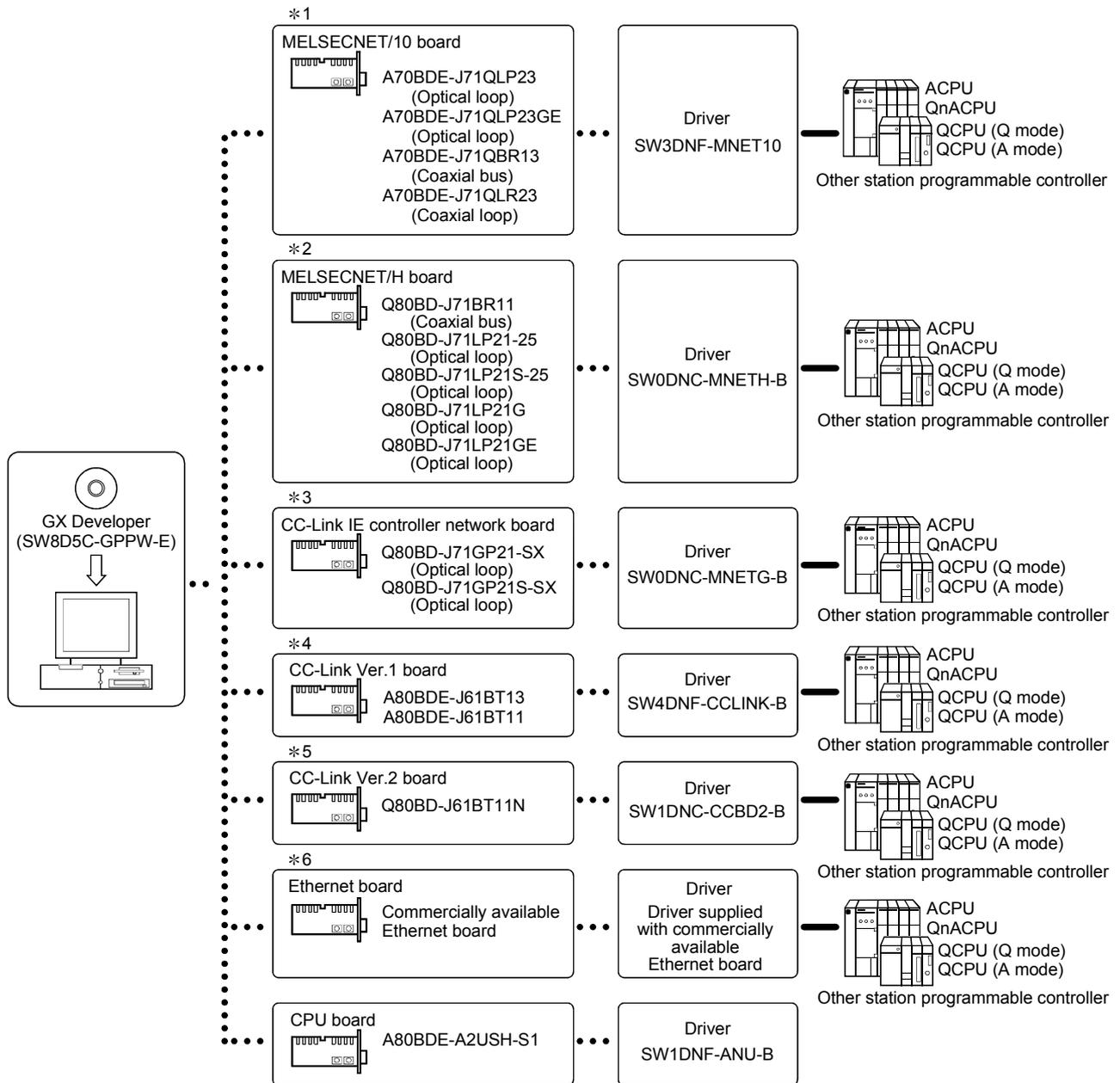
∗1: MELSECNET/10 board
The following table indicates the drivers that cannot be used with the specific Operating Systems.

Driver Name	Operating Systems
SW3DNF-MNET10	Cannot be used with Windows® Me/2000/XP/Vista.

If a communications error takes place, an error code is indicated in the least significant 4 digits.
Refer to the error code list of the MELSECNET/10 board manual.
MELSECNET/10 communication cannot be configured in Windows Vista®.

∗2: MELSECNET/H board
The following table indicates the drivers that cannot be used with the specific Operating Systems.

Driver Name	Operating Systems
SW0DNC-MNETH-B	Cannot be used with Windows® Me.

(1) Use SW0DNC-MNETH-B Version E or later to access the Process CPU.
(2) Use SW0DNC-MNETH-B Version K or later to access the Redundant CPU.

∗3: CC-Link IE controller network board
The following table indicates the drivers that cannot be used with the specific Operating Systems.

Driver Name	Operating Systems
SW1DNC-MNETG-B	Cannot be used with Windows® 95/98/Me/NT.

∗4: CC-Link Ver.1 board (A80BDE-J61BT11, A80BDE-J61BT13)
The following table indicates the drivers that cannot be used with the specific Operating Systems.

Driver Name	Operating Systems
SW4DNF-CCLINK-B	Cannot be used with Windows® Me/XP HOME/Vista.

(1) A80BDE-J61BT11 can be used as a master/local station.
(2) A80BDE-J61BT13 can be used as a local station.
(3) Use SW4DNF-CCLINK-B Version C or later to access the Process CPU.
(4) When connecting with the Redundant CPU, specify for a local station.
    Use Version G or later for SW4DNF-CCLINK-B.

∗5: CC-Link Ver.2 board (Q80BD-J61BT11N)
(1) Q80BD-J61BT11N can be used as a master/local station.
(2) When connecting with the Redundant CPU, specify for a local station.

∗6: Ethernet board
(1) The following Ethernet boards/cards have been confirmed by Mitsubishi Electric to operate properly.

	Maker Name	Model
Ethernet board/card	3COM make	Ethernet Link III LAN PC Card
	Allied Telesis make	Center COM LA-PCM Ethernet PC Card LAN Adapter
	TDK make	10BASE-T LAN card (Model: LAN-CD021BX)
Ethernet board	Allied Telesis make	RE2000 (ISA)

2.3 Connection from GX Developer Installed in PC CPU Module

(1) The following is the system configuration that can be connected from GX Developer installed in the PC CPU module.
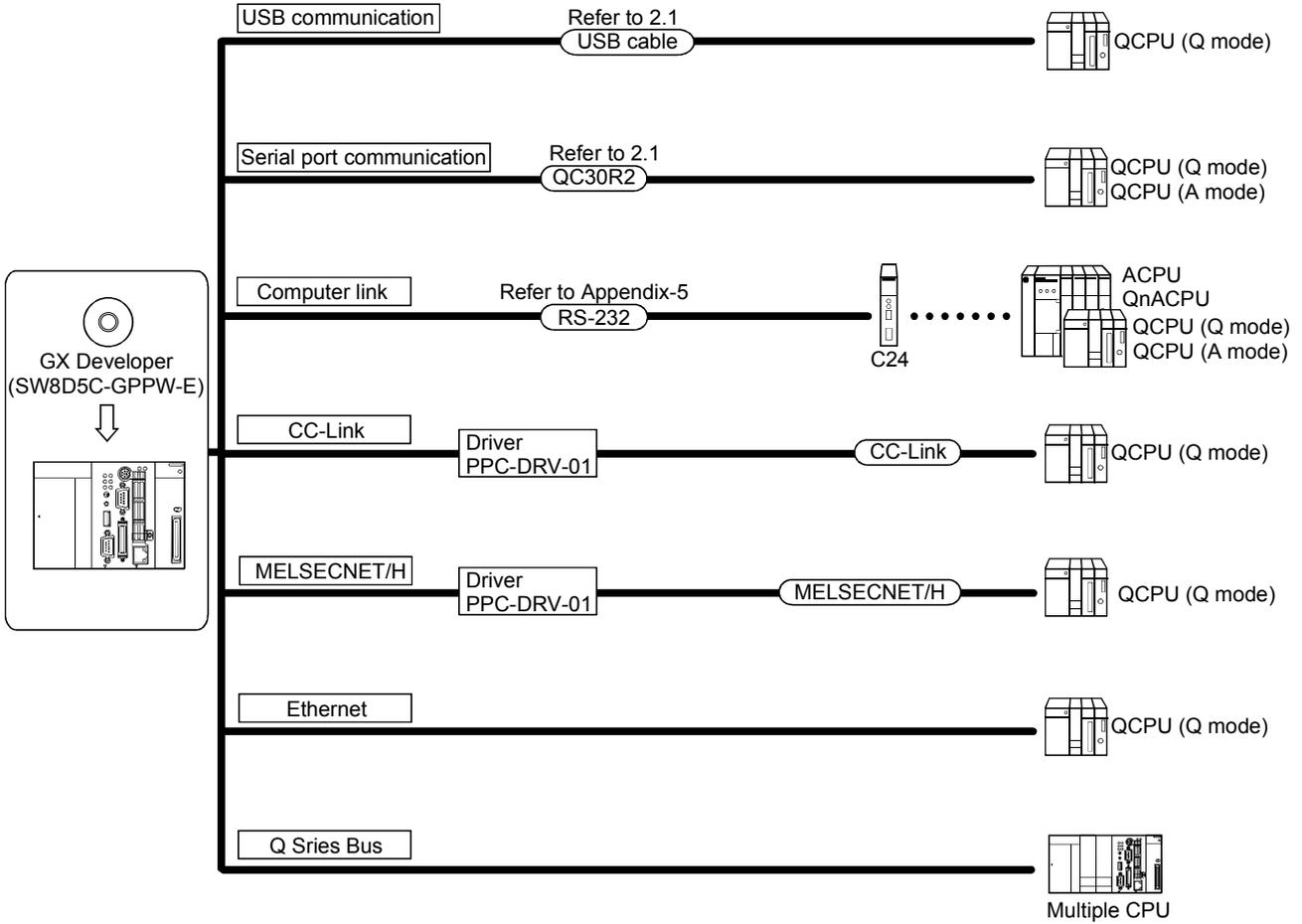
2.4 System Equipment Lists

(1) The following list indicates modules connectable from the serial port.

PLC Series	Module Name	Module Model
Q series	Programmable controller module	Q00J, Q00UJ, Q00, Q00U, Q01, Q01U, Q02(H), Q02PH, Q02U, Q03UD, Q04UDH, Q06H, Q06PH, Q06UDH, Q10UDH, Q12H, Q12PH, Q12PRH *1, Q13UDH, Q20UDH, Q25H, Q25PH, Q25PRH *1, Q26UDH
		Q02(H)-A, Q06H-A
	Serial communication module *2	QJ71C24, QJ71C24-R2, QJ71C24N, QJ71C24N-R2, QJ71C24N-R4
	MELSECNET/H network remote I/O module	QJ72LP25, QJ72BR15
	G4-S3 module	AJ65BT-G4-S3
QnA series	Programmable controller module	Q2A, Q2AS(H), Q2AS1, Q2AS(H)S1, Q3A, Q4A, Q4AR
	Serial communication module *3	AJ71QC24, AJ71QC24-R2, AJ71QC24-R4, AJ71QC24N, A1SJ71QC24, A1SJ71QC24-R2, AJ71QC24N-R2, AJ71QC24N-R4, A1SJ71QC24N, A1SJ71QC24N-R2
	MELSECNET/10 network remote I/O module	AJ72QLP25, AJ72QBR15, A1SJ72QLP25, A1SJ72QBR15, QJ72LP25, QJ72BR15
	G4 module	AJ65BT-G4, AJ65BT-G4-S3
A series	Programmable controller module	A0J2H, A1S(S1), A1FX, A1SJ, A1SH, A1SJH, A1N, A2C, A2CJ, A2N(S1), A2S(S1), A2SH(S1), A3N, A2A(S1), A3A, A2U(S1), A2US(S1), A2AS(S1), A2AS-S30, A2AS-S60, A2USH-S1, A3U, A4U
	Computer link module *4	AJ71UC24, A1SJ71UC24-R2, A1SJ71UC24-PRF, A1SJ71C24-R2, A1SJ71C24-PRF, A1SCPUC24-R2, A2CCPUC24, A2CCPUC24-PRF, A1SJ71UC24-R4
	MELSECNET(II) data link remote I/O module	AJ72P25, AJ72R25
	MELSECNET/B data link remote I/O module	AJ72T25B, A1SJ72T25B
	MELSECNET/10 network remote I/O module	AJ72LP25, AJ72LP25, AJ72BR15
	G4 module	AJ65BT-G4, AJ65BT-G4-S3
FX series *5	Programmable controller module	FX0, FX0S, FX0N, FX1, FX2, FX2C, FX1S, FX1N, FX1NC, FX2N, FX2NC, FX3G *6, FX3U *6 FX3UC *6
MOTION (SCPU)	Programmable controller module	A171SH, A172SH, A173UH(S1), A273UH(S3)
CNC (M6/M7) *7	Numerical controller	E60 Series, M60/M60S Series, C6/C64 Series, MELDASMAGIC64/68 Series, M600 Series (except M625), M700 Series
Inverter *8	Programmable controller module	FR-A700-NA Series, FR-A700-EC Series

(2) The following list indicates modules connectable from the USB port.

PLC Series	Module Model
Q series	Q00UJ, Q00U, Q01U, Q02H, Q02PH, Q02U, Q03UD, Q03UDE, Q04UDH, Q04UDEH, Q06H, Q06PH, Q06UDH, Q06UDEH, Q10UDH, Q10UDEH, Q12H, Q12PH, Q12PRH, Q13UDH, Q13UDEH, Q20UDH, Q20UDEH, Q25H, Q25PH, Q25PRH, Q26UDH, Q26UDEH
QSCPU	QS001
FX series *9 *10	FX0, FX0S, FX0N, FX1S, FX1N, FX1NC, FX2N, FX2NC, FX3G, FX3U, FX3UC

(3)   The following table indicates the modules connectable from the MELSECNET/10 or MELSECNET/H (MELSECNET/10 mode) board.

PLC Series	Module Model
Q series	QJ71LP21, QJ71LP21G, QJ71BR11, QJ71LP21-25, QJ71LP21S-25
QnA series	AJ71QLP21, AJ71QBR11, A1SJ71QLP21, A1SJ71QBR11
A series	AJ71LP21, AJ71BR11, A1SJ71LP21, A1SJ71BR11

(4)   The following table indicates the modules connectable from the MELSECNET/H board.

PLC Series	Module Model
Q series	QJ71LP21, QJ71BR11, QJ71LP21-25

(5)   The following table indicates the modules connectable from the CC-Link IE controller network board.

PLC Series	Module Model
Q series	QJ71GP21-SX, QJ71GP21S-SX

(6)   The following list indicates modules connectable from the CC-Link board.

PLC Series	Module Model
Q series	QJ61BT11, QJ61BT11N
QnA series	AJ61QBT11, A1SJ61QBT11
A series	AJ61BT11, A1SJ61BT11

(7)   The following list indicates modules connectable from the Ethernet board.

PLC Series	Module Model
Q series	QJ71E71, QJ71E71-B2, QJ71E71-100, QJ71E71-B5, Q03UDE [*11], Q04UDEH [*11], Q06UDEH [*11], Q10UDEH [*11], Q13UDEH [*11], Q20UDEH [*11], Q26UDEH [*11]
QnA series	AJ71QE71, AJ71QE71-B5, A1SJ71QE71-B2, A1SJ71QE71-B5, AJ71QE71N-T, A1SJ71QE71N-T, AJ71QE71N-B5, A1SJ71QE71N-B5, AJ71QE71N-B2, A1SJ71QE71N-B2, AJ71QE71N-B5T, A1SJ71QE71N-B5T, AJ71QE71N3-T, A1SJ71QE71N3-T
A series	AJ71E71-S3, A1SJ71E71-B2-S3, A1SJ71E71-B5-S3, AJ71E71N-B2, AJ71E71N-B5T, A1SJ71E71N-B2, A1SJ71E71N-B5T, AJ71E71N-T, A1SJ71E71N-T, AJ71E71N-B5, A1SJ71E71N-B5, AJ71E71N3-T, A1SJ71E71N3-T
CNC (M6/M7) [*7]	C6/C64 Series, M700 Series

*1:   When configuring the system with the redundant CPU, use the software package of GX Developer Version 8.18U (SW8D5C-GPPW-E) or later.

*2:   The following table indicates whether the interfaces may be connected to the personal computer when the programmable controller is accessed from the personal computer via the serial communication module (Q series).
If the module cannot be connected directly with the personal computer, it may be usable as the "n"th module of multidropping.

Type	Interface	1:1 Connection	Multidropping	
			First module	"n"th module
QJ71C24	RS-232	○	○	×
	RS-422/485	×	×	○
QJ71C24-R2	RS-232	○	×	×
	RS-232	×	×	×

∗3: The following table indicates whether the interfaces may be connected to the personal computer when the programmable controller is accessed from the personal computer via the serial communication module (QC24).
If the module cannot be connected directly with the personal computer, it may be usable as the "n"th module of multidropping.

Type	Interface	1:1 Connection	Multidropping	
			First module	"n"th module
AJ71QC24	RS-232	○	○	×
	RS-422/485	×	×	○
AJ71QC24N	RS-232	○	○	×
	RS-422/485	×	×	○
AJ71QC24-R2	RS-232	○	×	×
	RS-232	×	×	×
AJ71QC24N-R2	RS-232	○	×	×
	RS-232	×	×	×
AJ71QC24-R4	RS-422	×	×	×
	RS-422/485	×	×	○
AJ71QC24N-R4	RS-422	×	×	×
	RS-422/485	×	×	○
A1SJ71QC24	RS-232	○	○	×
	RS-422/485	×	×	○
A1SJ71QC24N	RS-232	○	○	×
	RS-422/485	×	×	○
A1SJ71QC24-R2	RS-232	○	×	×
	RS-232	×	×	×
A1SJ71QC24N-R2	RS-232	○	×	×
	RS-232	×	×	×

∗4: About the computer link module
Note that when the programmable controller is accessed from the personal computer via the computer link module, the modules that may be connected directly with the personal computer are limited.
If the module cannot be connected directly with the personal computer, it may be usable as the "n"th module of 1:n connection.

Type	Interface	1:1 Connection	1:n Connection	
			First module	"n"th module
AJ71UC24	RS-232	○	○	×
	RS-422/485	×	×	○
AJ71C24-S6	RS-232	○	○	×
	RS-422	×	×	○
AJ71C24-S8	RS-232	○	○	×
	RS-422	×	×	○
A1SJ71UC24-R2	RS-232	○	×	×
A1SJ71C24-R2	RS-232	○	×	×
A1SJ71UC24-PRF	RS-232	○	×	×
A1SJ71C24-PRF	RS-232	○	×	×
A1SJ71UC24-R4	RS-422/485	×	×	○
A1SJ71C24-R4	RS-422/485	×	×	○
A1SCPUC24-R2	RS-232	○	×	×
A2CCPUC24	RS-232	○	○	×
	RS-422	×	×	×
	RS-422/485	×	×	○
A2CCPUUC24-PRF	RS-232	○	○	×
	RS-422	×	×	×
	RS-422/485	×	×	○

∗5: It can be connected when the RS232 - RS422 conversion board/adaptor is used.

∗6: When configuring the system with the FX3UC, use the software package of GX Developer Version 8.18U (SW8D5C-GPPW-E) or later.
When configuring the system with the FX3U, use the software package of GX Developer Version 8.24A(SW8D5C-GPPW-E) or later.
When configuring the system with the FX3G, use the software package of GX Developer Version 8.72A(SW8D5C-GPPW-E) or later.

∗7: When creating the project of the numerical controller (CNC (M6/M7)), set the PLC type to "Q4A". Refer to the following manual for details.
• MITSUBISHI CNC 700 Series PLC Programming Manual

∗8: When creating the project of the inverter, set the PLC series to "ACPU" and set the PLC type to "A0J2H". Refer to the following manual for details.
• FR-A700 PLC FUNCTION PROGRAMMING MANUAL

∗9: It can be connected when the USB - RS422 conversion adaptor is used.
It can be connected directly to FX3G.

∗10:Since the Serial - USB conversion driver software is used for FX series, specify the COM port number of RS232C when setting a connection target for communication.

∗11:When accessing the QnA/ACPU in another station using the Built-in Ethernet port QCPU, the MELSECNET/H network module whose version is earlier than the one shown on the following table does not support in any of the following system configurations. Use the MELSECNET/H network module meeting the product information shown on the following table.
• Multiple CPU configuration
• Accessing another station via MELSECNET/H
• Control CPU for the MELSECNET/H network module routed through is not the Built-in Ethernet port QCPU.

Module name		Product information on available modules
MELSECNET/H network module	QJ71LP21(-25) QJ71LP21S(-25) QJ71LP21G QJ71LP21GE QJ71BR11	100420000000000-D or later

<Example>
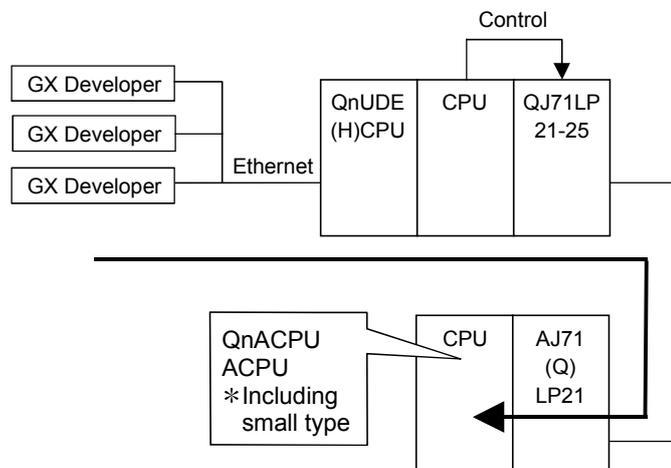
2.5 Precautions for Handling Projects on the Earlier Versions

2.5.1 Using GX Developer Version 4 (SW4D5C-GPPW-E) or earlier to handle the project

The following are the precautions for using GX Developer Version 4 (SW4D5C-GPPW) or earlier to handle the project that has been created with GX Developer Version 8 (SW8D5C-GPPW-E).
Handle the project after reading the following precautions.

About device memory:
(1) When editing on GX Developer Version 8 (SW8D5C-GPPW-E) and the version of GX Developer Version 4 (SW4D5C-GPPW-E or earlier), do not create multiple device memories.
(Refer to Chapter 11 for device memories.)

Do not read the GX Developer Version 8 (SW8D5C-GPPW-E) created multiple device memories on the version of GX Developer Version 4 (SW4D5C-GPPW-E or earlier). The data cannot be read correctly.

(2) Do not read the GX Developer Version 8 (SW8D5C-GPPW-E) created device memory of 32 MB or more on the version of GX Developer Version 4 (SW4D5C-GPPW-E or earlier).

Project data compatibility
The following table indicates whether the program created using GX Developer Version 8 (SW8D5C-GPPW-E) can be read using GX Developer Version 4 (SW4D5C-GPPW-E) or earlier.

Data created using GX Developer Version 8		Version of GX Developer used to open project			
		Version 3 to 4 *1		Version 0 to 2 *1	
Labels used	Ladder/list	No labels	○ *2	No labels	○ *2
	MELSAP3		○		×
	MELSAP-L		○ *3		×
	FB		×		×
	Structure		×		×
	ST		—		—
	FB (ST)		—		—
Labels not used	Ladder/list	No labels	○	No labels	○
	MELSAP3		○		×
	MELSAP-L		○ *3		×

○: Compatible
×: Not compatible
—: PLC type unsupported

*1: The project saved with the registration monitor open cannot be opened.
*2: Read by the execution program.
*3: Read by the MELSAP3 program.

2.5.2 Using GX Developer Version 5 (SW5D5C-GPPW-E) or earlier to handle the project

The following are the precautions for using GX Developer Version 5 (SW5D5C-GPPW-E) or earlier to handle the project that has been created with GX Developer Version 8 (SW8D5C-GPPW-E).
Handle the project after reading the following precautions.

(1) About the parameters (for the High Performance Model QCPU)
GX Developer Version5 (SW5D5C-GPPW-E) or earlier cannot handle the data where the parameters of the following items have been set.
The following dialog box appears if the project saved in the personal computer is read or read from PLC is performed from the programmable controller.

[Items which cannot be read if set on GX Developer (SW7D5C-GPPW-E)]
- Multi PLC setting
- I/O assignment (when multi PLC setting has been made)
- Memory card of boot file setting→Standard ROM all data automatic write setting
- Attached file format "CSV" of Ethernet (E-mail settings → New setting)
- "Local station 2, 3 setting" of CC-Link (Operational setting → Number of exclusive stations)
- Scan mode setting "sync" of CC-Link (mode setting (in remote I/O network mode)
- When the following network parameter is set
  (a) MNET/H (remote master)
- When multi-CPU automatic refresh setting is made

(2) About the remote password (for the High Performance Model QCPU)
The following explains the case where the remote password-set project is read/saved, for example.

(a) The remote password cannot be edited/changed.

Not displayed for GX Developer Version 5 or earlier.
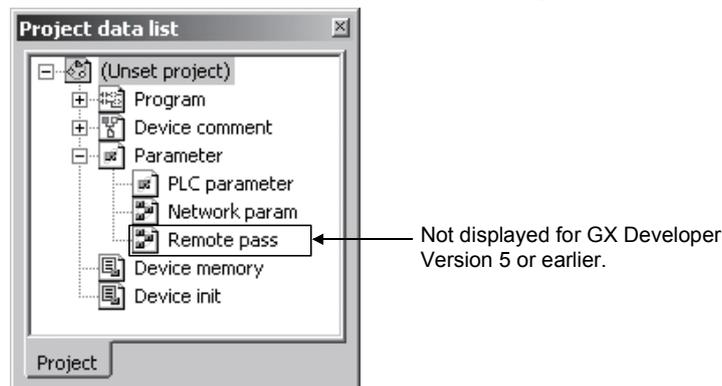
(b) When the project is saved, its set remote password is not deleted. (Saved unchanged)
(c) When the PLC type is changed (including the case where the type is changed to other than the QCPU (Q mode)), the remote password file is not deleted.
(d) When the [Online] PLC user data list is being displayed, the remote password file is not displayed.

(3) About the remote I/O station project
- The remote I/O station project cannot be read on GX Developer (SW5D5C-GPPW-E or earlier).

(4) About the device comments (for QCPU (Q mode))
   (a) The range where comments may be handled is U0(\G0) to U1FF(\G65535).
   (b) Comment data created in U200 to U3FF and U3E\G0 to U3FF\G65335 cannot be edited, searched for, and replaced.
   Comment data are not deleted if a project is saved without comment data editing or similar operation being performed.
   However, when [Save as] or [Change PLC type] is performed, the comment data created in U200 to U3FF and U3E\G0 to U3FF\G65335 are deleted.

(5) About the display scale factor specified
   GX Developer (SW7D5C-GPPW-E) has the function to specify any scale factor in addition to 50, 75, 100 and 150%. Hence, when the project used on the version of GX Developer (SW5D5C-GPPW-E or earlier) is to be saved on GX Developer (SW7D5C-GPPW-E), do not specify the display scale factor of other than 50, 75, 100 and 150%.
   If the project saved at the display scale factor of other than 50, 75, 100 and 150% is read on the GX Developer (SW5D5C-GPPW-E or earlier), that project opens at the preset scale factor, but is displayed blank when the scale factor is changed with the zoom tool button.
   In that case, perform the following operation to change the display scale factor setting to any of 50, 75, 100 and 150%.

   [Operating Procedure]
   Select [View] → [Zoom], then select a magnification factor.
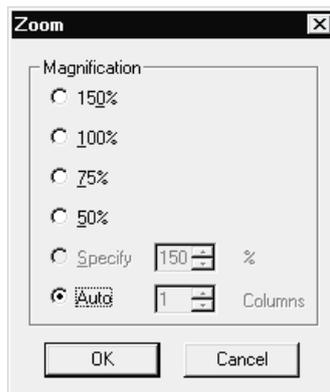
(6) Program compatibility
   The following table indicates whether the program created using GX Developer Version 8 (SW8D5C-GPPW-E) can be read using GX Developer Version 5 (SW5D5C-GPPW-E).

Data created using GX Developer Version 8		Version of GX Developer used to open project	
		Version 5 *1	
Labels used	Ladder/list	No labels	○ *2
	MELSAP3		○
	MELSAP-L		○
	FB		×
	Structure		×
	ST		○ *2
	FB (ST)		×
Labels not used	Ladder/list	No labels	○
	MELSAP3		○
	MELSAP-L		○

○: Compatible
×: Not compatible

*1: The project saved with the registration monitor open cannot be opened.
*2: Read by the execution program.

2.5.3 Using GX Developer Version 6 (SW6D5C-GPPW-E) or earlier to handle the project

The following are the precautions for using GX Developer Version 6 (SW6D5C-GPPW-E) or earlier to handle the project that has been created with GX Developer Version 8 (SW8D5C-GPPW-E).
Handle the project after reading the following precautions.

(1) About parameter (Applicable to the QCPU (Q mode))
GX Developer Version6 (SW6D5C-GPPW-E) or earlier cannot handle the data where the parameters of the following items have been set.
The following dialog box appears if the project saved in the personal computer is read or read from PLC is performed from the programmable controller .

[Item that makes the project unreadable if set in GX Developer (SW7D5C-GPPW-E)*1]

(a) Network parameters → Ethernet → Open settings → "Open system" →
"MELSOFT connection" (Unreadable when handled on Version 6.04E or earlier)
*1: Readable on Version 6.05F or later.

(2) About project
If either of the following parameters is set for the data, the project cannot be read from the personal computer/programmable controller using GX Developer (SW6D5C-GPPW-E or earlier).

(a) The project has been created on the Basic Model QCPU.
(b) The project has been created by selecting "Label + FB".

(3) Program compatibility
The following table indicates whether the program created using GX Developer Version 8 (SW8D5C-GPPW-E) can be read or not using GX Developer Version 6 (SW6D5C-GPPW-E).

Data created using GX Developer Version 8		Version of GX Developer used to open project	
		Version 6 *1	
Labels used	Ladder/list	No labels	○ *2
	MELSAP3		○
	MELSAP-L		○
	FB		×
	Structure		×
	ST		○ *2
	FB (ST)		×
Labels not used	Ladder/list	No labels	○
	MELSAP3		○
	MELSAP-L		○

○: Compatible
×: Not compatible

*1: The project saved with the registration monitor open cannot be opened.
*2: Read by the execution program.

2.5.4 Using GX Developer Version 7.09K (SW7D5C-GPPW-E) or earlier to handle the project

Handle the project created with GX Developer Version7.10L(SW7D5C-GPPW-E) or later using GX Developer Version7.09K(SW7D5C-GPPW-E) or earlier, while paying the followings.

(1) Unreadable parameters (Relevant for QCPU (Q mode))
The Project set with any of the parameters (a) to (C) described in this section cannot be handled with GX Developer Version7.09K(SW7D5C-GPPW-E) or earlier.
The following dialog box appears when this project is read from a personal computer or programmable controller.

Clicking on OK button changes the parameters to default. Be sure to reset the necessary parameters after the project is read.
(a) PLC parameter → PLC system → "High speed interrupt setting"
(b) Network param → Network type → NET/H (Multiplexed remote master)" / "NET/H (Multiplexed remote sub)"
(c) PLC parameter → Multiple PLC settings
GX Developer Version7.10L or later includes "Online module change" parameter within "Multiple PLC settings".
When reading a project including "Multiple PLC settings", GX Developer operates differently depending on the version as follows:
1) When reading the project created using GX Developer Version7.19V or later
   a) GX Developer Version7.09K(SW7D5C-GPPW-E) or earlier can read the project including "Multiple PLC settings" within which "Online module change" is disabled .
   b) GX Developer Version7.09K(SW7D5C-GPPW-E) or earlier cannot correctly read the project including "Multiple PLC settings" within which "Online module change" is enabled, automatically setting the parameters to default.
   Therefore, be sure to reset the necessary parameters to the project after reading them.
2) When reading the project created using GX Developer Version7.10L to 7.18U
   GX Developer Version7.09K(SW7D5C-GPPW-E) or earlier cannot correctly read the project including "Multiple PLC settings" within whichever "Online module change" is enabled/disabled, automatically setting the parameters to default.
   Therefore, be sure to reset the necessary parameters to the project after reading them.

POINT

- PLC parameter "High speed interrupt setting"
  Note that write to PLC can be performed to the programmable controller that is incompatible with high speed interrupt setting, but the high speed interrupt setting is ignored.

- GX Developer Version7.19V(SW7D5C-GPPW-E) or later has been improved; the project created with this version and including "Multiple PLC setting" within which "Online module change" is disabled can be read using GX Developer Version7.09K(SW7D5C-GPPW-E) or earlier without changing the parameters.
  For the latest GX Developer version, contact your local sales representative.

- How to read the project created with GX Developer Version7.10L to 7.18U using GX Developer Version7.09K(SW7D5C-GPPW-E) or earlier.

  It is required to perform the following operations using GX Developer Version7.19V(SW7D5C-GPPW-E) or later.

  (1) Project in which "Online module change" is enabled
      Disable the "Online module change" setting and then save the project.
      The saved project can be read using GX Developer Version7.09K(SW7D5C-GPPW-E) or earlier.
  (2) Project in which "Online module change" is disabled
      The following dialog box appears when reading the project from Q02(H)CPU, Q06HCPU, Q12HCPU or Q25HCPU.

MELSOFT series GX Developer
(i) The function to online module change is not used. Online module change parameter deletes.
OK
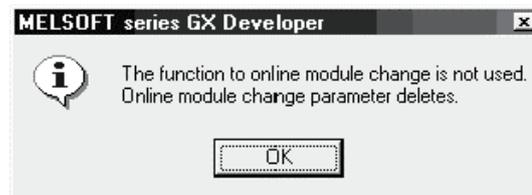
  Clicking on OK button deletes the unnecessary parameters.
  Therefore, save the project.
  The saved project can be read using GX Developer Version7.09K (SW7D5C-GPPW-E) or earlier.

(2) About project created on Process CPU
If GX Developer Version 7.09K (SW7D5C-GPPW-E) or earlier is used to read the Process CPU project saved in the personal computer, the following dialog box appears and the project cannot be read.
Be careful when executing [Open project] or [Copy].

The data written to the programmable controller can be read by performing read from PLC, but are read as the Q12H or Q25HCPU data.

(3) Program compatibility
The following table indicates whether the program created using GX Developer Version 8 (SW8D5C-GPPW-E) can be read or not using GX Developer Version 7 (SW7D5C-GPPW-E).

Data created using GX Developer Version 8		Version of GX Developer used to open project	
		Version 7	
Labels used	Ladder/list	Labels + FB	○
	MELSAP3		×
	MELSAP-L		×
	FB		○
	Structure		×
	ST		○ *1
	FB (ST)		○ *1
Labels not used	Ladder/list	No labels	○
	MELSAP3		○
	MELSAP-L		○

○: Compatible
×: Not compatible

＊1: Read by the label program.

2.5.5 Using GX Developer Version 7.20W (SW7D5C-GPPW-E) or earlier to handle the project

This section describes precautions when handling projects created with GX Developer Version 7.20W (SW7D5C-GPPW) or earlier using GX Developer Version 8.00 (SW8D5C-GPPW) or later.
Handle the projects while paying full attention to the following points.

Projects in which parameter (a) to (g) mentioned below are set cannot be handled using GX Developer Version 7.20W (SW7D5C-GPPW) or earlier.
When these projects are read out to a personal computer or read out from the programmable controller to a personal computer, the following dialog box will appear.
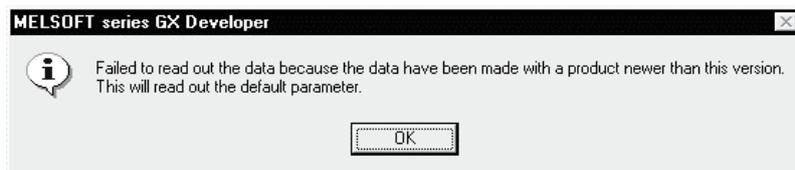
Click on OK button, and then read out the project with all parameters default.
It is required to reset the required parameters after reading.

(1) Parameters cannot be read by Basic model QCPU

   PLC parameter
   (a) [SFC] tab
   (b) [PLC file] tab
   (c) [PLC system] tab → [Intelligent function module setting]
   (d) "Multiple CPU setting"

   Network parameter
   (e) Ethernet → "E-mail settings"
   (f) Ethernet → "Interrupt"

(2) Parameters cannot be read by High Performance model QCPU or Process CPU

   PLC parameter
   (g) [Boot file] tab → "Boot option" → "Clear program memory"

(3) Program compatibility
   Refer to Section 2.5.4 (3).

2.5.6 Using GX Developer Version 8.02C (SW8D5C-GPPW-E) or earlier to handle the project

This section describes precautions when handling projects created with GX Developer Version 8.03D (SW8D5C-GPPW-E) or later using GX Developer Version 8.02C (SW8D5C-GPPW-E) or earlier.
Handle the projects while paying full attention to the following points.

The project, in which any of the following parameters has been set, cannot be handled using GX Developer Version 8.02C (SW8DC-GPPW-E) or earlier.

(1) CC-Link parameter setting - "Mode" - "Remote net (Ver. 2 mode)"
(2) CC-Link parameter setting - "Mode" - "Remote net (Additional mode)"
(3) CC-Link parameter setting - "Operational setting" - "Case of CPU STOP setting"

The following dialog box appears when the project, where any of the above parameters has been set, is read or read from the PLC.

```
MELSOFT series GX Developer                              [×]

  (i)   Failed to read out the data because the data have been made with a product newer than this version.
        This will read out the default parameter.

                         [    OK    ]
```

Click on OK button, and then read out the project with all parameters default.
It is required to reset the required parameters after reading.

2.5.7 Using GX Developer Version 8.04E (SW8D5C-GPPW-E) or earlier to handle the project

This section describes precautions when handling projects created with GX Developer Version8.05F (SW8D5C-GPPW-E) or later using GX Developer Version 8.04E (SW8D5C-GPPW-E) or earlier.
Handle the projects while paying full attention to the following points.

When following settings are made:
"Ethernet parameter setting" – "Operational settings" – "TCP existence confirmation setting" – "Use the KeepAlive"

"KeepAlive" setting is added to GX Developer from Version 8.05F.
("Ping" setting is fixed instead, when Version 8.04E or earlier is used.)
Note that either of following operations is done, and then parameters are written into PLC, this will start TCP existence confirmation function based on Ping setting.

(1)   When "Ethernet operations" setting screen is closed with $\boxed{\text{End}}$ button.
(2)   When PLC type is changed to other than QCPU (Q mode), and then return to QCPU (Q mode).

"Use the KeepAlive" setting will remain when the above operation is not done.

$\boxed{\text{REMARK}}$

If the projects created with GX Developer Version 8.04E (SW8D5C-GPPW-E) or earlier using GX Developer Version8.05F (SW8D5C-GPPW-E) or later, they will be displayed with "TCP existence confirmation setting" set to "Use the Ping".

2.5.8 Using GX Developer Version 8.17T (SW8D5C-GPPW-E) or earlier to handle the project

The following precautions should be taken when the project created using GX Developer Version 8.18U (SW8D5C-GPPW-E) or later is handled using GX Developer Version 8.17T (SW8D5C-GPPW-E) or earlier.
Handle the project, note the following description.

(1) The project where the parameters indicated in (a) and (b) have been set cannot be read from the personal computer or programmable controller using GX Developer Version 8.17T (SW8D5C-GPPW-E) or earlier.
  (a) Parameters related to the redundant CPU have been set.
  (b) "OPS connection" has been set as the open method on the open setting screen in the Ethernet setting.

(2) The project where the following parameters (a), (b) have been set cannot be handled by GX Developer Version 8.17T (SW8D5C-GPPW-E) or earlier.
  Read it using GX Developer Version 8.18U (SW8D5C-GPPW-E) or later.
  (a) Pairing setting of MELSECNET/H network range assignment
  (b) IP address on Ethernet operation setting screen in Ethernet setting

(3) When the remote password of the remote I/O station has been set
  The following explains the case where the remote password-set project is read/saved.
  (a) The remote password cannot be edited/changed.

Not displayed for GX Developer Version 8.17T(SW8D5C-GPPW-E) or earlier.
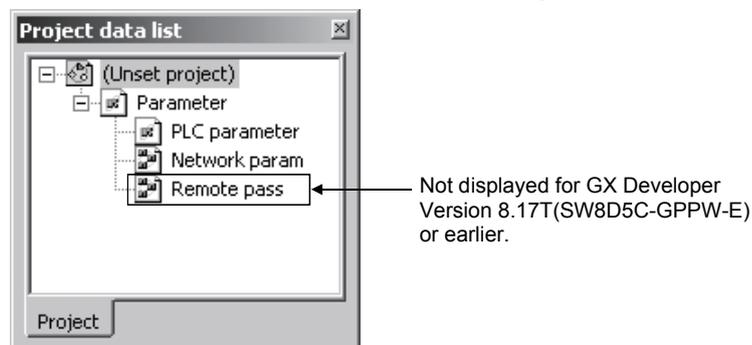
  (b) When the project is saved, its set remote password is not deleted. (Saved unchanged)

(4) CC-Link parameters (QCPU (Q Mode) only)
When the following CC-Link parameters have been set, the settings are changed and new settings are read.

(a) CC-Link parameter settings
- Mode → "Remote net [Ver. 2 mode]"
- Station information setting → Station information → Station type → "Ver. 1 remote I/O station" → "Remote station points"

CC-Link parameters

Station information setting screen

Remote station point setting is changed.

In the Station type field, select the Ver. 1 remote I/O station.

(b) Changed set values
The remote station points are changed as shown in the following table.

Points set by GX Developer Version 8.18U (SW8D5C-GPPW-E) or later		Points set by GX Developer Version 8.17T (SW8D5C-GPPW-E) or earlier	
Number of occupied stations	Number of remote station points	Number of occupied stations	Number of remote station points
1 station occupied	0 points (reserved station)	1 station occupied	Setting unchanged
	8 points		
	8 points + 8 points (reserved)		
	16 points		
	32 points		
2 station occupied	0 points (reserved station)	2 station occupied	0 points (reserved station)
	64 points		32 points
3 station occupied	0 points (reserved station)	3 station occupied	0 points (reserved station)
	96 points		32 points
4 station occupied	0 points (reserved station)	4 station occupied	0 points (reserved station)

The read new parameters need not be set again.

REMARK

When the project set by GX Developer Version 8.17T (SW8D5C-GPPW-E) or earlier is handled by GX Developer Version 8.18U (SW8D5C-GPPW-E) or later, the remote station points are changed as shown in the following table.

Points set by GX Developer Version 8.17T (SW8D5C-GPPW-E) or earlier		Points set by GX Developer Version 8.18U (SW8D5C-GPPW-E) or later	
Number of occupied stations	Number of remote station points	Number of occupied stations	Number of remote station points
1 station occupied	0 points (reserved station)	1 station occupied	Setting unchanged
	8 points		
	8 points + 8 points (reserved)		
	16 points		
	32 points		
2 station occupied	0 points (reserved station)	2 station occupied	0 points (reserved station)
	8 points ＊		64 points
	8 points + 8 points (reserved) ＊		
	16 points ＊		
	32 points		
3 station occupied	0 points (reserved station)	3 station occupied	0 points (reserved station)
	8 points ＊		96 points
	8 points + 8 points (reserved) ＊		
	16 points ＊		
	32 points		
4 station occupied	0 points (reserved station)	4 station occupied	0 points (reserved station)
	8 points ＊		128 points
	8 points + 8 points (reserved) ＊		
	16 points ＊		
	32 points		

＊: This setting is not supported by GX Developer Version 8.18U (SW8D5C-GPPW-E) or later. The following dialog box will appear if the project, where this setting has been made by GX Developer Version 8.17T (SW8D5C-GPPW-E) or earlier, is read.

MELSOFT series GX Developer

The combination of occupied remote station and Remote station points is not correct.
This will read the parameter changed appropriately.

OK
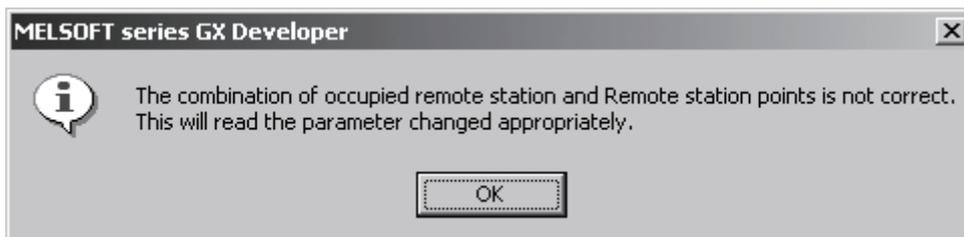
Click OK to change the settings to those indicated in the above table and read the new settings. (The parameters need not be set again.)

2.5.9 Using GX Developer Version 8.19V (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.20W (SW8D5C-GPPW-E) or later using GX Developer Version 8.19V (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

The project, in which the following parameter has been set, cannot be handled using GX Developer Version 8.19V (SW8D5C-GPPW-E) or earlier.

(1)   MELSECNET/H parameter setting "Network type" - "MNET/H Ext. mode (Control station)", "MNET/H Ext. mode (Normal station)"

The following dialog box will appear, when the project, in which the above parameter has been set, is read to personal computer or read from the PLC.

```
┌─────────────────────────────────────────────────────────────┐
│ MELSOFT series GX Developer                              [X] │
├─────────────────────────────────────────────────────────────┤
│  ┌─┐   Failed to read out the data because the data have been│
│  │i│   made with a product newer than this version.         │
│  └─┘   This will read out the default parameter.            │
│                                                              │
│                    ┌──────────┐                              │
│                    │    OK    │                              │
│                    └──────────┘                              │
└─────────────────────────────────────────────────────────────┘
```

Click the [OK] button, set all parameters to defaults and read the project.
After reading, the necessary parameters must be set again.
It is required to reset the required parameters after reading.

2.5.10 Using GX Developer Version 8.21X (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.22Y (SW8D5C-GPPW-E) or later using GX Developer Version 8.21X (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

● Specifying the connection destination
When connecting GOT to a PC via GOT transparent mode, note that the USB interface is not supported by GX Developer Version 8.21X(SW8D5C-GPPW) or earlier.
When handling the product with the settings (1) below, make sure to cancel and then reset the connection destination settings.

(1) Specified connection destination settings
1) PC side I/F setting
• In case of QCPU (Q mode), QnACPU or ACPU
"USB" is set.
• In case of FXCPU
"USB (GOT transparent mode)" is set.
2) PLC side I/F setting
• In case of QCPU (Q mode), QnACPU or ACPU
"via GOT(Bus) transparent mode" or "via GOT(direct coupled) transparent mode" is set.

(2) Corrective action
Before connecting to the programmable controller, operate and set as shown below on "Transfer Setup" screen.
1) Perform "PLC direct coupled setting". (Cancel of the specified connection destination settings.)
2) Specify the connection destination according to the actual communication path. (Resetting of the connection destination settings.)

2) Make the setting according to the actual communication path.

1) click here
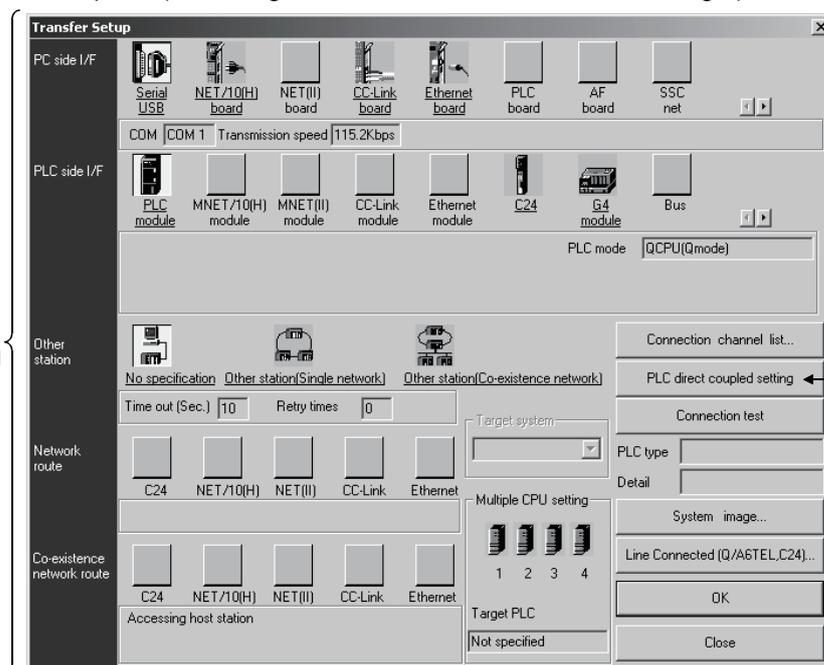
2.5.11 Using GX Developer Version 8.22Y (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.24A (SW8D5C-GPPW-E) or later using GX Developer Version 8.22Y (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

The project, in which the following parameter has been set, cannot be handled using GX Developer Version 8.22Y (SW8D5C-GPPW-E) or earlier.

(1)   PLC Parameter→"Multiple CPU setting"→"Refresh settings"→"Set the start device to each PLC"
(2)   PLC Parameter→[PLC RAS(2)]Tab (Process CPU only)

The following dialog box will appear, when the project, in which the above parameter has been set, is read to personal computer or read from the PLC.

Click the [OK] button, set all parameters to defaults and read the project.
After reading, the necessary parameters must be set again.
It is required to reset the required parameters after reading.

2.5.12 Using GX Developer Version 8.25B (SW8D5C-GPPW-E) or earlier to handle the project

This section describes precautions when handling projects created with GX Developer Version 8.27D (SW8D5C-GPPW-E) or later using GX Developer Version 8.25B (SW8D5C-GPPW-E) or earlier.
Handle the projects while paying full attention to the following points.

When changing and setting the condition for inspection as "No conditional settings (Character String send)" in the following settings are made:
"Ethernet parameter setting"-"E-mail settings"-"News setting"

"No conditional settings (Character String send)" setting is added to GX Developer from Version 8.27D.
Note that when parameters are written in RUN after any of the following operations, the Ethernet news setting is operated as "Condition for inspection".

(1)   When "Ethernet news setting" screen is closed with $\boxed{\text{End}}$ button.
(2)   When PLC type is changed to other than QCPU (Q mode), and then return to QCPU (Q mode).

"No conditional settings (Character String send)" setting will remain when the above operation is not done.

$\boxed{\text{REMARK}}$

If the projects created with GX Developer Version 8.25B (SW8D5C-GPPW-E) or earlier using GX Developer Version 8.27D (SW8D5C-GPPW-E) or later, they will be displayed with "Condition for inspection" set to "No conditional settings".

2.5.13 Using GX Developer Version 8.28E (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.29F (SW8D5C-GPPW-E) or later using GX Developer Version 8.28E (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

(1) Unreadable parameter (redundant CPU only)
The project, in which the following parameter has been set, cannot be handled using GX Developer Version 8.28E (SW8D5C-GPPW-E) or earlier.

(a) MELSECNET/H parameter setting "Network type" - "MNET/H Ext. mode (Control station)", "MNET/H Ext. mode (Normal station)"

The following dialog box will appear, when the project, in which the above parameter has been set, is read to personal computer or read from the PLC.

Click the OK button, set all parameters to defaults and read the project.
After reading, the necessary parameters must be set again.
It is required to reset the required parameters after reading.

(2) Readable parameter
(a) When changing and using the setting value of "Transient setting"- in the following settings.
MNET/H remote master station parameter setting-"Network range assignment" - "Supplementary setting.
The setting value of "Transient setting" is changeable in the GX Developer Version 8.29F or later.
(When using the GX Developer Version 8.28E or earlier, the setting value is fixed to "2".)
Note that when parameters are written in RUN after any of the following operations, the transient setting is operated as "2".

1) When "MNET/10(H) common parameters supplemental" setting screen is closed with End button.
2) When PLC type is changed to other than QCPU (Q mode), and then return to QCPU (Q mode).

When not executing any of the operations above, the changed setting value will be retained.

REMARK

If the projects created with GX Developer Version 8.28E (SW8D5C-GPPW-E) or earlier using GX Developer Version8.29F (SW8D5C-GPPW-E) or later, they will be displayed with "Transit setting" set to "2".

2.5.14 Using GX Developer Version 8.29F (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.30G (SW8D5C-GPPW-E) or later using GX Developer Version 8.29F (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following point.

The FB definition program having more than 500 steps cannot be edited, replaced and converted.

2.5.15 Using GX Developer Version 8.30G (SW8D5C-GPPW-E) or earlier to handle the project

This section describes precautions when handling projects created with GX Developer Version 8.32J (SW8D5C-GPPW-E) or later using GX Developer Version 8.30G (SW8D5C-GPPW-E) or earlier.
Handle the projects while paying full attention to the following points.

(1) CC-Link parameter (The QCPU (Q mode) only)
  • Parameters for the fifth module or later
  • Block guarantee of cyclic data per station in the Operational setting screen
  The following dialog box appears when the project in which the above parameters have been set is read to a personal computer or read from the PLC.

Click the OK button, and then read out the project with all parameters default.
It is required to reset the required parameters after reading.

(2) SFC program
  • If a program including (a) block statement(s) is read from the PLC, the program is read without the block statement(s).
  • When the project including (a) block statement(s) is read from a PLC, and then the SFC diagram is converted and saved, the block statement(s) will disappear.

2.5.16 Using GX Developer Version 8.39R (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.40S (SW8D5C-GPPW-E) or later using GX Developer Version 8.39R(SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

(1) Precautions for saving and deleting a project
When specifying a safety project as a save target or project to be deleted and performing the operation, login certification[1] is not performed to the safety project. Take care not to lose a safety project by the following operations.

- Overwriting to the existing safety project and then saving it with "Save as".

- Deleting a safety project with "Delete project".

(2) Precautions for opening the project
The safety project cannot be opened.

[1]: For project protection with login certification, refer to the GX Developer Version 8 Operating Manual (Safety Programmable Controller).

2.5.17 Using GX Developer Version 8.41T (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.45X (SW8D5C-GPPW-E) or later using GX Developer Version 8.41T (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

The project, in which any of the following parameters has been set, cannot be handled using GX developer Version 8.41T (SW8D5C-GPPW-E) or earlier.

(1) The parameter to which either CC IE Control (Control station) or CC IE Control (Normal station) is selected as Network type on the Setting the number of MELSECNET/ Ethernet cards. screen of the network parameter.

(2) The following network parameters
  - Parameter with END asynchronous settings on the Supplementary setting in the Assignment the MNET network range. screen for MELSECNET/H remote I/O network.
  - Parameter with Master station (Extension base) setting in Type of the CC-Link parameter for redundant CPU system.
  - Parameter with Ethernet (Extension base) setting in Type of the Ethernet parameter for redundant CPU system.

When the project with any of the above parameters is read from personal computer or the PLC, the following dialog box appears.

```
MELSOFT series GX Developer                                    [×]

  (i)   Failed to read out the data because the data have been made with a product newer than this version.
        This will read out the default parameter.

                              [   OK   ]
```
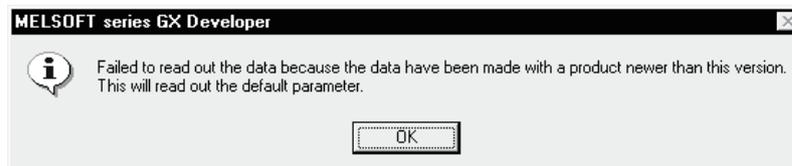
Click the [OK] button, set all parameters to defaults and read the project.
After the reading, reset the required parameters.

2.5.18 Using GX Developer Version 8.45X (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.48A (SW8D5C-GPPW-E) or later using GX Developer Version 8.45X (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

(1) Projects created with the Q02U cannot be used for GX Developer Version 8.45X (SW8D5C-GPPW-E) or earlier.

(2) The following table shows the results of data (project and data in the programmable controller) read from the Universal model QCPU (excluding the Q02UCPU) using GX Developer Version 8.45X (SW8D5C-GPPW-E).

Data type	Read result using GX Developer Version 8.45X (SW8D5C-GPPW-E)
Program	SFC programs cannot be read.
Parameter	Defaults are set.
Label variable	Device/Constant field is set blank, when file register ZR1042432 or later is assigned for the global variable setting.
Device comment	Device comments cannot be read when file register ZR1042432 or later is set.
Device memory	Device memory cannot be read when file register ZR1042432 or later is set.
Device initial value	Device initial values are displayed as they are, even though the range of points including file register ZR1042432 or later is set. (Note that it causes an error if the range setting is not modified.)
Sampling trace	Sampling trace files cannot be read.

2.5.19 Using GX Developer Version 8.58L (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.62Q (SW8D5C-GPPW-E) or later using GX Developer Version 8.58L (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

(1)   Projects created with the Q13UDH or Q26UDH cannot be used for GX Developer Version 8.58L (SW8D5C-GPPW-E) or earlier.

(2)   The project, in which any of the following parameters has been set, cannot be handled using GX developer Version 8.58L (SW8D5C-GPPW-E) or earlier.

- Remote I/O
  A project where "Continue" is set at H/W error time PLC operation mode in Detailed setting of the <<I/O assignment>> tab

- Universal model QCPU (Q02U, Q03UD, Q04UDH, Q06UDH)
  A project where "Local device" is set at File usability setting of the <<Program>> tab

When the project with any of the above parameters is read from personal computer or the PLC, the following dialog box appears.


```
MELSOFT series GX Developer                                          ×

  !    Failed to read out the data because the data have been made with a product newer than this version.
       The parameter will be set back to the default to continue the process.
       Please be sure to revice the parameters before executing each online operation.
       Do you want to continue the process?
       Caution!
       Executing each online operation with default parameters may cause errors.
        Please do not execute the online change and changing TC setting values when device points and PLC device points in
       parameters are not identical.

                        [  Yes  ]    [  No  ]
```
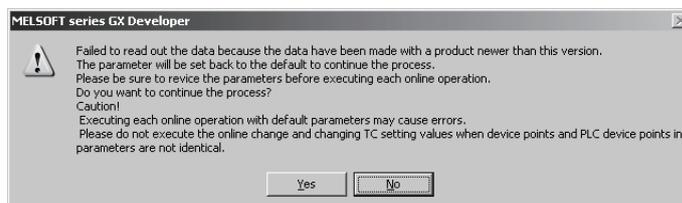
Click the Yes button, set all parameters to defaults and read the project.
After the reading, reset the required parameters.

(3)   A setting to connect personal computer with programmable controller via C24 using the GOT transparent mode cannot be made with GX Developer Version 8.58L (SW8D5C-GPPW-E) or earlier.
When handling the product with the settings (a) below, make sure to cancel and then reset the connection destination settings.

(a) Specified connection destination settings

- PC side I/F setting
  In case of QCPU (Q mode), QnACPU or ACPU
  "Serial,USB" is set.

- PLC side I/F setting
  In case of QCPU (Q mode), QnACPU or ACPU
  "via GOT transparent mode" is set.

(b) Corrective action

Before connecting to the programmable controller, operate and set as shown below on "Transfer Setup" screen.

1) Perform "PLC direct coupled setting". (Cancel of the specified connection destination settings.)

2) Specify the connection destination according to the actual communication path. (Resetting of the connection destination settings.)

2) Make the setting according to the actual communication path.
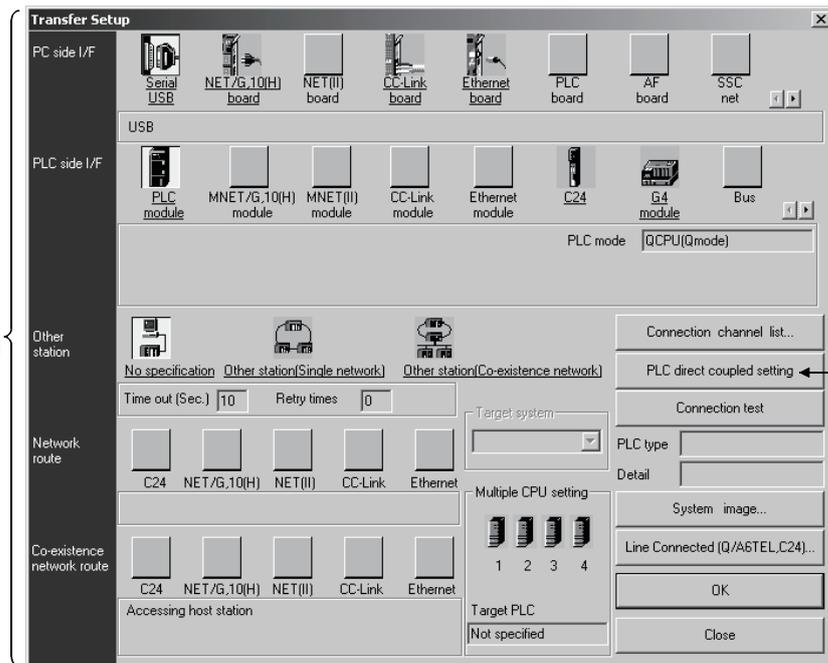
1) click here

2.5.20 Using GX Developer Version 8.62Q (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.65T(SW8D5C-GPPW-E) or later using GX Developer Version 8.62Q (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

(1) The project, in which any of the following parameters has been set, cannot be handled using GX developer Version 8.58L (SW8D5C-GPPW-E) or earlier.

- A QSCPU project where "Safety data monitoring time" has been set in the Setting the CC-Link list. screen
- A QSCPU project where "CC IE Control (Normal station)" or "Ethernet" has been set at Network type in network parameter

When the project with any of the above parameters is read from personal computer or the PLC, the following dialog box appears.
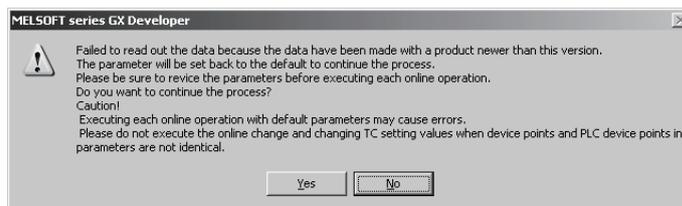
Click the Yes button, set all parameters to defaults and read the project.
After the reading, reset the required parameters.

(2) When remote password has been set to a QSCPU project
The following explains when a project with remote password is read/saved.
(a) The remote password cannot be edited/changed.

This item is not displayed on GX Developer Version 8.62Q or earlier.
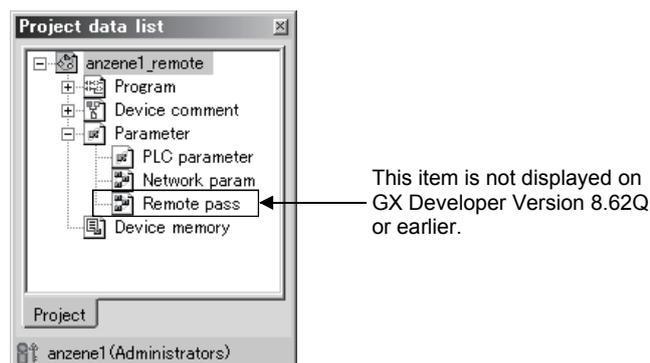
(b) If the project is saved, the set remote password is deleted.

2.5.21 Using GX Developer Version 8.65T (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.68W (SW8D5C-GPPW-E) or later using GX Developer Version8.65T (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

(1) Projects created with the Q02PH, Q03UDE, Q04UDEH, Q06PH, Q06UDEH, Q13UDEH or Q26UDEH cannot be used for GX Developer Version 8.65T (SW8D5C-GPPW-E) or earlier.

(2) The project, in which any of the following parameters has been set, cannot be handled using GX developer Version 8.65T (SW8D5C-GPPW-E) or earlier.

● The setting of the redundant power supply system in the <<PLC RAS>> tab is set not to diagnose in the project of the Universal model QCPU
● In Q00JCPU, Q00CPU, or Q01CPU project, CC IE Control (Normal station) is set at Network type.
● CC IE Control (Control station) or CC IE Control (Normal station) is selected as Network Type in the project of the Q12PHCPU, Q12PRHCPU, Q25PHCPU or Q25PRHCPU
● The shared group is set for the network range assignment of CC IE Control (Control station) in the project of the Universal model QCPU
● The pairing is set for the network range assignment of CC IE Control (Control station)

When the project with any of the above parameters is read from personal computer or the PLC, the following dialog box appears.
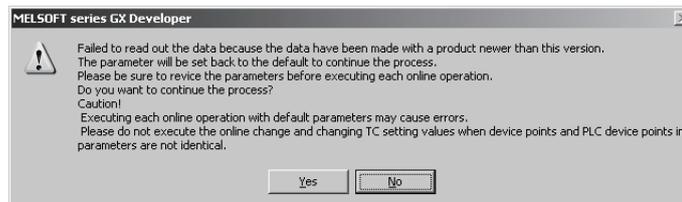
Click the Yes button, set all parameters to defaults and read the project.
After the reading, reset the required parameters.

(3) The project, in which any of the following parameters has been set, cannot be opened using GX developer Version 8.65T (SW8D5C-GPPW-E) or earlier.

● The points of either M or B in the <<Device>> tab exceed 32K points in the project of the Universal model QCPU
● "Use ZZ" is set in the project of the Universal model QCPU
● 0 point is set for S in the <<Device>> tab in the project of the Universal model QCPU

(4) Comments, device memory, and device initial values created within the extended device range are deleted in the project of the Universal model QCPU if the project is opened using GX developer Version 8.65T (SW8D5C-GPPW-E) or earlier.

(5) The auto start setting of the sampling trace cannot be changed in the project of the Universal model QCPU.

Recreate a trace setting and overwrite it to the CPU to prevent the auto start of the sampling trace.

2.5.22 Using GX Developer Version 8.68W (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.70Y (SW8D5C-GPPW-E) or later using GX Developer Version 8.68W (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

(1) The project, in which any of the following parameters has been set, cannot be opened using GX Developer Version 8.68W (SW8D5C-GPPW-E) or earlier.

- When extended data register or extended link register has been set in the Universal model QCPU project

2.5.23 Using GX Developer Version 8.70Y (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.72A (SW8D5C-GPPW-E) or later using GX Developer Version 8.70Y (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

(1) Projects created with the FX3G cannot be used for GX Developer Version 8.70Y (SW8D5C-GPPW-E) or earlier.

2.5.24 Using GX Developer Version 8.74C (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.78G (SW8D5C-GPPW-E) or later using GX Developer Version 8.74C (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

(1) The project of Q00UJ, Q00U, Q01U, Q10UDH, Q10UDEH, Q20UDH or Q20UDEHCPU cannot be opened using GX Developer Version 8.74C (SW8D5C-GPPW-E) or earlier.

(2) The project, in which any of the following parameters has been set, cannot be opened using GX Developer Version 8.74C (SW8D5C-GPPW-E) or earlier.

- The project in which the same network number is set for CC IE Control (Control station) and CC IE Control (Normal station), or CC IE Control (Normal station) of different modules on the Ethernet/CC IE/MELSECNET setting screen.

- The project in which any of the twist is set for the Baud rate setting of MNET/H mode (Control station) or MNET/H Ext. mode (Control station) on the Ethernet/CC IE/MELSECNET setting screen.

- The Q02UCPU project in which "Use serial communication" is set in the serial communication setting.

- The Universal model QCPU project in which PLC module change is set in the PLC system setting.

- The Universal model QCPU project in which some of index registers are specified as local devices in the device setting.

- The Universal model QCPU project in which Compatibility with A-PLC is selected in the PLC system setting.

- The Built-in Ethernet port QCPU project in which "Socket communication" is set for the open system of the open setting in the Built-in Ethernet port setting.

(3) When instructions or rising pulse close contact/falling pulse close contact that are newly added for Universal model QCPU (first 5 digits of serial number are "101002" or later) are used, and if that project is opened using GX Developer Version 8.74C (SW8D5C-GPPW-E) or earlier, an instruction code error occurs.

(4) A setting to connect a personal computer with a programmable controller via Ethernet using the GOT transparent mode cannot be set with GX Developer Version 8.74C (SW8D5C-GPPW-E) or earlier.
When the project in which the following settings (a) is applied, cancel and reset the connection destination settings.

(a) Specified connection destination settings
- PC side I/F setting
In case of QCPU (Q mode)
"Serial, USB" is set.

- PC side I/F setting
  In case of QCPU (Q mode)
  "via GOT (Ethernet) transparent mode" is set.

(b) Corrective action
  Before connecting to the programmable controller CPU, set the settings as
  shown below on the "Transfer Setup" screen.
  1) Perform "PLC direct coupled setting". (Canceling the connection
     destination settings.)
  2) Specify the connection destination according to the actual communication
     path. (Reset)

2) Make the setting
   according to the actual
   communication path.
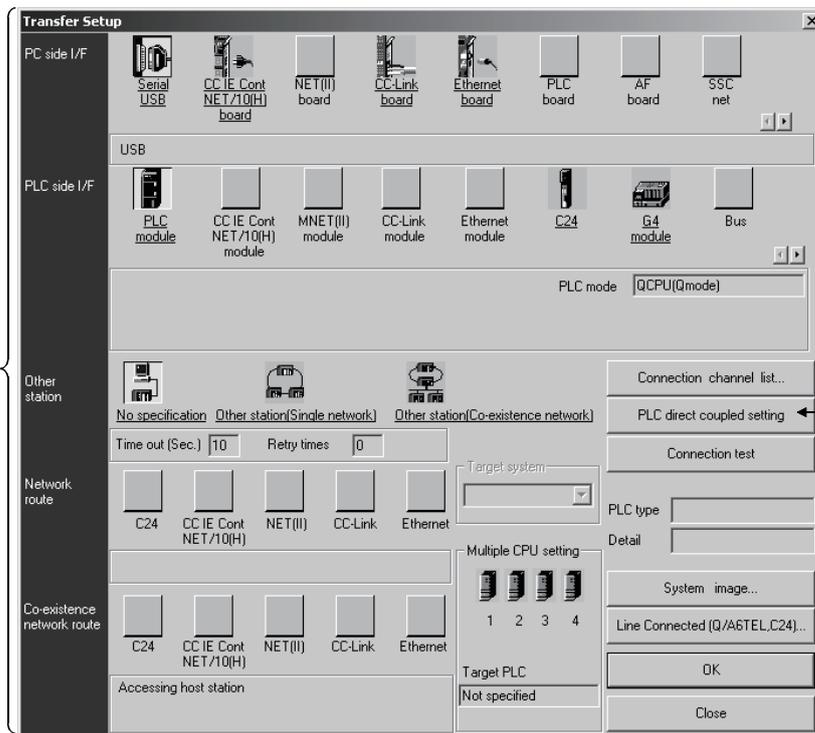
1) click here

2.5.25 Using GX Developer Version 8.80J (SW8D5C-GPPW-E) or earlier to handle the project

This section provides precautions when handling the project created with GX Developer Version 8.82L (SW8D5C-GPPW-E) or later using GX Developer Version 8.80J (SW8D5C-GPPW-E) or earlier.
Handle the project, while paying full attention to the following points.

(1) The project, in which the following parameter has been set, cannot be handled using GX developer Version 8.80J (SW8D5C-GPPW-E) or earlier.

- The Universal model QCPU project in which "Module error log (Intelligent function module)" is set in the PLC RAS (2) tab

When the project with the above parameter is read from personal computer or the PLC, the following dialog box appears.
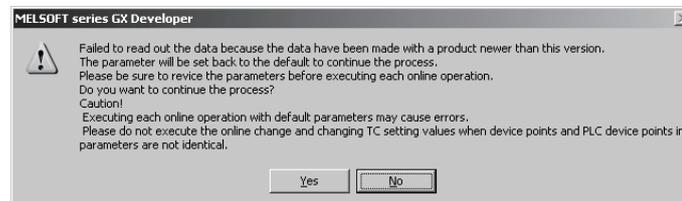
Click the Yes button, set all parameters to defaults and read the project.
After the reading, reset the required parameters.

2.6 Precautions when handling projects created with PX Developer

Use PX Developer together with GX Developer while paying full attention to following points.

(1) When GX Developer is started from PX Developer
   (a) The following operations are disabled to be executed and cannot be selected from menu when GX Developer is started from PX Developer.
      • New project
      • Open project
      • Close project
      • Save as
      • Change PLC type
   (b) A program whose name starts with #FBDQ cannot be changed to the write mode.

(2) When only GX Developer is started.
   (a) Projects created with PX Developer cannot be written to PLC or monitored (writing mode) and the programs/comments included in them cannot be edited using GX Developer. However, they can be read or monitored with GX Developer.
   (b) Do not perform device replacement, instruction replacement, step No. replacement or character string replacement. These operations will corrupt the data consistency when the project is opened using PX Developer.
   (c) When copying a program from other project, note that the program to be started from #FBDQ that is located within the project cannot be copied. This is not relevant to which application (GX Developer or PX Developer) was used for the project creation.

POINT
Do not edit the program that is created with PX Developer and written into programmable controller by using GX Developer, although they can be read to PLC. (Failure to observe this instruction will corrupt the consistency with PX Developer data.)

3. COMMON OPERATIONS

This chapter describes the common key operations and screen operations in GX Developer and the common function operations in some modes.

3.1 List of Shortcut Keys and Access Keys

(1)   List of shortcut keys

The following table lists the shortcut keys available with GX Developer.

Shortcut Key	Tool Button		Function	Description
Alt + F4	—		Close	Closes the active window.
Ctrl + F6	—		Next window	Activates the next window.
Ctrl + N	▯	Project	Create project	Creates a new project.
Ctrl + O	▱		Open project	Opens an existing project.
Ctrl + S	▤		Save project	Saves the project.
Ctrl + P	▤		Print	Prints the project.
Ctrl + Z	⟳	Edit	Undo	Reverts the previous operation.
Ctrl + X	✂		Cut	Moves the selected data to the Clipboard.
Ctrl + C	▤		Copy	Copies the selected data to the Clipboard.
Ctrl + V	▤		Paste	Copies the contents of the Clipboard to the cursor position.
Ctrl + A	—		Select all	Selects all the edit objects.
Shift + Ins	—		Insert row	Inserts a row at the cursor position.
Shift + Del	—		Delete row	Deletes a row at the cursor position.
Ctrl + Ins	—		Insert column	Inserts a column at the cursor position.
Ctrl + Del	—		Delete column	Deletes a column at the cursor position.
Shift + F2	▤		Read mode	Sets the read mode.
F2	▤		Write mode	Sets the write mode.
Ctrl + Shift + F2	—		Read mode (All windows)	Sets all windows in the read mode.
Ctrl + F2	—		Write mode (All windows)	Sets all windows in the write mode.

3

Shortcut Key		Tool Button	Function				Description
GPPA GPPQ	F5	⊣⊢ F5			Open contact		Inserts the contact a at the cursor position.
MEDOC	1	⊣⊢ 1					
GPPA	Shift + F5	⊣⊬⊢ sF5			Close contact		Inserts the contact b at the cursor position.
GPPQ	F6	⊣⊬⊢ F6					
MEDOC	2	⊣⊬⊢ 2					
GPPA	F6	⊔⊓ F6			Open branch		Inserts the contact a (open branch) at the cursor position.
GPPQ	Shift + F5	⊔⊓ sF5					
MEDOC	3	⊔⊓ 3					
MEDOC	4	⊔⊬⊓ 4					
GPPA GPPQ	F7	◯ F7			Coil		Inserts the coil (OUT) at the cursor position.
MEDOC	7	◯ 7					
GPPA GPPQ	F8	[ ] F8			Application instruction		Inserts an application instruction at the cursor position.
MEDOC	8	[ ] 8					
GPPA	F10	│ F10			Vertical line		Inserts a vertical line at the cursor position.
GPPQ	Shift + F9	│ sF9	Edit	Circuit symbol			
MEDOC	5	│ 5					
GPPA GPPQ	F9	─ F9			Horizontal line		Inserts a horizontal line at the cursor position.
MEDOC	6	─ 6					
GPPA GPPQ	Ctrl + F10	✳ cF10			Delete vertical line		Deletes a vertical line at the cursor position.
MEDOC	0	✳ 0					
GPPA GPPQ	Ctrl + F9	✳ cF9			Delete horizontal line		Deletes a horizontal line at the cursor position.
MEDOC	9	✳ 9					
Shift + F7		⊣↑⊢ sF7			Rising pulse open contact		Inserts a rising pulse open contact at the cursor position.
Shift + F8		⊣↓⊢ sF8			Falling pulse open contact		Inserts a falling pulse open contact at the cursor position.
Alt + F7		⊔↑⊓ aF7			Rising pulse open branch (OR)		Inserts a rising pulse (open branch) at the cursor pulse.
Alt + F8		⊔↓⊓ aF8			Falling pulse open branch (OR)		Inserts a falling pulse (open branch) at the cursor position.
Shift + Alt + F5		⊣↑⊬⊢ saF5			Rising pulse close contact		Inserts a rising pulse close contact at the cursor position.
Shift + Alt + F6		⊣↓⊬⊢ saF6			Falling pulse close contact		Inserts a falling pulse close contact at the cursor position.
Shift + Alt + F7		⊔↑⊬⊓ saF7			Rising pulse close branch (OR)		Inserts a rising pulse (close branch) at the cursor position.
Shift + Alt + F8		⊔↓⊬⊓ saF8			Falling pulse close branch (OR)		Inserts the falling pulse (close branch) at the cursor position.

Shortcut Key	Tool Button	Function			Description
Ctrl + Alt + F10	⊬caF10	Edit	Circuit symbol	Op result invert	Inserts the inverted Op result at the cursor position.
Alt + F5	↑aF5			Op result leading pulse	Inserts the inverted Op result at the cursor position.
Ctrl + Alt + F5	↓caF5			Op result trailing pulse	Inserts the Op result trailing pulse at the cursor position.
GPPA Alt + F10	⌐aF10			Insert line	Inserts a line.
GPPQ MEDOC F10	⌐F10				
Alt + F9	↖aF9			Delete line	Deletes a line.
Ctrl + F	—	Find/Replace		Find device	Finds device.
Ctrl + Alt + F7	—			Find contact or coil	Finds a contact or coil.
Ctrl + H	—			Replace device	Replaces device.
F4	⊻	Convert		Convert	Converts the program.
Ctrl + Alt + F4	⊼			Convert (All edit programs)	Converts all programs being edit at a time.
Shift + F4	—			Convert (Online change)	Converts the program and writes it to the CPU during running.
Ctrl + F5	—	View		Comment	Displays or hides comments.
Ctrl + F7	—			Statement	Displays or hides statements.
Ctrl + F8	—			Note	Displays or hides notes.
Ctrl + Alt + F6	—			Alias	Displays or hides Alias.
Alt + O	⊞			Project data list	Displays or hides the project data list.
Alt + 7	—			Switching project data list and window	Switches between Project data list and cross reference window.
Alt + 8	—			Network parameter	Switches to network parameter select dialog box.
Alt + 9	—			Cross reference window	Displays or hides the cross reference window.
Alt + F1	⊞			Instruction list	Switches circuit screen and list screen.
F3	🔍	Online	Monitor	Monitor	Monitors the screen.
Ctrl + F3	—			Monitor (All windows)	Monitors all circuits of the programs currently open.
Shift + F3	⊠			Monitor (Write mode)	Sets the write mode during circuit monitoring.
F3	⊡			Start monitor	Starts (restarts) circuit monitoring.
Alt + F3	⊠			Stop monitor	Stops circuit monitoring.
Ctrl + Alt + F3	—			Stop monitor (All windows)	Stops monitoring of all circuits of the program currently open.

Shortcut Key	Tool Button	Function			Description
Alt + 1		Online	Monitor	Device test	Forcibly turns on or off the device and changes the present value on the Device test screen.
Ctrl + Enter	—			Executional conditioned device test	Forcibly turns on or off the device and changes the present value on the Executional conditioned device test screen.
Shift + Enter	—			Present value change	Forcibly turns on or off the device, or changes present values on the Present value change screen.
Alt + 2				Skip	Performs a skip operation for a sequence program for which a range has been specified.
Alt + 3				Partial execution	Partially executes the sequence program.
Alt + 4				Run step	Performs step operation for the programmable controller.
Alt + 6	—		Remote operation		Performs remote operation.

(2) Access key
An access key is indicated by an alphabetic character shown at the end of each menu title to enable the user to select the menu with the keyboard.
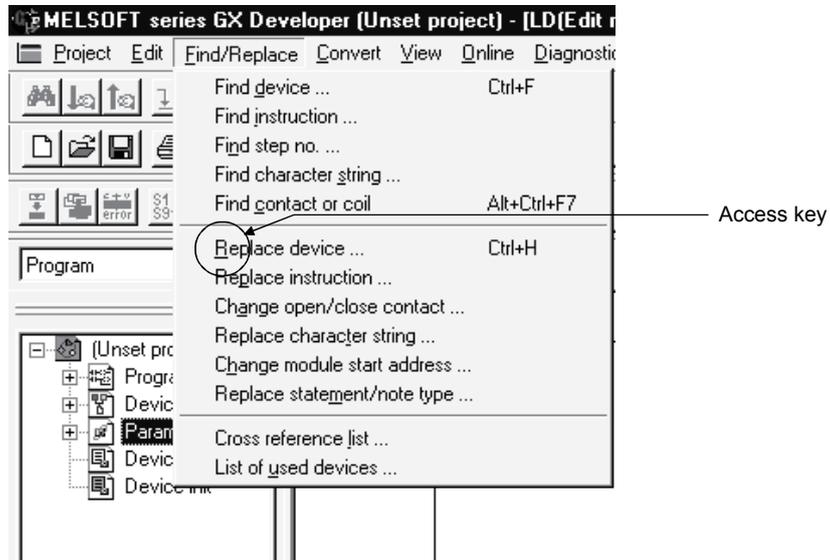
Press ⟦Alt⟧ and ⟦→⟧ key in order to highlight the [Project] menu.
Press ⟦↓⟧ key, then the drop-down menu will be displayed.
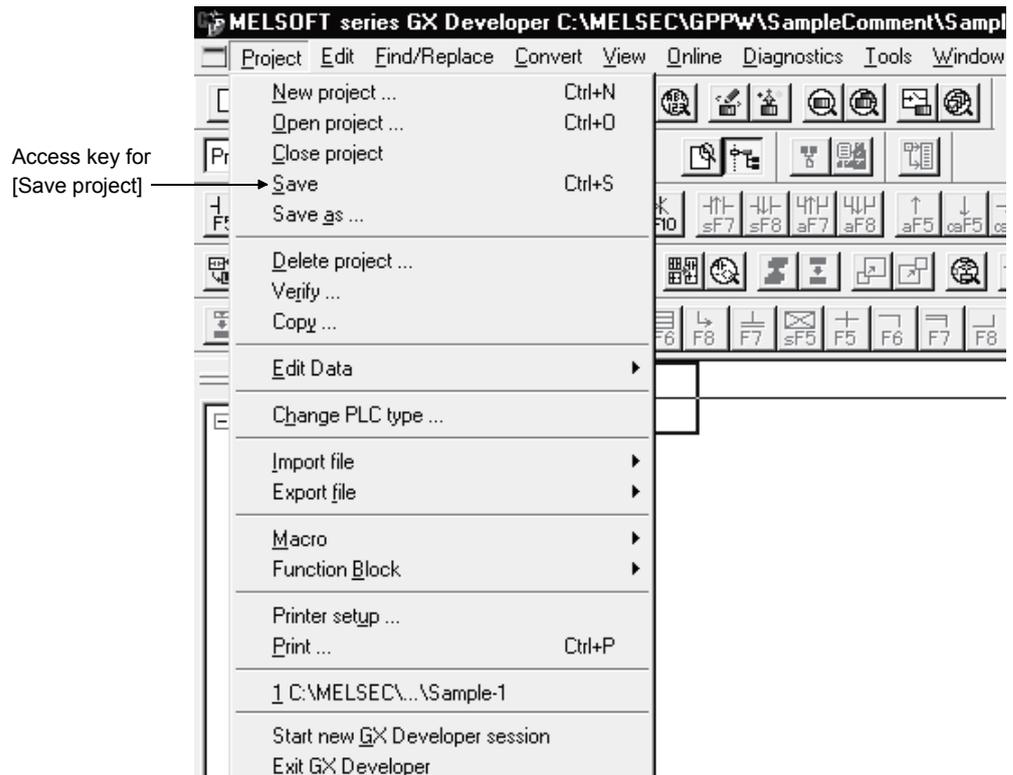
Press ⟦S⟧ key to save the project.

3.2 Project Specification

GX Developer sets a drive/path and a project name, but does not set the system name set like GPPA and GPPQ.
This section compares and describes the differences between GX Developer and GPPA/GPPQ.

- Designation in GPPA

    ..\GPP\USR\system-name\machine-name
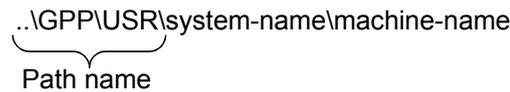
     └─── Path name

- Designation in GPPQ

    ..\GPPQ\SYS\system-name\machine-name\file-name
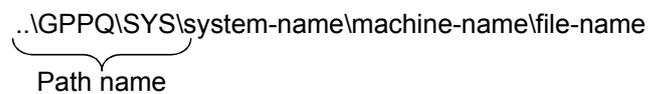
     └─── Path name

- Designation in GX Developer

    ..\project-name
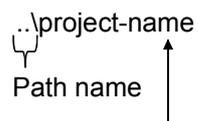
    Path name

    Corresponds to the machine name in GPPA or GPPQ.

- The GX Developer project path and project names can be designated as follows:
  Example

    1.C:\GPPW-program\main \data-1
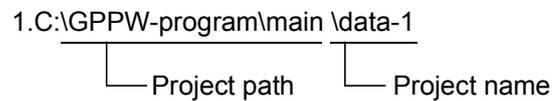
        └── Project path   └── Project name

    2.C:\factory-A \line-1
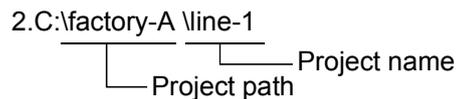
                    └── Project name
        └── Project path

    As shown above, the project can be saved in a desired folder.

3.2.1 Saving a project

[Purpose]
Designate a project name to read, save or delete a project, or to create a new project.

[Dialog Box]
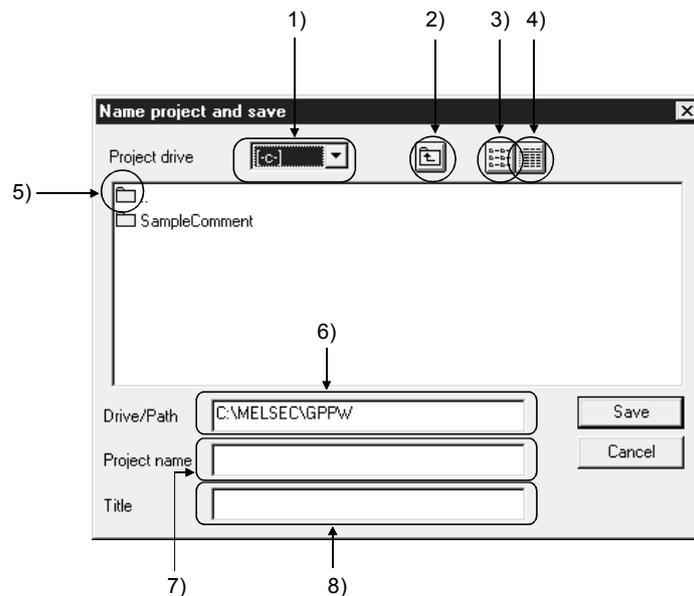
[Description]
1) Project drive
   Designates a drive in which the project has been saved or is to be saved.

2) ⬆ button
   Click this button to move to the folder one level upper than the current folder.

3) ▤ button
   Click this button to list the names of folders and projects contained in the current folder.

4) ▥ button
   Click this button to display the details of the folders and projects contained in the current folder such as the PLC types, creation dates, and title.

5) 📁 ..
   Double-click the icon to move to the folder one level upper than the current folder.

6) Drive/path
   Designates the path of the folder where the project has been saved or is to be saved.
   If you do not specify the drive/path (blank) but specify only the project name, the default drive/path is automatically created and the project is saved.

7) Project name
Designates a project name.
The following shows the characters and the number of characters that can be used to designate a drive path, project name, or data name.

- Number of characters
  The total number of characters used for designating both the project path and the project name (8 or more characters may be set) is 154.
  <Example>
  C:\SW3D5GPPW\ABCDEFGHIJKLMNOPQRSTUVWXYZ

- Characters not available in A, QnA and FX series
  /, \, >, <, ∗, ?, " ", |, :, ; (: and \ can be set for drive designation only)
  (: and \ are available only when the drive is specified.)
  Any project name cannot be ended by a period (.).
  (If a space is inserted after the project name, it is automatically deleted.)

8) Title
Sets the title for the project in up to 32 characters.

POINT

- If 8 or more characters have been entered for the project name in GX Developer SW3D5C-GPPW-E or later, those after the 8th character won't be displayed when the project is read in an older version of GX Developer (SW2D5-GPPW-E or older).

- The following dialog box appears if the T/C coils of the same number exist in the ACPU program.
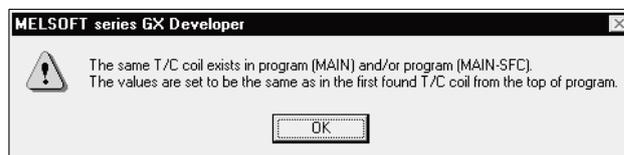
When write to PLC, write to GPPA format file or write to ROM is to be performed, the above dialog box also appear if the T/C coils of the same number exist in the program. (This does not apply to the extended T/C.)

Note: If a program (MAIN-SFC) has not been created, it is displayed as a message.

[Example]
Project name to be saved   : TEST1
Title   : Test program
Project location   : A:\GPPW\
GX Developer installation location : C:\MELSEC\GPPW

[Operating Procedure]
1.   Select [Project] → [Save as].
2.   Change the project drive from [-c-] to [-a-].

Change from [-c-] to [-a-]
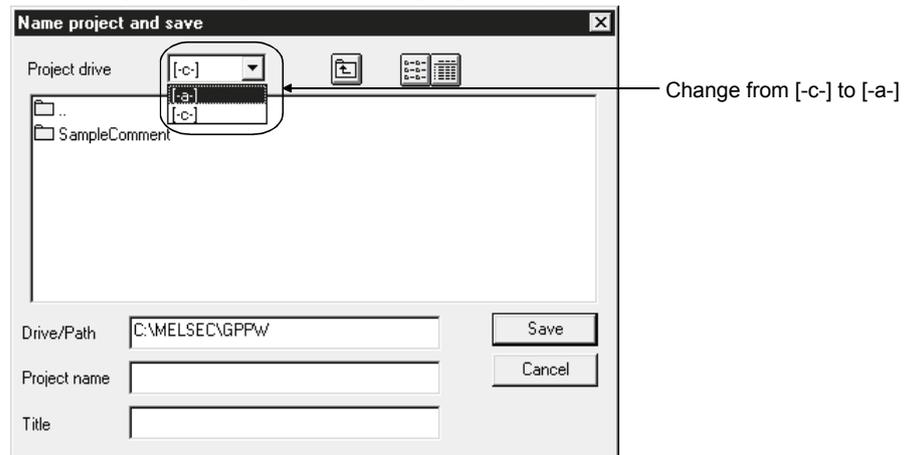
3.   Type "GPPW" as the project path.

Type "GPPW" in the project
path text box.
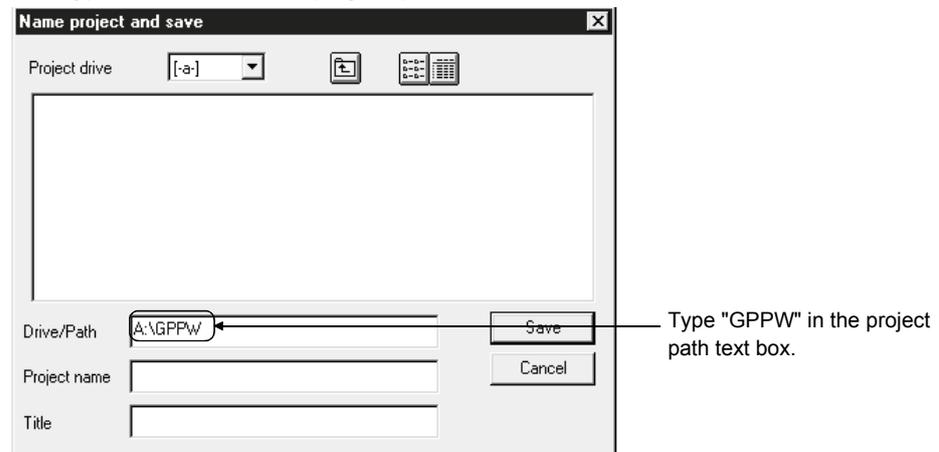
4.   Type "TEST1" as a project name. Then, type "Test program" as the project title.
     Click the Save button, and the project will be saved in the designated folder.

Type"TEST1" in the project
name text box, then type
"Test program" in the project
title text box.
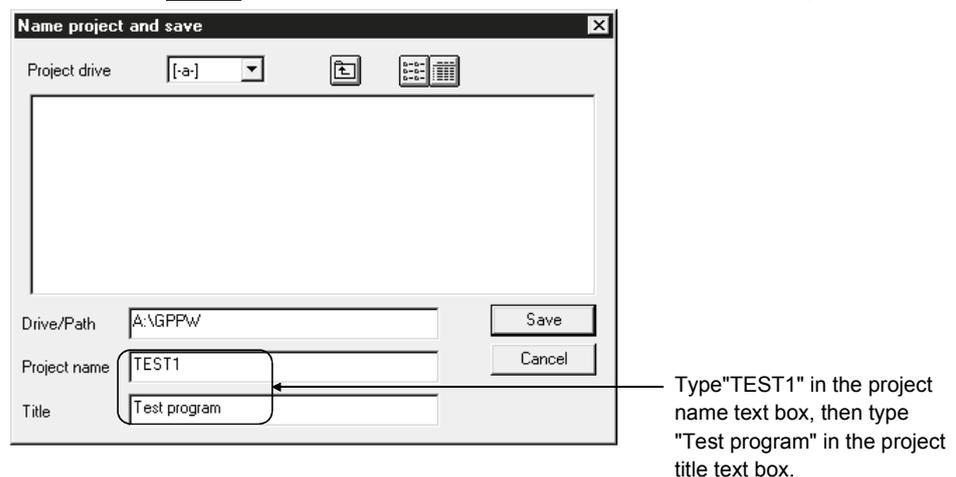
3.2.2 Opening a project

[Example]
Name of project to be read: TEST1
Project save location: A:\GPPW\
GX Developer installation location: C:\MELSEC\GPPW

[Operating Procedure]
1. Select [Project] → [Open project].
2. Change the project drive from [-c-] to [-a-].

Change from [-c-] to [-a-]
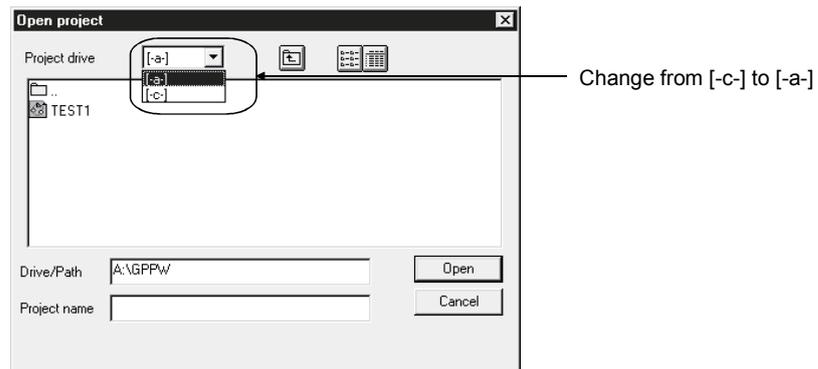
3. Double-click the "GPPW" folder icon in the list box to designate a project path.

Double-click the "GPPW" folder
icon.
• Selectable folders are displayed
 in blue.
• Other folders are displayed in
 gray.
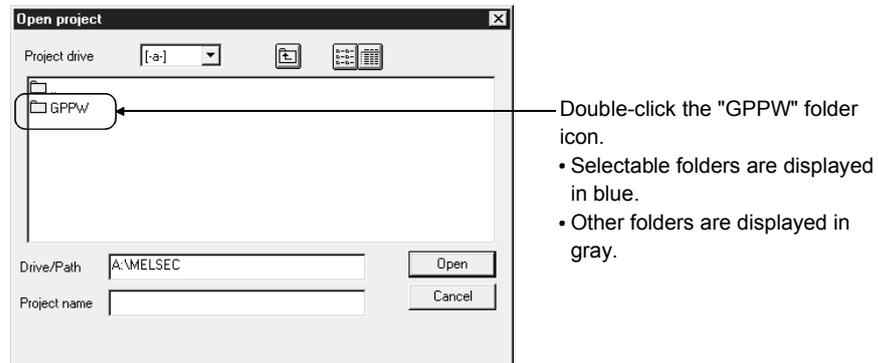
4. Click the "TEST1" project icon in the list box to designate the name of a project
 to be read.
 Click the Open button, and the designated project will be opened.

Designate "TEST1" as the
project name and click the
Open button.
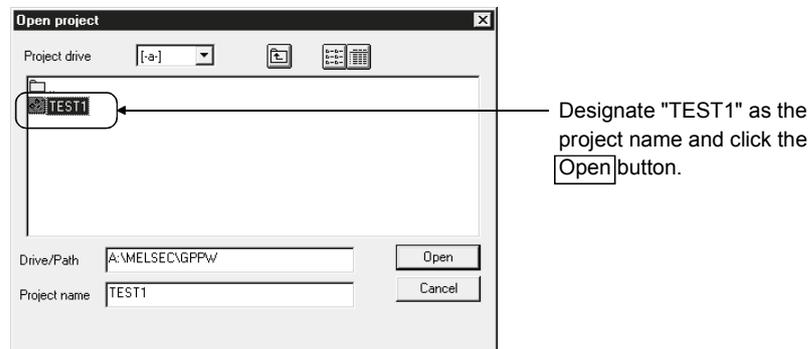
3.3 Cut, Copy, and Paste

This section describes the common operations such as cutting, copying and pasting table data such as comments, parameters, etc.
For details on how to cut, copy and paste the circuits, refer to Section 6.2.8.

3.3.1 Cut and paste

- Cutting and pasting the data
  The following example shows how to cut and paste the comments.
  Comments, parameters, and device memory can be cut and pasted through the same procedure.

[Operating Procedure]
1. Click the first cell of the comments to be cut, and the cursor will be positioned there.

Device	Comment	Label
X0	Unit abnormal	
X1	Host data link condition	
X2	Parameter setting condition	
X3	Other station condition	
X4	Unit reset receive complete	
X5	Start data link	
X6		
X7		
X8		

2. Confirm that the cursor (☐) is displayed, then drag the mouse over the range of the comments to be cut.
   The dragged comment cells are highlighted (the first cell in the range is not highlighted).
   To change the designated range, click any cell in the comment column.

Device	Comment	Label
X0	Unit abnormal	
X1	Host data link condition	
X2	Parameter setting condition	
X3	Other station condition	
X4	Unit reset receive complete	
X5	Start data link	
X6		
X7		
X8		

3. Select [Edit] → [Cut] or click ✂ (Ctrl + X), and the designated range of comments will be cut.

Device	Comment	Label
X0	Unit abnormal	
X1	Host data link condition	
X2	Parameter setting condition	
X3		
X4		
X5	Start data link	
X6		
X7		
X8		

4. Click the first cell in the comment column where the comments are to be pasted, and the cursor will be positioned there.

Device	Comment	Label	
X0	Unit abnormal		
X1	Host data link condition		
X2			
X3			
X4			
X5	Start data link		
X6			
X7			
X8			
X9			
X0A			

5. Confirm that the cursor ([   ]) is displayed, then select [Edit] → [Paste] or click 📋 (Ctrl + V).
The cut comments are pasted into the cells in the comment column starting from the designated cell.

Device	Comment	Label	
X0	Unit abnormal		
X1	Host data link condition		
X2			
X3			
X4			
X5	Start data link		
X6			
X7	Parameter setting condition		
X8	Other station condition		
X9	Unit reset receive complete		
X0A			

POINT

The cut, copy, and paste menus can also be selected from the popup menu displayed by clicking the right mouse button.

3.3.2 Copy and paste

- Copying and pasting the data
  The following example shows how to copy and paste comments.
  Comments, parameters, and device memory can be copied and pasted through the same procedure.

[Operating Procedure]

1. Click the first cell of the comments to be copied, and the cursor will be positioned there.

Device	Comment	Label
X0	Unit abnormal	
X1	Host data link condition	
X2	Parameter setting condition	
X3	Other station condition	
X4	Unit reset receive complete	
X5	Start data link	
X6		
X7		
X8		

2. Confirm that the cursor (☐) is displayed, then drag the mouse over the range of the comments to be copied.
    The dragged comment cells are highlighted (the first cell in the range is not highlighted).
    To change the designated range, click any cell in the comment column.

Device	Comment	Label
X0	Unit abnormal	
X1	Host data link condition	
X2	Parameter setting condition	
X3	Other station condition	
X4	Unit reset receive complete	
X5	Start data link	
X6		
X7		
X8		

3. Click the first cell in the comment column where the comments are to be pasted, and the cursor will be positioned there.

Device	Comment	Label
X0	Unit abnomal	
X1	Host data link condition	
X2		
X3		
X4		
X5	Start data link	
X6		
X7		
X8		
X9		
X0A		

4. Confirm that the cursor ([   ]) is displayed, then select [Edit] → [Paste] or
    click 📋 ([Ctrl] + [V]).
    The copy comments are pasted into the cells in the comment column starting
    from the designated cell.

Device	Comment	Label
X0	Unit abnomal	
X1	Host data link condition	
X2		
X3		
X4		
X5	Start data link	
X6		
X7	Parameter setting condition	
X8	Other station condition	
X9	Unit reset receive complete	
X0A		

POINTS

- The cut, copy, and paste menus can also be selected from the popup menu
  displayed by clicking the right mouse button.

- Notes on cut, copy and paste operations of parameters
  1. Only numeric characters can be pasted. (Alphabetic characters cannot be
     pasted.)
  2. The format conversion of the numeric value does not take place at a
     destination for pasting.
     <Example>
     Even when the network number (decimal) "10" is copied and pasted at
     the first I/O number (hexadecimal), it is not converted to "A".

3.3.3 Notes on cutting, copying and pasting network parameters

The following shows the areas in which you can cut, copy and paste network parameters and also the areas that prevent these operations.

Prevent cut, copy and paste.

Prevent cut and paste. Allows copy.

Allows cut, copy and paste.

Allows cut, copy and paste.

Prevents cut, copy and paste.

Allows cut, copy and paste.

POINTS

- When used together with MELSECNET(II), the L/R type is not changed even if lines in a local station are copied and pasted to a remote station (or vice versa).

- When some destination items allow paste but some prevent paste, parameter paste takes place only in the items allowing paste.

- When the data types of copy source and destination are not the same, an abnormal paste operation may result.
  For example, this problem occurs when data in the Point column is pasted in the Start column of the destination.

- Only numeric characters can be copied and pasted.

- Even when decimal data is cut, copied, and pasted in a hexadecimal column, it is not converted into hexadecimal data.
  However, when a decimal number "16" is copied into a hexadecimal column, it is handled as a decimal number "22".

3.4 Toolbar

The toolbar contains the menu items or the attributes of data types. To execute a menu item, move the cursor onto the icon, then click there.
To display or hide the tool bar, select [View] → [Toolbar].

[Dialog Box]
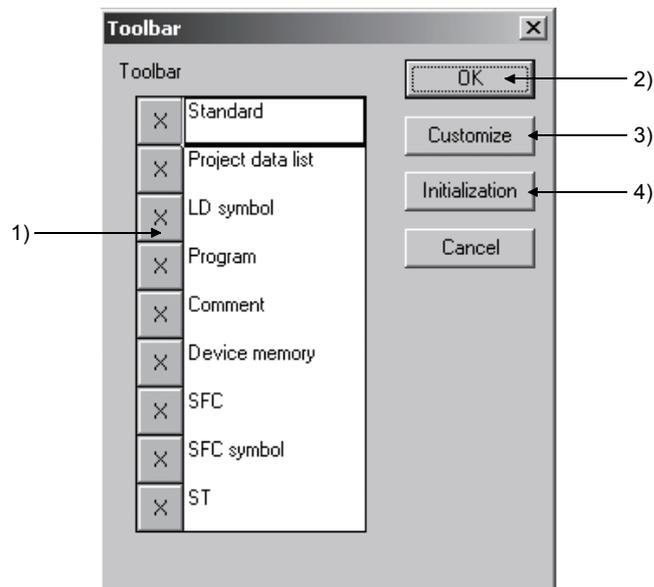
1) Toolbar
    Click here to display or hide the toolbar.
    Click to display the toolbar and click ▨ to hide the tool bar.
2) OK button
    Click this button when the setting are complete.
3) Customize button
    Click this button to display a dialog box for adding/deleting tool buttons to/from the toolbar.
    Select the toolbar of which tool button settings to be changed as described in 1) before clicking this button.
    Each tool button can be displayed by checking the corresponding check box.
    By default, all the tool buttons are displayed on the toolbar.
4) Initialization button
    Click this button to set the display positions of tool bars, project data list, and cross reference window back to the default setting.

3.5 Status Bar

The status bar is displayed at the bottom of the application window to indicate GX Developer status information.
To display or hide the status bar, select [View] → [Status bar].

| Ready | A3U | Host | | Over writ | CAP | NUM | SCRL |

1)　　　　　　　　　　　2)　　3)　　　　　　　　　　4)　5) 6) 7)

[Description]
1) Indicates the status of the mouse cursor position.

2) Indicates the CPU type.

3) Indicates the destination CPU. ＊1

4) Indicates the cursor position (line, column) for ST editing.

5) Indicates the current mode.

6) Indicates the status of the Caps Lock key.

7) Indicates the status of the Num Lock key.

8) Indicates the status of the Scroll Lock key.

＊1: The following shows a display example of the connection destination CPU when the system is configured using the redundant CPU.

| Q25PRH | Host station Control system |
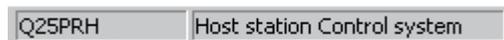
3.6 Zooming in on or out of the Edit Screen

This section describes how to magnify (zoom in) or reduce (zoom out) the edit screen. The edit screen can be resized as necessary.

[Operating Procedure]
Select [View] → [Zoom], then select a magnification factor.
Or click 🔲 or 🔲 to get the same result.
When 🔲 on the tool bar is selected, the edit screen is magnified.
In contrast, when 🔲 is selected, the edit screen is reduced.

[Dialog Box]

Ladder mode	List mode	SFC mode
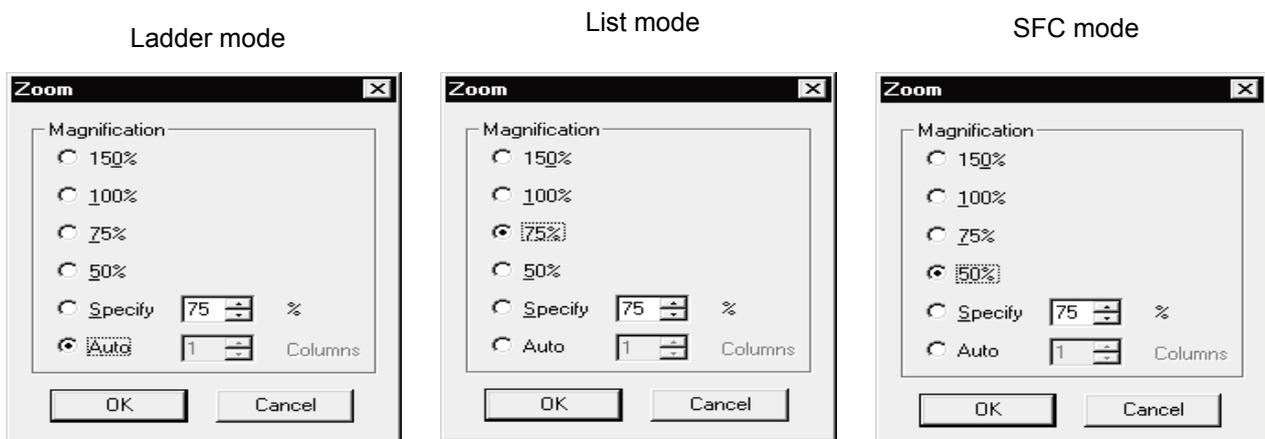
[Description]
1) Specify
   Specify the scale factor within the range 50 to 150.

2) Auto
   The width of a ladder is automatically adjusted to display the whole ladder.
   In the ladder mode, the Columns setting is masked.
   In the list mode, Auto is masked.
   In the SFC mode, you can set the Columns within the range 1 to the maximum.

POINT

• Refer to Section 2.5.2 for the precautions for and restrictions on using the GX Developer (SW5D5C-GPPW-E) or earlier version to read the project where this function has been set.

3.7 Project Data List

A project data list contains project data according to the data types.
A project data list will be displayed differently according to the label setting, i.e.,
whether "Use label" or "Do not use label" is selected at the time of new project
creation.
The edition screen can be switched by clicking on the project data list.
To display or hide the project data list, select [View] → [Project data list] or
click [🔲] ([Alt] + [O]).
To add, copy, delete or rename project data, click the target project data with the
right mouse button.
Refer to Sections 4.9 to 4.12 for details on each operation.
Data names except the parameters can also be deleted with the [Delete] key.

Project label →

Project data list →
For sorting the
project data list,
refer to Section
3.17.

<<FB>>/<<Structure>> tab →
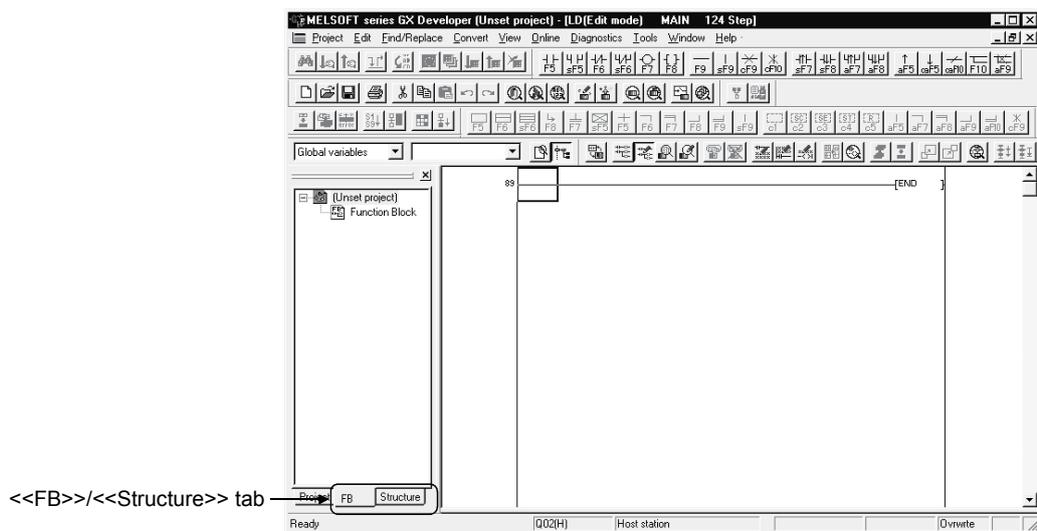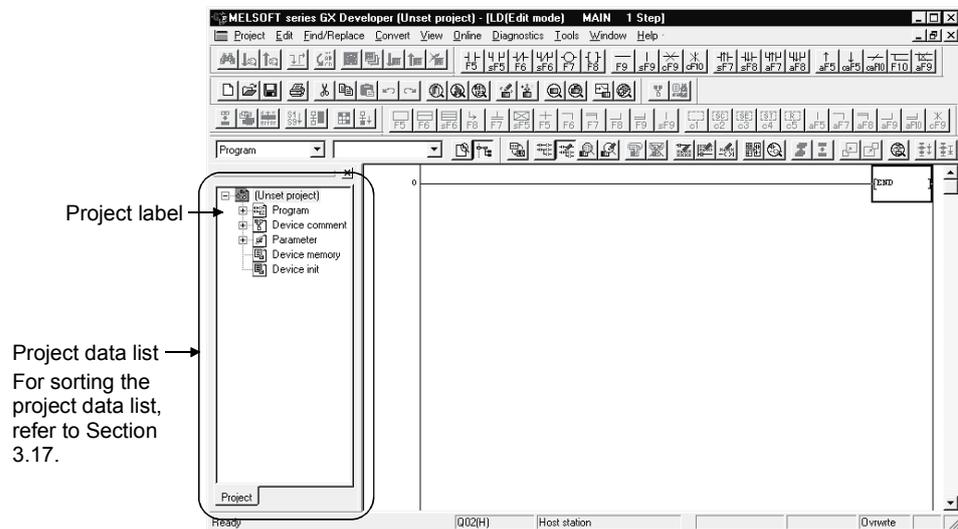
The project data list can be changed in size by floating it or can be hidden by clicking
$\boxtimes$.
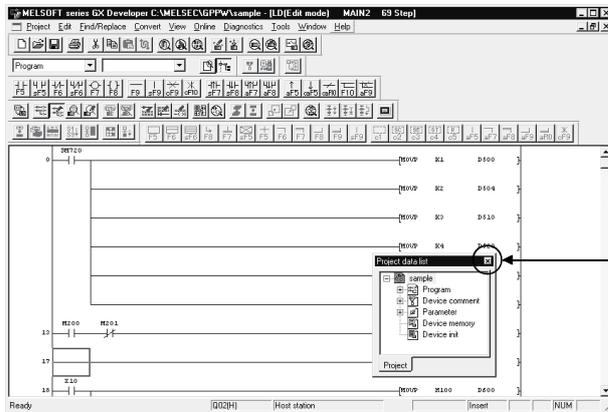
The project data list can
be hidden by clicking here.

- You can change the edit screen from the toolbar.

    1. Choose the data type.

    Click here.

    2. Choose the data type you want to change.
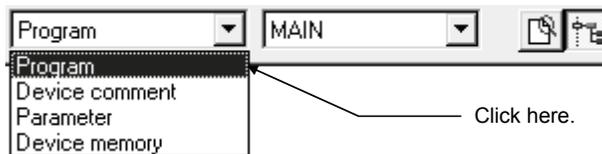
    Click here.

    3. Choose the data name.

    Click here.

    4. Choose the data you want to show.

    Click here.

POINT

- If you opened multiple programs, comments, etc. or if you started multiple GX
  Developers, the screen may be changed in color or shape (displayed
  improperly).
  In such a case, close the other applications or program and comment screens.
- The projects used to create multiple programs/device comments/device
  memory data will be displayed in alphabetical order (A to Z), when opened in
  Windows® 2000 Professional or Windows® XP.

3.8 Comment Display

[Purpose]
  Displays the created device comments on the circuit creation screen.

[Operating Procedure]
  Select [View] → [Comment]

> **POINT**
>
> When a common comment and a comment by program have been set for the
> same device, click <<Each program>> tab on the dialog box displayed by
> selecting [Tool] → [Option] tab to set a comment to be displayed.
> Refer to Section 15.12.
> The comment from the GX Developer (SW3D5-GPPW-E) is displayed just
> beneath the circuit symbol.
> (It will be printed out just beneath the circuit symbol, if printed out.)
> Only when monitored, is it displayed with one line spaced.

3.9 Statement Display

[Purpose]
  Displays the created statement on the circuit creation screen.

[Operating Procedure]
  Select [View] → [Statement]

> **POINT**
>
> In the FXGP (DOS) and FXGP (WIN), "statement" is called the "circuit
> comment".

3.10 Note Display

[Purpose]
  Displays the created notes on the circuit creation screen.

[Operating Procedure]
  Select [View] → [Note]

> **POINT**
>
> In the FXGP (WIN), "note" is called the "coil comment".

3.11 Alias Display

[Purpose]
Displays the Alias in circuit mode on the circuit creation screen.

[Operating Procedure]
Select [View] → [Alias]

POINT
- The Alias cannot be used for the project in which "Use label" is selected.
- Create the Alias on the device comment edit screen.
  Device names created in A Series format will not be saved when written in a different file format.

3.12 Displaying Current Monitored Values

[Purpose]
Hides the current monitored values in ladder mode.
Hiding the lines of currently monitored values increases the number of ladder lines displayed on a screen. This function is helpful to check more ladders.
Setting "Show only during monitor" automatically switches the display/non-display of the lines of currently monitored values so that it may be displayed during monitoring.

Displays the parts enclosed with dotted lines (current monitored values).

Display ⇧ ⇩ Non-display
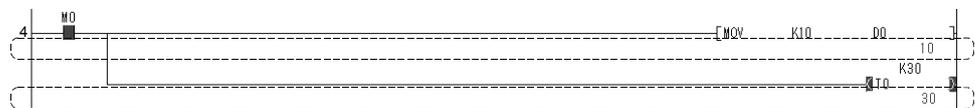
Hides the parts enclosed with dotted lines (current monitored values) (ladders are displayed in reduced size).
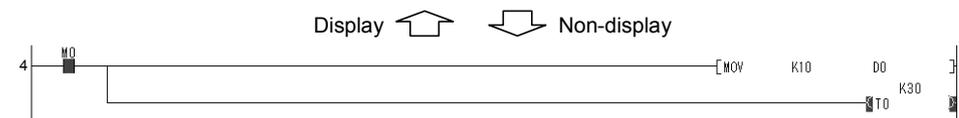
[Operating Procedure]
Select [Display] → [Displaying Current Monitored Values]

3.13 Comment Format

[Purpose]
To display comments in the ladder mode in 4 × 8 characters or 3 × 5 characters.

[Operating Procedure]
[View] → [Comment format]

3.14 Alias format display

3.14.1 Displaying alias instead of device name

[Purpose]
Displays aliases in device display positions.

[Operating Procedure]
[View] → [Alias format display] → [Replace device name and display]

[Dialog Box]
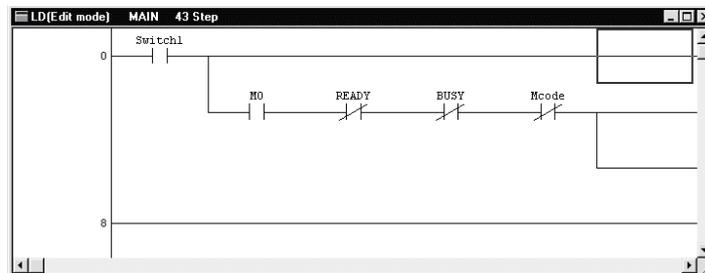
3.14.2 Displaying alias with device name

[Purpose]
Displays aliases above devices shown. (Displays devices and aliases together)

[Operating Procedure]
[View] → [Alias format display] → [Arrange with device and display]

[Dialog Box]
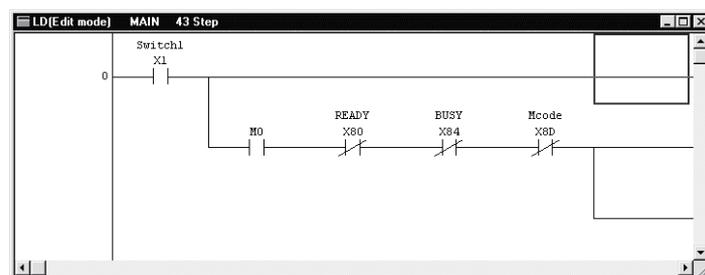
POINT
For timers/counters, if you set aliases to T0 and D0, respectively, in such an instruction as OUT T0 DO, the alias added to D0 (set value) does not appear. The device name will not be displayed either if word device bit specification (example: D0.1), bit device word specification (example: K4M0), indirect specification device (example: @D100) or index qualification specification (example: D12285Z1) has been set.

3.15 Setting the Number of Comment Lines

[Purpose]
Specifies and displays the number of device comment lines in 1 to 4 lines.
This function enables to display more ladders in a single screen.

Number of comment
lines: 4 lines

```
      SM400
315   | |                        ─[ G.RIWT    U72      D3600     D3610     M3300    ]
      Always 0                                         Completi  WriteDat  RIWT Com
      N                                                on statu  aStorage  pletion
                                                       s(RIWT/R  DeviceSt  flag
                                                       IRD)      artNo.
```

Number of comment [*]1
lines: 2 lines

```
      SM400
315   | |                        ─[ G.RIWT    U72      D3600     D3610     M3300    ]
      Always 0                                         Completi  WriteDat  RIWT Com
      N                                                on statu  aStorage  pletion
```
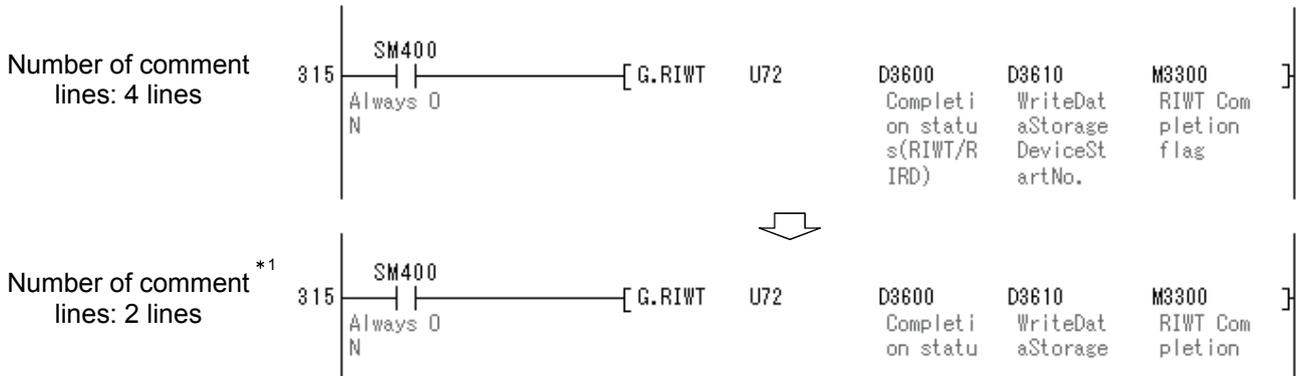
[*]1: The lines after the set number of comment lines (For example, 3 and 4 lines on
the diagram above) are not displayed.

[Operating Procedure]
[Display] → [Number of comment lines]

3.16 Setting the Number of Contacts

3.16.1 Displaying 9 contacts

[Purpose]
A ladder is displayed in a 9-contact format.

[Operating Procedure]
[View] → [Set the contact] → [9 contacts]

[Dialog Box]
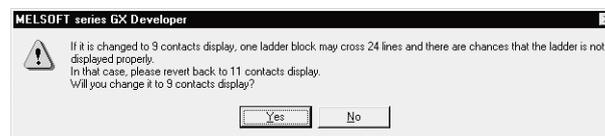
Click Yes to change to a 9-contact display.

3.16.2 Displaying 11 contacts

[Purpose]
A ladder is displayed in an 11-contact format.

[Operating Procedure]
[View] → [Set the contact] → [11 contacts]

3.17 Project data display format

[Purpose]

Data names in the project data list are sorted in ascending/descending order.

[Operating procedure]

Not sort

[View] → [Project data display format] → [Not sort]

Sort data name ascending

[View] → [Project data display format] → [Sort data name ascending]

Sort data name descending

[View] → [Project data display format] → [Sort data name descending]

[Setting item explanation]

Data can be sorted are project, device comment (only comments by program) and device memory.

All data names created on [Project] tab, [FB] tab and [Structure] tab in Project list are sorted when sort is executed.

POINT
If "Not sort" is selected when sort has been executed, the data will be return to the status before sort is executed.

3.18 Cross reference

A	Q/QnA	QS	FX
◯	◯	◯	◯

[Purpose]
A list that displays where the specified device or label that is located at the cursor position on the ladder/list/SFC (ZOOM ladder/list, block list) screen is used.

[Operating Procedure]
[View] → [Cross reference window]

[Dialog Box]
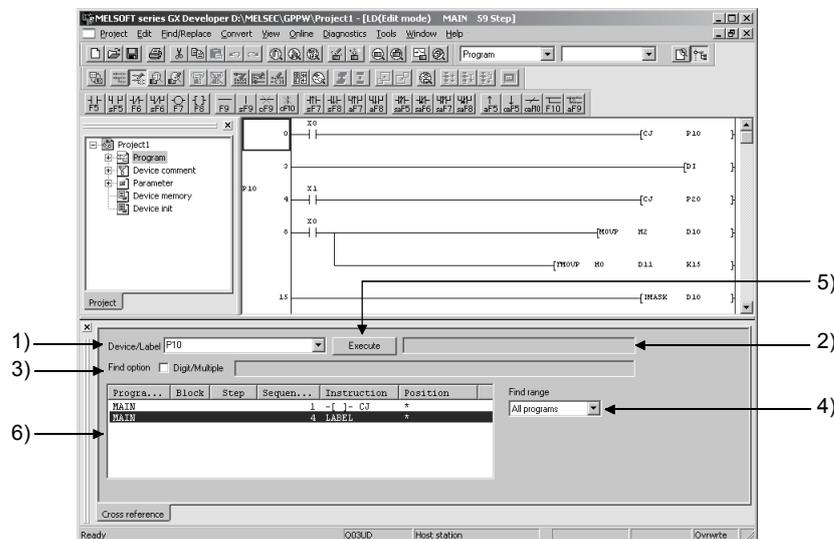
[Setting Items]

1) Device/Label
   Specify the device or label to be searched for.

2) Comment
   The comment of the device or label specified in 1) is displayed.

3) Find option
   Check this item when setting a condition ("Digit" or "Double") that will apply to the target (specified in 1)) to be searched for.
   The conditions will apply as follows: "Digit" to a bit device; "Multiple" to word device.

   POINT

   "Find option" setting is not available for the label or the device that includes indexing, digit specification or bit specification, even if it is checked.

4) Find range
   Set the range to search for the device or label specified in 1).

5) Execute button
   Click this button to execute search according to the settings; the search results, i.e., where the specified device or label is used, will be displayed in the search results display area.

6) Search results display area

Item	Description
Program name	The program names are displayed that include the specified device. Up to 500 lines of search results can be displayed.
Block	The block No. are displayed that include the specified device.
Step	The step No. are displayed that include the specified device.
Sequence step	The step No. are displayed that include the device specified in ladder.
Instruction	The instructions are displayed that include the specified device.
Position	Where the specified device locates in the relevant instructions is displayed using "*". In case of MOV K4YO DO, the location of "DO" is displayed as "_ *".

POINT

Some of messages that appear in the search results display area require corrective actions as follows:

- "There is some unconverted data"
  Some programs within the search range are not converted. Compile them and execute search again.

- "There is some error in device setting"
  The device out of the device No. range is specified or the device name is invalid. Specify a correct device and execute search again.

- When BLn is specified for the search device in SFC program, block start step which starts n block is also searched.
  On the Instruction field of the search results display area, "BLOCK" (with END check) or "BLOCK-S" (without END check) is displayed.

- For device search by index modification using "ZZ", refer to Appendix 15.

---

4. INITIALIZATION

> **POINT**
>
> When saving the existing project or renaming and saving it, the source project must exist.
>
> For example, if a project on a floppy disk is opened and then the floppy disk is removed, the project cannot be saved on another floppy disk or renamed and saved to another drive.)

4.1 Creating a Project

A	Q/QnA	QS	FX
○	○	○*	○

*: Refer to GX Developer Version 8
Operating Manual (Safety
Programmable Controller)

[Purpose]
Designates the information required to create a project such as PLC series, PLC type and project name.

[Operating Procedure]
Select [Project] → [New project] or click 🗋 (Ctrl + N).

[Dialog Box]
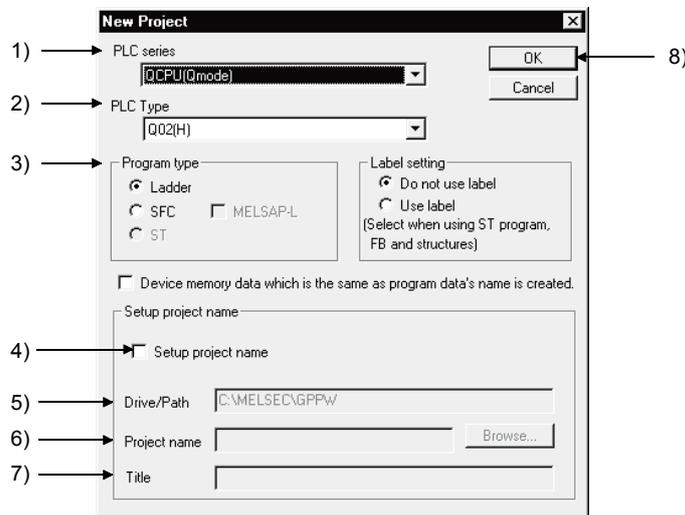
[Description]
1) PLC series
Designates the PLC series of the project by selecting from QCPU (Qmode), QnACPU, QCPU (Amode), ACPU, MOTION (SCPU) and FXCPU.

2) PLC type
Designates the CPU type to be used by selecting from the list.
For FX and FX2, select FXU.
When creating remote I/O parameters on the Q series, choose the QCPU (Q mode) as the PLC series and then select "Remote I/O" as the PLC type.

3) Program type
Choose either of ladder program or SFC program.
When creating an SFC on the A series, make the following settings.
1. Set the microcomputer value in the memory capacity setting of PLC parameters.
2. Choose SFC in the project type on the [Project] [Edit data] [New] screen.
   SFC is not compatible with label programming.
   Refer to Chapter 5 for the creating procedure.

4) Label setting
Unuse   : To be set when a label program is not created.
Use Label   : To be specified when ST, FB or structure is created.
Label program : Refer to Chapter 5 of this manual.
ST   : Refer to GX Developer Version 8 Operating Manual (Structured Text).
Structure   : Refer to Section 5.2 of this manual.
FB program   : Refer to GX Developer Version 8 Operating Manual (Function Block).

4

5) Device memory data which is the same as program data's name is created.
Make setting when creating the device memory having the same name as the program name for creation of a new project.

6) Set project name
Designate a project name to save the created data.
When designating a project name before creating a program, check the checkbox.
The project name can be designated before and after program creation.
When designating the project name after data creation, use the [Save As] menu.

Refer to Section 4.5 "Naming and Saving a Project."

7) Drive/path

8) Project name   Refer to Section 3.2 for setting these fields.

9) Title

10) OK button
Click this button after making necessary settings.

POINT

- The following lists the data and data names in new project creation.
  Program   : MAIN
  Comment   : COMMENT (common comment)
  Parameter : PLC parameter
            : Network parameter (A series and QnA series only)
  In addition, refer to Sections 4.9 and 11.2 for device memory, and Section 4.9 and Chapter 12 for device initial values (QnA series only).

- If multiple programs are being created or multiple GX Developers are running, the screen may not be displayed properly due to the shortage of the personal computer resources.
  In this case, close GX Developers once or close other applications, if any.

- If you do not specify the drive/path (blank) but specify only the project name, the default drive/path is automatically created and the project is saved.

4.2 Opening the Existing Project File

A	Q/QnA	QS	FX
◯	◯	◯	◯

[Purpose]
Reads the saved project file.

[Operating Procedure]
Select [Project] → [Open project] or click 📂 (Ctrl + O).

[Dialog Box]

For details on how to designate the drive/path, project name, and project title, refer to Section 3.2.

POINT

- When the existing project is opened, GX Developer starts in the screen status that the project was saved.
  - GX Developer screen position and size.
  - Ladder monitor, registration monitor, batch monitor status (when connected with a CPU)
    However, the screen is not restored properly if the resolution is different.
- In GX Developer (SW3D5-GPPW-E Ver. 00A to SW5D5-GPPW-E Ver. 10B), 32-bit constants cannot be used for the third device in the DTO instruction of the ACPU. (Third device constants can have a maximum of 16 bits.)
  When the same data is also used in a version of GX Developer (other than SW3D5-GPPW-E Ver. 00A to SW5D5-GPPW-E Ver. 10B), the values displayed on the screen will become different. (Although data is saved in 32 bits internally, it becomes 16-bit data when the DTO instruction is edited in GPPA or a version of GX Developer between SW3D5-GPPW-E Ver. 00A and SW5D5-GPPW-E Ver. 10B. Caution is necessary.)
  GX Developer (SW3D5-GPPW-E Ver. 00A to SW5D5-GPPW-E Ver. 10B) and GPPA can only handle 16-bit data. Therefore, when a program created in 32 bits is displayed in these applications, the screen will show only the lower 16 bits.
  To align the values displayed in GX Developer and GPPA (regardless of versions), it is recommended that the 32-bit data be replaced using the DMOV instruction immediately before the DTO instruction.

  <Example of program>

  ```
  X0
  0 ──┤├────────────────────────────────[DMOVP   K123456    D0    ]
          └──────────────────────────────[DTOP    H0     K0    D0    K1    ]
  ```
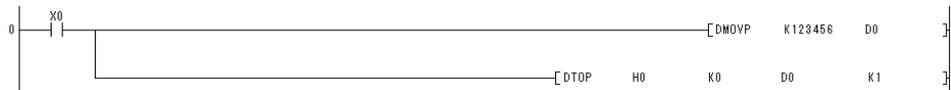
- The project data with read-only attribute cannot be opened.
  When using a project in read-only memory such as CD-ROM, copy the project in a hard disk, then cancel the read-only attribute.
  (Select "Apply changes to this folder, subfolders and files" in the "Confirm Attribute Changes" screen.)

4.3 Closing a Project File

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
 Closes the active project file.

[Operating Procedure]
 Select [Project] → [Close project].

[Description]
 When no project name has been designated or data has been edited, you will be prompted to save change to the project when you select [Close project].
 To save the change to the project, click the Yes button.
 To close the project without saving it, click the No button.

 For label programming
 A dialog box appears if there are data being edited in global variable setting/local variable setting.
 If you do not discard the edited data, click the No button, click the Register button on the global variable setting/local variable setting screen, and then close the project.

4.4 Saving a Project

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
 Saves the active project file with the designated name.

[Operating Procedure]
 Select [Project] → [Save project] or click ▣ (Ctrl + S).

[Description]
 Selecting [Save project] causes data to be written onto the existing project file.

 For label programming
 A dialog box appears if there are data being edited in global variable setting/local variable setting.
 If you do not discard the edited data, click the No button, click the Register button on the global variable setting/local variable setting screen, and then save the project.

4.5 Saving a Project with a New Name

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Saves the active project with a new name.

[Operating Procedure]
Select [Project] → [Save as].

[Description]
Designate the project path, project name, and project title before saving the project.

For details, refer to Section 3.2.
A dialog box appears if there are data being edited in global variable setting/local variable setting.
If you do not discard the edited data, click the No button, click the Register button on the global variable setting/local variable setting screen, and then save the project.

POINT

When saving the existing project with a name, an old project must exist.
(For example, if a project on an FD is opened and the FD is then removed, that project cannot be saved into another drive with a name.)

4.6 Deleting a Project

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Deletes the unnecessary project files.

[Operating Procedure]
Select [Project] → [Delete project].

[Description]
Select the project to be deleted, then click the Delete project button.

4.7 Verifying Data in Projects

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Verifies data between the programmable controller projects of the same PLC type.

[Operating Procedure]

Select [Project] → [Verify].

[Dialog Box]
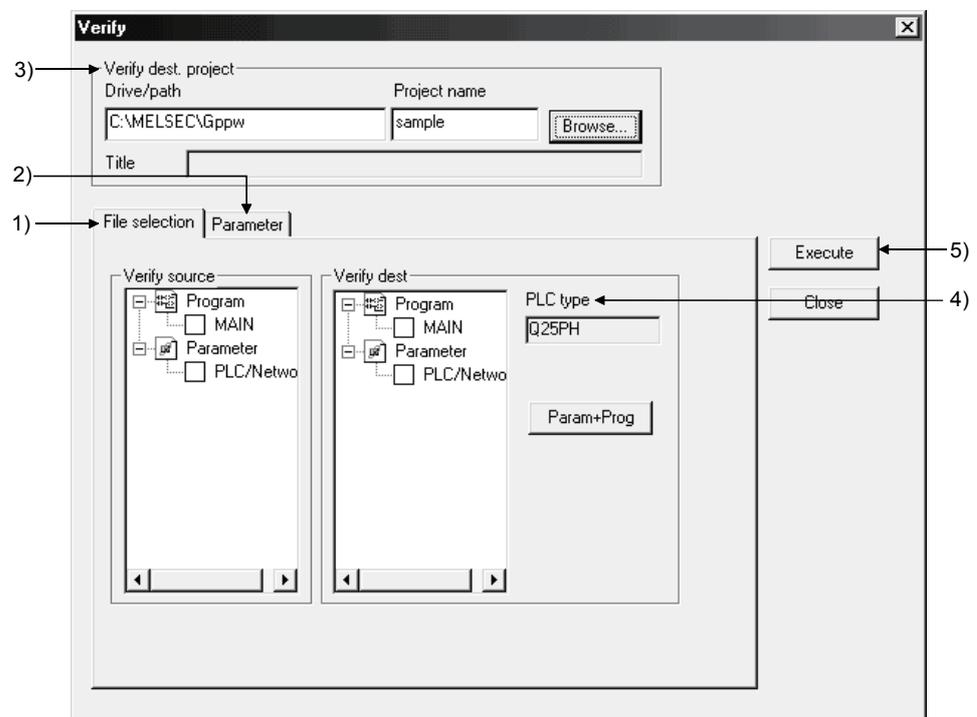
[Description]

1) <<File selection>>tab
- Verify source

  Lists the current project data.

  Check the checkbox of a data name to select it.
- Verify dest

  Lists the project data of a destination.

  Check the checkbox of a data name to select it.

2) <<Parameter>>tab (Q/QnA series only)
    Select the parameter verify level.
    The default is "Level 1".

When verify is performed on "Level 2"
On "Level 2", the parameter area other than the user setting area is also
verified.
The following message appears if any mismatch is detected as a result of
verifying the parameter area other than the user setting area.
Take corrective action according to the message of the verify result.

Message	Corrective Action
The header information of the parameter block is inconsistent.	A mismatch exists in other than the user setting area. Write the parameters to the programmable controller again.
This parameter block can't analyze.	The GX Developer version used to create the project differs between the verify source and verify destination. This does not affect the operation of the programmable controller.

3) Drive/path, Project name
    Sets a drive path for the project data to be verified.
    Refer to Section 3.2 for details on how to set the path.

4) PLC type
    Displays the PLC type of the project.

5) Execute button
    Click this button after making necessary settings.

6) Param+prog button
    Selects only the parameter data and program data of a source.

[Operating Procedure]
1. Select a project name in the dialog box displayed by clicking the Browse
   button to designate a destination drive/path name and a project name.

2. Check a checkbox for source data name and a checkbox for destination data
   name to be verified.

3. Click the Execute button after making necessary settings.

POINT

- Multiple data can be selected in source and destination data for verification
  as shown below.
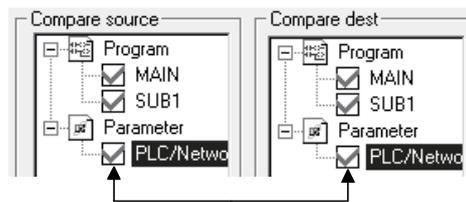
Check the checkbox of a data name to select it.

- For label programming
  Verify can be performed when the verify source and verify destination
  projects are label-programmed. Verify cannot be performed if the project of
  other than the label-programmed is specified as the verify destination.

- For remote I/O projects
  Verify can be performed when the verify source and verify destination
  projects are remote projects. You cannot select the project of other than the
  remote I/O project as the verify destination.

4.8 Copying a Project

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Copies data between projects.

When the selected source data is already in the destination, the existing data in the destination is overwritten with the source data.

[Operating Procedure]

Select [Project] → [Copy].

[Dialog Box]
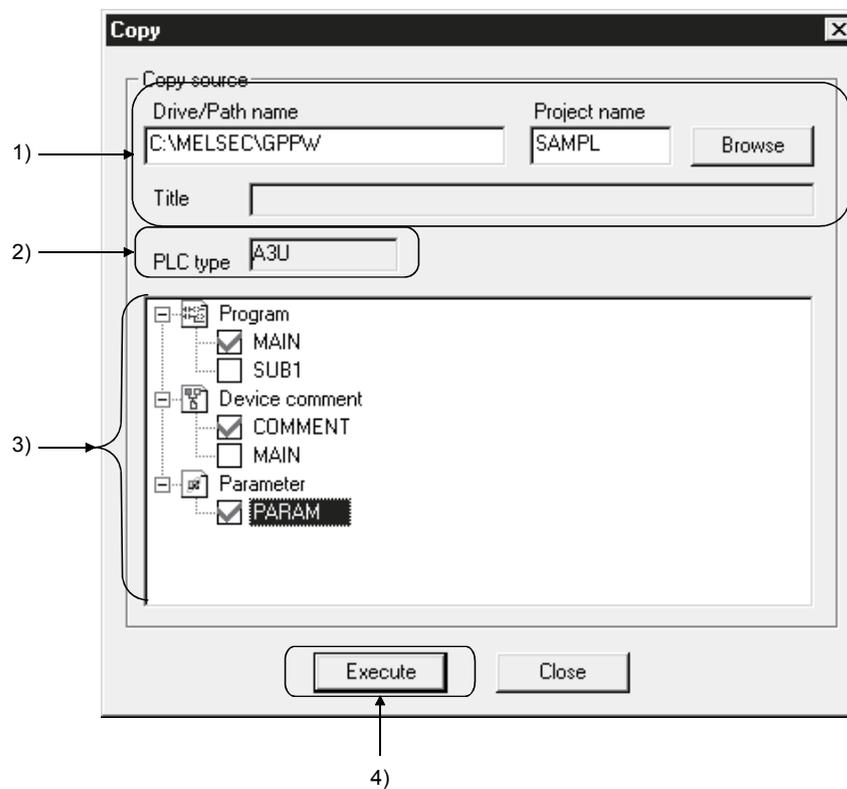
[Description]

1)   Drive/path name, Project name
Designates a drive path for project data to be copied.

2)   PLC type
Displays the PLC type of the source project.

3)   Source data list
Lists source data.

4)   Execute button
Click this button after setting necessary settings.

[Operating Procedure]
1. Select a project in the dialog box displayed by clicking the $\boxed{\text{Browse}}$ button to designate a source data drive/path name and a project name.

2. Check a checkbox for source data name.

3. Click the $\boxed{\text{Execute}}$ button after making necessary settings.

POINT

- All the selected data will be copied.
  Source

Check the checkbox of a data name to select it.
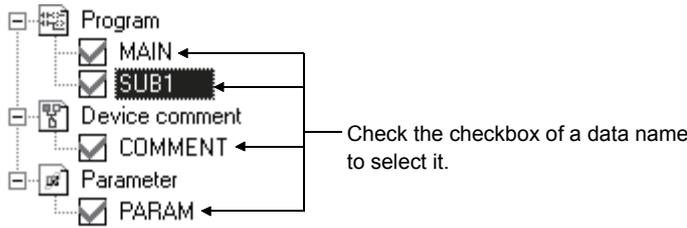
- For label programming (Q/QnA series only)
  The following table indicates the items which can be copied when label programming is specified at the copy source and/or copy destination.

Copy Destination (Open project)	Copy Source (Copy source project)	Copy Selectable Items
Label programming	Label programming	• Label program • Local variable definition • Global variable definition
Label programming	Other than label programming (Execute program)	• Execute program. $*1$
Other than label programming (Execute program)	Label programming	• Only execute program is read.

$*1$: Executable on GX Developer Version 8.27D (SW8D5C-GPPW) or later.

- For remote I/O station program (Q series only)
  The following table indicates the after-copy status when remote I/O station projects are specified at the copy source and/or copy destination.

Copy Destination (Open project)	Copy Source (Copy source project)	Copy
Remote I/O	QCPU (Q mode)	The parameters of the copy source are copied to the project being edited. However, when the data selected is other than the parameters, the parameters of the copy source become defaults.
Remote I/O	Other than QCPU (Q mode)	Copy cannot be performed.
QCPU (Q mode)	Remote I/O	Only parameters can be copied.
Other than QCPU (Q mode)	Remote I/O	Copy cannot be performed.

4.9 Adding Data to a Project

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Adds a program, common comment, comments by program, or device memory data to the project.

[Operating Procedure]
Select [Project] → [Edit data] → [New].

[Dialog Box]
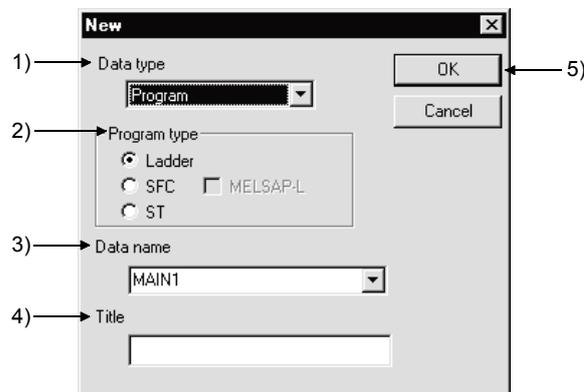
[Description]

1) Data type
Designates the type of the data to be added.
When Basic model QCPU is selected, common comment cannot be selected.
When the FXCPU is selected, only the comments by program can be selected.

2) Program type
Choose either of ladder program or SFC program. When creating an SFC on the A series, make the following settings.
1. Set the microcomputer value in the memory capacity setting of PLC parameters.
2. Choose SFC in the project type on the [Project] → [Edit data] → [New] screen.

3) Data name of the data to be added
Designates the name of the data to be added.
If one of A series PLCs is set as the PLC type of the active project, the name is fixed as SUB1, SUB2, or SUB3. (If the PLC type is A4UCPU, comments by program, named SUB4, can also be added.)
Name of subprograms can be designated after completing memory capacity setting for parameters.
For Q/QnA series, the name should be designated within 8 characters.
For FX series, MAIN is designated as the name.

Characters that may be used to set a data name
For A series
The data name of the A series accepts only alphanumeric characters, - (hyphen) and _ (underline).
In the A series, an error will occur if the data name is headed by a numeral.
For Q/QnA/FX series
Alphanumeric characters, kana, kanji, _, ^, $, ‾, (tilde), !, #, %, &, ( ), -, { }, @, ' (single quotation)
Unusable characters
An error will occur if any of " = | : ; , ¥ [ ] + * ? < > . / exists.

4) Title
    Designates the title of the data in up to 32 characters.

5) $\boxed{\text{OK}}$ button
    Click this button after setting necessary settings.

POINT
• Although multiple sequence programs can be created on one project, the number of sequence programs can be written to programmable controller depends on the specifications of each programmable controller. For details, refer to the corresponding programmable controller user's manual.

4.10 Copying Data within a Project

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
  Copies the existing data within a project.

[Operating Procedure]
  Select [Project] → [Edit data] → [Copy].

[Dialog Box]
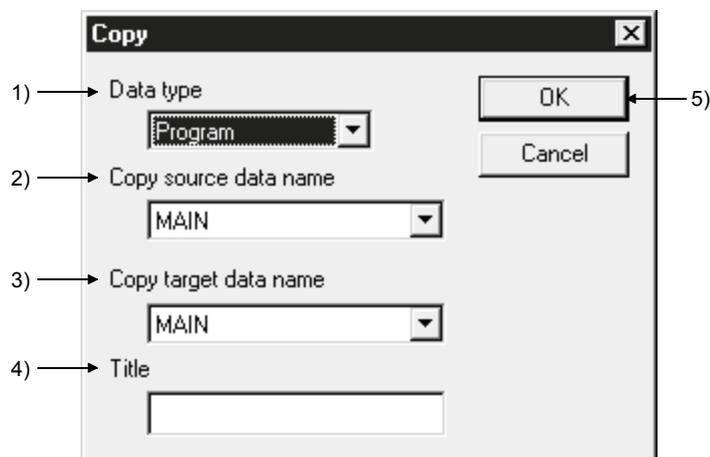
[Description]
  1) Data type
      Designates the data type to be copied.
      When Basic model QCPU is selected, program cannot be selected.

  2) Source data name
      Designates the name of source data.

  3) Destination data name
      Designates the new data name.
      If necessary, source data can also be overwritten onto an existing data.
      The data name must be designated in up to 8 characters.

  4) Title
      Displays the set title of the data.
      If necessary, the title can be edited and stored.
      It must be designated in up to 32 characters.

  5) OK button
      Click this button after making necessary settings.

4.11 Deleting Data from a Project

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Deletes an existing data in a project.

[Operating Procedure]
Select [Project] → [Edit data] → [Delete].

[Dialog Box]
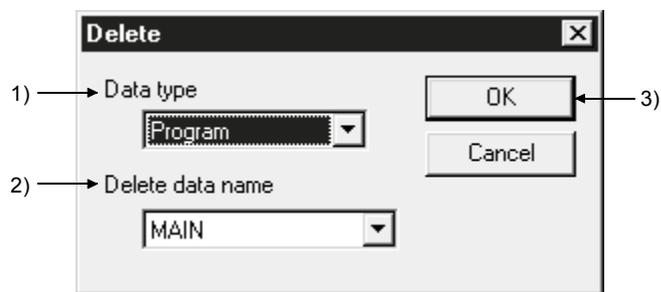
[Description]

1) Data type
   Designates the data type to be deleted.

2) Data to be deleted
   Designates the name of the data to be deleted.

3) OK button
   Click this button after making necessary settings.

4.12 Renaming Data within a Project

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
  Renames the existing data in a project.

[Operating Procedure]
  Select [Project] → [Edit data] → [Rename].

[Dialog Box]

1) → Data type
   | Program ▼ |

2) → Data name before changing
   | MAIN ▼ |

3) → Changed Data name
   | MAIN ▼ |

4) → Title
   | |

OK ← 5)
Cancel
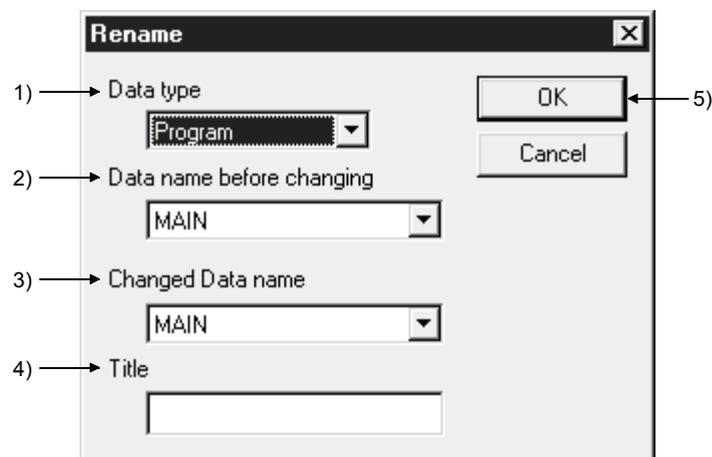
[Description]
  1) Data type
     Designates the data name to be changed.

  2) Data name before renaming
     Designates the data name before renaming.

  3) Renamed data name
     Designates the new data name after renaming.
     The data name must be designated in up to 8 characters.

  4) Title
     Displays the set title of the data.
     If necessary, the title can be edited and stored.
     It must be designated in up to 32 characters.

  5) OK button
     Click this button after making necessary settings.

POINT

This operation cannot change the data name of comments by program to "COMMENT".
For changing the comments by program to the common comment (COMMENT), refer to "Setting Comment Types" (Section 9.6).

4.13 Changing the Ladder and SFC with each other

A	Q/QnA	QS	FX
×	×	×	○

[Purpose]
Sets when the existing ladder program is changed to the SFC program, and vice versa.

[Operating Procedure]
Select [Project] → [Edit Data] → [Change program type].

[Dialog Box]
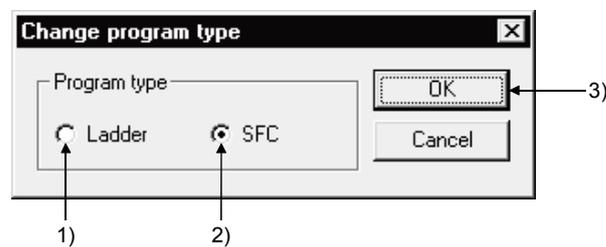
[Description]

1) Ladder
Changes the SFC program being displayed to the ladder program.
After the changing operation has been completed, editing of the ladder program is enabled.

2) SFC
Changes the ladder program being displayed to the SFC program.
After the changing operation has been completed, editing of the SFC program is enabled.

3) OK button
Click this button after making necessary settings.

POINT

For cautions on interchanging, refer to the GX Developer Version8 Operating Manual (SFC).

4.14 Changing the PLC Type of a Project

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]
Changes the type of the existing data or the data being edited so that it can be used with another type or PLC series.

[Operating Procedure]
Select [Project] → [Change PLC type].

[Dialog Box]
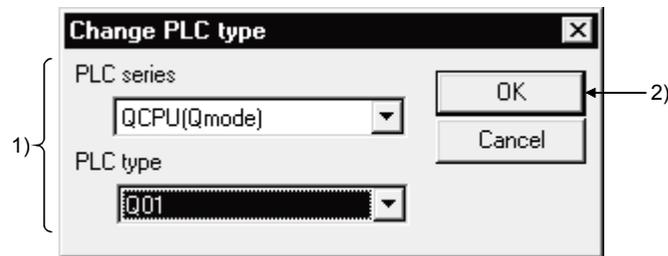
[Description]

1) PLC series/PLC type
Designates the PLC series or PLC type to be changed.

2) OK button
Click this button after making necessary settings.
After the OK button is clicked, the following dialog box appears.
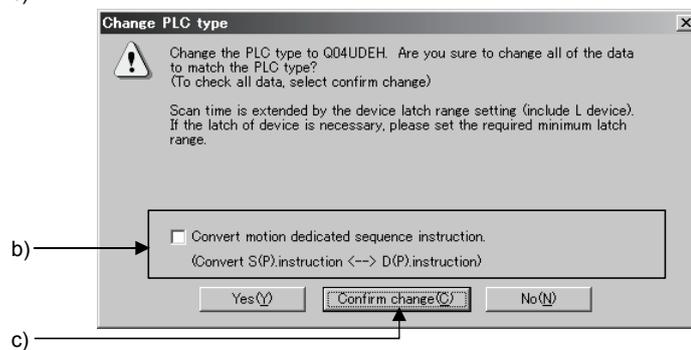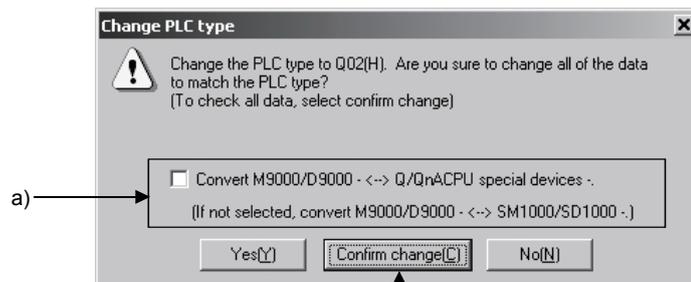
a) Check this check box when making conversion between the M9000/ D9000 range and the Q/QnACPU special devices.
The check box appears for changing the following PLC types:
- Conversion between QCPU (Q mode) and ACPU
- Conversion between QnACPU and ACPU

Conversion can be made if you do not make the A series CPU compatibility setting after choosing [PLC parameter] - <PLC system>.

b) Check this check box when making motion dedicated instruction conversion at the time of changing the PLC type with Universal model QCPU.
For the motion dedicated instructions for conversion, refer to Appendix 12.5.
The check box appears for changing the PLC type between the following PLC types:
- Universal model QCPU (except Q02UCPU) ↔ Universal model QCPU (Q02UCPU), High Performance model QCPU, Process CPU or Basic model QCPU (except Q00J)

c) By clicking the Confirm change button, you can change the parameter and other settings while simultaneously confirming them.
When changing the PLC type between FX and FX, you can make corrections to the PLC parameter capacity within the specification range of the PLC type after change.

POINT

- For restrictions on changing each PLC series/PLC type, refer to the Restrictions on PLC Type Change in Appendix 4.

- When reading a project from such as a FD, the PLC type cannot be changed if there is no source project.
  When changing the PLC type, do not remove the FD, etc. nor delete the project.

- Note that if SB and/or SW is used in CC-Link refresh setting, special module interrupt setting, etc., the Q → QnA change will cause the SB and/or SW in that part not to be refreshed or interrupt-processed.

- PLC type cannot be changed during the monitoring of the ladder or device data in batch.

- If selecting Remote I/O of the QCPU (Q mode) in change PLC type, the data of the conversion source are changed to defaults.

- Refer to Appendix 4 for label programming.

- When changing the PLC type of the project that includes the intelligent function module parameters to the Q00J/Q00/Q01CPU or Remote I/O, reexamine the device ranges of the auto refresh setting in the intelligent function module parameters, and make correction if there are devices outside the ranges.
  The devices other than the following need not be corrected.

Usable Device	QCPU (Q Mode)	Q00/Q01	Q00J	Remote I/O
X	0-1FFF	0-7FF		—
Y	0-1FFF	0-7FF		—
M	0-32767			0-8191
B	0-7FFF			0-3FFF
D	0-32767			0-12287
W	0-7FFF			0-3FFF

- If the PLC type is changed while the line is connected, the line is cut off.

- "Change PLC type" cannot be performed during monitoring of a programmable controller.
  To perform, place all open ladder editing screens in write or read mode, and close all monitor screens.

- Changing the FXCPU other than the FX3G, FX3U or FX3UC to the FX3G, FX3U or FX3UC
  If 32-bit counter is used for 16-bit instruction, convert the instruction into 32-bit instruction after checking the message.
  Although no error occurs even if 32-bit counter is used for 16-bit instruction with the programmable controller other than the FX3G, FX3U or FX3UC, an error occurs when the programmable controller is FX3G, FX3U or FX3UC.
  <Example>
  MOV K300 C200 → DMOV K300 C200

4.15 Reading Other Format Files

4.15.1 Reading a GPPQ, GPPA, FXGP(DOS) or FXGP(WIN) file

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]
Reads the existing GPPQ, GPPA, FXGP(DOS), and FXGP(WIN) data into GX Developer. These data can be read according to the following procedure immediately after GX Developer is started.

[Operating Procedure]
Select [Project] ⟶ [Import file] ⟶ [Import from GPPQ format file]
⟶ [Import from GPPA format file]
⟶ [Import from FXGP(WIN) format file]
⟶ [Import from FXGP(DOS) format file]
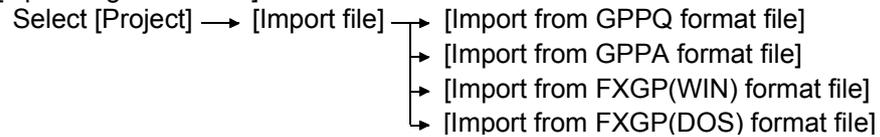
[Dialog Box]
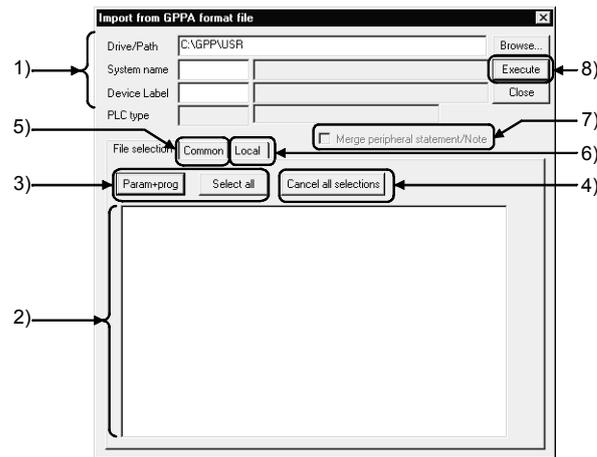
[Description]

1) Drive/path, System name, Machine name, PLC type
    Designates0 the location of data created by GPPQ, GPPA, FXGP(DOS) or FXGP(WIN).
    Enter a system name and a machine name for the data specified in the drive path. Clicking the ⟨Browse⟩ button shows the dialog box for choosing the system name and machine name. Double-click the file to be read to specify.
    When FXGP(DOS) or FXGP(WIN) data is read, a folder name is specified as the system name and a file name as a machine name.
    Also, specifying a file name from a root directory, the system name is left blank. For details, refer to Section 3.2.

2) Source data list
    Displays data created by GPPQ, GPPA, FXGP(DOS), and FXGP(WIN).
    Check the checkbox of data names to be selected.
    The selected comments can be edited in the program common tab or the program tab.

3) | Param+prog | button/ | Select all | button
   • | Param+prog | button
     Selects only the parameter data and program data of a source.
   • | Select all | button
     Selects all data in a source data list.
     comment2 is selected as comments in A series, and the device memories of
     the same quantity as the number of data are displayed.
     The first data name is selected for comments and file registers in QnA series.

4) | Cancel all selections | button
   Cancels all the selected data.

5)   <<Common for programs>> sheet (A series)
   Click <<Common for programs>> tab to set a range for common comments and
   read data.

For the setting method for each PLC series, refer to Chapter 9 "SETTING
DEVICE COMMENTS".

6)   <<For each program>> sheet (A series)
Click <<For each program>> tab to set a range for comments by program and
read data.
(Except the FX series)
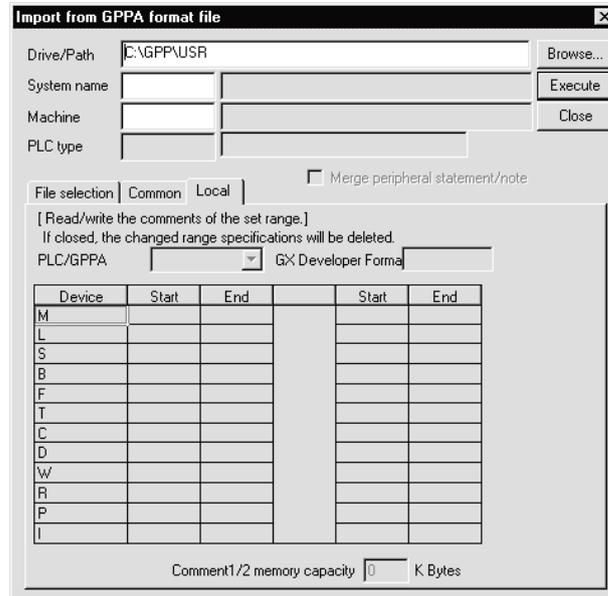
For the setting method for each PLC series, refer to Chapter 9 "SETTING
DEVICE COMMENTS".

7)   Merge peripheral Statement/Note
Refer to Section 10.2.

8)   Execute button
Click this button after the setting is over.

[Setting Procedure]
• Data selection
  1. Set a drive/path for reading by GPPQ, GPPA, FX(DOS), or FX(WIN).

  2. Select a project name in the dialog box displayed by clicking the Browse
      button to designate a system name and machine name for the project to be
      read.

  3. Check the checkbox of data to be selected by using Param+prog button,
       Select all button, or the mouse.

  4. Click the Execute button after making necessary settings.

• Canceling data selection
  (1) When canceling the selected data arbitrarily:
      • Clear the checkmark (√) in the checkbox with the mouse or space key.

  (2) When canceling all the selected data:
      • Click the Cancel all selection button.

Precautions for reading the other format files

For A series	
A6GPP, SW0S-GPPA format data	Read data with GX Developer after performing the corresponding format conversion with GPPA. For the operating methods, refer to Type SW□SRXV/IVD-GPPA GPP Function Operating Manual (Details).
For data selection	For device comment selection, you may only choose either comment 2 or comment 1.
For GPPA format reading	Abandon the project data on GX Developer and read the other format file. The area in excess of the program capacity is deleted when read. For the PLC type which cannot use subprograms, subprograms are deleted when read. With the GX Developer, the ACPU program, including a micro computer program, can be backed up (saving the project after "Read from PLC") and restored (write to PLC). However, the micro computer program disappears when performing either of the following operations. • Editing MELSAPII program • Clicking the END button in the [PLC parameter] screen
For QnA series	
Ladder return positions	Returning places are different between GPPQ and GX Developer. Because of this, if the total of return sources and return destinations exceeds 24 lines in a single ladder block, the program is not displayed properly. Corrective action: Add SM400 (normally ON contact) to adjust the return positions.
For data selection	For the device memory and file register, you may select only one data name for each item.
For FX series	
CPU type	When the FX3G or FX3U(C) is selected, reading from the other format file cannot be selected.
For data selection	Any item that does not exist in the source data is not displayed.
Read range	For the A6GPP format, read the data after making conversion once with the FXGP(DOS) software. For the conversion method, refer to the SW1PC-FXGPEE/AT Software Operating Manual. The data will disappear if it includes microcomputer programs other than SFC programs.

	For FXGP(DOS) format	Files to be read	• Program file (.PMC) Parameter, program, comment, file register • Comment file (.COK) Comment • Device memory file Data register, file register, RAM file register, special register (.DMD, .DME, .DMF, .DMG)
		Files not read	Circuit comment file (.COL), sampling trace file (.STA) Print title file (.PTL), comment file (.COH) Shared circuit file (.DAT)
	For FXGP(WIN) format	Files to be read	• Program file (.PMW) Parameter, program, comment, file register • Comment file (.COW) Device comment, circuit comment, coil comment, Alias • Device memory file (.DMW) Data register, special register, RAM file register
		Files not read	Sampling trace file (.STW), print title file (.PTW) Registration monitor file (.RMW)
		Restrictions	• Device comment Up to 50 characters can be input for FXGP(WIN) device comments, but only the first 32 characters are read because the maximum number of character is 32 in GX Developer. • Statement Any number of characters can be input for FXGP(WIN) circuit comments, but only the first 64 characters are read because the maximum number of characters is 64 in GX Developer. • Note Any number of characters can be input for FXGP(WIN) coil comments, but only the first 32 characters are read because the maximum number of characters is 32 in GX Developer.

4.15.2 Reading a MELSEC MEDOC format file (Printout)

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]
   Reads the data output to a file with MELSEC MEDOC as print-out data.

[Operating Procedure]
   [Project] → [Import file] → [Import from Melsec Medoc format file].

[Dialog Box]
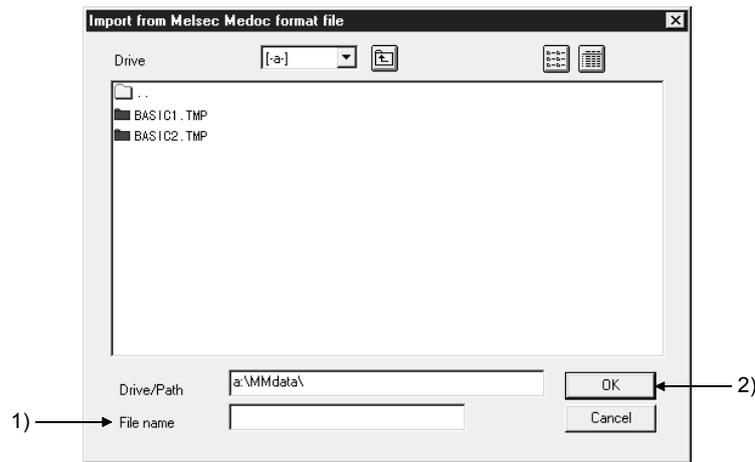
[Description]

1)   File name
      The data output to a file with MELSEC MEDOC as print-out data will be read.
      The MELSEC MEDOC data created with version Ver 2.3 or later will be read.

2)   OK button
      Click this button after the setting is over.

POINT

- If print data created with the OS (MS-DOS) in other than English includes characters which cannot be handled by English Windows, reading the data to GX Developer may not show them correctly.
- The headers, parameters, programs and comments in the print-out data are read.
- The parameters read are only the memory capacity, latch range and timer/counter range (except the FX series).
- The instructions that cannot be converted are converted as abnormal instruction codes.
- When reading the MELSEC MEDOC data with GX Developer, always save it after adding the Printer Head (incompatible with the Small Header) on the MELSEC MEDOC side.
   For the parameters, programs, etc., use the following table as reference.

	MELSEC MEDOC Print-out DataType	Condition
Program	Instr	Any
Comment	Name (Name is to be printed out, Comment is not to be printed out)	Any *1
Comment range	parameter	Any *1
Parameter	parameter	Any *1

   *1: Only the print-out data for MAIN is valid.
         Data existing in the print-out data for SUB is not read.
- Refer to Section 4.15.3.

4.15.3 Reading a MELSEC MEDOC format file

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]

Reads the data created with MELSEC MEDOC.

[Operating Procedure]

[Project] → [Import file] → [Import from Melsec Medoc format file].

[Dialog Box]
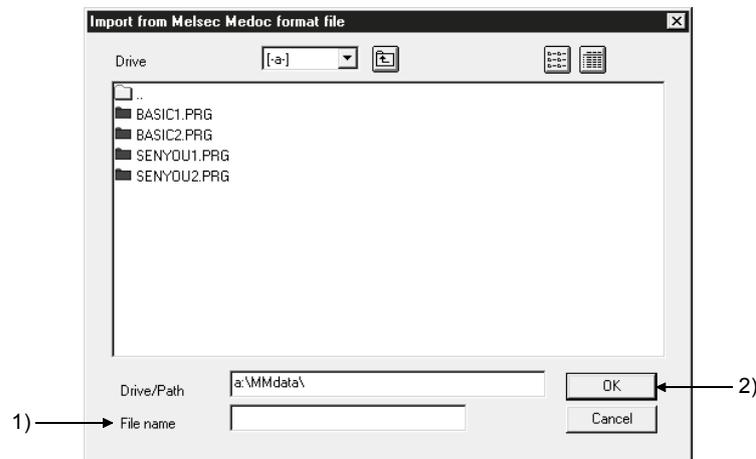
[Description]

1) File name

Choose the data created with MELSEC MEDOC.

2) OK button

Click this button after the setting is over.

POINT

- If you want to read subprogram data but the subprogram memory capacity has not been set on the project side, an error occurs and the data is not read.
  Preset the memory capacity in the PLC parameter.
- Unconvertible instructions are converted as instruction code faults.
- The definition of a conversion error is displayed in the dialog box and can be saved in the file.
  The place where it will be saved is the drive/path where the data to be read is saved.
- Data having many statements cannot be displayed properly.
  Refer to Section 10.1.

POINT

- The MEMORY CAPACITY (Total memory-Sequence Program) parameter whose setting is step 0 in the sequence program created with MEDOC (PLC type: FX2N) will not be read properly.
- If you read the parameter where the set value devices are specified for the normal counters/timers other than the extended counters/extended timers in the sequence program created with MEDOC (PLC type: ACPU), the set value device numbers are deleted on GX Developer.
- A line-to-line statement headed by ";" results in a conversion error. Change ";" to another character to enable read.
- The following ladder created with MEDOC will not be displayed.
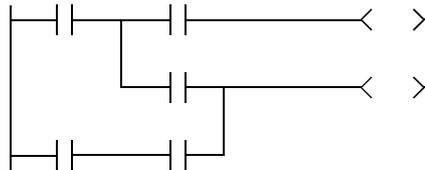
- When the MELSECNETII parameters have been set with MELSEC MEDOC, they will be written as MELSECNETII mixed parameters if they are written to the programmable controller with the latter half setting screen merely opened and no settings made.
  If a MEDOC format file is read with GX Developer, it is read as a MELSECNETII parameter file since the later half has not been set.
  Verifying the PLC and GX Developer data in this status will result in a verify mismatch.
- When starting GX Developer with Windows® 98, do not start the following application at the same time.
  BarClock
- An error will occur if Swedish special characters are included in the ASC instruction of the MEDOC data.
- If lines of only line feed have been created in the program created with MEDOC, conversion to GX Developer data will erase those lines.
- A line-to-line statement headed by "@Export:" results in a conversion error.

4.16 Exporting GPPQ, GPPA, FXGP(DOS) or FXGP(WIN) Files

A	Q/QnA	QS	FX
◯	◯	×	◯

[Purpose]

Saves GX Developer data in a GPPQ, GPPA, FXGP(DOS) or FXGP(WIN) file so
that it can be read and edited as a GPPQ, GPPA, FXGP(DOS), or FXGP(WIN) file.

[Operating Procedure]

Select [Project] ⟶ [Export file] ⟶ [Export to GPPQ format file]
                                  ⟶ [Export to GPPA format file]
                                  ⟶ [Export to FXGP(WIN) format file]
                                  ⟶ [Export to FXGP(DOS) format file]

[Dialog Box]
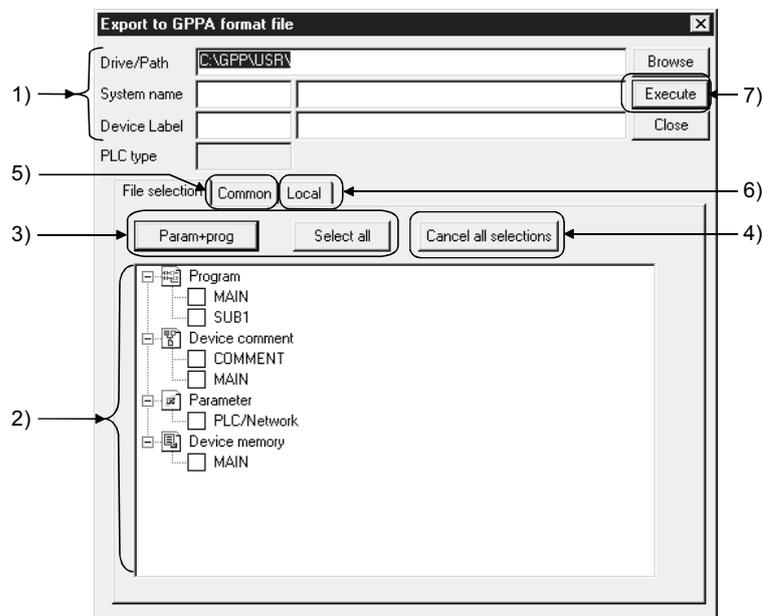
[Description]

1)   Drive/path, System name, Machine name, PLC type
     Designates a drive/path for writing a GPPQ, GPPA, FXGP(DOS), or
     FXGP(WIN) file.
     Enter a system name and a machine name for data specified in the project
     path.
     When data is written to an FXGP(DOS) or FXGP(WIN) file, a folder name must
     be designated as a system name and a program file name as a machine name.
     Refer to Section 3.2.1 for details on operating methods.
     Characters that can be set for data name setting
     For A series
         You must not use any characters other than alphanumeric characters and -
         (hyphen).
         The first character should be "alphabetic" (a numeral will result in an error).

For QnA/FX series

Alphanumeric characters, _, ^, $, ¯,~ (tilde), !, #, %, &, (,), -, {, }, @,
'(apostrophe), ' (single quotation)
Unusable characters

An error will occur in presence of any of:
" = | : ; , ¥ [ ] + * ? < > . / (space)

2) Source data list
Selects data to be written to a GPPQ, GPPA, FXGP(DOS) or FXGP(WIN) file.
Check a checkbox of the data name to be selected.

3) ⌐Param+Prog¬ button/ ⌐Select all¬ button
• ⌐Param+Prog¬ button
  Selects only the source parameter data and program data.
• ⌐Select all selection¬ button
  Selects all the listed source data.

4) ⌐Cancel all selection¬ button
Cancels all the selected data.

5) <<Common>> sheet (A series)
Click <<Common>> tab to set a range for common comments and write data.

For the setting method for each PLC series, refer to Chapter 9 "SETTING
DEVICE COMMENTS".

6) <<Local>> sheet (A series)
Click <<Local>> tab to set a range for comments by program and write data.
(Except the FX series)
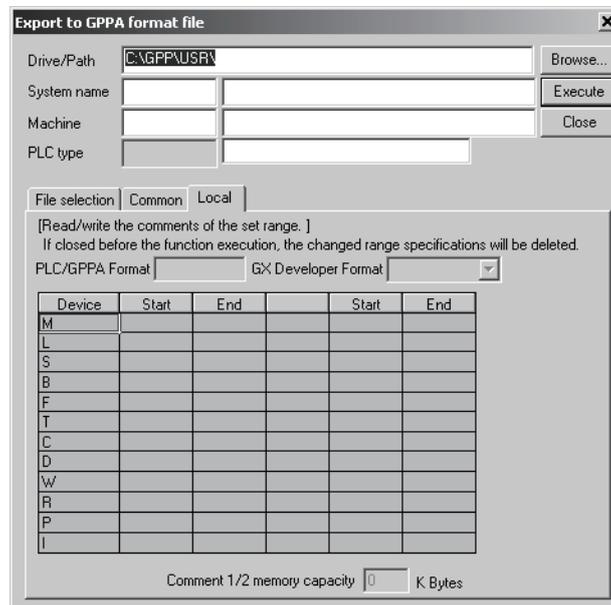
For the setting method for each PLC series, refer to Chapter 9 "SETTING DEVICE COMMENTS".

7) Execute button
Click this button after making necessary settings.

[Operating Procedure]
- Data selection
  1. Designate a drive/path for the project to be written.

  2. Select a project name in the dialog box displayed by clicking the Browse button to designate a system name and machine name for the project to be written.

  3. Check the checkbox of data to be selected by using Param+Prog button, Select all selection button, or the mouse.

  4. When setting a range for comments to be written, set the details of the comment range. (Refer to Chapter 9 for details on setting methods.)

  5. Click the Execute button after making necessary settings.

- Canceling data selection
    (1) Canceling the selected data arbitrarily
        - Clear the checkmark ✓ in the checkbox with the mouse or space key.

    (2) Canceling all the selected data
        - Click the Clear all selection button.

Precautions for writing the other format files

For A series, QnA series	
Program name	When writing programs in the GPPA format in A series, the program names other than MAIN, SUB1, SUB2 and SUB3 cannot be used.
Statement, note	When statements/notes are created, they are written at the same time by selecting programs.
Writing method	The QCPU-A data is written to the A4UCPU file.

For FX series			
CPU type	When the FX$_{3G}$, FX$_{3U(C)}$ is selected, writing to the other format file cannot be selected.		
For data selection	For FXGP(DOS) and FXGP(WIN), the following items to be written are displayed, respectively. Note that any item that does not exist in the source data is not displayed.		
Write range			
	For FXGP(DOS) format	Files to be written	• Program file (.PMC) Parameter, program, comment, file register • Comment file (.COK) Comment • Device memory file Data register, file register, RAM file register, special register (.DMD, DME, .DMF, .DMG)
		Files not written	• Circuit comment file (.COL) • Sampling trace file (.STA) • Print title file (.PTL) • Comment file (.COH) • Shared circuit file (.DAT)
		Restrictions	• Device comment Up to 32 characters can be input for GX Developer device comments, but only the first 16 characters are written because the maximum number of character is 16 in FXGP(DOS). • Comment The maximum number of comments is 3400. • P, I statement P, I statement is not written.
	For FXGP(WIN) format	Files to be written	• Program file (.PMW) Parameter, program, comment, file register • Comment file (.COW) Device comment, circuit comment, coil comment, Alias • Device memory file (.DMW) Data register, special register, RAM file register
		Files not written	• Sampling trace file (.STW) • Print title file (.PTW) • Registration monitor file (.RMW)
		Restrictions	• Alias A GX Developer Alias can be input in up to 8 characters, but only the alphanumeric characters and symbols (/ + - * / = . ? # $ % & : ; _) can be used in FXGP(WIN) (Refer to Section 9.4.1). The Alias containing characters not written is deleted when writing the data. • P, I statement P, I statement is not written.

4.17 Starting Multiple Projects

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Starts and reads multiple projects so that data can be edited (cut, copied and pasted) among the projects.

[Operating Procedure]
Select [Project] → [Start new GX Developer session].

[Description]
Once the window is displayed, open the projects and edit data.

4.18 Existing GX Developer

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Exits GX Developer.

[Operating Procedure]
Select [Project] → [End GX Developer] or click ☒.

[Description]
When no project name has been designated, clicking [End GX Developer] causes a dialog box to be displayed for project name confirmation.
Click the Yes button to save the changes to the project.
For details on designating the project path and project name, refer to Section 3.2.
Click the No button not to save the changes to the project.

┌───┐
│ POINT   │
├───┤
│ • When exiting GX Developer by clicking ☒, click the button shown below. │
│   Click here. │
│   ↓   │
│ ┌──┐   │
│ │ MELSOFT series GX Developer C:\MELSEC\GPPW\sample - [LD(Edit mode)   MAIN   35 Step]   _ □ ☒ │ │
│ │ ☐ Project Edit Find/Replace Convert View Online Diagnostics Tools Window Help ·   _ ⱽ ☒ │ │
│ └──┘   │
│   │
│ • When closing only the open data without exiting GX Developer, click ☒ on the │
│   menu bar.   │
│   │
│ • When using Windows NT® 4.0 or Windows Vista® , exit from GX Developer to │
│   restart or shut down the personal computer.   │
│   │
│ • If GX Developer is exited with GX Simulator having been started, the following │
│   message may appear.   │
│   Since no special problems will occur in operation, click the OK button to close │
│   the message.   │
│   "Some operation ended incorrectly.   │
│   If this application cannot start normally at the next operation.   │
│   follow the messages."   │
└───┘

5. STANDARDIZING THE PROGRAMS

Programs can be standardized by using label programming or macros to create sequence programs.
The creation and monitoring operations of ladders are identical to those of execute programs.

5.1 Label Programming

A	Q/QnA	QS	FX
×	○	○	×

Label programming increases design efficiency.
- As creating a general program by label programming permits device assignment changes according to equipment makeup, it can be easily diverted to other programs.
- If you do not know equipment makeup, labels can be used for programming.
- When the equipment makeup has been determined, relating the labels and actual devices enables generation of an execute program easily.
- By merely specifying the label assignment method, you can make device assignment automatically by performing only compile operation, without being conscious of the device names/device numbers.
- The program can be monitored/debugged, without the label names being changed, ensuring efficient debugging.
  Note that there are some restrictions on batch device monitoring and online program correction. For details, refer to the "Precautions/restrictions when handling label programs" in this section.
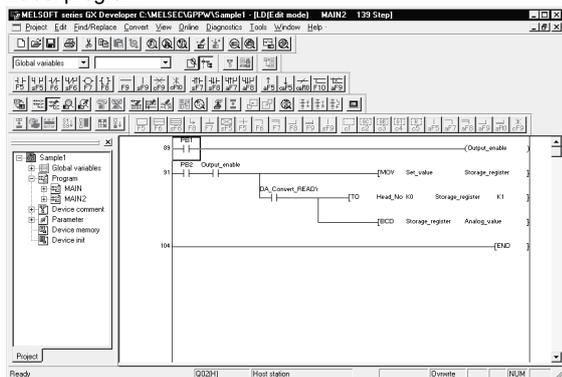
Label program

Global variable setting screen
Local variable setting screen

Compile — When writing a program to the programmable controller, always perform compile operation.

Execute program

Write to PLC
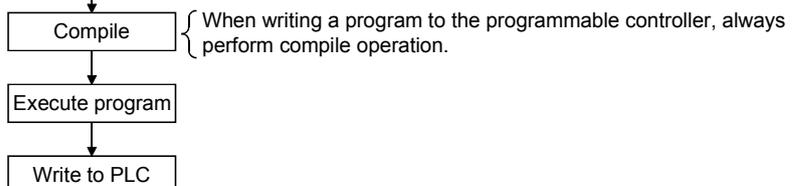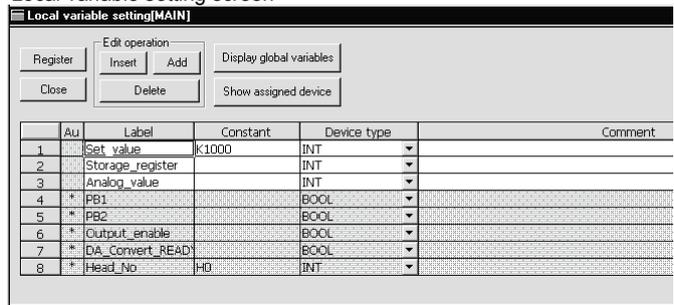
Label creating procedure

The sample label programs (SAMPLE1, SAMPLE2) used in the following explanation are contained on the CD-ROM of this product.

After installation of GX Developer, choose [Project] → [Open Project] to open the corresponding sample program.

New label creating procedure (The program used is SAMPLE1.)

1. List up the I/O equipment.
    Temporarily determine the label names of the I/O equipment.

2. Set local variables.
    Make setting to automatically assign constants or internal relays, data registers, etc. to the labels used in only the program created in above step 2.
    To make automatic assignment, leave the constant fields blank.
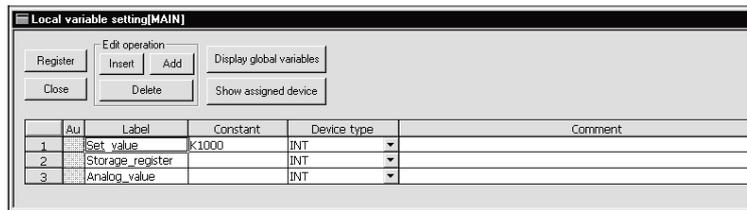
3. Set global variables.
    (a) Set devices or constants to the labels of the I/O equipment or the labels used in multiple programs.
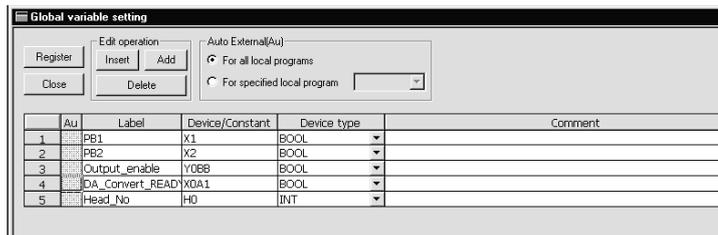
    (b) Register the programs where the labels will be used. (Auto External)
         Also, to reflect the global variables on the local variables, click "○" under Au.
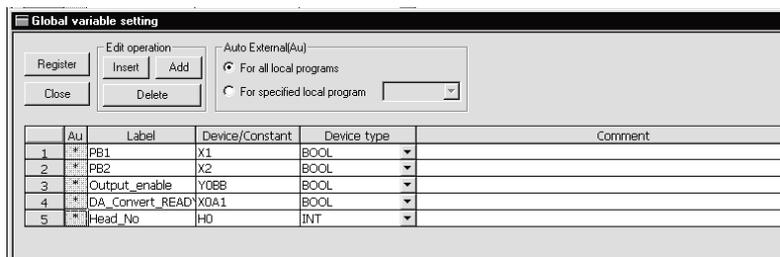
(c) The following screen gives an example of global variable setting reflected on the local variable setting screen.

4. Start programming.
   Start programming using the label names (such as I/O equipment and internal relays).
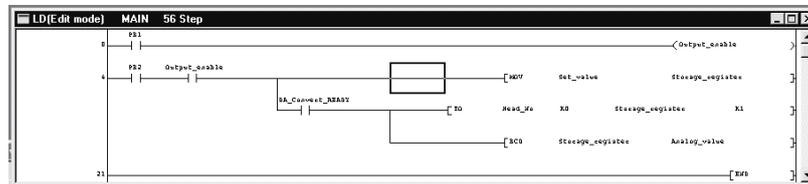
5 Compile.
   The execute program is generated.
   The number of steps in the execute program can be checked by selecting [View] → [Device program display mode].
   The screen below gives an example of circuit display. (Refer to 5.1.10.)

Label programming side

Actual device side
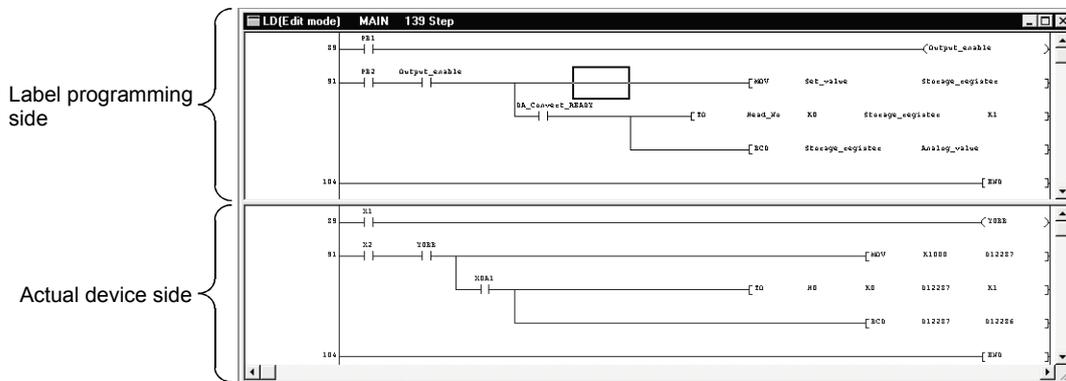
You can write the generated execute program to the PLC to run the program.
The program can be debugged in the label programming description format (device names are displayed as labels).

Existing label program diverting procedure (The program used is SAMPLE2.)
SAMPLE 2 is the program created by making the following modifications to
SAMPLE1.

1. The device number of the I/O equipment was changed.
    PB1 was changed from X1 to X10.

2. The label of the I/O equipment was added.
    Operation ready

3. The constant was changed.
    The set value was changed from K1000 to K3000.

1. Open the existing label program project.

2. Add the label name in label programming.
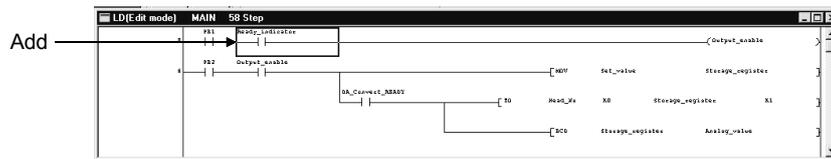
3. Change the global variable setting.
    (a) After changing the device number assigned to the label of the I/O
         equipment, make registration again. Set the device and device type of the
         added label.
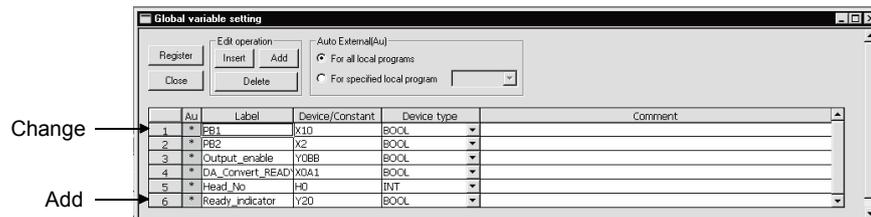
4. Change the local variable setting.
    Change K1000 of the set value to K3000.
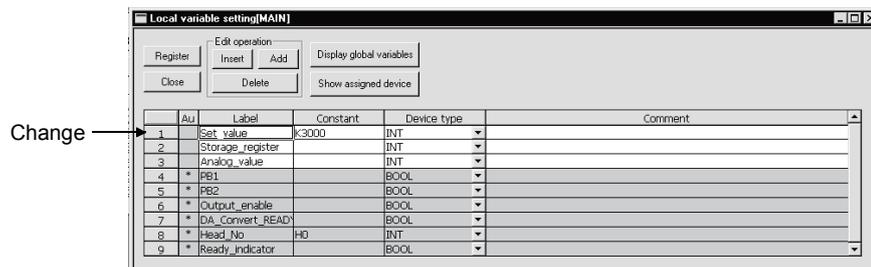
5. Compile.
    After compilation, you can check the execute step counts of the program by
    clicking [View] → [Device program display mode] (Refer to Section 5.1.10)

The following terms will be used in label programming.

Project List	Term	Description
	Label program	Sequence program where devices are described as labels.
	Execute program	Program that can be executed by the programmable controller. Compiled program when it is created by label programming.
	Actual device	The term "Actual device" is used in this manual to differentiate a program created under a label name and one that has been compiled. (A compiled program to which device has been assigned.)
☐ (Unset project)	Global variable	Label variable which is made valid for all label programs when multiple label programs were created in a project.
└ Global variables	Local variable	Label variable which is made valid for only within individual programs. Set this variable one for one to each label program.
└ Label	External variable	Variable where the label variable set on the global variable setting screen has been reflected on (registered to) the local label variable.
└ Program	Global label	Generic term for labels assigned in global variable setting.
└ MAIN	Local label	Generic term for labels assigned in local variable setting.
└ Header	Automatic device setting	Sets the D, W, ZR, M, B, T, ST, C and P device setting ranges. Set the automatically assigned device ranges on the auto device setting screen.
└ Body	Compile	Operation which converts a label program into an execute program.

Precautions/restrictions when handling label programs

1.   Editing label programs
(1) SFC and MELSAP-L are not compatible with label program.

(2) Device comments displayed are those set on the global/local variable setting screen.
Comments created on the device comment batch-edit screen are not displayed.
You can set a comment of up to 64 characters but the number of characters that may be displayed is up to 32.

(3) If the same label has been set to global and local variables, local variables have higher priority than global variables when they are displayed on the edit screen.

(4) When labels are used, indexing is unavailable.
To execute indexing, use actual devices as target devices.

2.   Reading programs from programmable controller
(1) Reading label programs
    (a) Select "Use label" when creating a project.

    (b) Set the memory that stores label programs to "Target memory". (If label programs and execute programs have been written into different memories, specify the memory in which the label programs have been written.)

    (c) One label program and one execute program are read out as a pair.
        The data list of PLC read dialog box appears as shown below;
        A label program and execute program are read out from the programmable controller when "Label program" is selected and then PLC read is executed.
        Refer to Section 16.3.1 for the PLC read operation.
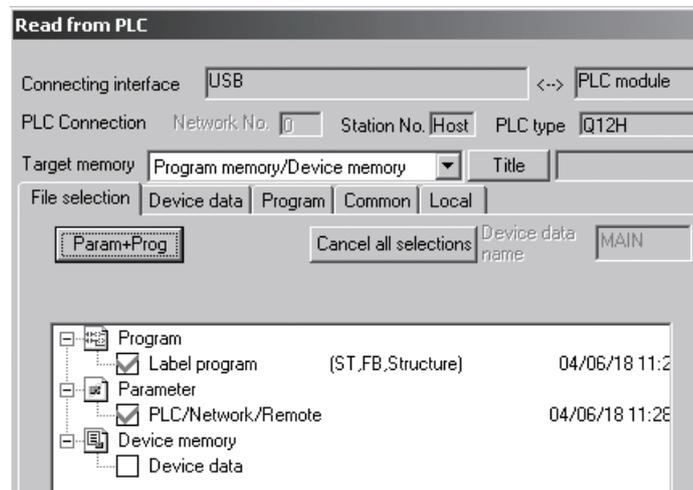
    (d) Read of execute program only cannot be performed.
        To read an execute program only, close the current project, and then start it again. In this case, do not select "Use label". (Refer to Section 2.(2).)

(e) Do not read a label program from the programmable controller CPU when the label program in the programmable controller CPU is old and does not match with the execute program.

The time and date when the label program and execute program were written can be checked by placing the cursor on each data in the Delete PLC data screen.
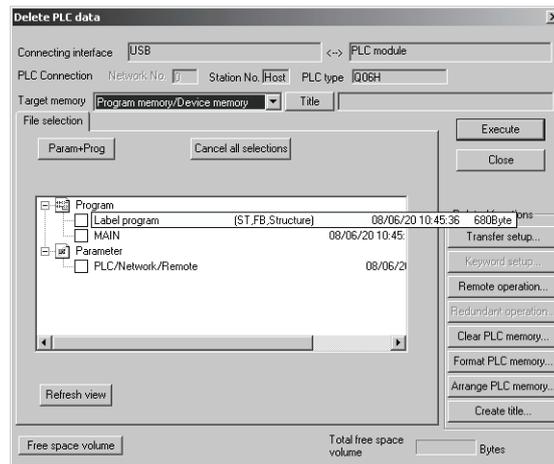
When there is not alternative, perform it while paying full attention to following points.

1) Back up the label programs in the personal computer before performing PLC read. The label programs in the personal computer will be overwritten. Therefore, make sure to save projects and back up the label programs in order to keep the latest programs.

2) The following dialog box appears when the PLC read is completed. Observe the given message.
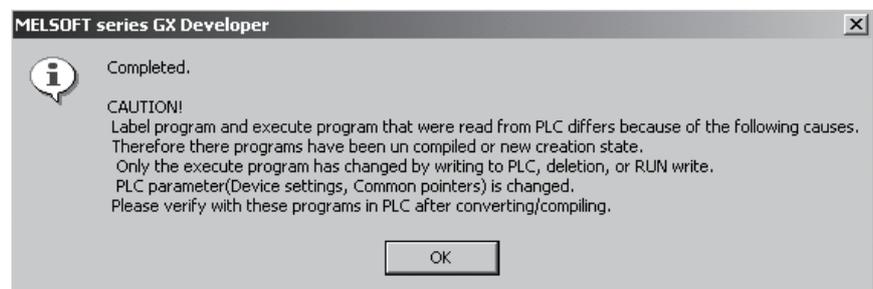
Return the backed up programs as necessary.

(2) Reading execute program only.
When creating a project, start the project and perform PLC read. In this case, do not select "Use label".

3. Wring programs into programmable controller
(1) Writing label programs
(a) Check "Label program (ST, FB Structure)" and then perform PLC write of label programs. This allows label programs and execute programs to be written in pairs into the programmable controller.
Perform "Write to PLC" to the programmable controller CPU whenever old label program has been stored in the programmable controller CPU or only the execute programs were written online.
Refer to Section 16.3.1 for the PLC write operation.

      (b) If PLC read of label programs are interrupted in any of the following cases, the programs are not normally written. Therefore, perform PLC read again, and complete it.

         1) In the case in which "No" is selected when confirmation dialog box asks "Are you sure OK to overwrite?" while writing execute program to PLC.

         2) In the case in which the keyword is not canceled on the "Keyword cancel" dialog box when writing execute program to PLC using QnACPU.

         3) In the case in which "Write protect" is set for attribute change of the execute program using QnACPU.

(2) Wring execute programs only
    (a) Uncheck "Label program (ST, FB Structure)" and then perform PLC write of execute programs.
    (b) Do not mix with old label programs.
       If only execute programs are written while old programs are stored in the programmable controller, an inconsistency may occurs between the label programs and execute programs.
       If the old label programs in the programmable controller are written into the personal computer without eliminating the program inconsistency, the label programs in the personal computer will be overwritten with the old programs.
       If old label programs are/may be stored, make sure to write label programs and execute programs in pairs, or format the memory to erase the old label programs before performing PLC write.

4. Writing programs online
    In the QCPU (Q mode), when writing programs online, label programs also can be written online.
    In the QnACPU/QSCPU, when writing programs online, the execute programs are changed; however, the label programs are not changed in the programmable controller.

    Write a label program online when the program matches with a one in the programmable controller CPU.

    If writing only the execute programs online to the programmable controller CPU for which label programs have been written, pay attention to the following.
(1) Write label programs into PLC after online change is completed.
    Make sure to write label programs and execute programs in pairs into programmable controller by performing PLC write.
(2) Do not perform PLC read of label programs while they have not written into PLC, after online change is completed.
    Otherwise, the label programs in the personal computer will be overwritten with the old programs in the programmable controller.

5. Verifying programs
    Label programs cannot be verified. (Only execute programs can be verified.)

6. Monitoring label programs
    Devices specified by label can be monitored via registration monitor.
    Devices cannot be monitored in batch.

7. Precautions for program creation
   (1) When using an instruction of which relevant data are stored in multiple word devices as shown below, specify an array for an operation result storage destination label.
   - Division (storage of quotient and remainder of division, etc.)
   - Block transfer instruction (BMOV), etc.

   [Storage example when division is specified by array]

   ⓐSetting
   Label name   : Value_A
   Device type   : Array (word)
   Number of elements : 2
   Program   : [/   D0   D1   Value_A]
                                      ↑
                                      └─── 2 words required

   ⓑOperation result

	Value_A[0]	Value_A[1]
Operation result of [/ D0 D1 Value_A]	(Quotient)	(Remainder)
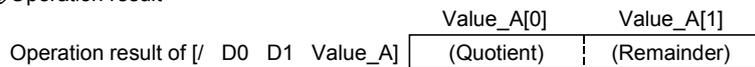
   (2) When setting the array, be careful of the device type and number of elements of the data storage destination.
   Incorrect setting may change the contents of the devices assigned to the other label.

   [Example of incorrect device type setting]

   ⓐSetting
   Label name : Value_A
   Device type : Double word
   Program   : [D∗   D0   D2   Value_A]
                                  ↑
                                  └─── 4 words required

   ⓑOperation result
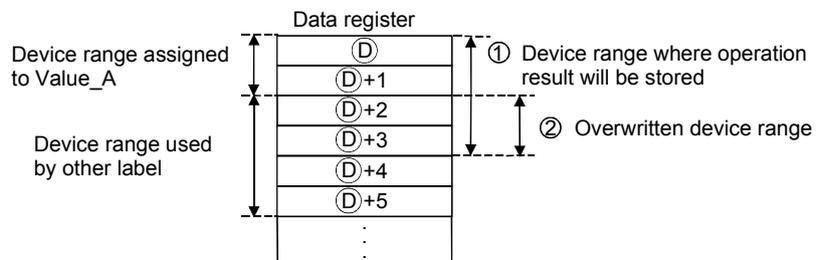
   In the above case, set 4 words to the operation result storage destination label (Value_A).
   To assign 4 words in the label setting, set the label type as indicated below.

   Device type: Array (double word) Number of elements: "2"

   When the label program is compiled, the device range for 4 consecutive words is secured.

(3) When assigning devices in the global variable setting, take care not to overlap the device ranges where the execution results of the instructions will be stored.

[Example of incorrect device type setting]

ⓐ Setting

Label name   : Value_A
Device type   : Array (double word)
Number of elements : 2
Device   : D100
Program   : [D∗ D0   D2   Value_A]

                                — 4 words required

Label name : Value_B
Device type : Double word
Device   : D102
Program : [D∗ D10   D11   Value_B]

                            — 2 words required

ⓑ Operation result

	Data register	
Device set for Value_A →	D100	① Device range where operation result will be stored
	D101	
Device set for Value_B →	D102	② Overwritten device range
	D103	
	D104	
	.	
	.	
	.	
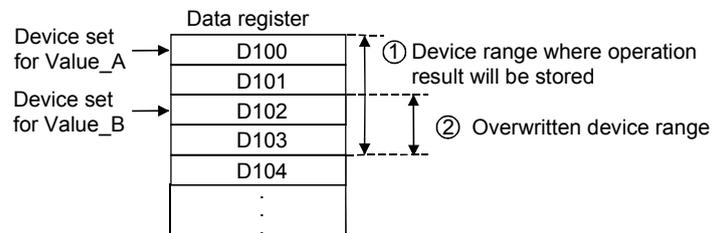
In the above case, make setting to assign the device of the label (Value_B) to D104.

REMARK

For details of ST operation, prefer to the following manual.
GX Developer Version 8 Operating Manual (Structured Text)

5.1.1 Label programming sequence

A	Q/QnA	QS	FX
×	○	○	×

The following flowchart shows a label programming procedure.

```
                    ┌─────────────────────────────┐
                    │            Start            │
                    └─────────────────────────────┘
                                  │
            ┌─────────────────────────────────────┐
            │  Start GX Developer.                 │········Refer to Section 4.1.
            └─────────────────────────────────────┘
                                  │
            ┌─────────────────────────────────────┐
            │  Choose [New project].               │········Refer to Section 4.1.
            └─────────────────────────────────────┘
                                  │
            ┌─────────────────────────────────────┐
            │  Specify "QCPU (Q mode)" or "QnACPU" │········Refer to Section 4.1.
            │  as the PLC series.                  │
            └─────────────────────────────────────┘
                                  │
            ┌─────────────────────────────────────┐
            │  Specify the PLC type.               │········Refer to Section 4.1.
            └─────────────────────────────────────┘
                                  │
            ┌─────────────────────────────────────┐
            │  Specify the "ladder or "label program"│········Refer to Section 4.1.
            │  as the program type.                │
            └─────────────────────────────────────┘
                                  │
Free setting····· ┌──────────────────────────┐
                  │ Make automatic device setting.│·····Refer to Section 5.1.3.
                  └──────────────────────────┘
                                  │
Free setting····· ┌──────────────────────────┐
                  │ Make global variable setting. │·····Refer to Section 5.1.3.
                  └──────────────────────────┘
                                  │
            ┌─────────────────────────────────────┐
            │  Make local variable setting.        │········Refer to Section 5.1.3.
            └─────────────────────────────────────┘
                                  │
            ┌─────────────────────────────────────┐
            │  Create a label program.             │········Refer to Section 5.1.2.
            └─────────────────────────────────────┘
                                  │
            ┌─────────────────────────────────────┐
            │  Compile the label program.          │········Refer to Section 5.1.9.
            └─────────────────────────────────────┘
                                  │
            ┌─────────────────────────────────────┐
            │  Perform write to PLC.               │········Refer to Section 16.3.
            └─────────────────────────────────────┘
                                  │
                    ┌─────────────────────────────┐
                    │            End              │
                    └─────────────────────────────┘
```

5.1.2 Label program input method

A	Q/QnA	QS	FX
×	○	○	×

＊: The Q00J, Q00 and Q01CPUs are incompatible.

Label programs can be created in the ladder/list mode. (Not in SFC mode)
The programming operation is identical to that in the ladder/list mode.
For details of the operation, refer to Section 6.2.
This section explains how to perform operation specific to label programming.

[Label input method example]

1. When entering a contact

Enter symbol	×
▼	LD Switch_A	OK	Exit	Help

2. When entering application instructions

Enter symbol	×
▼	MOV Watch_dog_timer D0	OK	Exit	Help

Enter symbol	×
▼	MOV K1000 Set_value device	OK	Exit	Help

Enter symbol	×
-[ ]- ▼	MOV Watch_dog_timer Storage_re	OK	Exit	Help
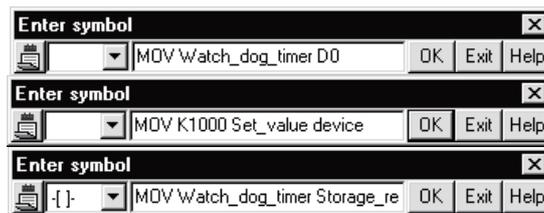
3. When entering structure label

Enter symbol	×
-[ ]- ▼	DTOP H0 H0 QD62CH1.Preset K1	OK	Exit	Help

Enter the label set on the "Local variable setting" screen.

Enter the label set on the "Structure variable setting" screen.

Enter period here.

[Operating Procedure]

There are terms (reserved words) which cannot be used as labels.
Refer to Appendix 14.
When entering a device name, do not include an apostrophe (').

[Array]

Array is set as a block of named consecutive areas.

For example, it is suitable for handling network refresh device.

In the following example, buffer memory of QJ61BT11 CC-Link system master/local module (hereinafter referred to as QJ61BT11) is set as array.

1. The QJ61BT11 buffer memory is set on the "Local variable setting" screen.

QJ61BT11 buffer memory		
Item		Address
Must not be used		0_H to DF_H
Remote input (RX)	1st station	$E0_H$ to $E1_H$
	2nd station	$E2_H$ to $E3_H$
	⋮	⋮
	64th station	$15E_H$ to $15F_H$
Remote input (RY)	1st station	160_H to 161_H
	2nd station	162_H to 163_H
	⋮	⋮
	64th station	$1DE_H$ to $1DF_H$
Remote register (RWw) For write	1st station	$1E0_H$ to $1E3_H$
	2nd station	$1E4_H$ to $1E7_H$
	⋮	⋮
	64th station	$2DC_H$ to $2DF_H$
Remote register (RWr) For read	1st station	$2E0_H$ to $2E3_H$
	2nd station	$2E4_H$ to $2E7_H$
	⋮	⋮
	64th station	$3DC_H$ to $3DF_H$
Must not be used		$3E0_H$ to $5DF_H$

2. Set the array in a sequence program as shown below.

POINT

Input range for number of elements is 1 to 256.

[Number of steps in label program]
- The number of steps in the label program is indicated in parentheses ( ). When the label program is compiled, the number of steps in the execute program is displayed. (The screens below show that the number of steps has changed from 0 before compiling to 78 after compiling.)
  Basically, the number of steps increases after compiling. When writing a program to the programmable controller, perform compiling and check the number of steps.

Label program (before compiling)

Number of steps before compiling →
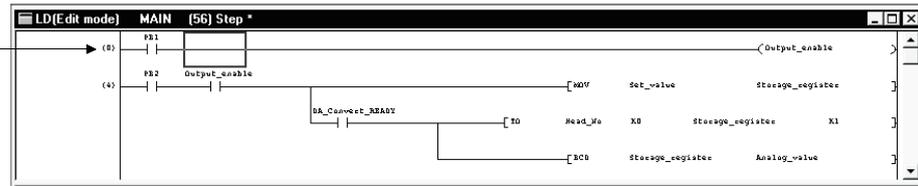
Label program (after compiling)

Number of steps after compiling →
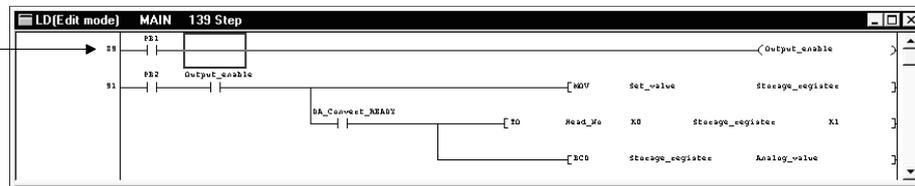
MOV aaa aaa
MOV aaa D0   Any of these is in 3 steps.
MOV D0 aaa
When the device which increases in the number of steps, e.g. U0\G0, (MOV U0\G0 aaa) is used, the number of steps is 4.
- When the instruction is headed by S., e.g. S.FWRRITE, the number of steps is as given in the programming manual.
  The pointer, EGP and EGF instructions are in 1 step.

```
POINT

When a label program is created using label names and actual devices
together, making automatic device assignment may generate double coils.
In this case, make a program check after compiling.
Also, the device use list and contact/coil use list can be used to check the
devices used. These lists are useful for device checking.
```

5.1.3 Making global variable/local variable setting

A	Q/QnA	QS	FX
×	○	○	×

[Purpose]

Sets labels, device types, comments and others in a label program.

[Operating Procedure]

Local variable setting: Double click or select the local label displayed within the project data list, and press ‎ Enter ‎.

Global variable setting: Select [Edit] → [Global variable setting].

[Dialog Box]

Local variable setting screen
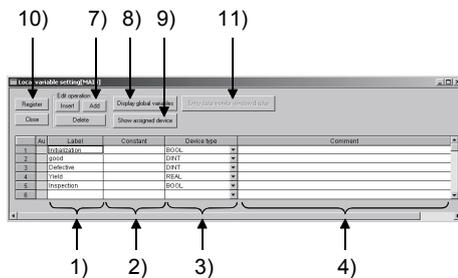
Global variable setting screen
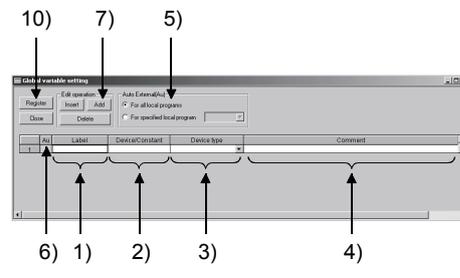
Local/global variable setting item list

	Local Variable Setting	Global Variable Setting
Auto External	―	Required
Au	Setting disabled (display only)	Required
Label	Required	Required
Device/constant value	As desired	Required
Device type	Required	Required
Comment	As desired	As desired
Global variable setting	As desired	―

[Description]

1) Label

Create a label within 16 characters.

Reserved words and actual device names are characters unusable as labels.

Reserved word or actual device name displays a "An unusable device has been designated" or "The reserved word is used for label" dialog box. Set another label name.

The number of label creation lines for local/global variable setting is 5120.

Refer to Appendix 14 for reserved words.

2) Device/constant value
Device types to which constant values can be set are; 'INT', 'DINT', 'REAL', and 'STRING'.
Enter constant values following K, H, E or "" in order that they will be identified as decimal, hexadecimal, actual number or character string.
- Local variable setting
  When setting constants, input numeric values in this field.
  When assigning devices automatically, keep this field blank (For details, refer to Section 5.1.4.)
- Global variable setting
  Set actual devices/initial values.
  Following qualifications, bit specification, digit specification and indexing can be applied to devices and registered. Indirect specification is not available.

POINT

For ST programs, make sure to use "Z2" or later, as "Z0" and "Z1" are used for compile.
For the Universal model QCPU, use devices other than the device number from "Z16" to "Z19", since they are used in the system for compiling.

---

3) Device type
Set any of bit, word, double word, real number, character string, array, timer, counter, retentive timer, pointer and structure.
Choosing a character string, array or structure displays the following dialog box.

Device type setting	Device type setting	Structure definition selection
Number of letters: 20	Number of elements: 1	Structure definition
STRING	BOOL	USER_01
	INT	USER_02
	DINT	USER_03
	REAL	
	TIMER	
	COUNTER	
	STOREDTIMER	
		The Structure definition to: USER_01
OK Cancel	OK Cancel	OK Cancel
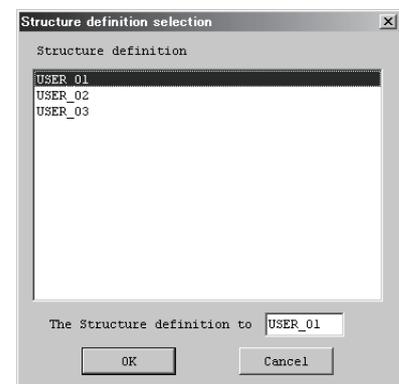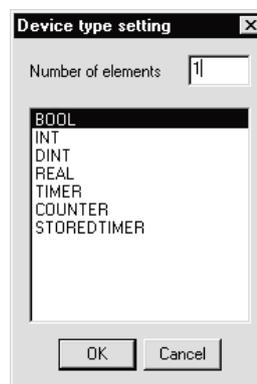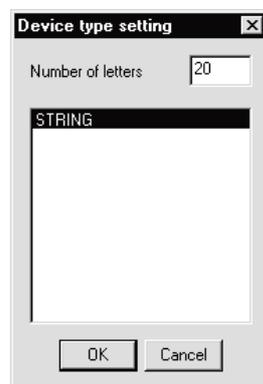
Max. number of characters: The input range is 0 to 50 characters.
Number of elements: The input range is 1 to 256.

4) Comment
Set a comment within 64 characters.
When comment addition/correction is made to any of the multiple labels which are the same (including all local/global variables), the latest comment is reflected on the data registered to the local/global variable setting and on the data on the label program edit screen.

5) Auto External
The data of the labels, set values, device types and comments set in global variable setting are reflected on all the local variables or the specified local variables.

6) Au
   For registration
   Choosing "○" of the variable you want to register on the global variable setting screen and clicking the Register button reflects the label, set value, device type and comment settings on the local variable setting screen.
   For cancellation
   Choosing "●" of the variable you want to cancel on the global variable setting screen displays the following dialog box to delete the settings from the local variable setting screen.
   <Screen example>
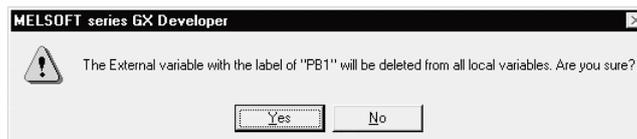
7) Edit operation
   Insert line button
   Used to insert a blank row in the current cell position.
   When you want to batch-insert multiple rows, choose cells equal to the number of rows you want to insert.
   Blank rows are inserted into the cell-selected range.
   Add line button
   Used to add a blank row under the current cell position.
   When you want to batch-add multiple rows, choose cells equal to the number of rows you want to add.
   Blank rows are added to under the top cell of the range-selected cells.
   Delete line button
   Used to delete the cell-selected range.

8) Global variable label setting
   Used to display the global variable setting screen.

9) Automatically assigned device display/hide
   Used to check how actual devices have been assigned to labels which are displayed on the local variable setting screen.
   Perform compile when displaying automatically assigned devices.

10) | Register | button

Click the Register button after you have terminated setting the labels, constant values, device types and others.
If any of the labels, constant values and device types is not set correctly, the following dialog box will appear and they cannot be registered.
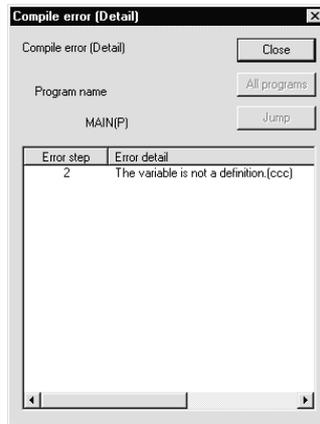
Choosing the Error detail and clicking the | Jump | button shows the error location.

11) | Entry data monitor window display | button

Click the button to display "Entry data monitor" dialog box. For details, refer to Section 17.6.

> **POINT**
>
> On the global/local variable setting screen, the settings can be sorted in the label order, device/constant order, or device type order.
> The sequence of sorting is as indicated below.
> 1. Symbols
> 2. Alphabets (upper-case letter)
> 3. Alphabets (lower-case letter)

5.1.4 Making automatic device setting

A	Q/QnA	QS	FX
×	○	○	×

[Purpose]
Sets the automatically assigned device ranges when you want to assign devices automatically to local labels.

[Operating Procedure]
Select [Edit] → [Auto device setting].

[Dialog Box]

High performance Model QCPU
Process CPU, Redundant CPU
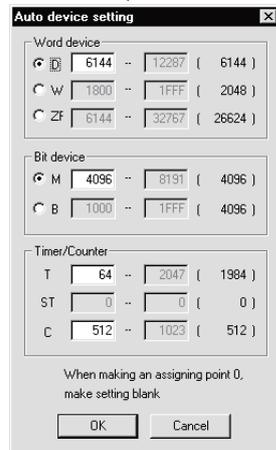
Basic Model QCPU
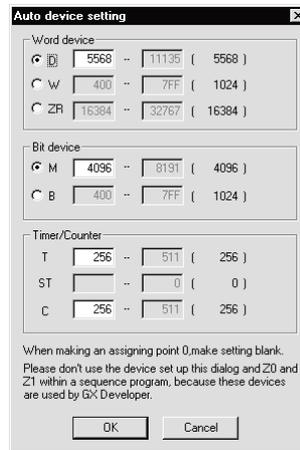
Universal Model QCPU
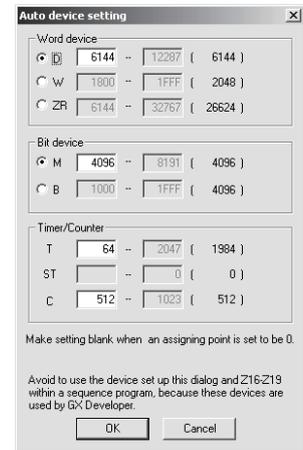
[Description]

1. For bit and word devices, use the radio buttons to choose the devices to be assigned automatically.

2. The maximum value of each device displayed is the value set for <<Device>> which is shown by choosing [PLC parameter] → <<Device>> tab.
When 0 points have been set to <<Device>>, it is masked to disable setting on the automatic device setting screen.
When you want to set ST (retentive timer) or the like, make setting in <<Device>>.

3. The maximum number of ZR (file register) points is 32K and that of P (pointer) points is 4K.

4. The word devices, bit devices or timers/counters are assigned in order of larger device numbers in the device range set in the automatic assignment device setting.

5. The Ps (pointers) used in each program are searched for, and the unused numbers are assigned in order of smaller numbers.
The largest device number that can be assigned is the (number set in the common pointer setting of the parameter dialog box) - 1.
The common pointer can be set from the [PLC parameters] → <<PLC system setting>> tab.

5.1.5 Deleting External

A	Q/QnA	QS	FX
×	○	○	×

[Purpose]

Deletes all Auto External variables on the active local variable setting screen.

[Operating Procedure]

Select [Edit] → [Delete Auto External].

[Dialog Box]

MELSOFT series GX Developer ⊠

⚠ All External variables will be deleted. Are you sure?

[Yes]   [No]
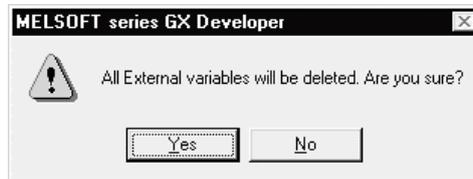
5.1.6 All deletion

A	Q/QnA	QS	FX
×	○	○	×

[Purpose]

Deletes all variables on the active local/global variable setting screen.

[Operating Procedure]

Select [Edit] → [Delete all].

[Dialog Box]

```
MELSOFT series GX Developer          [×]

  /!\   All variables will be deleted. Are you sure?

          [ Yes ]      [ No ]
```

5.1.7 Importing device comments

A	Q/QnA	QS	FX
×	○	○	×

[Purpose]

Imports the comments created on the device comment batch-edit screen to the label comments of the currently edited global variable setting.

[Operating Procedure]

Select [Edit] → [Import the device comment].

[Dialog Box]
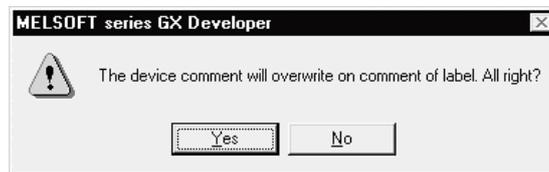
[Purpose]

- Device comments may be imported to the global variable setting only.
  They cannot be imported to the label comments of the local variable setting.
- The label comments are not rewritten if there are no device comments for the devices assigned in the global variable setting.
- When common comments (COMMENT) and program-based comments exist in the device comments, the common comments have higher priority in importing.

Common comments (COMMENT)

Device name	Comment	Alias
X0		
X1	Current status1	
X2	Current status2	
X3	Current status3	

Program-based comments (MAIN)

Device name	Comment	Alias
X0		
X1	Operation1	
X2	Operation2	
X3	Operation3	

Local device setting screen

Global device setting screen

	Au	Label	Device/Constant	Device type	
1		LBL1	X1	BOOL	Current status1
2		LBL2	X2	BOOL	Current status2
3		LBL3	X3	BOOL	Current status3
4		LBL4	X4	BOOL	Current status4
5		LBL5	X5	BOOL	Current status5

	Au	Label	Cons	e type	
1		LBL11			
2		LBL22			
3		LBL33			
4		LBL44			
5		LBL55			

5.1.8 Exporting to device comments

A	Q/QnA	QS	FX
×	○	○	×

[Purpose]

Exports the label comments of the currently edited local/global variable setting to the device comment batch-edit screen.

[Operating Procedure]

Select [Edit] → [Export the device comment].

[Dialog Box]
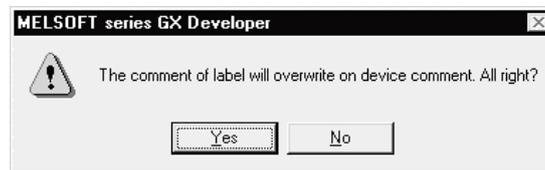
[Purpose]

- If 33 or more characters are set to a label comment, the 33rd and latter characters are deleted when it is exported to the device comment batch-edit screen.
- The device comments are not rewritten if there are no label comments.
- The label comments of the local variable are reflected on the program comments. The label comments of the global variables are reflected on the common comments (COMMENT).

Global variable comments

Local variable comments

Common comments
(COMMENT)

Program comments
(MAIN)

5.1.9 Converting label programs into execute programs (Compile)

A	Q/QnA	QS	FX
×	○	○	×

[Purpose]

Converts programs created as ladders or lists into execute programs.

[Operating Procedure]

Select [Convert] → [Convert/Compile].

Select [Convert] → [Convert/Compile (All programs being edited)].

Select [Convert] → [Convert/Compile (All programs)].

Select [Convert] → [Convert/Compile (Online change)].

[Description]

- Compile can be executed when the global variable setting screen/local variable setting screen/ladder edit screen/list edit screen is active.

	Global Variable Setting Screen	Local Variable Setting Screen	Ladder	List	Other Screen
Compile	×	○	○	○	×
All programs being edited	○	○	○	○	×
All programs	○	○	○	○	×

- How to identify whether a program has been compiled or not.

  The program not yet compiled is indicated by "*".

Indicated here.
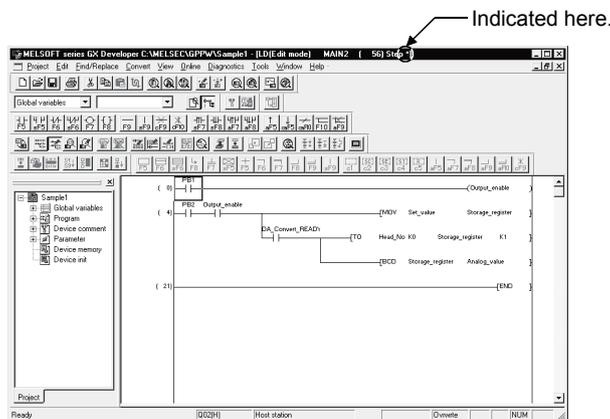
• If an error occurs after compile, the following dialog box appears.
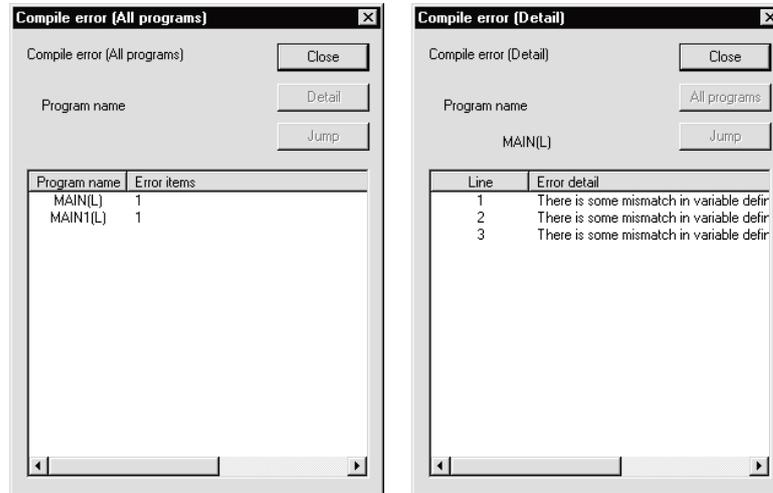
If errors have occurred over multiple programs, "Compile error (All program)" appears.
When there is only one error program, "Compile error (Detail)" appears.

• For the Q series, label programs can be written online when performing "Online change" to the execute programs.
For writing of programs online, refer to Section 16.9.
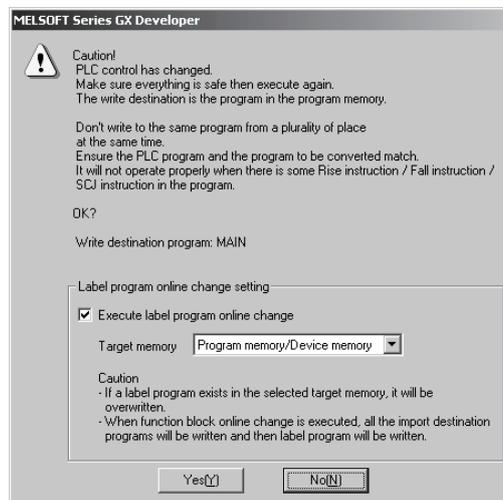
POINT

Compile processing time
Compile is completed in about 5 seconds when 1000 lines of labels are compiled on a personal computer (Digital CELEBRIS GL 5133ST Pentium$^{\circledR}$ 133MHz, memory 80M).
When 5000 lines are compiled, compile is completed in about 2 minutes 13 seconds.

5.1.10 Displaying the Device Program

A	Q/QnA	QS	FX
×	◯	◯	×

[Purpose]

This setting is used when, after compiling, you wish to check the actual device assigned to the label.

[Operating Procedure]

1. After compiling, select [View] → [Display device program].
2. Select [View] → [Device program display mode] → [Below] ([Right]).

[Setting Screen]

When splitting the circuit display to horizontally
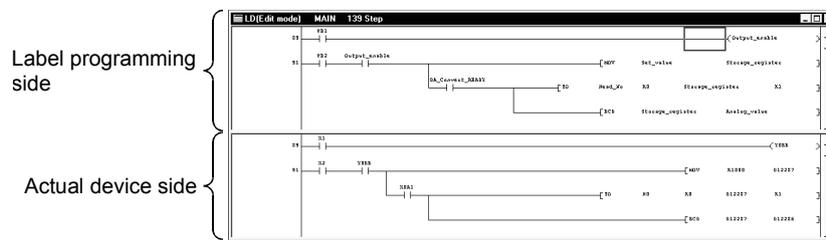
When splitting the list display vertically
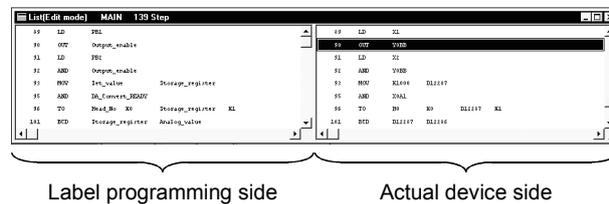
[Explanation of Items]

- When editing a program, do so on the label program side. Data cannot be edited on the actual device side.
- The label program panel and the actual device panel scroll separately.
- To synchronize the steps in the displayed program, select [View] → [Display step synchronization]. The panel without cursor scrolls in tandem with the panel with the cursor.
- When Display statement/note/comment is selected, the setting will be reflected in the label program side and the actual device side.
- The display positions of the label program panel and the actual device panel cannot be changed.
- Label program/actual device split display is available in the circuit/list mode and device registration monitor.

Note

If the number of characters in the label name differs from that in the device name, the loopback point will vary and the two sides of the circuit display may not become identical. Caution is necessary.

5.2 Structure

Structure is a data integrated of various device types (bit device, word device or similar device).
For example, make one definition of initial setting (preset value, coincidence output point setting) of high speed counter module as structure. The structure can be read out and easily used when using the defined label even in the case where multiple modules are present.

5.2.1 Conception of structure and program example

In the following case, buffer memory of QD62 high speed counter module is regarded as a structure.
The structure is created in a ladder.

1.   Select "Ladder", "Use label" on the "New Project" screen.
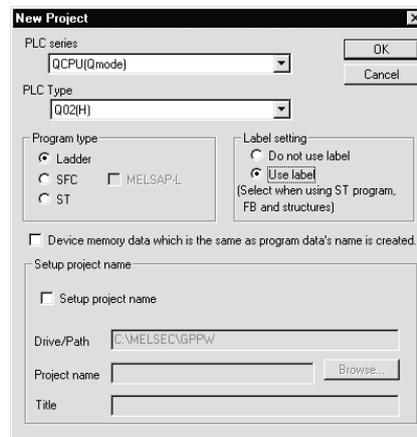
2.   Select [Structure] tab from project data list.
Refer to Section 3.7.

3.   Select [Project] → [Edit data] → [New] and then set "Data type", "Data name" on the following screen. Data name can be set as desired.
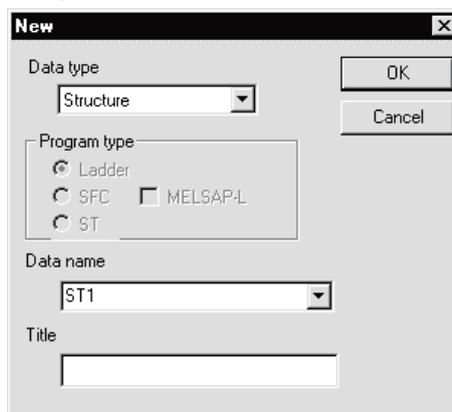
4. Make settings on "Structure variable (structure label) setting" screen based on the QD62 high speed counter module's buffer memory.

Q62 buffer memory		
Setting item	Address	
	CH1	CH2
Preset value setting	0	32
	1	33
Present value	2	34
	3	35
Agreement output point No.1 setting	4	36
	5	37
Agreement output point No.2 setting	6	38
	7	39
Overflow detection	8	40
Counter function selection setting	9	41
Sampling/period hour setting	10	42
Sampling/Counter flag of cycle	11	43
Count rate of latch	12	44
	13	45
Sampling count rate	14	46
	15	47
Value the periodic pulse count last	16	48
	17	49
Value the periodic pulse count this time	18	50
	19	51
Setting of lower limit of ring counter	20	52
	21	53
Setting of upper limit of ring counter	22	54
	23	55
System area	24	56
	25	57
	26	58
	27	59
	28	60
	29	61
	30	62
	31	63

5. Click on [Project] tab to display "Local variable setting" screen and set the local label of program. After the above setting is completed, execute [Convert/Compile].

6.   Create the data to be set on "Structure variable (structure label) setting" screen and "Local label (local variable) setting" screen in a sequence program.
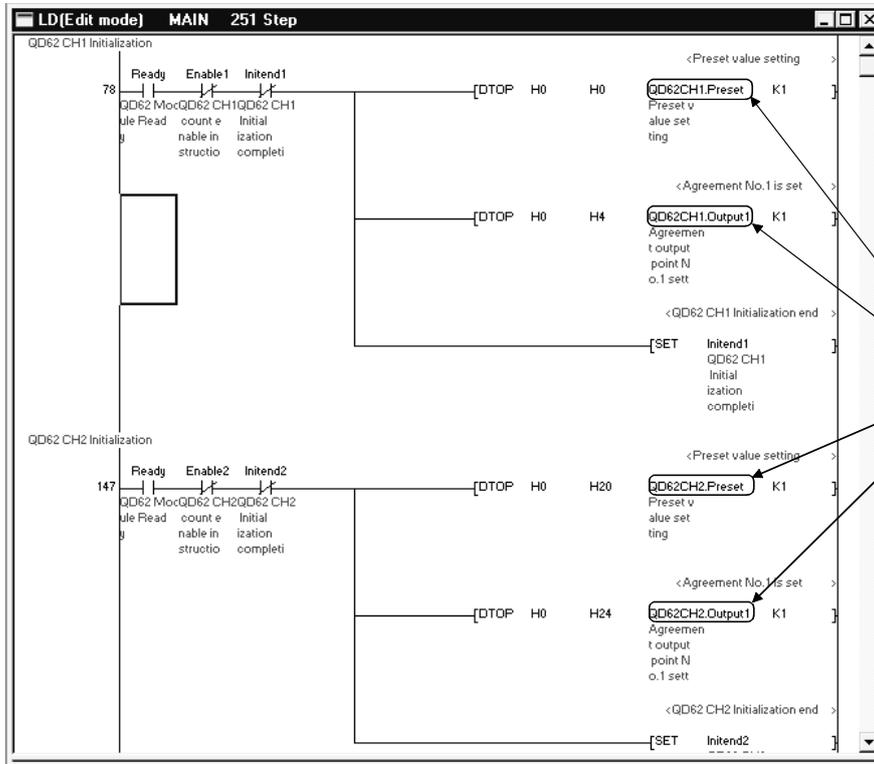
For entering method, refer to Section 5.1.2.

5.2.2 Structure variable setting [ST]

A	Q/QnA	QS	FX
×	○	○	×

[Purpose]

Set labels, device types and comments required for structure.

[Operating Procedure]

Project data list → <<Structure>> → [Project] → [Edit Data] → [New].
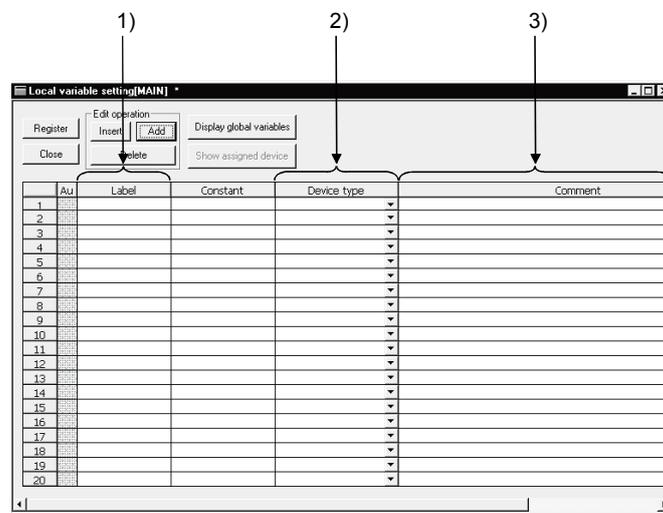
[Dialog Box]

[Description]

1) Label

Create a label with up to 16 characters.

Note that reserved word and actual device name cannot be used for label name.

If reserved word or actual device name is used, a dialog box appears to warn

that "A reserved word is used" or "Device name is used". In this case, set the

different name.

Up to 128 lines of labels can be crated for structure variable.

For details of reserved word, refer to Appendix.14.

2) Device type
Set the device type from bit, word device, double word, real number, character string, array, timer, counter, integrating timer or pointer.
If character string or array is selected, the corresponding setting dialog box will appear as shown below.
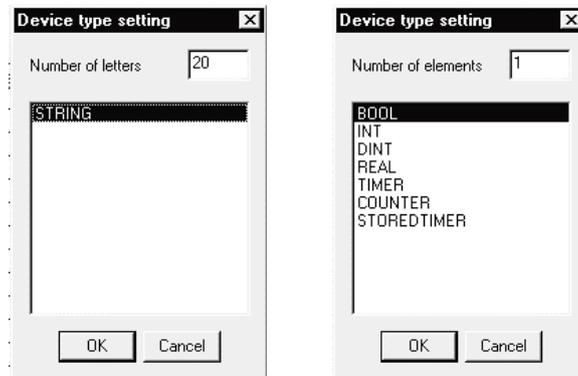
Maximum no. of character strings: 0 to 50 characters can be entered.
No. of elements: 1 to 256 elements can be entered.

3) Comment
Set a comment with up to 64 characters.
The same named labels will have the same comments. If one of those comments are changed, the comments of corresponding data registered in Structure variable setting [ST] or on the label program edit screen will be also updated.

5.3 Macros

A	Q/QnA	QS	FX
○	○	×	○

By naming any ladder pattern (macro name) and registering it in a file (macro registration), you can read the registered ladder pattern, and change and utilize the devices (macro utilization) in actual programming.

Macro registration
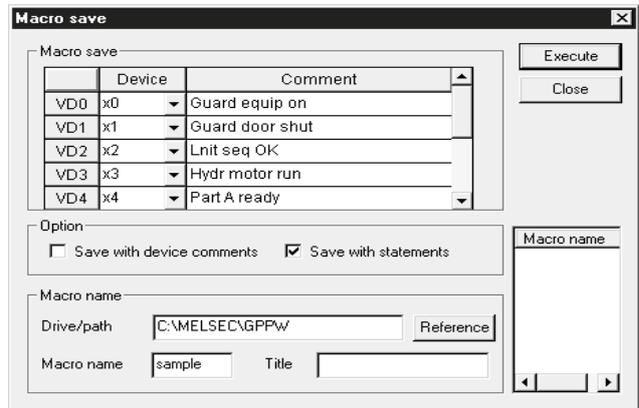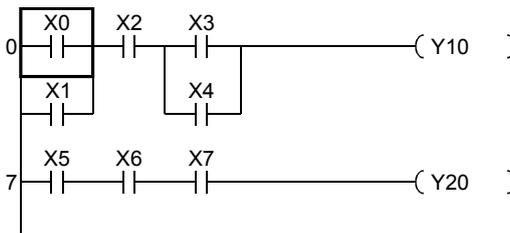
1. Choose the program area to be registered as a macro.
2. Set the devices and so on to be registered.
3. Set the file name of the macro to be registered.

Macro utilization
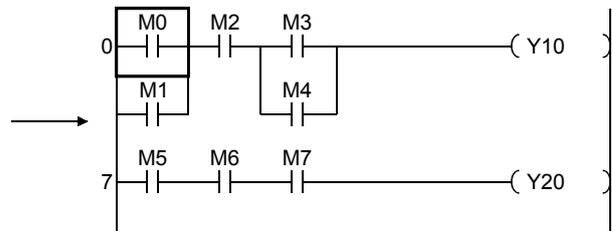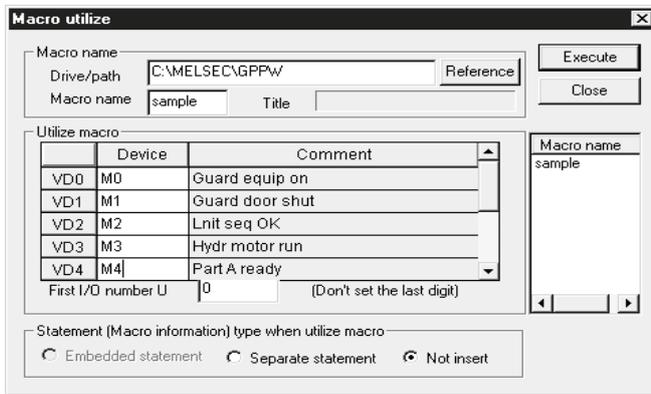
1. Specify the file name registered as a macro.
2. Set the devices to be changed.

Macro reference destination setting   (Except the FX series)

If you have set a macro-registered file in macro reference destination setting, you can utilize the macro by entering a simple macro instruction.


```
* :[ MACRO : M.bbb          ]
* [                         ]
* VD0 = (STOP BUTTON    ) M0
* VD1 = (               ) Y10
        M0
   0 ──┤├──────────────────( Y10 )

* [MACROEND]

   2 ──┌────┐──────────────( END )
```

Read mode (Shift + F2)

[View] → [Macro instruction format display]

```
   ─────────────────────────( M. MAC M0 Y0 )

   ─────────────────────────( END )
```

┌───┐
│ POINT   │
│   │
│ Choosing [View] → [Macro instruction format display] in the read mode   │
│ allows the developed macro instruction to be represented in the M.Macro │
│ VD0 VD1 VD2... instruction format.   │
│ Any macro name may be set. ──────────────────────────────┘   │
│ (The macro instruction format display is compatible with the macros   │
│ created with GX Developer (SW3D5-GPPW-E) or later.)   │
│   │
│ Note the following to provide the macro instruction format display   │
│ properly.   │
│   │
│ 1. Do not make corrections, deletions or the like to macro programs   │
│   which utilize macros.   │
│   │
│ 2. When a macro-utilized ladder is displayed with statements, do not   │
│   utilize macros within MACROEND.   │
│   │
│ 3. Do not change the utilized devices which have been specified as VDs.   │
│   (The device numbers remain as utilized at first.).   │
└───┘

5.3.1 Registering a macro

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]

Registers part of a program to a file as a macro instruction.
The registered macro instruction can be used as an application instruction in a program.

[Operating Procedure]

[Project] → [Macro] → [Registration macros].

[Dialog Box]
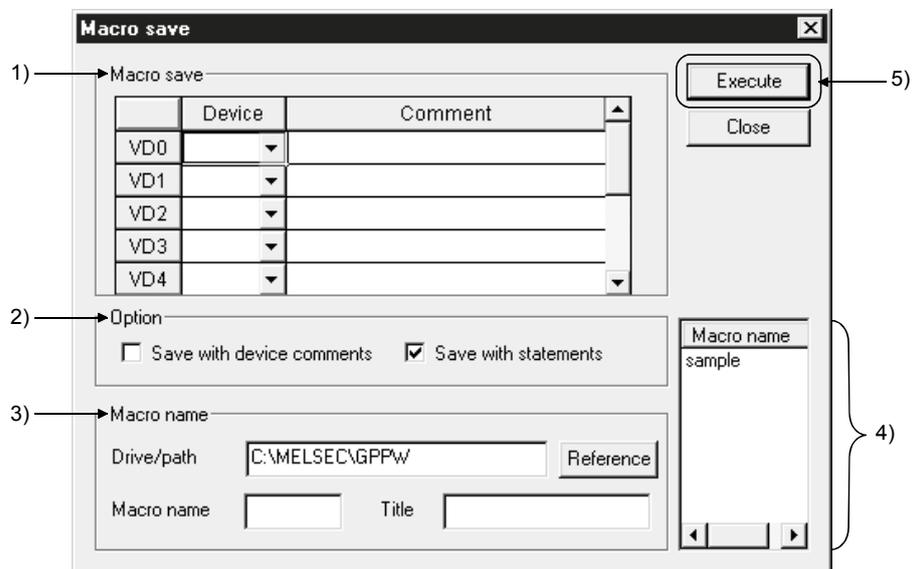
[Description]

1) Macro save

Among the devices in the area-specified ladder block, specify the devices you want to change for macro utilization as variable devices VD0 to VD9.
The following example shows the devices registered.
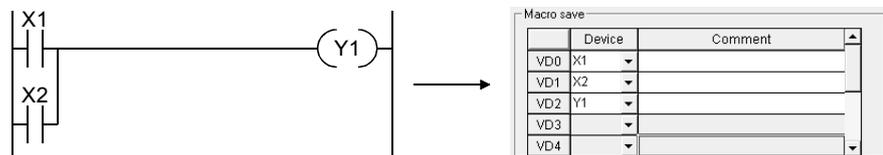
If the devices have been commented, the comments are automatically set. Also, comments may be edited. (Setting can be made independently of the number of comment characters in the option.)

2) Option

Set whether or not comments and statements will be registered together with the ladder for macro registration.

3) Macro name
Set the drive/path and where the macro will be registered and the macro file name.
The number of characters set to the title is within 32.

4) Macro name displays area
The existing macro name appears.

5) ⌐Execute⌐ button
Click this button after the setting is over.

The following devices may be registered to macros.

Device Type		Example	Device Registration
Bit device	—	M0	○
	Digit designation	K4M0	○
Word device	—	D0Z0	○
	Indirect designation	@D0Z0	○
	Bit designation	D0.1	○
Extended designation (J, U, BL)	Bit	J1\B1Z0	○ (J1B1 also possible) (J1) not possible for unit No. only. (B1Z0, B1) not possible for device only.
	Digit designation	J1\K1B1Z0	○ (J1K1B1 also possible) (J1) not possible for unit No. only. (K1B1Z0, K1B1) not possible for device only.
	Word	J1\W0Z0	○ (J1W0 also possible) (J1) not possible for unit No. only. (W0Z0, W0) not possible for device only.
	Indirect designation	@J1Z1\W0Z0	○ (J1, J1Z1) not possible for unit No. only. (W0Z0, W0) not possible for device only.
	Bit designation	J1\W1.1	○ (J1) not possible for unit No. only. (W1.1) not possible for device only.
Designation with digit		K4M0, J1\K1B1Z0	(K4) not possible for designation with digit only.
Index qualification		D0Z0, J1\K1B1Z0	(Z0) not possible for index qualification only.
Constant	Integer/real number	K10, H10, E0.1	○
	Character string	"Abcd"	×
Index		Z0	○
Pointer		P, I	○
Alias			○ Also possible for other than display/Alias display.

POINT

The macro registered as a ladder cannot be utilized in an SFC.
Also, the macro registered as an SFC cannot be utilized in a ladder.

5.3.2 Utilizing a macro

A	Q/QnA	QS	FX
◯	◯	×	◯

Macros that may be utilized are only those of the same series as the PLC series at the utilization destination. (Macros cannot be set if the PLC series is the same but the PLC type is different.)
However, macros can be utilized between the A series and MOTION (SCPU).

[Purpose]
  Reads the macro-registered ladder block from the file, changes the devices registered, and utilizes the macro in any position of a ladder.

[Operating Procedure]
  [Project] → [Macro] → [Macro utilize].

[Dialog Box]
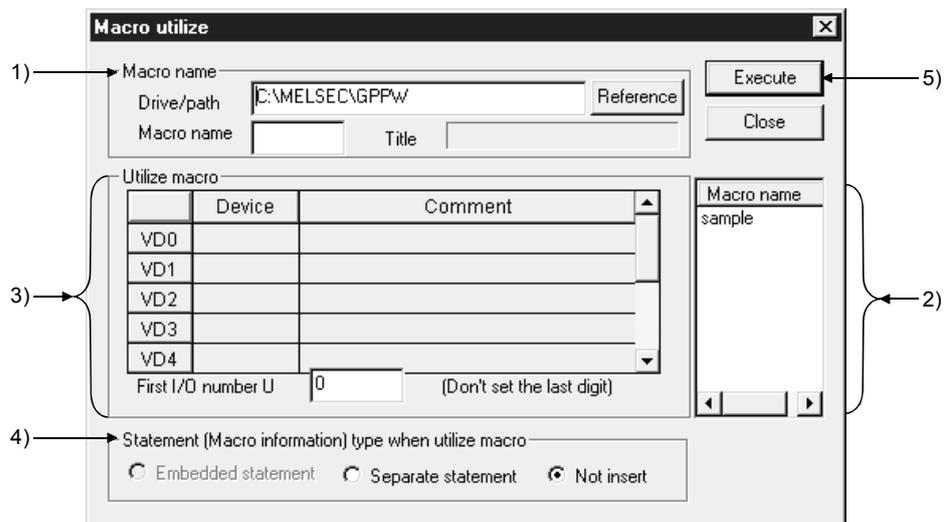
[Description]
  1) Macro name
      Specify the drive/path where the macro is registered.
      The macro name can be specified from the Macro name displays area.

  2) Macro name displays area
      The macro file names registered appears.
      Specify the macro name you want to utilize.

3) Utilize macro setting
The devices specified as VD0 to VD9 for macro registration are changed to the devices specified here. (Only the variable devices specified for macro registration may be set.)

The devices specified as VD0 to VD9 should be those equivalent to the devices specified for macro registration.
You cannot specify a bit device as a word device and vice versa.

Specifying the first I/O number biases the X, Y and U device numbers by the specified number.
<Example>
When the first I/O number specified is U[1F], the X and Y devices are biased by +1F0 and the U devices by +1F.

4) Statement(Macro information)type when utilize macro
Select whether macro development will be made with Embedded/Separate Line statement or without statements.
If you have also registered statements during macro registration, development will be made under the registered conditions independently of this setting.

5) ⌷Execute⌷ button
Click this button after the setting is over.
The macro-utilized ladder is inserted in a place before the ladder block at the cursor position.

POINT

- A macro is utilized unchanged if it includes the instructions/devices that cannot be used in the utilization destination project or the devices that are outside the range.
  In that case, make a program check and correct the program.
- Macros created with GX Developer can be utilized. (QnA series only)
- The device names assigned to VD during macro utilization are added after the statements. (For Embedded statement, the number of statement steps increases.)
- If you have set "Save with device comments" during macro registration, the comment attached to the VD are utilized as comments.
  If the device comments used with the VD already exist in the existing program, they are overwritten by the comment of the VD.
- When utilizing macros after MACROEND, utilize them in the list mode.

5.3.3 Deleting a macro

	A	Q/QnA	QS	FX
	○	○	×	○

[Purpose]
Deletes the user-created macro file.

[Operating Procedure]
[Project] → [Macro] → [Delete macros].

[Dialog Box]
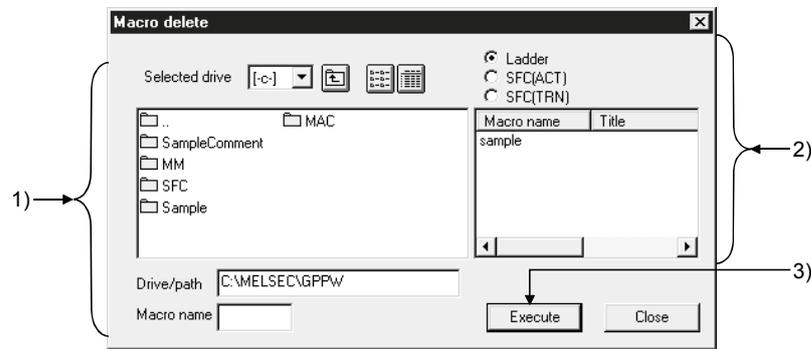
[Description]

1) Directory name displays
   Specify the directory of the macro file to be deleted.

2) Macro file delete selection
   Choose the object of deletion from the sequence program, SFC (ACT) and SFC (TRN), and specify the macro file name to be deleted.

	Deletion Destination Folder	Description
Sequence	MAC	For sequence program
SFC (ACT)	MAC. ACT	For SFC (operation output)
SFC (TRN)	MAC. TRN	For SFC (transition condition)

3) Execute button
   Click this button after the setting is over.

5.3.4 Displaying macro references

A	Q/QnA	QS	FX
○	○	×	×

[Purpose]

Enables GX Developer to use the macro data created by GPPQ.

For A series or FX series, this function cannot be used.

[Operating Procedure]

Select [Project] → [Macro] → [Macro reference path].

[Dialog Box]
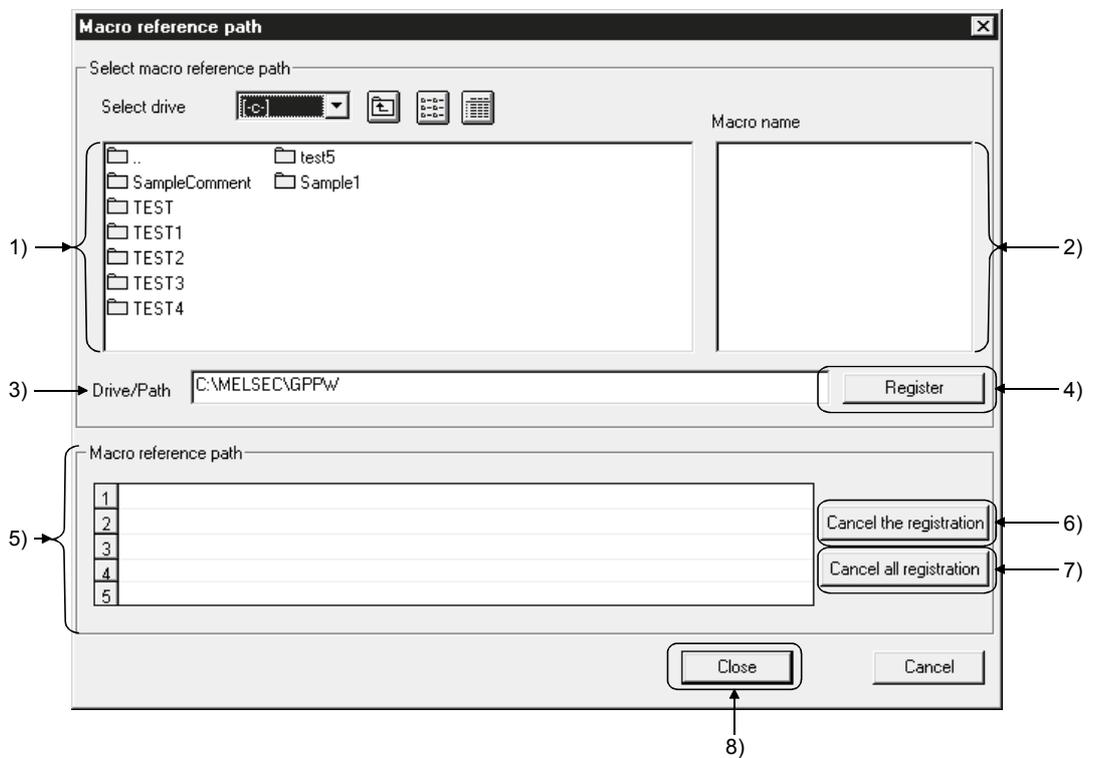
[Description]

1) Folder name list

Displays the macro names of a project designated in the Drive/path.

2) Macro file name list

Displays the macro files that can be referenced when the current drive/path is set for macro reference.

3) Drive/Path

Designates a drive/path for the macro to be referenced. (The machine name folder created by GPPQ must be designated here.)

Even though the folder name list contains the entries MAC, MAC.ACT and MAC.TRN, they cannot be designated because there is no macro file in them.

4)   Register button
Click this button to register macros in Macro reference path.
The macros cannot be used unless they are registered in this field.

5)   Macro reference path
Up to five macro names with different drives/paths can be registered in this field.
A maximum of 242 characters can be used to designate a drive/path. The
number of characters of a drive/path listed in this reference field is 94
characters in large fonts and 103 characters in small fonts. Even when a macro
name consists of more characters, it can be used though it cannot be displayed
in this field.

6)   Cancel the registration button
Cancels the drive/paths displayed in Macro reference one by one.

7)   Cancel all registration button
Cancels all the drives/paths displayed in Macro reference at a time.

8)   Close button
Click this button after making necessary settings.

POINT

- Once a macro reference is registered, its settings are not cleared even when GX Developer is terminated.
- About macro instruction input

Normal macro

```
 |                              [ END ] |
 |                                      |
 |                                      |
```

M. $\underline{****}$ $\underline{VD0 \ VD1 \ \cdots\cdots\cdots\cdots}$
   Macro name   Variable device setting

$\boxed{Enter} \longrightarrow \boxed{F4}$

```
    D0.1
 |---| |---------------------(  M0  )-|
    D1.1  |
 |---| |--|
```

$\boxed{Ctrl} + \boxed{F7}$ (Statement display)

```
[MACRO:MAC        (3)]──────────────→ Number of VDs
[       ]
 VD0(   ) M0  ⎞
 VD1(   ) M1  ⎬──────────────→ The device names assigned to
 VD2(   ) Y70 ⎠                 the VD during macro utilization
    D0.1                        are added after the statements.
 |---| |---------------(  M0  )-|    (For Embedded statement,
    D1.1  |                          the number of statement steps increases.)
 |---| |--|
```

First I/O number designation (Not possible for A series)

U. $\underline{****}$ UX $\underline{VD0 \ VD1}$ $\cdots$
   Max. 8 characters ↳Max. 10 variable devices
                                (MAX:VD9)
                      ↳First input I/O number
                                (MAX:1FF)

6. CREATING CIRCUIT

<div style="border:1px solid">

POINT

- When creating comments, statements, notes, and Alias for creating circuits, refer to the following table.
- Refer to Section 6.4 for finding and replacement.

	To edit	To display on edit window
Comment	Refer to Section 9.4.	Refer to Section 3.8.
Statement	Refer to Subsection 10.3.1 (1).	Refer to Section 3.9.
Note	Refer to Section 10.4.1.	Refer to Section 3.10.
Alias	Refer to Section 9.4.	Refer to Section 3.11.

</div>

(1) Circuit creation method
- Input instruction list representations (mnemonic language) with the keyboard.
- Use tool buttons on the tool bar.
- Use function keys.
- Use the tool bar menu.

Once the above operation is started, the following circuit input dialog box is displayed.

Continuous input section   Device instruction text box
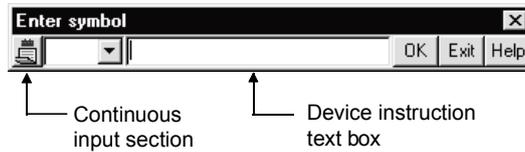
Click ▤ in the continuous input section so that the circuits or contacts can be input continuously without closing the circuit input dialog box.
(This function will not apply to MEDOC style.)

6

(2) Switching circuit and list modes (This operation also covers the SFC operation outputs and transition conditions.)
Used to switch the display modes of the edit window.
(a) When switching from circuit edit window to list edit window:
Select [View] → [Instruction list] or click ▦ ($\boxed{\text{Alt}}$ + $\boxed{\text{F1}}$) to set the list mode.
(b) When switching from list edit window to circuit edit window:
Select [View] → [Ladder], or click ▦ ($\boxed{\text{Alt}}$ + $\boxed{\text{F1}}$) to set the circuit mode.

(3) Switching read and write modes
(a) Read mode (to read a circuit)
Select [Edit] → [Read mode] or click ▦ ($\boxed{\text{Shift}}$ + $\boxed{\text{F2}}$).

If a device to be read, step No., or instruction is designated directly with the keyboard in read mode, a desired part of the circuit can be read.

Find	✕
⊣⊢ ▾	M1	Find	Close	Device
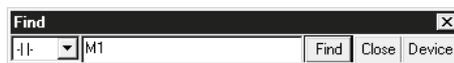
Click here, and the search dialog box will be displayed for device designation

(b) Read mode (to set all windows in the read mode)
Select [Edit] → [Read mode (All windows)] ($\boxed{\text{Ctrl}}$ + $\boxed{\text{Shift}}$ + $\boxed{\text{F2}}$)
Set the all open windows in the read mode.
(c) Write mode (to edit a circuit)
Select [Edit] → [Write mode] or click ▦ ($\boxed{\text{F2}}$).

In write mode, sequence circuits can be edited (i.e., circuit creation or search and replacement can be performed.)
(d) Write mode (to set all windows in the write mode)
Select [Edit] → [Write mode (All windows)] ($\boxed{\text{Ctrl}}$ + $\boxed{\text{F2}}$)
Set the all open windows in the write mode.

6

(4) Switching insert and write modes (Use [Insert] key to switch the mode.)
   (a) Insert mode (Cursor: purple)
      Used to insert contacts and application instructions into the existing circuits
      1. Move the cursor to the following position.
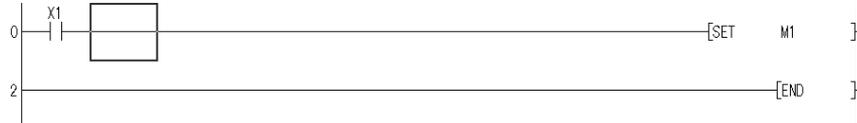
      2. Enter "MOV K1 DO" with the keyboard, and the circuit input dialog box will be displayed. The entered data is written to the device instruction text box.

      3. Press [Enter] key and click [OK] button to make input in the edit window.
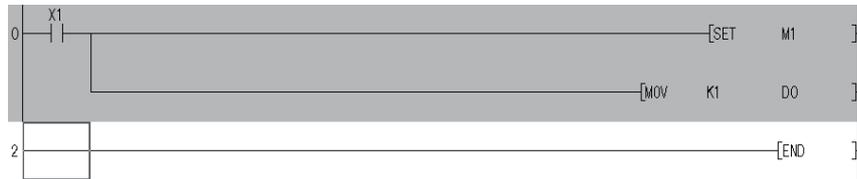
      4. Press [F4] key and click 📷 button for inputting.

   (b) Overwrite mode (Cursor: blue)
      Used to overwrite contacts and application instructions to the existing circuits
      1. Move the cursor to the following position.
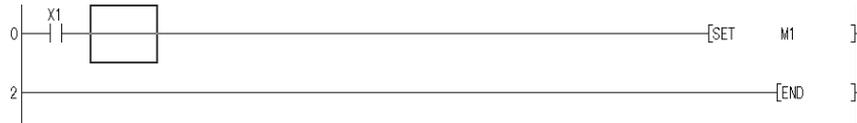
      2. Enter "MOV K1 DO" with the keyboard, and the circuit input dialog box will be displayed. The entered data is written to the device instruction text box.

      3. Press [Enter] key and click [OK] button to make input in the edit window.
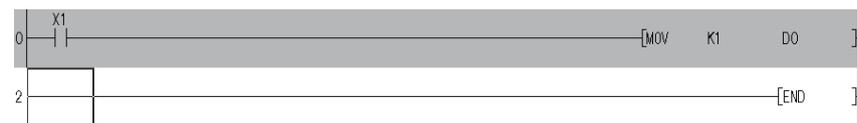
(5)   Instruction help
(1)   If you do not know instructions and others at the time of ladder creation, you can enter instructions without looking at the programming manual. Instruction help of GX Developer has the following features.
1.   You can choose and enter the intended instructions if you do not know them.
2.   You can enter instructions if you do not know instruction names/descriptive expressions.
3.   You can enter instructions if you do not know devices usable with the corresponding instructions.

(2)   The following is the operating procedure for Instruction help.
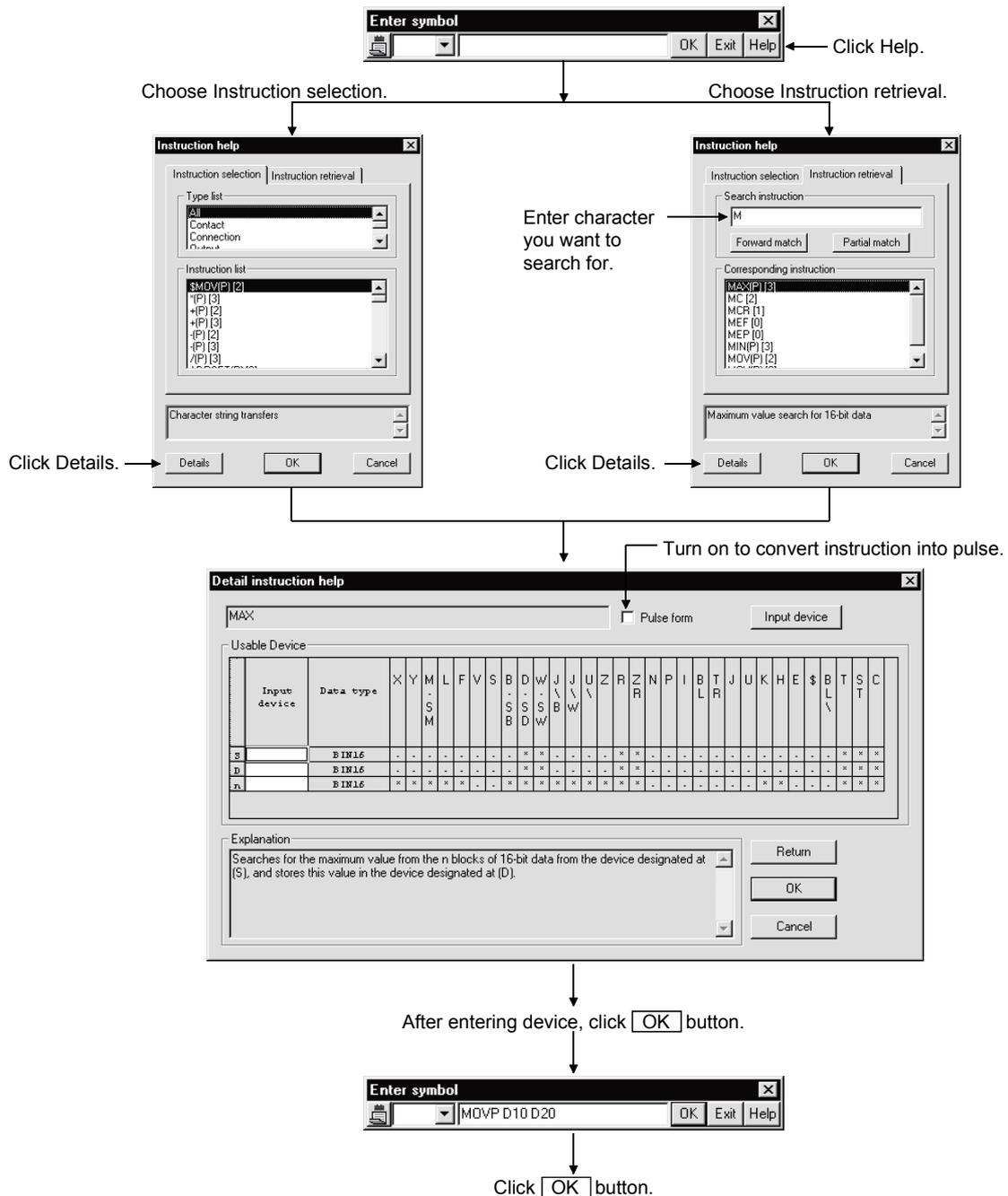
(3) Restrictions on use of Instruction help
The A series dedicated instructions will be explained using the entry of the PRN instruction as an example.
1. Entering method
When entering a dedicated instruction, repeat the procedure in "(2) The following is the operating procedure for Instruction help." instruction by instruction.

LEDA/LEDB	PRN
SUB	H80
SUB	K6
LEDC	D20
LEDC	M0
	LEDR

Enter symbol — LEDA PRN OK Exit Help
Enter symbol — SUB H80 OK Exit Help
Enter symbol — SUB K6 OK Exit Help
Enter symbol — LEDC D20 OK Exit Help
Enter symbol — LEDC M0 OK Exit Help
Enter symbol — LEDR OK Exit Help
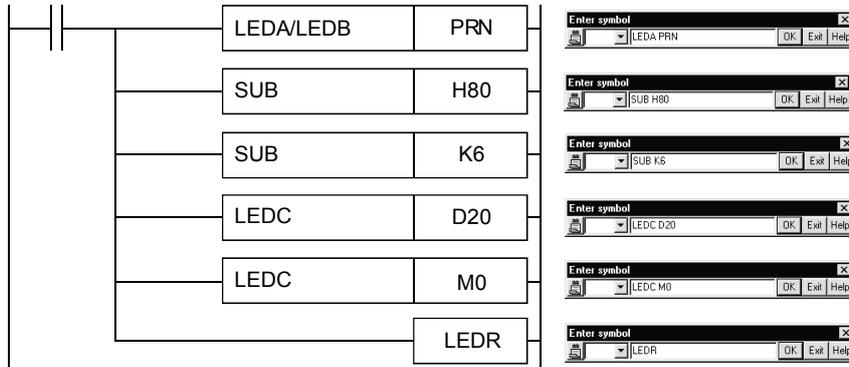
2. About the Detail instruction help screen
The Explanation field shows the explanation of LEDC instruction + device entry.

Detail instruction help

LEDA PRN   □ Pulse form   Input device

Usable Device

Input device	Data type	X	Y	M	L	S	B	D	W	R	A	Z	V	N	P	I	K	H	T	C
n	BIN16	·	·	·	·	·	·	·	·	·	·	·	·	·	·	×	×	·	·
n	BIN16	·	·	·	·	·	·	×	×	×	·	·	·	·	·	×	×	×	×
s	BIN16	·	·	·	·	·	·	×	×	×	·	·	·	·	·	·	·	×	×
D	Bit	·	×	×	×	×	×	·	·	·	·	·	·	·	·	·	·	·	·

Explanation
Please input the device used with LEDC/SUB instruction.Sends n2 byte or word data stored in the devices beginning with the device designated by S to the external device connected to the AJ71C24(S3,S6,S8)/AJ71UC24 designated by n1.

Return

OK

Cancel

POINT

Tool buttons:
- Tool buttons vary from model to model in the CPU series.
- The key assignment can be changed by customizing the keys.
  Refer to Section 15.10 for details.

Function keys:
- How to read function key symbols shown on the tool buttons is shown below.

⊣ ⊢	⊀	⊣↑⊢	↓
sF5	cF9	aF7	caF5

| Shift + F5 | Ctrl + F9 | Alt + F7 | Ctrl + Alt + F5 |

Inputting for low speed timers, high speed timers, integrating timers, and edge relays

- For Q /QnA series, input as follows.

Low speed timer

Enter symbol ✕
⊟ [▼] OUT T0 K100   OK Exit Help

Enter symbol ✕
⊟ -{ }- [▼] T0 K100   OK Exit Help

High speed timer

Enter symbol ✕
⊟ [▼] OUTH T0 K100   OK Exit Help

Enter symbol ✕
⊟ -{ }- [▼] H T0 K100   OK Exit Help

High-speed integrating timer

Enter symbol ✕
⊟ [▼] OUTH ST0 K100   OK Exit Help

Enter symbol ✕
⊟ -{ }- [▼] H ST0 K100   OK Exit Help

Edge relay

Enter symbol ✕
⊟ [▼] EGP V0   OK Exit Help

Enter symbol ✕
⊟ -P- [▼] V0   OK Exit Help

Read/write modes
- In the read mode, the sequence circuit cannot be edited.
- In the write mode, searching by direct inputting cannot be performed.
- The circuit input dialog box can also be displayed by double-clicking the cursor.
- The contact or application instruction can be changed by pressing function keys (F5 ⊣ ⊢ F6 ⊣/⊢ F7 ⊣( )⊢ F8 ⊣[ ]⊢).
  (If the key assignment is customized to MEDOC style, it is not possible to change the contact or application instruction by these function keys.)
- In the write mode, with the Ctrl key + arrow keys, the cursor position can be moved with the input dialog box opened.

Ladder/list modes:
- For switching from circuit edit window to list edit window
  Position the cursor at any contact on the circuit edit window and switch the screen. The circuit block where the cursor is positioned will be displayed at the top of the list edit window.
- For switching from list edit window to circuit edit window
  Position the cursor at any list on the list edit window and switch the screen. The circuit block where the cursor is positioned will be displayed at the top of the circuit edit window.

6.1 Restrictions on Circuit Creation

This section describes the restrictions of the circuit display window and circuit edit window.

6.1.1 Restrictions on circuit display window

A	Q/QnA	QS	FX
○	○	○	○

1. The maximum number of lines on one screen is 12. (at 800 x 600 pixels, 50% reduced screen)

2. A created circuit block must be less than 24 lines.
   Excess lines cause an error.

3. A circuit line can consist of 11 contacts plus 1 coil.

4. The following table lists the number of comment characters.

	No. of Input Characters	No. of Characters Displayed in Circuit Window
Device comment ＊1	32 characters	All characters (8 characters x 4 lines) are displayed.
Statement	64 characters	All specified characters are displayed.
Note	32 characters	
Alias	8 characters	

＊1: The number of device comment edit characters can be set to 16 characters or 32 characters. (refer to Section 15.12 for details.)

Note that only 16 characters can be used for writing data to PLC/GPPA files.
Note that only 16 characters can be used for writing data to FXGP(DOS) files.

POINT

A ladder block displayed yellow indicates that there is an error in that ladder lock.
By choosing [Tools] - [Program check], identify the error details and correct the program.

6.1.2 Restrictions on circuit edit window

A	Q/QnA	QS	FX
○	○	○	○

1. The maximum number of edit lines per circuit block is 24.

2. The maximum number of edit lines (24 lines/circuit block) is 48.

3. Data up to 48 lines can be cut.
    The maximum block size is 124K steps.

4. Data up to 48 lines can be copied.
    The maximum block unit is 124K steps.

5. Data cannot be cut, copied and pasted in read mode.

6. Master control (MC) can not be edited and displayed.
    The MC symbol appears in the read or monitor mode.
    (It does not appear in the write mode.)

7. When a series circuit with 12 contacts or more is created on one line, excess contacts are automatically wrapped and continued to the next line.
    Symbols K0 to K99 are used for wrapping and the same number is used for OUT(→) and IN(>-).

8. No circuits can be inserted between the lines OUT(→) and IN(>-).

9. The wrapping symbol numbers can be changed in the range of K0 to K99.
    When changing the numbers, take care of the following points.
    • The order of wrapping source numbers has to be identical with that of wrapping destination numbers.
      If not identical, the ladder cannot be converted. Furthermore, if a ladder is edited with the orders mismatched, the wrapping may not be correctly performed.
    • The wrapping symbol numbers are reassigned in ascending order, starting from K0, by conversion.

When the wraping symbol is input at the second line or after, it is also input at the first line. When the wraping symbol is input at the first line, it is also input at the second line or after.
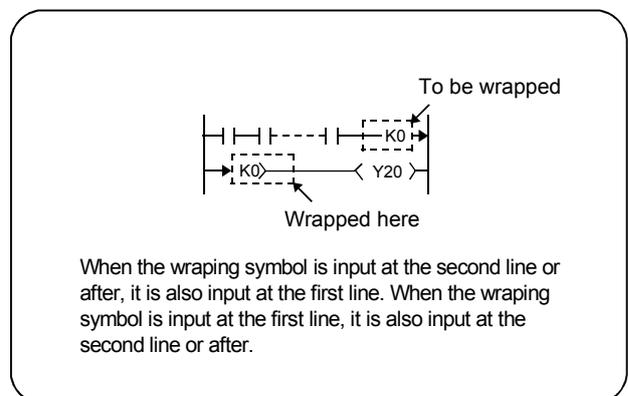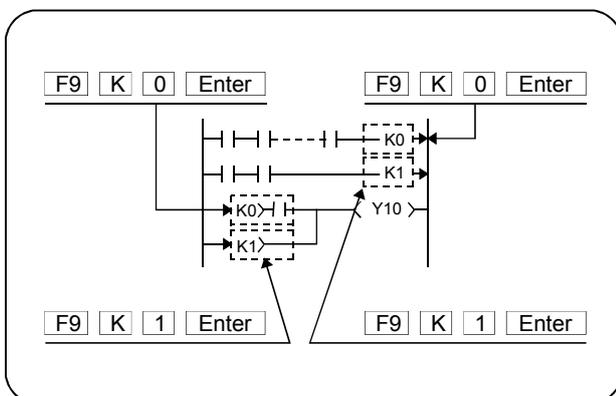
10. When the middle stage of a wrapping ladder is edited (e.g. column insertion/ deletion), the ladder may not be replicated correctly and converted.

<Example> When a column is inserted to the middle stage of a wrapping ladder and only the one line is replicated.

A line is inserted to the middle stage.

Replicated   Not replicated
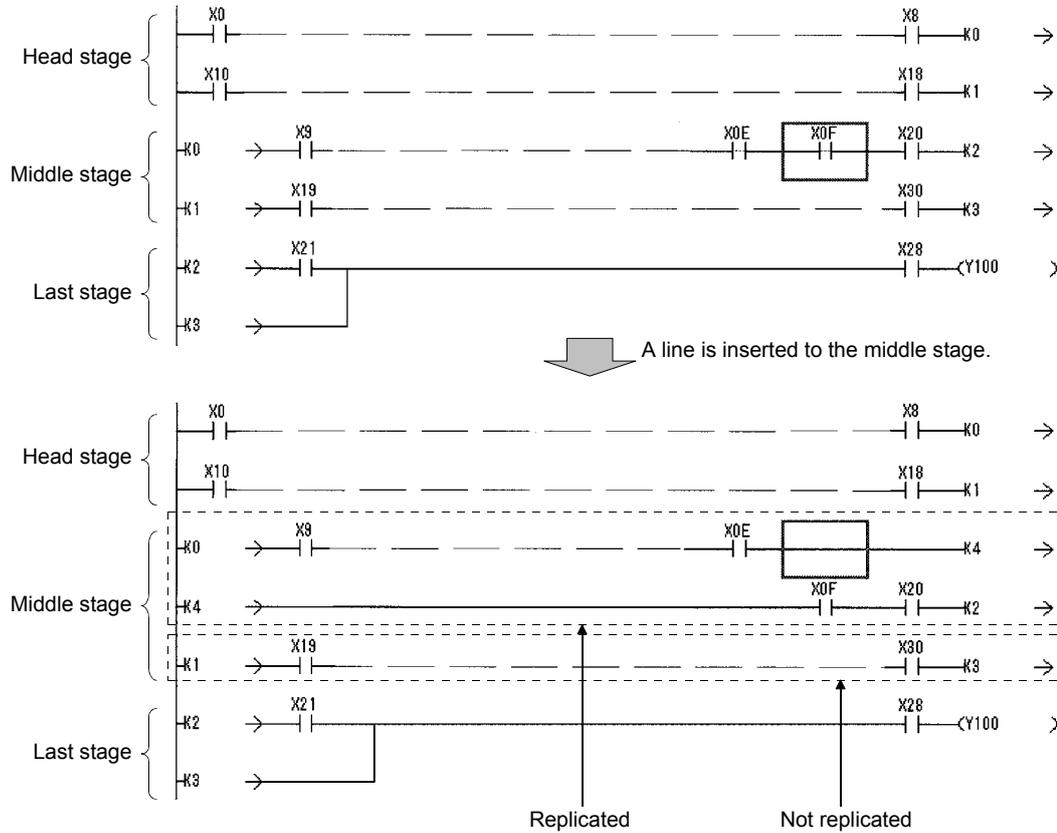
- Corrective action

  If the middle ladder was not correctly replicated, edit it so that the wrapping symbol number of OUT (→) may match with that of IN(>-). The following procedure is taken to the example above.

  (1) Move the line 1) below by one line.
  (2) Insert the new wrapping line 2).
  (3) Correct the wrapping number 3) from K3 to K5.
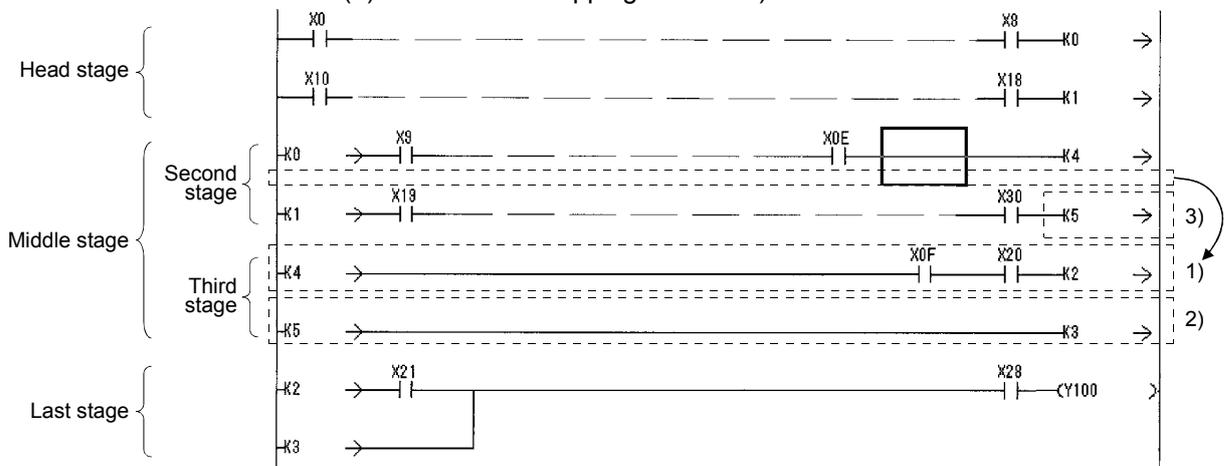
11. When an overwrite contact or coil extends over multiple contacts, the circuit cannot be edited in write (overwrite) mode.

    <Example>

    An instruction containing " ─[= D0 D1]─ " (multiple contacts) cannot be overwitten at this position.
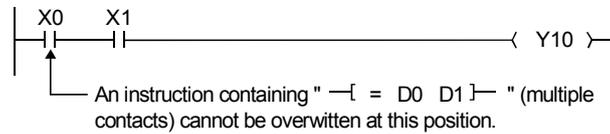
    When the above change is made, "-[= D0 D1]-"must be input in write mode (insert mode), then "LD X0" must be deleted with the ⟨Delete⟩ key.

12. When wrapping occurs for contact insertion to the first line of the circuit, the contact cannot be inserted.

    <Example>

    Neither contact nor column can be inserted in the first line of the circuit. (Insertion is possible only when the second line and the after is free and no wrapping does not occur for insertion.)
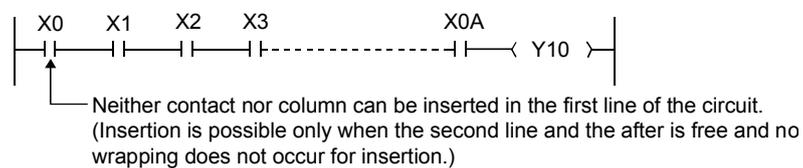
13. Line insertion processing is not possible if the insertion position is within an instruction.

    <Example>

    If the cursor is at 1), line insertion position is line 2) witch is the middle of the instruction. Accordingly, line insertion cannot be execute.
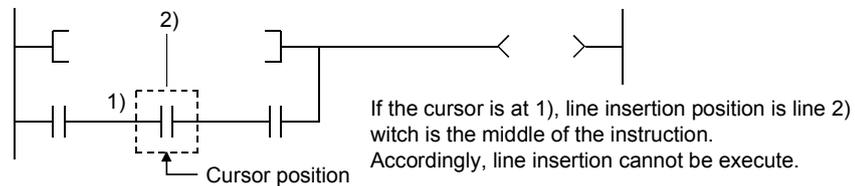
    Cursor position

14. Since circuit symbol insertion is processed by the combination of rite flush and line insertion processing, insertion may be impossible depending on the circuit configuration.

    <Example>

    If a circuit symbol is going to be inserted with the cursor at position 1), "The edit position is incorrect" occurs disabling circuit symbol insertion under the following conditions.
    ● No spece between 1) and 2)
    ● Insertion at line 3)
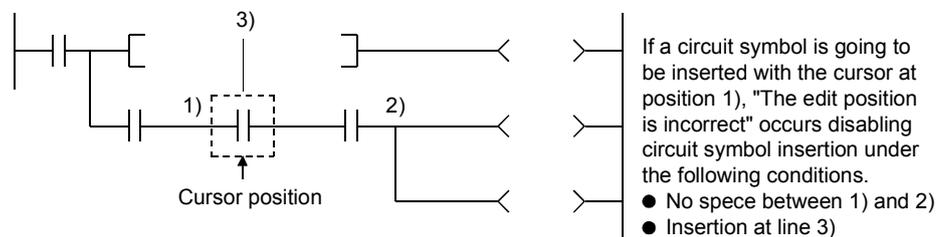
    Cursor position

    Note: Position 2) is the closest position to the cursor position among the branch symbols and the coil-equivalent instructions.

15. When inserting vertical lines in write (overwrite) mode according to specified number of lines/connecting lines, input the column in the second line and after with Ctrl + Insert keys, then insert the contact or column to the left of X0.

16. When a circuit block consists of 2 lines or more and an instruction cannot be input in one line, the instruction must be wrapped as shown below for instruction input.

<Example>   Input of ECALL "abcdefg" hP0 ZR12345Z1 ZR12345Z1 ZR12345Z1 ZR12345Z1 ZR12345Z1
Input can be made from the position 2).
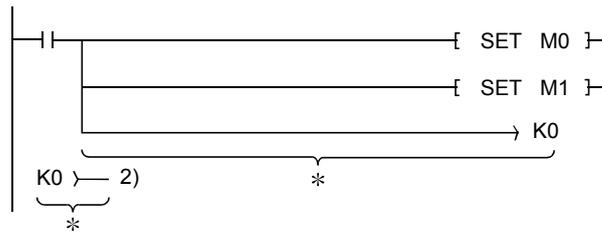
<When no circuit can be created>
The instruction shown in the above example cannot be created in 1).
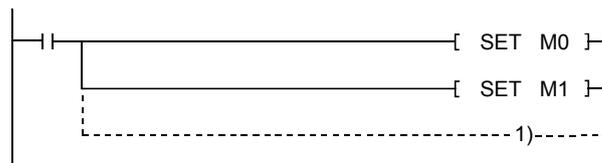
17. When a ladder block includes two or more wrapping lines, the instructions that increase wrapping cannot be entered.

<Example> When ECALL "abcdefg" P1000 ZR1000000 ZR1000001 ZR1000002 ZR1000003 ZR1000004 are entered.

Entry disabled
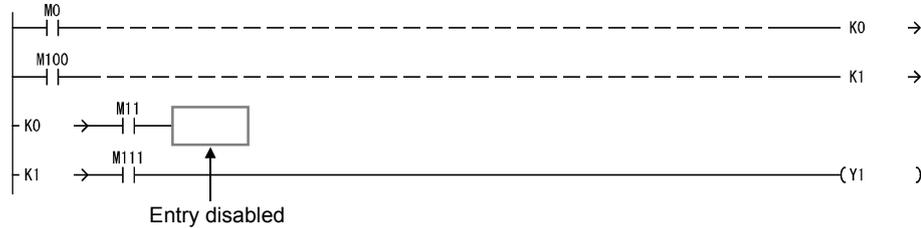
- Input action
  Enter the instruction to be added under the ladder block for adjusting the wrapping numbers.
  The following procedure is taken to the example above.
  (1) Enter the instruction 1) that is to be added under the ladder block.
  (2) Enter the wrapping number at 2).
  (3) Enter the wrapping number at the head line 3) of the added instruction.
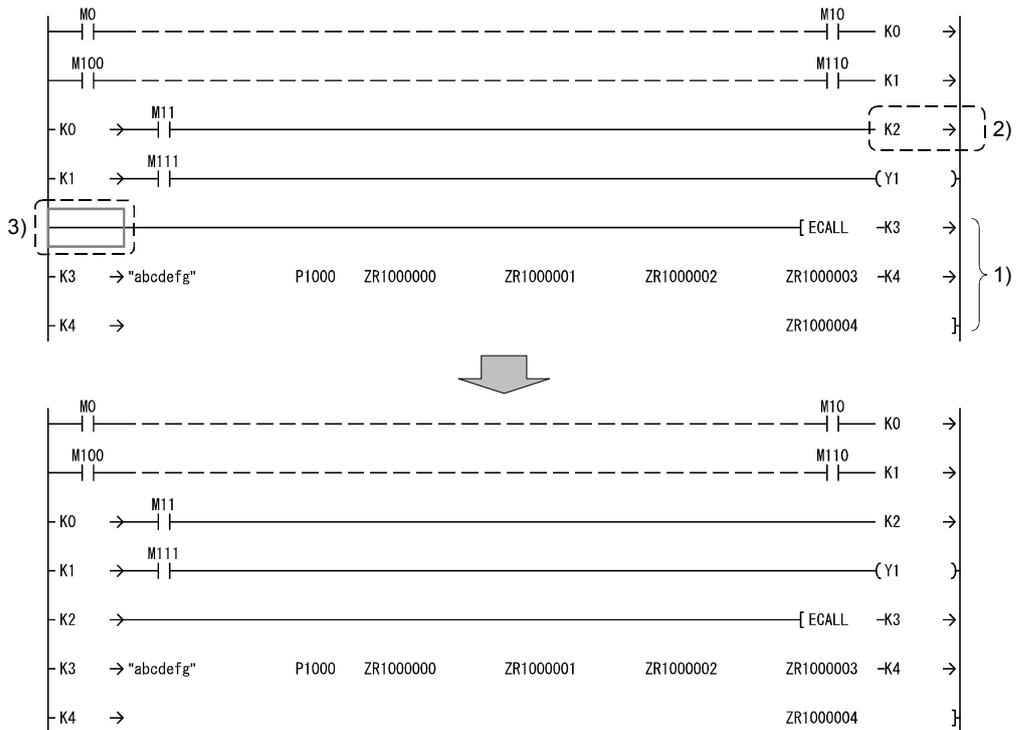
18. The instruction and device that can be input in the first line are shown below (for QnA series selection).

<Example>
U0\G12.1 → Use lines for one contact.
U0\G123.1 → Use lines for two contacts.

19. Create the steps of a single ladder block within approx. 4K steps.
NOP instructions in the ladder block are also included in the number of steps.
This does not apply to the NOP instruction existing between ladder blocks.

20. The representations of FX series step ladder instructions and cautions on programming
   • Conventional representations in FXGP(DOS) and FXGP(WIN)

Start of step ladder

S0 STL		Y000
		Y001
		SET M0
		MOV K3 D0
M5		M4
M6		Y003
M7		RST M3
		M8
X000		SET S20
		RET	End of step ladder
X001		Y002
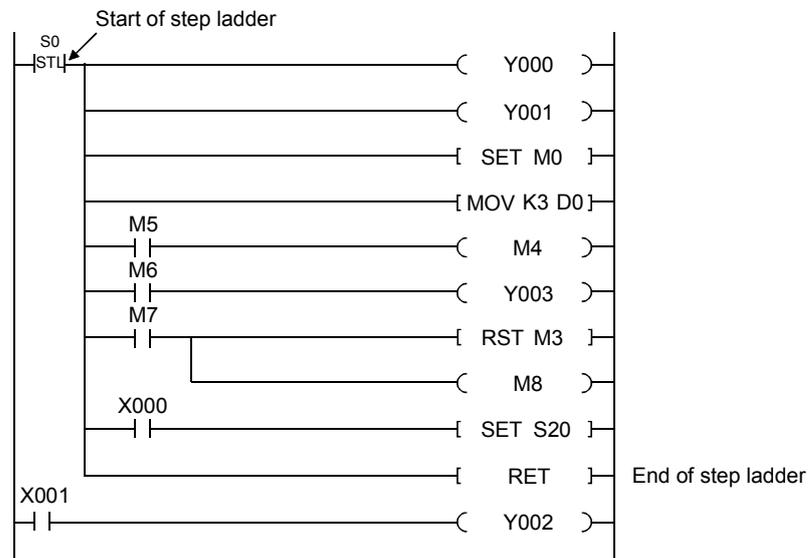
   • Representations in GX Developer and cautions on programming

	STL S0	Start of step ladder *1
	Y000	The first coil instruction given immediately after the STL instruction is connected from the base line. The coil instructions thereafter are connected from the inside of one symbol.
	Y001	
*2	SET M0	
	MOV K3 D0	
M5	M4	
M6	Y003	The coils including contact symbols are connected from the base line inside the state.
M7	RST M3	
	M8	
X000	SET S20	
	RET	Start of step ladder *1
X001	Y002	

Bus in STL

Though the FX series programming material gives descriptions using the above conventional representations, they must be given in a GPPW-specific style when the step ladder instructions are input by GX Developer.

*1: When the programming is made to create the zoom circuit for SFC program, STL/RET instruction need not to be input.
*2: Do not enter the contact to the coil instruction subsequently from the first coil instruction given immediately after STL instruction. (The circuit into which contact is input cannot be displayed in FXGP (DOS) and FXGP (WIN).
When entering contacts, enter from the base line.

6.2 Creating and Editing Circuits

A	Q/QnA	QS	FX
○	○	○	○

POINT

Replacing
- Replace (F4 / 🔲)
  Replaces the program under editing.
- Replace (All programs under editing) (Ctrl + Alt + F4 / 🔲)
  Replaces all programs at a time under editing.
- Replace (Write during RUN) (Shift + F4)
  Refer to Section 16.9.

Replacing SFC figures.
- Refer to the GX Developer Version6 Operating Manual (SFC)

6.2.1 Inputting contacts and application instructions

[Contact input procedure]

1. Move the cursor to an input position.

2. Enter the contact.
   - For input with list representation
     Enter "LD X1" with the keyboard.

   - For input with tool buttons
     Click 🔲 F5 , and enter "LD X1" with the keyboard.

   - For input with function keys
     Press F5 key with the keyboard to enter "X1".

   - For input with menu
     Select [Edit] → [Ladder symbol] → [Open contact], and enter "X1" with the keyboard.

3. Press Enter key and click OK button to make input in the edit window.

4. Press F4 key and click 🔲 button for inputting.

POINT

The following shows the contacts that can be input with the tool buttons.

Type	Contact tool button
GPPA contact	
GPPQ contact	 The contacts saF5, saF6, saF7, and saF8 can be used only when Universal model QCPU is selected for the PLC type.
When FX series is selected	 sF7, sF8, aF7, and aF8 can be used only when FX2N(C), FX3G or FX3U(C) is selected at "PLC Type".

[Application instruction input procedure]

1. Move the cursor to input position.
   The application instruction and device can be input to the following cursor position.

2. Enter the application instruction.
   - For input with list representation
     Enter "MOV K1 DO" with the keyboard.

   - For input with tool buttons /
     Click , and enter "MOV K1 DO" with the keyboard.

   - For input with function keys
     Press the F8 key with the keyboard to enter "MOV K1 DO".

   - For input with menu
     Select [Edit] → [Ladder symbol] → [Application instruction], and enter "MOV K1 DO" with the keyboard.

3. Press Enter key and click OK button to make input in the edit window.
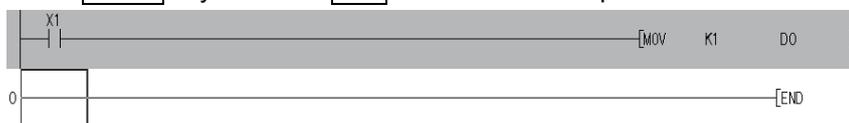
4. Press F4 key and click button for inputting.

6.2.2 Inputting lines (vertical and horizontal)

> **POINT**
>
> Start drawing a connecting line from the upper left position of the connecting line.

[Drawing lines]
1. Move the cursor to a connecting line input position.

2. Draw a line.
    *   For input with tool buttons

        Click 🔲 and 🔲, and drag the cursor to draw a line.

    Drag the cursor.

    *   For input with function keys
        Press ⌜Alt⌝ key + ⌜F10⌝ key (⌜F10⌝), and draw a connecting line using ⌜Shift⌝ key + arrow keys.

3. Press ⌜F4⌝ key and click 🔲 button for inputting.

[Drawing vertical line]
1. Move the cursor to a vertical line input position.

2. Draw a vertical line.
    *   For input with tool buttons

        Click 🔲 and 🔲, and enter the number of vertical lines to be input in the vertical line input window.
        When the number of input lines is not designated, one vertical line is input.
    *   For input with function keys
        Press ⌜F10⌝ (⌜Shift⌝ + ⌜F9⌝) key to enter the number of vertical lines to be input in the vertical line input window.
        When the number of input lines is not designated, one vertical line is input.

3. Press ⌜Enter⌝ key and click ⌜OK⌝ button to make input in the edit window.

4. Press ⌜F4⌝ key and click 🔲 button for inputting.

[Drawing horizontal line]
1. Move the cursor to a horizontal line input position.

2. Draw a horizontal line.
    - For input with tool buttons
      Click [F9], and enter the number of horizontal lines to be input in the horizontal line input window.
      When the number of input lines is not designated, one horizontal line is input.
    - For input with function keys
      Press [F9] key to enter the number of horizontal lines to be input in the horizontal line input window.
      When the number of input lines is not designated, one contact horizontal line is input.

3. Press [Enter] key and click [OK] button to make input in the edit window.

4. Press [F4] key and click [ ] button for inputting.

POINT
Connecting lines cannot be input when the END line immediately follows the cursor-positioned line.
In this case, press [Shift] + [Insert] keys simultaneously to make free space in advance.

6.2.3 Deleting contacts and application instructions

[Deleting procedure]
1. Move the cursor to a contact or an application instruction to be deleted.

2. Press [Delete] key.
   For deletion in insert mode, forward justification takes place for circuits.
   However, forward justification does not take place on the wrapped line.

[Deleting all programs created]
1. Move the cursor to the outside of the left base line at the top of the program.

```
         X0    X0F
   0    ─┤/├──┤ ├──────────────────────────────[PLS   M0    ]
         M0
   4    ─┤ ├──────────────────────────────[MOV   K5    D0    ]
         │
Drag     │                                 ─[SET   M1    ]
         M1
   8    ─┤ ├──────────────────────────────[SET   Y0    ]
         X7
  10    ─┤ ├─────────────────[FROM  H4   H0E0   D10   K1    ]
         │
         │                                 ─[RST   Y46   ]

  17    ────────────────────────────────────────[END   ]
```
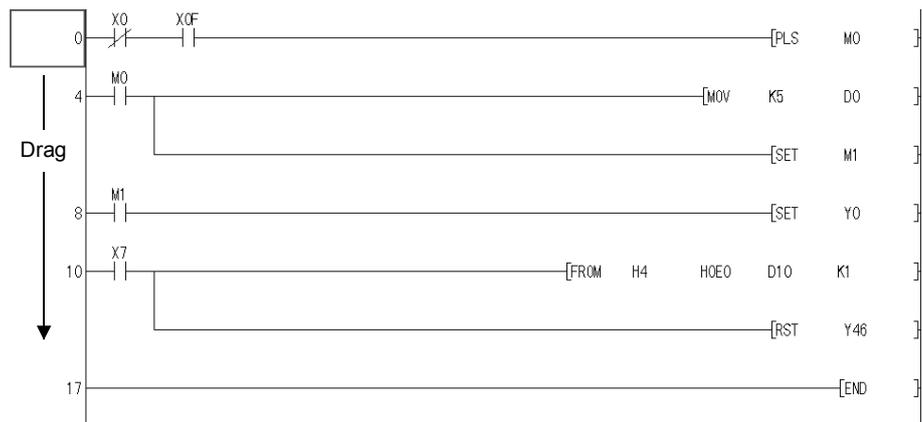
2. Drag the cursor just before the END instruction.

```
         X0    X0F
   0    ─┤/├──┤ ├──────────────────────────────[PLS   M0    ]
         M0
   4    ─┤ ├──────────────────────────────[MOV   K5    D0    ]
         │
         │                                 ─[SET   M1    ]
         M1
   8    ─┤ ├──────────────────────────────[SET   Y0    ]
         X7
  10    ─┤ ├─────────────────[FROM  H4   H0E0   D10   K1    ]
         │
         │                                 ─[RST   Y46   ]

  17    ────────────────────────────────────────[END   ]
```

3. Press [Delete] key.

6.2.4 Deleting connecting lines

[Deleting procedure]
1. Move the cursor to a connecting line to be deleted.
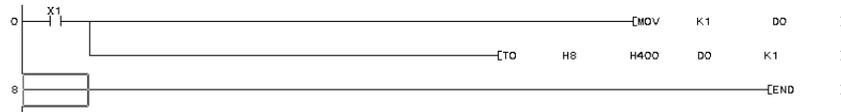
2. Delete the connecting line.
   - For deletion with tool buttons

     Click [⬚], and drag the cursor through a line to be deleted.
   - For deletion with function keys

     Press ⎣Alt⎤ key + ⎣F9⎤ key → ⎣Shift⎤ key + arrow keys to move the cursor through a line to be deleted.

6.2.5 Inserting/Deleting a line between circuit blocks

(1)   For line insertion (in one-circuit block)

[Operating procedure]

1.   Move the cursor to a line to be inserted.

2.   Insert the line.
- For insertion with function keys
  Press $\boxed{\text{Shift}}$ key + $\boxed{\text{Insert}}$ key to insert a line.
- For insertion with menu
  Select [Edit] → [Insert Column] to insert a line.

(2)   For line deletion (in one-circuit block)

[Operating procedure]

1.   Move the cursor to a line to be deleted.

2.   Delete the line.
- For deletion with function keys
  Press $\boxed{\text{Shift}}$ key + $\boxed{\text{Delete}}$ key to delete a line.
- For deletion with menu
  Select [Edit] → [Delete Column] to delete a line.

(3) For column insertion (in one-circuit block)
[Operating procedure]
  1. Move the cursor to a column to be inserted.

  2. Insert the column.
- For insertion with function keys
  Press ⎡Ctrl⎤ key + ⎡Insert⎤ key to insert a column.
- For insertion with menu
  Select [Edit] → [Insert] to insert a column.

(4) For column deletion (in one-circuit block)
[Operating procedure]
  1. Move the cursor to a column to be deleted.

  2. Delete the column.
- For deletion with function keys
  Press ⎡Ctrl⎤ key + ⎡Delete⎤ key to delete a column.
- For deletion with menu
  Select [Edit] → [Delete] to delete a column.

POINT

A column can be inserted to/deleted from only the head or last stage of a wrapping ladder.

<Line Insertion Example>
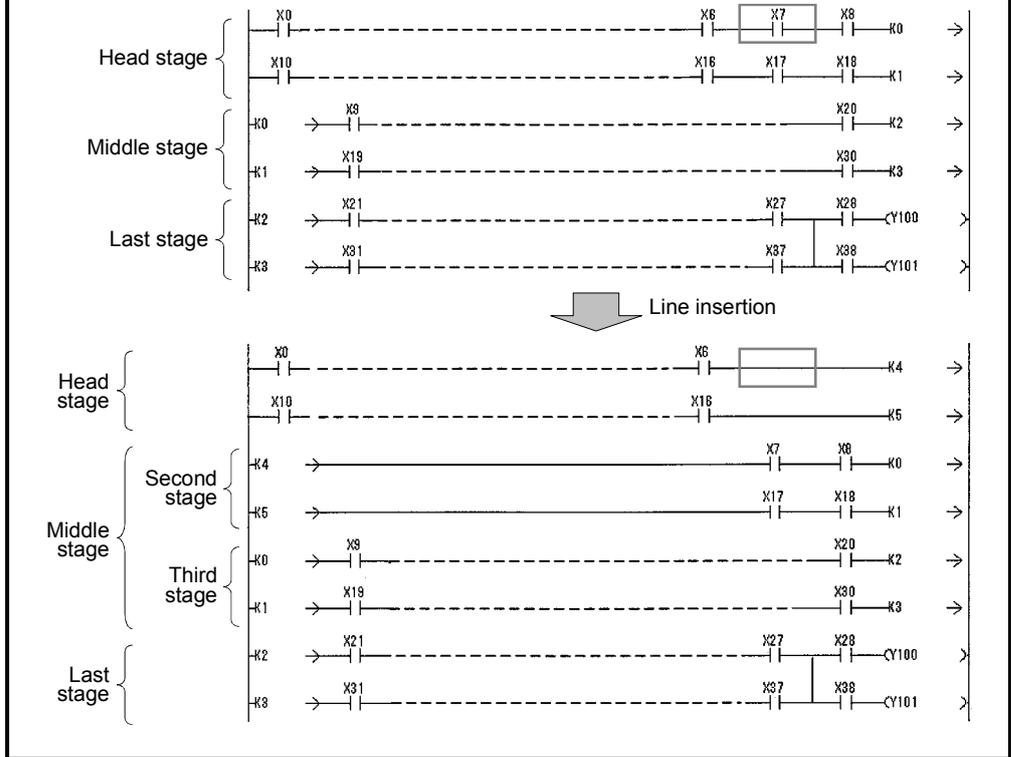
6.2.6 Inserting NOP to a batch of steps

[Purpose]
Inserts all NOPs (no operation instructions) to reserve space in a program for debugging.

[Operating Procedure]
Move the cursor to an insert line (at any location), then select [Edit] → [Insert NOP batch].

[Dialog Box]
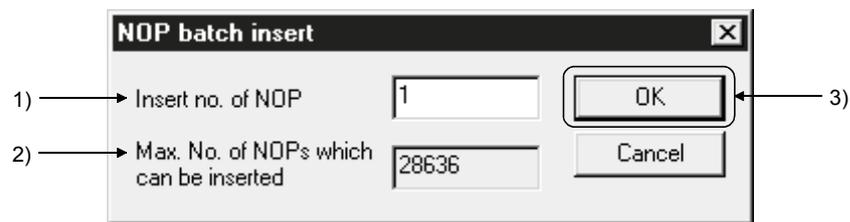
[Description]
1) Insert no. of NOP
   Designates the number of NOPs to be inserted.

2) Max. No. of NOPs which can be inserted
   Displays the maximum number of NOPs that can be inserted.

3) OK button
   Click this button after making necessary settings.

6.2.7 Deleting NOP from a batch of steps

[Purpose]
Deletes NOPs (no operation instructions).

[Operating Procedure]
Select [Edit] → [Delete NOP batch].

[Description]
If the OK button is clicked on the confirmation dialog box, all NOP instructions from step 0 to the END instruction are deleted.

6.2.8 Cutting, copying and pasting circuits

(1) Pasting the circuits cut or copied by a specified range
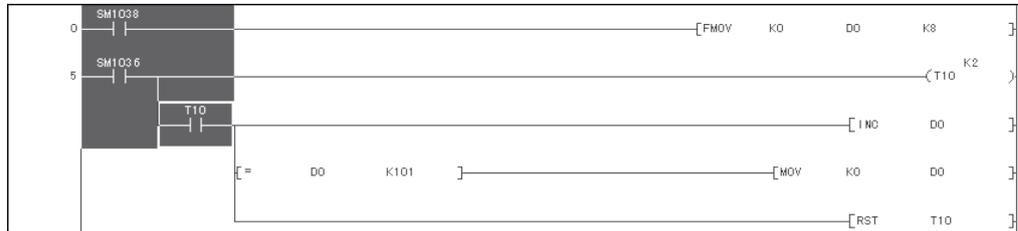
[Operating procedure]
1. Set to the Write mode.
    Select [Edit] → [Write mode] or click 🖉 (F2).

2. Specify the range of the cut/copied ladder.
    (1) When specifying the range
        Drag the mouse to specify the cut/copy range.
        The specified range is highlighted.
    (2) When not specifying the range (When cutting/copying only one contact)
        The contact, coil or the like at the cursor is the target of cutting/copying.
        At ladder mode editing, the line statement/P, I statement and END
        instruction cannot be cut/copied.

3. Cut or copy the specified range of circuit.
    * For cutting
        Select [Edit] → [Cut] or click ✂ (Ctrl + X).
    * For copying
        Select [Edit] → [Copy] or click 📄 (Ctrl + C).

4. Click the location in which the cut or copied circuit is to be pasted to set the
    cursor there.

5. Paste the circuit.
    Select [Edit] → [Paste] or click 📋 (Ctrl + V).
    On completion of circuit paste, the pasted part is grayed.

6. Press F4 key and click 🔽 button for inputting.

(2)　Pasting the circuits cut or copied in circuit block
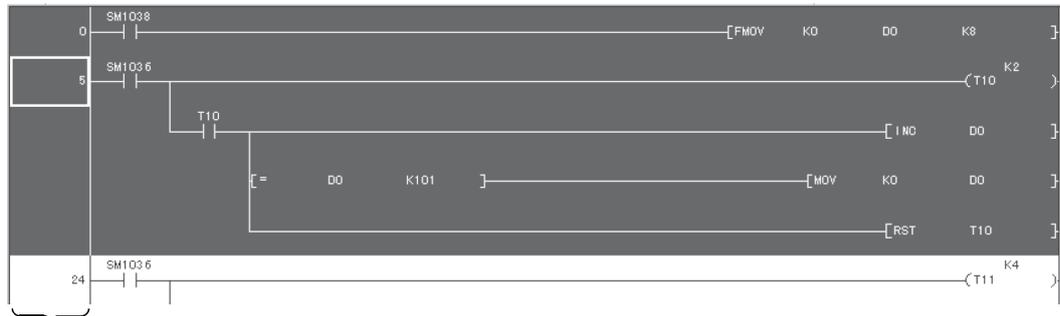
Move the cursor here and drag
the mouse vertically to specify
the range.

[Operating procedure]
1. Set to the Write mode.
   Select [Edit] → [Write mode] or click 🖉 (F2).

2. Specify the range of the cut/copied ladder block.
   (1) When moving the cursor to specify the range
       Click the position where the step number of the ladder block to be
       cut/copied is indicated, and drag the mouse vertically to specify the
       cut/copy range.
   (2) When making a search to set the range
       Highlight one or more ladder blocks to select the range, and specify the
       device, character string or the like you want to search.

3. Cut or copy the specified range of circuit block.
   • For cutting
     Select [Edit] → [Cut] or click ✂ (Ctrl + X).
   • For copying
     Select [Edit] → [Copy] or click 🗐 (Ctrl + C).

4. Click any location within a circuit block at the lower stage of the location to be
   pasted to set the cursor there.

5. Paste the circuit.
   Select [Edit] → [Paste] or click 📋 (Ctrl + V).
   The designated circuit is pasted at the designated location.

6. Press F4 key and click 🔽 button for inputting.

```
┌─────────────────────────────────────────────────────────────────────┐
│  ┌─────────┐                                                          │
│  │ POINT   │                                                          │
│  └─────────┘                                                          │
│  •   The cut, copy or paste menu can also be selected from the popup  │
│      menu displayed by clicking the right mouse button.               │
│  •   When a range designation is given as follows, the vertical bar   │
│      at the rightmost end is not selected.                            │
│                                                      Selected range    │
│                                                                       │
│                                                                       │
│  •   Circuit paste takes place in overwrite or insert mode.           │
│  •   Performing cut/copy on a ladder block basis inserts and pastes   │
│      the data to the existing ladder.                                 │
│      When overwriting the data, delete the row to be overwritten in   │
│      advance, and then paste the data.                                │
│  •   You cannot paste the data cut or copied from a label program to  │
│      an execute program.                                              │
│      You can paste the data cut or copied from an execute program to  │
│      a label program.                                                 │
│      Hold down Shift and press ↑ / ↓ to correct the specified range   │
│      after selection of the cut/copy range.                           │
└─────────────────────────────────────────────────────────────────────┘
```
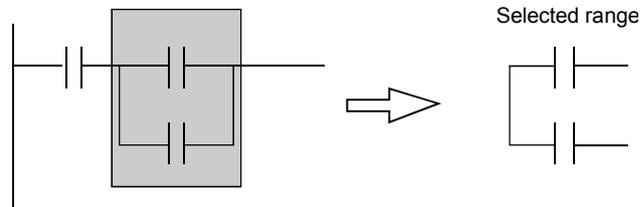
6.2.9 Undoing the last operation

[Purpose]
Cancels the last operation (cut, copy, or paste) and restores the previous state.

[Operating Procedure]
1. Select [Edit] → [Undo] or click ⟲ immediately after cutting, copying or pasting the circuit.

(1) The following states can be restored.
- Line insertion, line deletion
- Column insertion, column deletion
- Connecting line input, connecting line deletion
- Instruction input
- Cut and paste within a specified range
- Circuit deletion by Delete or Back space keys

(2) The following states cannot be restored.
- After circuit conversion
- Abandoning the circuit not converted yet
- Program change due to PLC reading, other format file reading, copying from another project
- Replacement, inserting or deleting NOPs at a time, or TC setting value change
- Search after cut or paste in units of circuit blocks
- Errors due to cut, etc.

6.2.10 Restoring after ladder conversion

[Purpose]
Perform this operation at the time of ladder editing when you want to return to the status right after ladder conversion and perform reediting.
This operation is enabled only in the ladder or SFC (ZOOM) mode. (Disabled in the list mode)

[Operating Procedure]
Select [Edit] → [Restore after ladder conversion].

6.2.11 Entering a pointer (P) and interrupt pointer (I)

[Entry procedure]

1. Move the cursor to the base line to the left of the line where a pointer (P) or interrupt pointer (I) is to be entered.
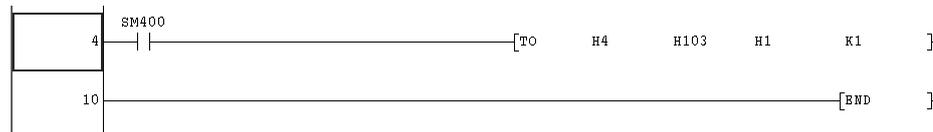
2. Enter a pointer (P) or interrupt pointer (I).

   • When entering a pointer P10
     Enter "P10" on the keyboard.

   • When entering an interrupt pointer I20
     Enter "I20" on the keyboard.

3. The pointer is entered in the editing screen by pressing the ⌸Enter⌸ key or clicking the ⌸OK⌸ button.

   • When entering a pointer P10

   • When entering an interrupt pointer I20

4. Convert the ladder by pressing the ⌸F4⌸ key or clicking the 🔻 button.

6.3 Changing T/C Setting Values

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Lists the setting values of timers and counters used in the program so that they can be changed at a time.

For SFC, the set values of the timers and counters within the block being displayed are changed.

[Operating Procedure]

Select [Edit] → [Change TC setting].

[Dialog Box]
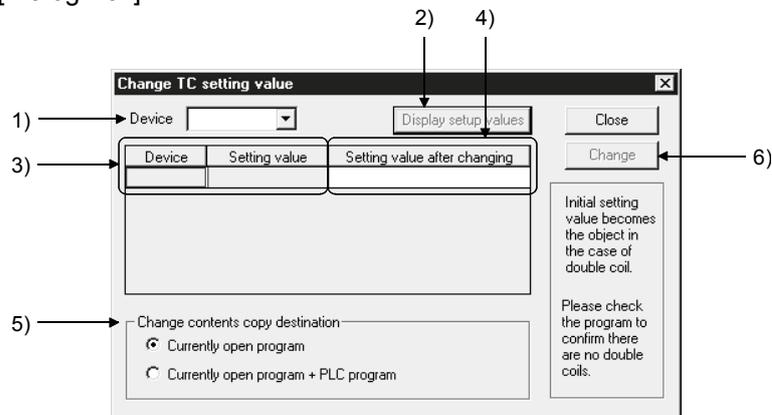
[Description]

1) Device

Designates the timer(s) or counter(s) for which the current setting values must be changed.

2) |Display setup values| button

Click this button to display the current setting values of the timers or counters designated by device input.

3) Device, Setting value

Displays the current setting values of the designated timer(s) or counter(s).

4) Setting value after changing

Designates the setting value of the timer or counter for which the current setting value is to be changed.

5) Change contents copy destination

⊙ Currently open program

Changes the setting values of the timers and counters in the open program at present.

⊙ Currently open program PLC program

Changes the setting values of the timers and counters in the open program at present and writes them to the programmable controller.

However, these setting values can be changed only between the constants.

6) ⬚Change⬚ button
Click this button for setting value change.

POINT

- Setting values can be changed from constant (K) to indirect designation (D) and vice versa.

- For a high-speed counter of the FX series, setting value change between constant(K) and indirect designation(D) is not allowed in the online state. (same as write Online change)

- Devices with index modification cannot be designated.

- When the changed setting value is to be written to the programmable controller, the setting value cannot be changed using ZR.
K10 → K1234	Can be set
K10 → ZR100	Cannot be set
ZR100 → D100	Cannot be set

- The following dialog box appears if the T/C coils of the same number exist in the T/C set value changing program. (This does not apply to the extended T/C.)

  MELSOFT series GX Developer

  ⚠ The same T/C coil exists in program (MAIN) and/or program (MAIN-SFC).
  The values are set to be the same as in the first found T/C coil from the top of program.

  [OK]
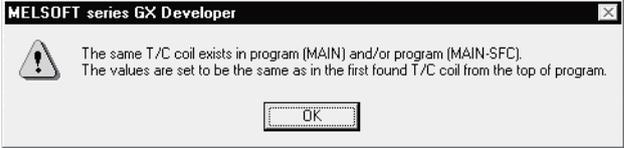
  Note: If a program (MAIN-SFC) has not been created, it is displayed as a message.

- When the date of the personal computer is February 29, TC value change to the Basic model QCPU may not be executable.
  Refer to Section 16.3.1 for the action to be taken when this change cannot be executed.

- For the Universal model QCPU, after changing TC setting value by selecting "Currently open program + PLC program", whether to transfer the contents of program cash memory to program memory can be selected by "Transfer to program memory after writing data is end." on the Options screen.
  For the option settings, refer to Section 15.12.

- The Universal model QCPU cannot execute the following functions during the transfer of program memory in which the TC setting value has been changed.
  - Online change (ladder, ST language, Function Block)
  - TC setting value change (Currently open program + PLC program)
  - Write to PLC (When the target memory is a program memory)
  - Program memory batch transfer
  - Transfer setup
  - Change PLC type
  - Check parameter
  - Clear all parameters
  - Marge data

6.4 Find and Replace

> POINT
>
> Refer to the GX Developer Version8 Operating Manual (SFC) for step No. and block No. finding and step No. replacement of SFC figures.

(1) Common operations for finding
  (a) Find direction
    - From top to bottom
      Searching takes place from step 0 to the END instruction.
    - From cursor to bottom
      Searching takes place from cursor position to the END instruction.
    - From cursor to top
      Searching takes place from cursor position to step 0.
  (b) Find Next button
    Click this button to search for the next device.

(2) Common operations for replacement
  (a) Find direction
    - From top to bottom
      Searching takes place from step 0 to the END instruction.
    - From cursor to bottom
      Searching takes place from cursor position to the END instruction.
    - Range designation
      When a range to be replaced is designated, the step No. is set automatically.
      Click the radio button, and a step range to be found can be designated.
      A range to be replaced ranges from the head of a circuit block including a designated step No. to the end of the circuit block including the designated step No.
  (b) Find Next button
    Click this button to search for the next target device without replacing a cursor-positioned device.
  (c) Replace button
    Click this button to search for the next target device after replacing a cursor-positioned device.
  (d) Replace all button
    Click this button to replace all the target devices in the designated search range.
  (e) About replacement during label program editing
    Making replacement to an already compiled program puts the program in an uncompiled status.
    Select [Convert] → [Compile] to recompile the program.

(3) Find/replace of the other programs
Click Find Next button in each find and replace to find and replace the other programs.

[Operating procedure]
1. Find and replace the current open programs.

2. Click Find Next button to find and replace the other programs.
A prompt to ask for find and replace of the other programs is displayed one time only.
In searching for and replacing the other programs, searching takes place in the following order.
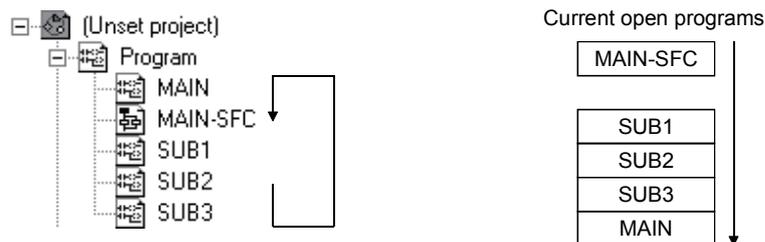
(4) About replacement in label programming

	Local Variable Setting	Global Variable Setting
Device replacement	Search/replacement is made on only the active local variable setting screen. Auto External variables are only searched for. (Auto External variable replacement is made on the global variable setting screen.)	Search/replacement is made on only the global variable setting screen.
Character string replacement	Search/replacement is made on only the active local variable setting screen. Note that Auto External variables are only searched for. (Auto External variable replacement is made on the global variable setting screen.)	Search/replacement is made on only the global variable setting screen.

- SFC programs will also be search and replacement targets.
- When there is no search program, search and replace terminates without displaying a message for searching for the other programs.
- When there remains a search program, searching for the program takes place automatically.
- When a range is designated for program replacement, this range specification is effective only for open programs. Searching in the other programs takes place from the beginning.

POINT
Devices and character strings found and replaced are saved as a log. However, it is cleared when exiting GX Developer.

6.4.1 Finding a device

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Searches for a device in the program.

In A series and QnA series, it is possible to search in other programs in the project.

[Operating Procedure]

Select [Find/Replace] → [Find device] or click 🔍 .

[Dialog Box]
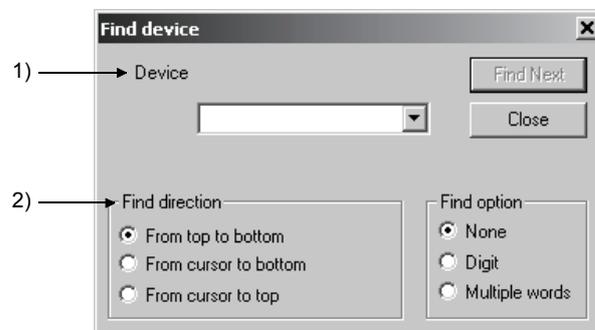
[Description]

1) Device

Designates a device to be searched.

For label programming

When a label or device search is made in the ladder/list mode, only the completely matching character string of the label or device is searched for.

2) Find direction

Sets a search direction.

⊙ Find from top to bottom

Searching takes place from step 0 to the END instruction.

⊙ Find from cursor bottom

Searching takes place from the cursor position to the END instruction.

⊙ Find from cursor to top

Searching takes place from the cursor position to step 0.

POINT

- The following table shows device search examples.

Device Specification	Search Device	Search Example
B0	(k✳✳)B0(Z✳✳)	B0, K4B0, B0Z1, K4B0Z1
K4B0	K4B0(Z✳✳)	K4B0, K4B0Z1
J12\B0	J12(Z✳✳)\(K✳✳)B0(Z✳✳)	J12/B0, J12B0Z1, J12Z2\K4B0, J12Z1\K4B0Z1

- In the presence of the [BMOV K1X0 D100 K4] instruction in the program, choosing "Digit" with the search option makes a search when any of the following device numbers is specified.
    - X0 to XF (devices included in the K1X0 specification range)

  Choosing "Multiple words" makes a search when any of the following device numbers is specified.
    - D100 to D103 (devices included in the D100 specification range)

- For device search by index modification using "ZZ", refer to Appendix 15.

6.4.2 Finding an instruction

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Searches for an instruction in the program.

[Operating Procedure]

Select [Find/Replace] → [Find instruction] or click 🔍 .

[Dialog Box]
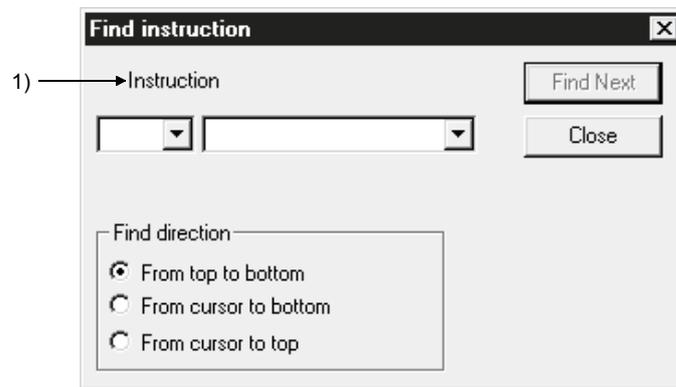
[Description]

1) Instruction

Designates an instruction symbol and an instruction name for search.

The following lists the symbols that can be designated.

POINT

- The following table shows instruction search examples.

Instruction specification	Search instruction	Search example
MOV	MOV(P)	MOV, MOVP
MOVP	MOVP	MOVP
MOV D0 K4Y0	MOV(P)D0(Z∗∗) K4Y0(Z∗∗)	MOV D0 K4Y0, MOVP D0Z1 K4Y0, MOV D0 K4Y0Z1, MOVP D0Z1 K4Y0Z1
MOVP D0 J1\W0	MOVP D0(Z∗∗) J1(Z∗∗)\W0(Z∗∗)	MOVP D0 J1\W0, MOVP D0Z1 J1\W0, MOVP D0 J1Z1\W0Z1, MOVP D0Z1 J1Z1\W0Z1

6.4.3 Finding a step No.

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Searches for and displays a step No. during inter-line statement or note editing.

[Operating Procedure]

Select [Find/Replace] → [Find step No.].

[Dialog Box]

1) ────→

2)
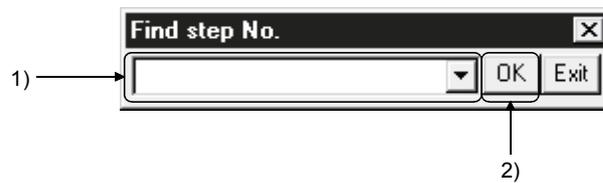
[Description]

1) Step No. text box

Designates a step No. to be used for search.

2) OK button

Click this button to display a circuit with a designated step No.

6.4.4 Finding a character string

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Searches for a character string in the edit window for programs, device comments, or device memories.

[Operating Procedure]

On each edit window, select [Find/Replace] → [Find character string] or click 🔍.

[Dialog Box]

Ladder/list edit window
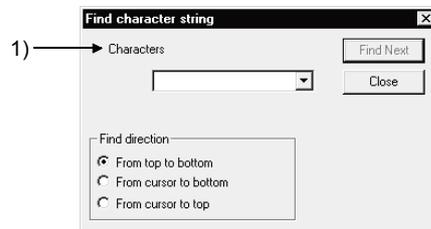
Device comment edit window
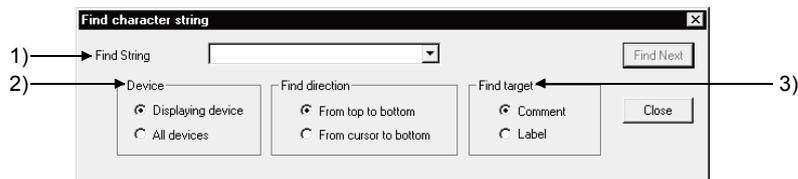
Device memory edit window
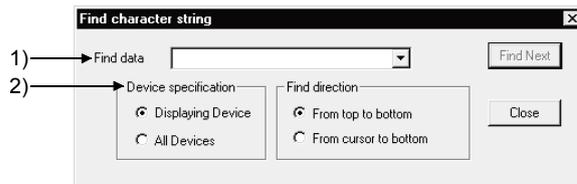
Device memory edit window
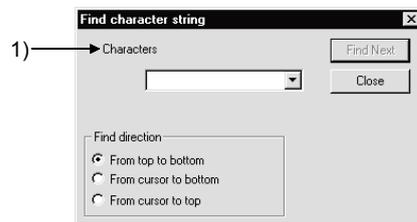
[Description]
1) Find character
   Enter a character string to be searched for in up to 64 characters.

2) Device
   ⊙ Displaying devices
     Select this to search for only the devices being displayed in the window.

   ⊙ All devices
     Select this to search also those devices not displayed in the window.

3) Find target
   Select a button to designate a comment or Alias.

POINT
Device memory find direction
Find from top to bottom Searching takes place from D0, W0, or R0 to the bottom.

6.4.5 Finding a contact/coil

A	Q/QnA	QS	FX
◯	◯	◯	◯

[Purpose]

Searches for a contact or coil corresponding to the device at the cursor position.

[Operating Procedure]

Select [Find/Replace] → [Find contact or coil].

[Dialog Box]
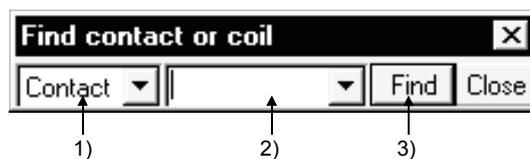
[Description]

1) Contact or coil select
   Choose the contact or coil.

2) Device text box
   Set the device you want to search for.

3) [Find] button
   Click this button to search for the specified device.
   A search starts from the beginning of the program.
   If there are two or more programs, the other programs will be searched.

6.4.6 Finding a device comment

A	Q/QnA	QS	FX
◯	◯	×	◯

[Purpose]

Searches for a device comment or label comment of the device being used in the program.

[Operating Procedure]

Select [Find/Replace] → [Find comment].

[Dialog Box]
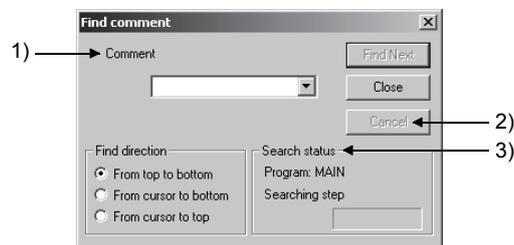
[Description]

1) Comment

Specify a device comment to be searched.

Specify a comment to be searched in 32 characters.

For label programs, specify a comment to be searched in 64 characters.

2) Cancel button

Cancels the search process.

By clicking the Find Next button after canceling the search process, the next search is executed from the current cursor position to the set search direction.

3) Search status

⊙ Program

Displays the program name being searched.

This item is not displayed on the Entry Ladder monitor screen, FB definition screen, and FB screen.

⊙ Searching step

Displays a position of the step being searched, or a position of the searched step.

6.4.7 Finding data

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Searches the set numerical data.

[Operating Procedure]
On the device memory edit window, select [Find/Replace] → [Find data].

[Dialog Box]
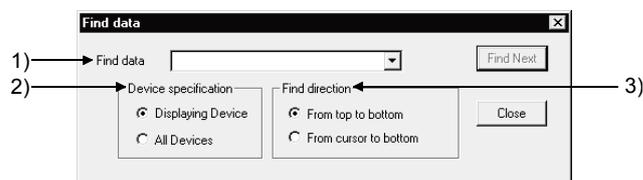
[Description]
1) Find data
Enter the data to be searched for.

2) Device
⊙ Displaying devices
Select this to search for only the devices being displayed in the window.
⊙ All devices
Select this to search for also those devices not displayed in the window.

3) Find direction
Select a button to designate whether to search for devices from the beginning or at the cursor position.
⊙ From top to bottom
Searching takes place from D0, W0, or R0 to the bottom.
⊙ From cursor to bottom
Searching takes place from the cursor position to bottom.

POINT

Since the find and replace of a floating point and a fixed point are processed as actual data, a target of search may not be found due to a conversion error between the floating point/fixed point and the actual data.
Do not find and replace the floating point or fixed point after a 32-bit integer has been converted to a floating point. Find and replace in the input conditions.

6.4.8 Replacing a device

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Replaces a device or character string constant in the program currently being edited.

[Operating Procedure]

Select [Find/Replace] → [Replace device].

[Dialog Box]
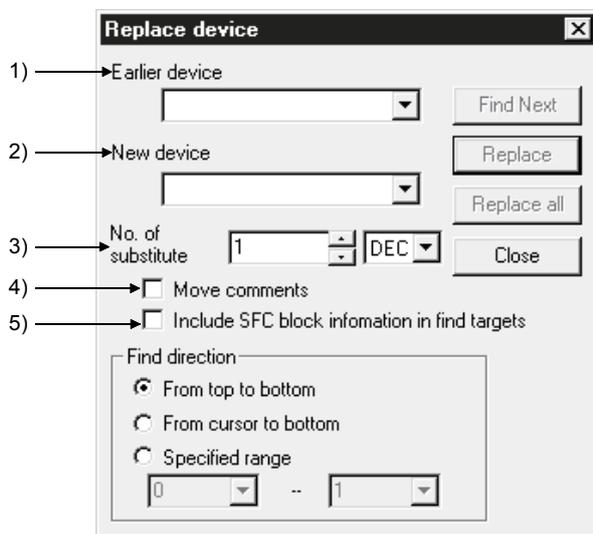
For label programming
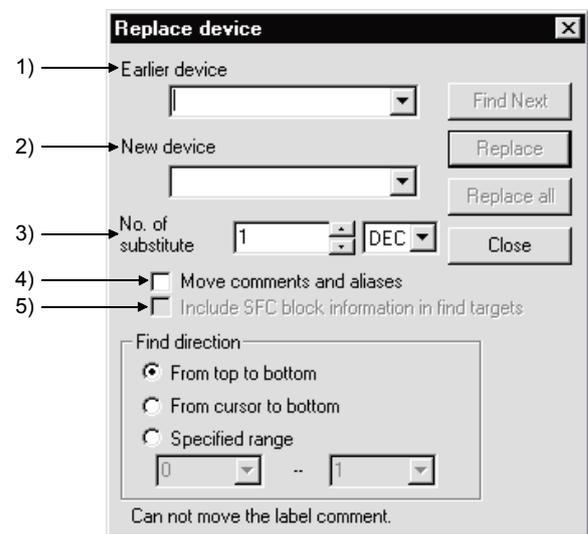
[Description]

1) Earlier device

Designates a device or character string constant (before change) to be replaced.

2) New device

Designates a device or character string constant (after change) for replacement.

3) No. of substitute

Designates the number of devices to be replaced among the devices designated by earlier device setting.

Alternatively, you can specify the substitute count in decimal or hexadecimal.

For label programming

When specifying by label, limit the number of replacement points to 1.

POINT

During label program editing, label comments do not move independently of the "Move comments and aliases" setting.

---

4) Move comments
   Designates whether to move the comments and Alias attached to a device together.

5) Include SFC block information in find targets
   Set whether the device set in the block information of each block will be replaced or not.

POINT

- Device specification
  The following lists the devices that can be replaced.

  ・ Word device ⟶ Word device
  ・ Bit device ⟶ Bit device

- Though an extended specification can be given, digit, index, and indirect modifications cannot be made.
  The table below lists the extended specification and word/bit device replacement examples

  X0 ⟶ J1\B0 .... Replaceable　　X0 ⟶ D0 .... Not Replaceable
  D0 ⟶ U10\G0 ..... Replaceable　　X0 ⟶ K4X0 .... Not Replaceable
  X0 ⟶ D0.5 .... Replaceable　　D0 ⟶ D0.5 .... Not Replaceable
  D0.1 ⟶ D1.1 .... Replaceable

- When a replacement range is given, it is effective only for open programs at present and searching for the other programs takes place from the beginning.

- Restrictions on FX series
  Device replacement cannot take place between the 16-bit counters and 32-bit counters.

- The replacement of the device used in the SFC block information is suspended with an error indication if the new device will be unusable.

- For device replacement by index modification using "ZZ", refer to Appendix 15.

6.4.9 Replacing a batch of devices

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Set multiple devices and replace all of them at once.

[Operating Procedure]

Choose [Find/Replace] → [Device block replacement].

[Dialog Box]
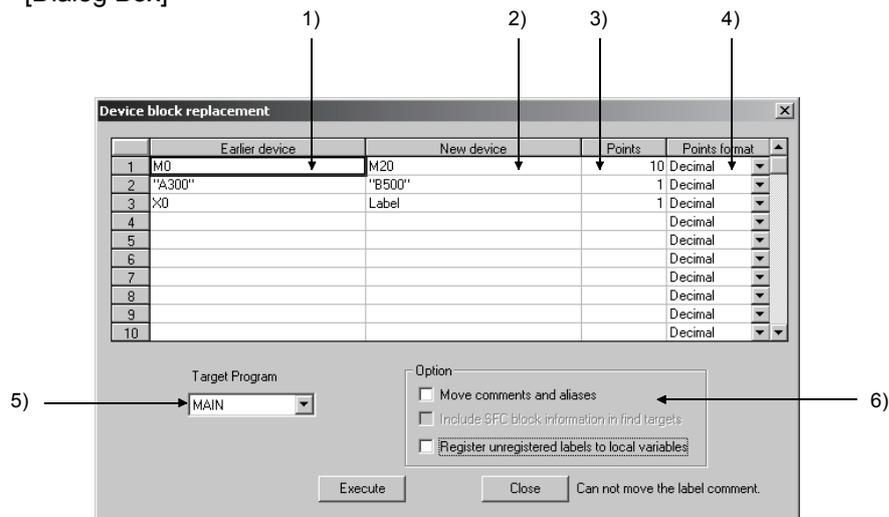
[Setting Items]

1) Earlier device

Specify the device or character string constant or label to be searched for.

2) New device

Specify the replacement device or character string constant or label.

3) Points

Set how many points will be replaced starting from the one specified as "Earlier device".

The points must be specified in decimal or hexadecimal.

4) Points format

Select decimal or hexadecimal format.

5) Target Program

Select the target program for replacement.

6) Option

Move comments and aliases

Set whether the comments and device names will be moved together with the corresponding device.

Include SFC block information in find targets

Set whether the devices used in block information of each block will also be the target for replacement.

Register unregistered labels to local variables

Register labels that are replaced with new devices to local variables.

POINT

• Up to 32 device block replacement settings can be made.

• When the label set in earlier or new device is not defined, an error occurs in compiling of the target label program.

6.4.10 Replacing an instruction

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Replaces an instruction in the program currently being edited.

[Operating Procedure]

Select [Find/replace] → [Replace instruction].

[Dialog Box]
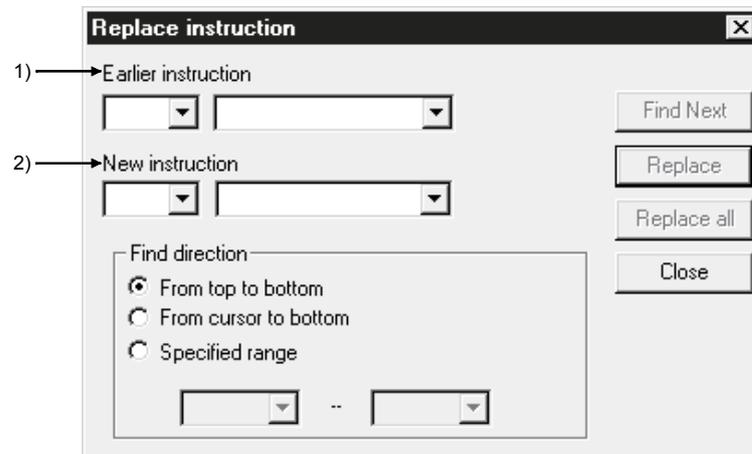
[Description]

1) Earlier instruction

Designates an instruction (before change) to be replaced.

2) New instruction

Designates an instruction (after change) for replacement.

POINT

1. An instruction plus device can be designated for instruction input.
   Only the circuit symbol can also be designated.
2. The replaced instruction is not executed unless it is logical.
3. The number of steps changes for instruction replacement.
4. The following shows the instruction replacement examples.

—( )— Y90	→	—[ ]— MOV D0 D1	.... Replaceable
—| |— M100	→	—|/|— D1.1	.... Replaceable
—( )— J12\B5	→	—( )— U3\G123.5	.... Replaceable
—| |— B100	→	—( )— B100	.... Not replaceable
—[ ]— MOV D0 D1	→	—| |— X0	.... Not replaseable

- The step numbers specified for the SFC operation outputs/transition conditions are those used when the SFC diagram is represented as an equivalent to a ladder.

- For the replacement of a 16 bit (word) handling instruction by a 32 bit (double word) handling instruction in instruction replacement, if a constant has been specified for the device, it will be changed as follows.

  Negative constant of K (example: K-1) → Sign extension is made (K-1)

  For H, constant whose bit corresponding to the sign is ON (example: HFFFF) → sign extension is not made and the constant is converted as it is (H0000FFFF)

  Example: MOV K-1 D0   (MOV replaced by DMOV)   DMOV K-1 D0

            MOV K-200 D0   (MOV replaced by DMOV)   DMOV K-200 D0

            MOV HFFFF D0   (MOV replaced by DMOV)   DMOV H0000FFFF D0

  For the replacement of a 32 bit handling instruction by a 16 bit handling instruction, the upper 16 bits are discarded.

  Example: DMOV K-1 D0   (DMOV replaced by MOV)   MOV K-1 D0

            DMOV K150000 D0   (DMOV replaced by MOV)   MOV K18928 D0

            DMOV HFFFFFFFF D0 (DMOV replaced by MOV)   MOV HFFFF D0

6.4.11 Changing open/close contacts

A	Q/QnA	QS	FX
◯	◯	◯	◯

[Purpose]
Changing the contacts (open contact/close contact) of the program currently being edited.

[Operating Procedure]
Select [Find/Replace] → [Change open /close contact].

[Dialog Box]

```
Change open/close contact                              ×

1) ──►  Device                                    Find Next

        [                              ▼]         Replace

2) ──►  Number of substitutes                     Replace all

        [1        ][▲▼] DEC ▼                      Close

        ┌ Find direction ──────────────┐
        │  ⦿ From top to bottom        │
        │  ○ From cursor to bottom     │
        │  ○ Specified range           │
        │     [0    ▼]  --  [1    ▼]    │
        └──────────────────────────────┘
```
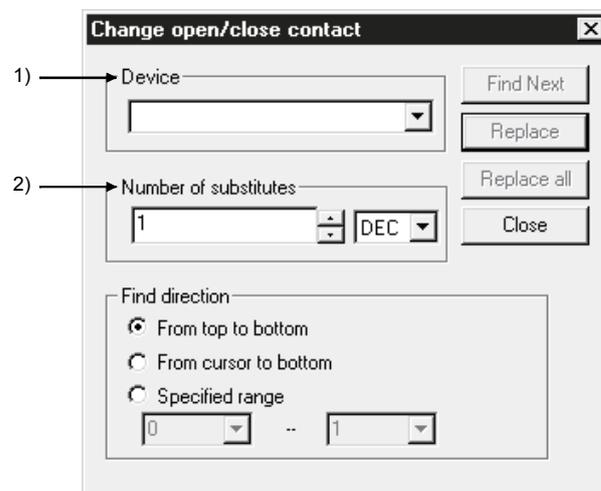
[Description]
1) Device
   Designates a device for which contacts A and B are to be switched.
2) Number of substitutes
   Designates the number of consecutive devices (including a designated device) for which contacts A and B are to be switched.
   For label programming
   For label programming, always set 1 point in the number of replacement points since replacement cannot be made if it is other than 1.
   If you set 2 or more points, only 1 point is changed.

┌───┐
│ POINT   │
│ ● Device specification   │
│   Extended specifications and bit No. modifications are valid for device │
│   specification, but index modifications are not valid.   │
│ ● Device specification example   │
│   X0, J1\B6, D0.5, U10\G0.3 ──► Can be specified   │
│   X0Z3 ─────────────────────► Cannot be specified   │
│   (index modification is not possible.) │
│   │
│ ● The open contact and close contact of the following instructions can │
│   be switched.   │
│   Open contact : LD, AND, OR, LDR, ANDP, ORP, EGP   │
│   Close contact : LDI, ANI, ORI, LDF, ANDF, ORF, EGF   │
│ ● The step numbers specified for the SFC operation outputs/transition   │
│   conditions are those used when the SFC diagram is represented as an   │
│   equivalent to a ladder.   │
└───┘

6.4.12 Replacing a character string

A	Q/QnA	QS	FX
○	○	○	○

POINT
- The step numbers specified for the SFC operation outputs/transition conditions are those used when the SFC diagram is represented as an equivalent to a ladder.
- For a ladder, a statement or note is the target of search.
- For an SFC, a note or SFC comment is the target of search.

[Purpose]
Replaces the character string on each edit window for programs, device comments, or device memories.

[Operating Procedure]
On each edit window, select [Find/Replace] → [Replace character string].

[Dialog Box]
Ladder/list edit window
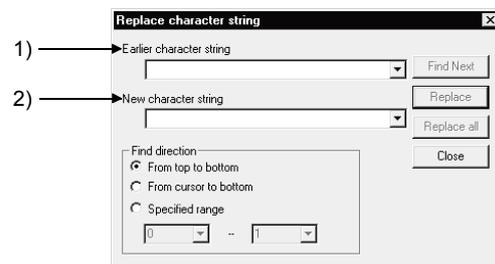
Device comment edit window
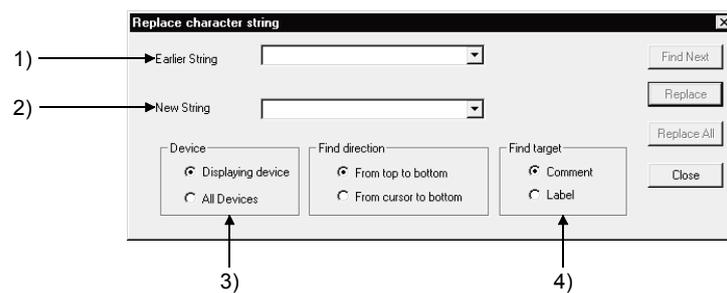
Device memory edit window
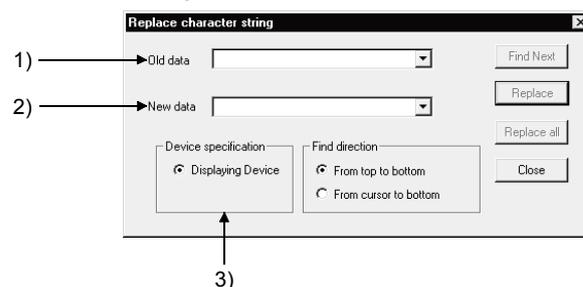
[Description]
  1) Earlier character string
      Enter a character string to be replaced (statement before change) in up to 64
      characters.

  2) New character string
      Enter a character string for replacement (statement after change).

  3) Device
      • Device under display
        Select this to replace only the devices being displayed in the window.
      • All devices (device comment only)
        Select this to replace also those devices not displayed in the window.

  4) Find target
      Select a button to designate a comment or a Alias.

POINT
• Search with Find Next button Searches a device designated by earlier character string. • Search with Replace button Replaces for each device.

6.4.13 Replacing the module's first I/O number

A	Q/QnA	QS	FX
○∗	○	○	×

∗: Unusable for the A2C.

[Purpose]

Changes the first I/O number of the FROM(P), TO(P), DFRO(P), DTO(P), RFRP or RTOP instruction.

[Operating Procedure]

Select [Find/Replace] → [Replace the module's first I/O number].

[Dialog Box]

The following screen shows a setting example for replacing the old module I/O number range of 0 to FF with the new module's first I/O No. of 30.
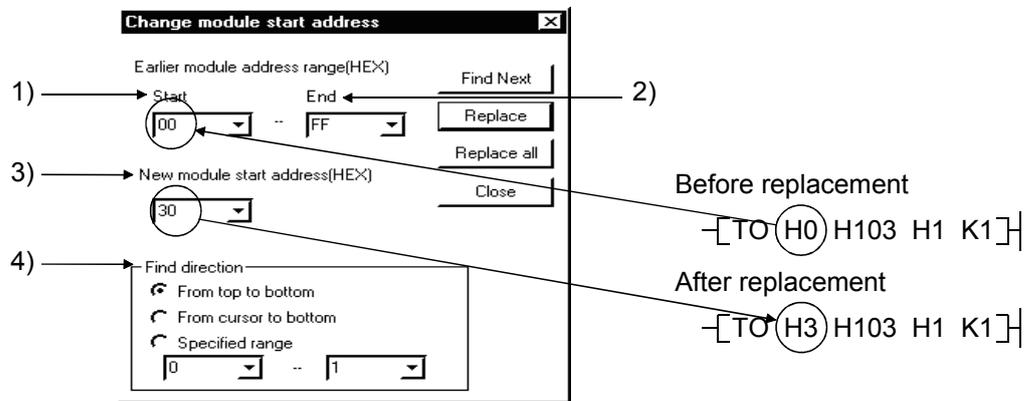
[Description]

1) Start
    The input range is 0 to FFF0.

2) End
    The input range is 0 to FFFF.
    (Set a value greater than the value input in start.)

3) New module start address(HEX)
    The input range is 0 to FFF0.

4) Find direction·Specified range
    Set the replacement starting position and range.
    The input range is 0 to 99999999.
    If the starting step is greater than the end step, the Replace, Replace all and Close buttons are masked.

POINT

* Specify the I/O addresses in the same method as in entering the instruction.
* When replacing the module I/O No. of the G. device, choose [Find/Replace] → [Device replace].

6.4.14 Changing the statement or note type

A	Q/QnA	QS	FX
×	○	○	×

```
  POINT
  Refer to Section 10.1 for the data of integrated/peripheral statements.
```

[Purpose]
  Changes the type of the statement or note currently being edited to the integrated or
  peripheral statement or note.
  For details on the integrated/peripheral statement or note, refer to Sections 10.1.

[Operating Procedure]
  Select [Search/Replace] → [Replace statement/note type].

[Dialog Box]
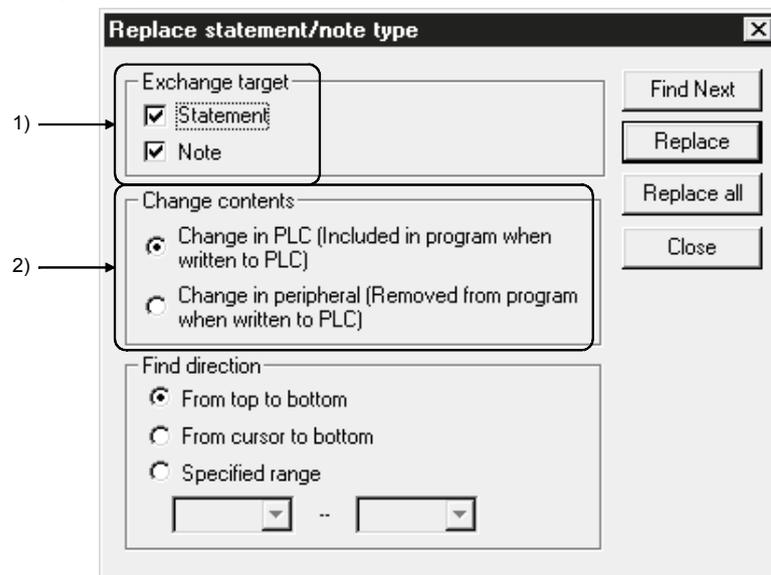
[Description]
  1) Exchange target
      Designates a target to be replaced (statement or note).

  2) Change contents
   ⊙ Change in PLC [Included in program when written to PLC]
      Replaces a character string with an integrated statement or note.
      PLC write/read processing takes place automatically for the character string.
   ⊙ Change in peripheral [Removed from program when written to PLC]
      Replaces a character string with a peripheral statement or note.
      PLC write/read processing does not take place for the character string.

```
  POINT
  • Because only the peripheral statements and notes are set in A series, the
    statement and note types cannot be changed.
  • The step numbers specified for the SFC operation outputs/transition conditions
    are those used when the SFC diagram is represented as an equivalent to a
    ladder.
  • For an SFC, only the note will be changed. (There are no statements.)
```

6.4.15 Replacing data

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Replaces the set numerical data.

[Operating Procedure]

On the device memory edit window, select [Find/Replace] → [Replace data].

[Dialog Box]
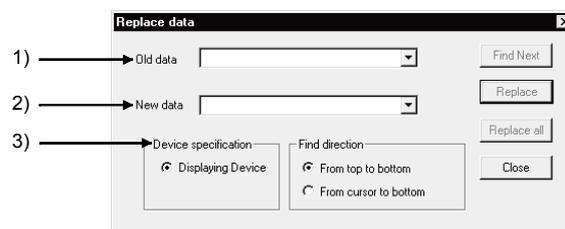
[Description]

1) Old data

Enter a numerical value to be replaced (statement before change).

2) New data

Enter a numerical data for replacement (statement after change).

3) Device

⊙ Displaying device

Select this to designate only the devices being displayed in the window (fixed).

```
┌─────────────────────────────────────────────────────────────────────┐
│ POINT                                                                 │
├─────────────────────────────────────────────────────────────────────┤
│ • Since the find and replace of a floating point and a fixed point    │
│   are processed as actual data, a target of search may not be found   │
│   due to a conversion error between the floating point/fixed point    │
│   and the actual data.                                                │
│   Do not find and replace the floating point or fixed point after a   │
│   32-bit integer has been converted to a floating point.  Find and    │
│   replace in the input conditions.                                    │
│ • A change mode cannot be replaced online.                            │
└─────────────────────────────────────────────────────────────────────┘
```

6.4.16 Finding a contact/coil

A	Q/QnA	QS	FX
◯	◯	◯	◯

[Purpose]
Lists the step(s), instructions, and locations in which the designated instruction has been used.

[Operating Procedure]
Select [Find/Replace] → [Cross reference list].

[Dialog Box]
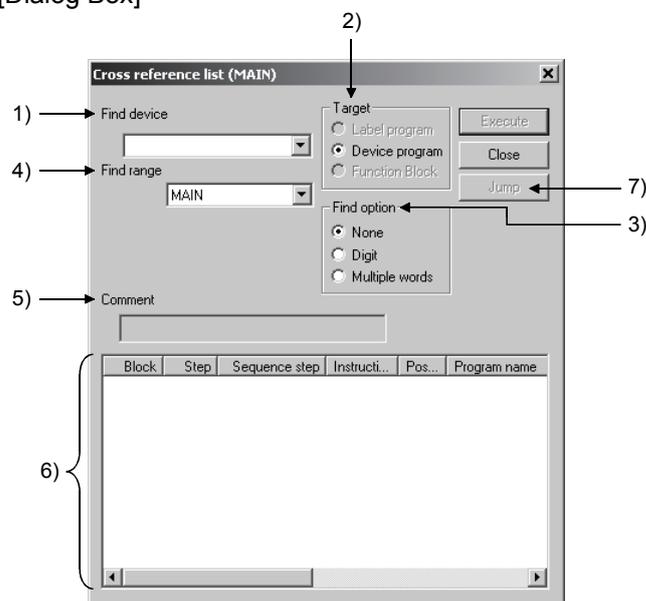
[Description]

1) Find device
   Designates a device to be searched.

2) Target (only during label programming)
   Select label program or actual device.

3) Find options
   Sets the state of a search target.
   The search options (with digit, multiple words, etc.) make it possible to search for a device which has not been coded in the program but is actually used.

   ⊙ None
      Searches for a designated device only.

   ⊙ Digit
      Searches for bit devices (including a designated device) with digits.

   ⊙ Multiple words
      Searches for word devices including a designated device and multiple words devices (including real numbers and indirect specifications).

4) Target the whole program
For ladder
Choose the program to be searched (by program, all programs).
For SFC

All programs:	All programs in the project are searched.
All blocks:	All blocks of the SFC diagram being edited are searched.
Inside block (SFC diagram):	Only the block being displayed is searched.
Inside block (Zoom diagram):	Only the operation outputs/transition conditions being displayed are searched.

For ST
ST is not selectable.

5) Comment
Displays a comment assigned to a designated device.

6) Contact coil use list

Block................	Lists the numbers with which the block No. designated in the SFC is used.
Step	Lists the numbers with which the step No. designated in the SFC is used.
Sequence step.	Lists the step numbers in which the designated device has been used.
Instruction	Lists the instructions in which the designated device has been used.
Location	Indicates by ＊ the byte positions in which the designated device has been used.
(Example)	In the case of "MOV K4Y0 D0", the DO position is indicated by "-＊."
Program name.	Lists the program names with which the specified device is used.

Up to 500 items can be retrieved and displayed in this list.

7) Jump button
Click any data in the contact coil use list, then click the [Jump] button to locate the cursor at the position where the corresponding contact coil is used within the sequence circuit.

POINT

- The cross reference list function can be used even when unconverted circuits exist.

- When BLn is specified for the search device in SFC program, block start step which starts n block is also searched.
  On the Instruction field of the Cross reference list, "BLOCK" (with END check) or "BLOCK-S" (without END check) is displayed.

- For device search by index modification using "ZZ", refer to Appendix 15.

6.4.17 List of used devices

A	Q/QnA	QS	FX
◯	◯	◯	◯

[Purpose]

Lists the device use conditions in a program on a specified device basis.
Specifying the device displays the ladder symbol used, the frequency of use, and whether an error has occurred or not.

[Operating Procedure]

Select [Find/Replace] → [List of used device].

[Dialog Box]
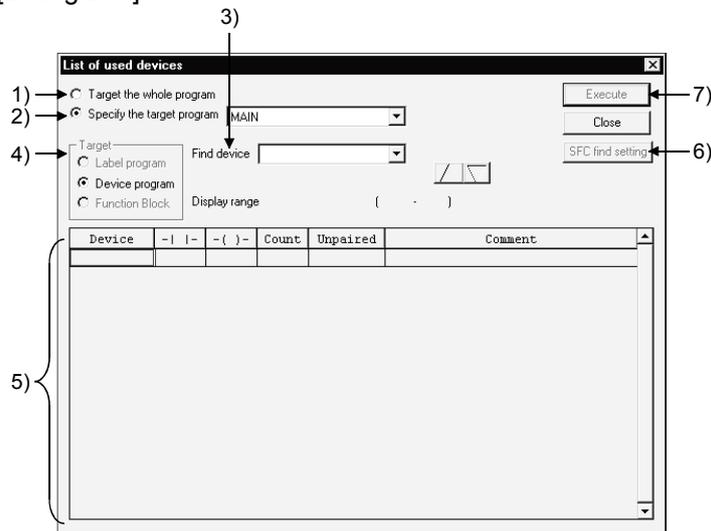
[Description]

1)   Target the whole program
     Click the radio button to display a device-use list for all programs in the project.

2)   Specify the target program
     Designates a program to be searched.
     ST is not selectable.

3)   Find device
     Designates the first device to be searched for.
     Clicking the / button moves the screen up or down by 512 points.
     (Clicking the scroll bar moves the screen by 512 points.)
     In a single search, 512 points shown in the display area are searched.
     When the cursor is on the device list, you can scroll the screen using Ctrl +
     PageUp / PageDown .

4)   Target (only during label programming)
     Select label program or actual device.

4)   Device-use Instruction list

Device........... Instruction lists devices in such a way that the device designated in the search device is listed first.

─┤├─............... Displays ＊ when the device has been used in the source of the instruction.

─( )─............ Displays ＊ when the device has been used in the destination of the instruction.

Count .... Indicates the frequency of coil usage.

Error.............. Displays "ERR" when the device has been used only in the source or the destination.

Comment ...... Displays a comment attached to the device.

Clicking the scroll bar moves the screen by 512 points.

5)   Specify whether all blocks or only the specified block will be searched.

```
┌─────────────────────────────────────────┐
│ SFC find setting                      ⊠ │
├─────────────────────────────────────────┤
│                                          │
│  ○ Target all blocks        ┌─────────┐  │
│                             │   OK    │  │
│  ● Specify the find block   └─────────┘  │
│                             ┌─────────┐  │
│                             │ Cancel  │  │
│     Find block number  │0│  └─────────┘  │
│                                          │
└─────────────────────────────────────────┘
```
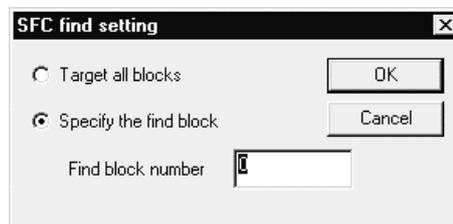
6)   Execute button

Click this button after designating a search program or a search device.

A device-use list contains the instructions used and their frequency in such a way that the device designated in the search device comes first.

┌───┐
│ POINT   │
├───┤
│   │
│ • When ZR is designated, 8,192 devices (including the designated device │
│   as the first one) are searched.   │
│   To display out-of-range devices, the devices must be designated again. │
│   Page scroll takes place within 8,192 devices listed.   │
│   │
│ • When two or more windows are open, the result of comment editing on   │
│   the deice use list screen is reflected on other windows as soon as   │
│   the window is switched to another.   │
│   │
│ • If there is an unconverted ladder, the device use list function can   │
│   be used.   │
│   │
│ • For label program creation, this function does not support label   │
│   devices. Make an "N/O"/"N/C" contact change after searching for a   │
│   label device in the contact/coil use list.   │
│   │
│ • For device search by index modification using "ZZ", refer to   │
│   Appendix 15.   │
│   │
└───┘

7. CREATING INSTRUCTION LIST

This chapter describes how to create, modify and read the sequence programs.

7.1 Common Notes on List Creation

This section describes the common items and restrictions on Instruction list creation, Instruction list display window, and Instruction list edit window.

1. Instruction list input dialog box
    Input alphanumeric characters.

Enter list	☒
	OK	Exit	Help

2. Program display area
    - Display does not depend on the number of END instructions.
      In addition, programs may be input after the END instructions.
      When a new Instruction list is created, the END instruction appears at the first line.
      No display takes place for NOP only.

3. Modification of existing Instruction list
    For creating a new instruction list, move the cursor to an incorrect instruction location in the input (overwrite) mode, then input a correct instruction there.
    For adding Instruction list, move the cursor to a line insert step in the input (insert) mode, then input an instruction.
    To switch input modes (overwrite and insert modes), press │Insert│ key.

4. Deletion in units of instructions
    Move the line to be deleted, then press │Delete│ key or │Shift│ + │Delete│ key.

5. The preceding or subsequent page of the current page can be displayed during a read/write operation.
    Click │Page Up│ key to display the preceding page.
    Click │Page Down│ key to display the subsequent page.

6. The following table lists the modes that can be used in Instruction list mode.

Mode	Availability
Read mode	○
Write mode	○
Monitor mode	✕
Monitor write mode	✕

7. Circuit symbol buttons on the toolbar, monitor/write monitor, monitor start/stop, step run, partial run, skip are disabled.

8. Device comment display
    No device comments are displayed.

9. Display with statements or notes
    When statements or notes have been created, they are always displayed (fixed processing).
    In A series and FX series, no step numbers are displayed.
    In QnA series, step numbers are displayed.
    Statements and notes can be created in the same way as for operations on the circuit edit window (refer to Section 10.3.1 and 10.4.1 for details.)

10. In the list mode, program a single ladder block within 24 lines.

11. The program area that cannot be converted into a ladder is displayed yellow.
    (Yellow display: Indicates that there is an error in the corresponding ladder block.)

POINTS

When a created single ladder block has 25 or more lines
- The ladder is displayed yellow, and its 25th line and later are not displayed.
- When a ladder block of 25 lines or more is converted in the ladder mode, the 25th line and later are deleted.

7

7.2 Creating a Program Instruction list

Sequence programs are input by the Instruction list instructions.
In addition, it is convenient to edit in the Instruction list mode the instructions that cannot be edited in the circuit mode.
For details on how to switch the Instruction list mode, refer to Chapter 6.

7.2.1 Inputting a contact or application instruction

A	Q/QnA	QS	FX
○	○	×	○

- For contact input (insert mode)

    1.   Press Insert key to set the insert mode.

    ```
        0   END
        1
    ```

    2.   Enter "LD X1", then the Instruction list input dialog box is displayed and
         entered data is displayed in the device instruction text box.
         Press Enter key to make input in the edit window.

    Enter list   ☒
    LD X1   OK Exit Help

    ⬇

    ```
        0  LD       X1
        1  END
        2
    ```

- For application instruction input

    1.   Enter "MOV K1 D0", then the Instruction list input dialog box is displayed with
         the entered data being displayed in the device instruction text box.

         Press Enter to make input in the edit window.

    Enter list   ☒
    LD X1   OK Exit Help

    ⬇

    ```
        0  LD       X1
        1  MOV      K1        D0
        6  END
        7
    ```

    | POINT |

    Refer to Section 9.4.3 when creating a device comment right after writing the
    instruction.

7.2.2 Changing the existing program in overwrite mode

A	Q/QnA	QS	FX
○	○	×	○

1. Confirm that the overwrite mode is indicated on the status bar.
    Press ⌷Insert⌷ key to switch the insert and overwrite modes.

2. Move the cursor onto the program to be corrected in overwrite mode. List input
    dialog box

```
 0   LD      X2
 1   OUT     Y70
 2   OUT     T0        K600
 6   SET     M0
 7   LD      T0
 8   OUT     C0        K3
12   RST     T0
16   LD      X3
17   OUT     Y71
18   OUT     T1        K100
22   SET     M1
23   OUT     Y40
24   LD      T1
25   OUT     C1        K6
29   RST     T1
33   LD      X4
34   OUT     Y72
35   OUT     T2        K1200
39   SET     M2
```

3. Enter an instruction or device (LD M10) for correction, then the list input dialog
    box is displayed with the entered data being displayed in the device instruction
    text box.
    Press ⌷Enter⌷ key to make input in the edit window.

```
Enter list                          ×
LD M10                    OK  Exit  Help
```
→ ⌷Enter⌷

```
 0   LD      X2
 1   OUT     Y70
 2   OUT     T0        K600
 6   SET     M0
 7   LD      T0
 8   OUT     C0        K3
12   RST     T0
16   LD      X3
17   OUT     Y71
18   OUT     T1        K100
22   SET     M1
23   OUT     Y40
24   LD      T1
25   OUT     C1        K6
29   RST     T1
33   LD      M10
34   OUT     Y72
35   OUT     T2        K1200
39   SET     M2
40   LD      T2
```

Input alphanumeric characters.

7.2.3 Inserting or adding the existing program

A	Q/QnA	QS	FX
◯	◯	×	◯

1. Confirm that the insert mode is indicated on the status bar.
    Press Insert key to switch the insert and overwrite modes.

2. Move the cursor to the position to insert or add a program.

```
 0   LD    X2
 1   OUT   Y70
 2   OUT   T0        K600
 6   SET   M0
 7   LD    T0
 8   OUT   C0        K3
12   RST   T0
16   LD    X3
17   OUT   Y71
18   OUT   T1        K100
22   SET   M1
23   OUT   Y40
24   LD    T1
25   OUT   C1        K6
29   RST   T1
33   LD    X4
34   OUT   Y72
35   OUT   T2        K1200
39   SET   M2
```

3. Enter an instruction to be inserted or added or device (LD M10), then the list
    input dialog box is displayed with the entered data being displayed in the device
    instruction text box.
    Press Enter key to make input in the edit window.

Enter list

LD M10   OK Exit Help   → Enter

```
 0   LD    X2
 1   OUT   Y70
 2   OUT   T0        K600
 6   SET   M0
 7   LD    T0
 8   OUT   C0        K3
12   RST   T0
16   LD    X3
17   OUT   Y71
18   OUT   T1        K100
22   SET   M1
23   OUT   Y40
24   LD    T1
25   OUT   C1        K6
29   RST   T1
33   LD    M10
34   OUT   Y72
35   OUT   T2        K1200
39   SET   M2
40   LD    T2
```
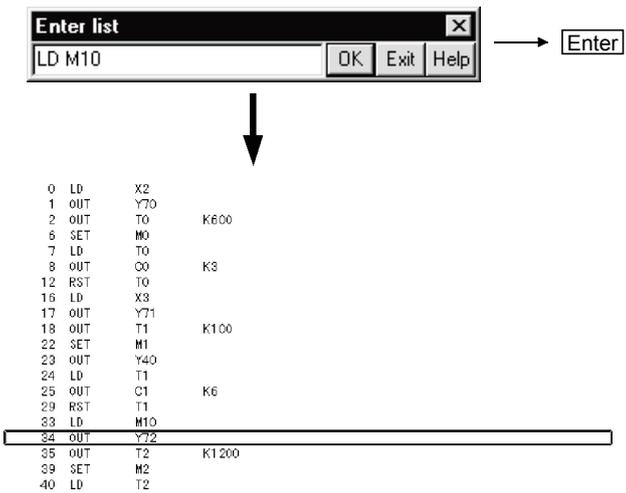
7.2.4 Deleting the existing program list

A	Q/QnA	QS	FX
○	○	×	○

1. Move the cursor to a program to be deleted.

2. Press ⎡Delete⎤ key or ⎡Shift⎤ + ⎡Delete⎤ key to delete the program.

```
 0   LD      X2
 1   OUT     Y70
 2   OUT     T0          K600
 6   SET     M0
 7   LD      T0
 8   OUT     C0          K3
12   RST     T0
16   LD      X3
17   OUT     Y71
18   OUT     T1          K100
22   SET     M1
23   OUT     Y40
24   LD      T1
25   OUT     C1          K6
29   RST     T1
33   LD      X4
34   OUT     Y72
35   OUT     T2          K1200
39   SET     M2
```

7.2.5 Inserting NOP to a batch of steps

A	Q/QnA	QS	FX
○	○	×	○

- Inserting NOPs in units of lines
  Move the cursor to a location for inserting a NOP, then press $\boxed{\text{Shift}}$ + $\boxed{\text{Insert}}$ key
  (The NOP is inserted in the line above the cursor.)

- Insert NOPs at a time
  Move the cursor to a location for inserting NOPs, then select [Edit] → [insert NOP batch]. The following dialog box is displayed for confirmation.
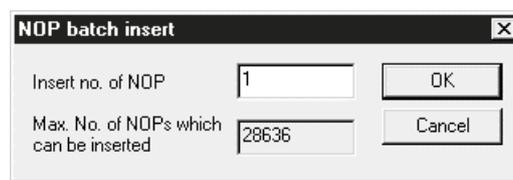
Input the number of NOPs to be inserted in insert no. of NOP text box, then click the $\boxed{\text{OK}}$ button.

A ladder may not be displayed if NOPs are inserted at any points in a ladder block and the number of ladder block steps exceeds about 4K steps.

NOP insertion can take place even when the cursor has been positioned after the END line.

7.2.6 Deleting NOP from a batch of steps

A	Q/QnA	QS	FX
○	○	×	○

- Deleting NOPs in units of lines
  Move the cursor to a location for deleting a NOP, then press $\boxed{\text{Delete}}$ key or $\boxed{\text{Shift}}$ + $\boxed{\text{Delete}}$ key to delete it. (The NOP in the line above the cursor is deleted.)

- Deleting NOPs
  Press $\boxed{\text{Enter}}$ key, and the program will be displayed in the list input dialog box.
  Select [Edit] → [Delete NOP batch], and the following dialog box will be displayed.
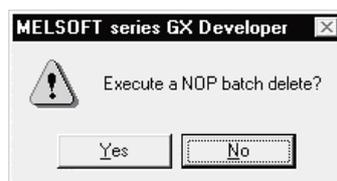
Click the $\boxed{\text{Yes}}$ button, and NOPs will be deleted at a time.
When there are NOPs after the END instruction, they are also deleted.

7.3 Find and Replace

7.3.1 Finding a device

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.1 for details.

7.3.2 Finding an instruction

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.2 for details.

7.3.3 Finding a step No.

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.3 for details.

7.3.4 Finding a character string

A	Q/QnA	QS	FX
○	○	×	○

Searching for a statement or note takes place.
Refer to Section 6.4.4 for details.

7.3.5 Finding a contact/coil

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.5 for details.

7.3.6 Finding a device comment

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.6 for details.

7.3.7 Finding a data

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.7 for details.

7.3.8 Replacing a device

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.8 for details.

7.3.9 Replacing a batch of devices

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.9 for details.

7.3.10 Replacing an instruction

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.10 for details.

7.3.11 Changing open/close contacts

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.11 for details.

7.3.12 Replacing a character string

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.12 for details.

7.3.13 Changing module start address

A	Q/QnA	QS	FX
○＊	○	×	×

＊: Unusable for the A2C.

Refer to Section 6.4.13 for details.

7.3.14 Changing the statement or note type

A	Q/QnA	QS	FX
×	○	×	×

Refer to Section 6.4.14 for details.

7.3.15 Replacing data

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.15 for details.

7.3.16 Finding contact/coil

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.16 for details.

7.3.17 List of used devices

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.4.17 for details.

7.4 Display

7.4.1 Displaying a Alias

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]

Displays the created Alias on the list edit window.

[Operating procedure]

1. Select [View] → [Alias] (Alt + Ctrl + F6).

```
  0  LD      X2
  1  OUT     Y70
  2  OUT     T0        K600
  6  SET     M0
  7  LD      T0
  8  OUT     C0        K3
 12  RST     T0
 16  LD      X3
 17  OUT     Y71
 18  OUT     T1        K100
 22  SET     M1
 23  OUT     Y40
 24  LD      T1
 25  OUT     C1        K6
 29  RST     T1
 33  LD      M10
 34  OUT     Y72
 35  OUT     T2        K1200
 39  SET     M2
```

2. The Alias is displayed in the window instead of the device.

```
  0  LD      COVER
  1  OUT     Y70
  2  OUT     T0        K100
  3  SET     M0
  4  LD      SAFTY
  5  OUT     C0        K3
  6  RST     T0
  9  LD      READY
 10  OUT     Y71
 11  OUT     T1        K100
 12  SET     M1
 13  OUT     Y40
 14  LD      PARTSB
 15  OUT     C1        K6
 16  RST     T1
 19  LD      PARTSA
 20  OUT     Y72
 21  OUT     T2        K1200
 22  SET     M2
```

7.5 Switching between Read and Write Modes

7.5.1 Switching to read mode

A	Q/QnA	QS	FX
○	○	×	○

Refer to Chapter 6 for details.

7.5.2 Switching to write mode

A	Q/QnA	QS	FX
○	○	×	○

Refer to Chapter 6 for details.

7.5.3 Switching to circuit mode

A	Q/QnA	QS	FX
○	○	×	○

Refer to Chapter 6 for details.

7.6 Changing T/C Setting Values

A	Q/QnA	QS	FX
○	○	×	○

Refer to Section 6.3 for details.

8. CONVERSION

There are three kinds of menu provided for conversion, [Convert], [Convert (All programs being edited)], and [Convert (Online change)].
This chapter describes normal conversion and batch program conversion.
For conversion from the [Convert (Online change)] menu, refer to Section 16.9.

8.1 Converting an Edit Program

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
  Converts the program currently being edited (in the active window).

[Operating Procedure]
  Select [Convert] → [Convert].

8.2 Converting Multiple Edit Programs

A	Q/QnA	QS	FX
○	○	○	×

[Purpose]
  Converts multiple edit programs at a time.

[Operating Procedure]
  Select [Convert] → [Convert (All programs being edited)].

[Description]
  Edit programs are converted in the order that the sequence programs have been opened.

POINT
For the conversion operation for SFC diagram editing, refer to the following manual. GX Developer Version8 Operating Manual (SFC)

8

MEMO

8

9. SETTING DEVICE COMMENTS

This chapter describes the points to be noted on comment creation with GX Developer.

In addition, it describes how to input the device comments created with GX Developer to ACPU, QnACPU or FXCPU and how to input the data created with GPPA, GPPQ, FXGP(DOS) or FXGP(WIN) to GX Developer.

POINT
• Any FX project that was created with GX Developer (SW2D5-GPPW-E) or later appears in the project list display when GX Developer (SW0D5-GPPW-E) or GX Developer (SW1D5-GPPW-E) is started, but it cannot be read.
• For comment creation for label devices during label programming, refer to Section 5.1.3 or Section 9.4.2.

9.1 Points to be Noted before Comment Creation with GX Developer

A	Q/QnA	QS	FX
○	○	○	○

This section describes the points to be noted and settings that vary depending on whether to handle comments only on peripheral devices or to input them to programmable controller.

(1) Comments on special resisters and special relays

Since the comments on special resisters and special relays are created in the installed directory (MELSEC\GX Developer\Sample Comment), it is useful to copy them to projects for which sequence programs will be created.

Sample-1   ACPU COMMENT SP.M, SP.D
Sample-2   A1FX COMMENT SP.M, SP.D
Sample-3   QnA COMMENT SM, SD, J1\SB, J1\SW
Sample-4   FX CPU COMMENT SP.M, SP.D
Sample-5   Q COMMENT SM, SD, J1\SB, J1\SW
Sample-6   Q (A Mode) (SP.M, SP.D)
           For multi-CPU-compatible SMs, comments are stored in SM240 to 247 and SM390.
           For multi-CPU-compatible SDs, comments are stored in SD4 to SD15 and SD395.
Sample-7   Q00J/Q00/Q01CPU COMMENT SM, SD, J1\SB, J1\SW
Sample-8 FX_{3U}/FX_{3UC} CPU COMMENT SP.M SP.D
Sample-9   QSCPU COMMENT SM, SD, SB, SW
           User name: sample, Password; sample

(2) Extended comments

When AnNCPU is selected, the extended comments can be created with GX Developer, but cannot write them to the programmable controller.

The extended comments 2 to 4 cannot be written to the ACPU/GPPA file.

The extended comments read from the ACPU/GPPA file to the GX Developer are stored in the common comment.

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(3)   Device comments when GX Developer and GPPA are used
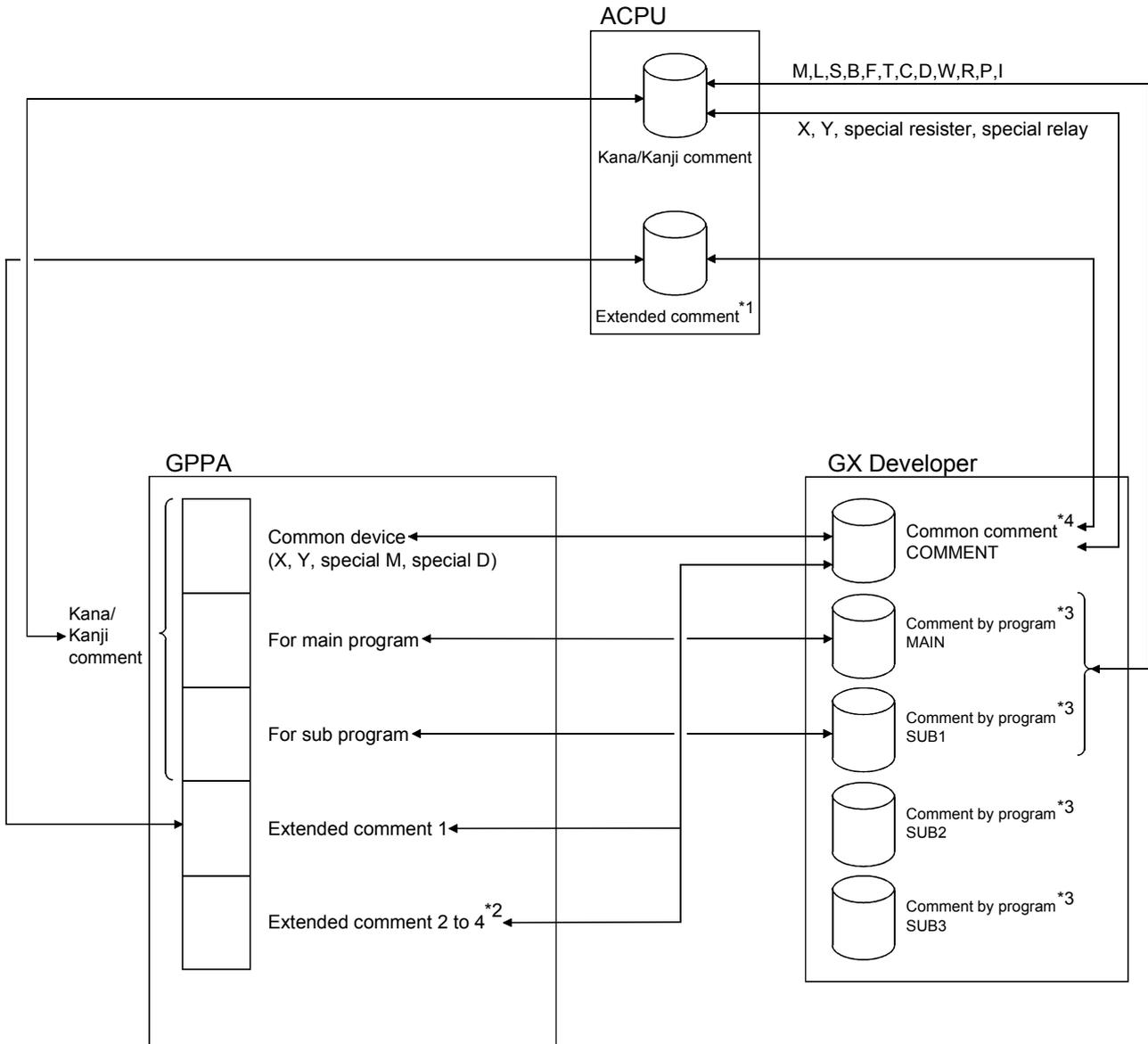
Precautions:
∗1: Only AnA and AnUCPU can be written to the programmable controller.
∗2: The extended comments 2 to 4 cannot be written to the programmable controller.
∗3: The comments created in X, Y, special resisters, special relays, SUB2, and
     SUB3 among those created by program cannot be written to the ACPU/GPPA
     file.
∗4: Those devices other than the X, Y, special resisters, and special relays created
     in COMMENT (common comment) can be written to the ACPU/GPPA file by
     setting them in the extended comment (Refer to Section 9.7).
     When a comment on the same device (X, Y, etc.) is created for a common
     device and an extended comment, the device comment set in the extended
     comment is read (Refer to Section 9.1.3 for details).

9

(4)   About the device comment creation ranges for multi-CPU configuration
Device comments can be created in the following ranges for the buffer memory
(3E00 to 3E3F) of the programmable controller in a multi-CPU configuration.

System Configuration	Creation Enabled Range	Creation Disabled Range
No multi-CPU configuration	U0(\G0) to U1FF(\G65535)	–
Multi-CPU configuration	U0(\G0) to U1FF(\G65535)	U200(\G0) to U3DF(\G65535)
	U3E0(\G0) to U3FF(\G65535)	

The created device comments are enabled for PLC read/write/verify and file
read/write/verify.

9.1.1 Editing comments only on GX Developer

A	Q/QnA	QS	FX
○	○	○	○

(1) In A series, Q/QnA/A/FX series, the created comments can be saved. Neither parameter settings nor comment range settings are required.

(2) Both common comments and comments by program can be created. Common comments can be created independent of comments for the main program and subprograms. (Refer to Section 9.3 for details.)

(3) The common comment data name is fixed to "COMMENT".

(4) There are two methods for creating comments by program. The first method sets a comment data name according to the data name of a sequence program. The second method sets a data name different from the sequence program name. (Refer to Sections 4.9 and 9.3 for details.)

(5) The devices subject to comment creation are all displayed (for monitoring) or printed out.

(6) When creating a Alias in A series, note that it cannot be input to ACPU or GPPA files.

POINT

- When a common comment and a comment by program have been set for the same device, click <<Each program>> tab on the dialog box displayed by selecting [Tools] → [Option] to set a comment to be displayed in units of devices (Refer to Section 15.12 for details).

  <Example>

Common comments (COMMENT)

Device	Comment	Label
X0		
X1	START	
X2		

Comments by program (SUB1)

Device	Comment	Label
X0		
X1	SECURITY	
X2		

<<Each program>> sheet

Options

Program common | Each program | Whole data | TEL

Copy source/display source of reference during comment edit

Program name   MAIN

The program [MAIN-SFC] of Q00J/Q00/Q01PLC refer the program comment [MAIN].

Device type	Device comment
M	Comment for all program
SM	Comment for all program
L	Comment for all program
F	Comment for all program
V	Comment for all program
X	Comment for all program
T	Comment for all program
B	Comment for all program
SB	Comment for all program

OK

Cancel

Common comment selection

MAIN

```
    X1
   | |                          (OUT Y1)
   Start
```

SUB1

```
    X1
   | |                          (OUT Y2)
   Start
```

When either a common comment or a comment by program has been set for a device, the set comment is displayed automatically.

- The number of letters used in editing comment devices or used for display in the circuit mode can be changed from 16 to 32 and from 32 to 16.
  Click <<Whole data>> tab on the dialog box displayed by selecting [Tool] → [Option] (Refer to Section 15.12).

9.1.2 Writing to ACPU/GPPA file

A	Q/QnA	QS	FX
○	×	×	×

(1) Writing to ACPU takes place according to <u>the memory size setting (comment, extended comment) and write comment range setting (refer to Section 9.7) in the PLC parameter.</u>
Only comment1/2 and extended comment 1 can be input to the programmable controller (Extended comments 2 to 4 cannot be input.)

(2) Comment1 (4032 comments x 15 character) can be input to ACPU while Comment2 (4032 comments x 16 character) can be input to ACPU.

(3) <u>Devices other than X, Y, SP.M (special relay), and SP.D (special register) must be saved in the extended comment 1 area.</u>
(Refer to Sections 9.7 for details.)

(4) When a comment has been created in more than 17 characters with GX Developer, the comment part in the 18th character and after is not input to the programmable controller.

(5) When X and Y areas are overlapping in a common comment, Y comment is not input because X takes precedence over Y.

9.1.3 Reading from ACPU/GPPA file

A	Q/QnA	QS	FX
◯	×	×	×

(1)   When the comments X and Y created by the programmable controller or GPPA are read into GX Developer, they are pasted onto the edit windows X and Y respectively.

(2)   When comment1/2 and extended comments have been set for the existing data, both comments are read into GX Developer common comments.
In addition, <u>when comment1/2 and extended comments are overlapping, the latter extended comments are read with precedence.</u>
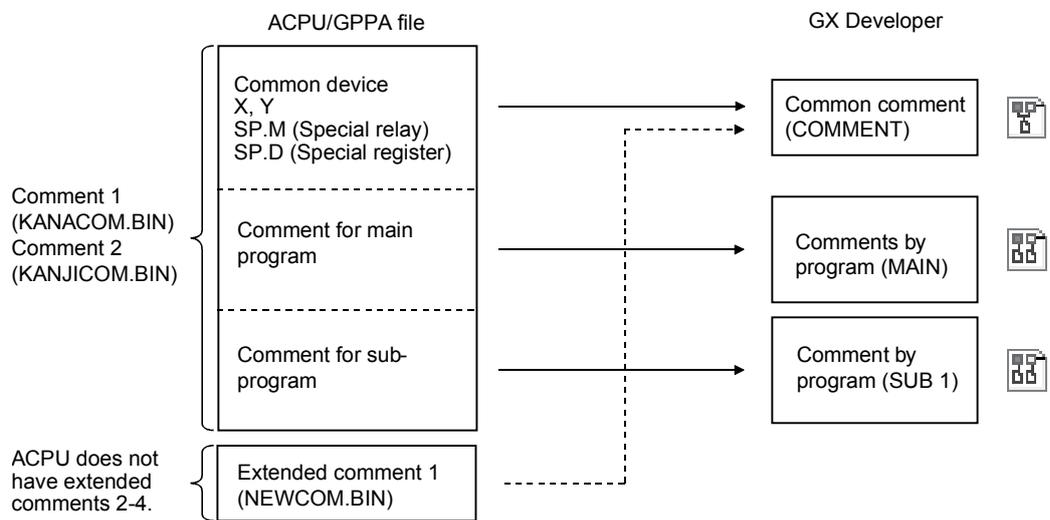
The comments for the main program and subprograms include the device comments, M, L, S, B, F, T, C, D, W, R, P, and I.

[Notes on reading and writing common comments]

When the common devices X0 to XF and extended comments Y0 to YF are overlapping (in files created on the preceding page) , if they are read into GX Developer, then input to ACPU, care should be taken because the comments Y0 to YF read from the extended comments are input to the common devices and the original common device comments are overwritten.
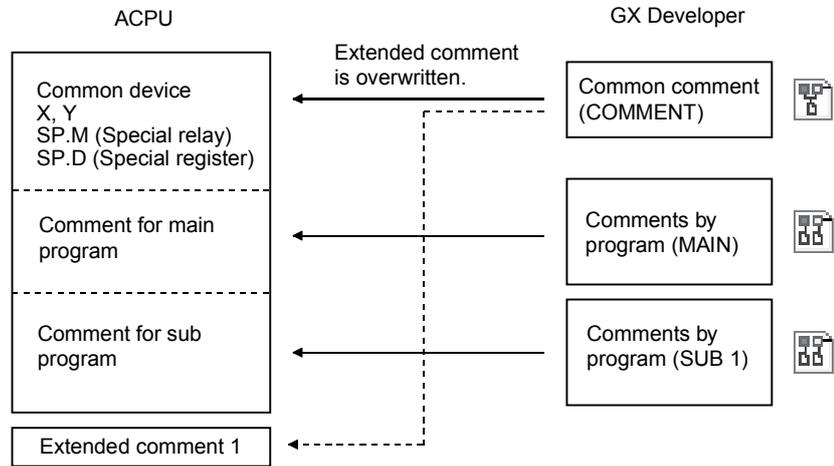
9.1.4 Writing to QCPU (Qmode) QnACPU/GPPQ file

A	Q/QnA	QS	FX
×	○	○*	×

∗: Cannot be written in GPPQ format.

(1) Common comments and comments by program can be written to the programmable controller CPU and GPPQ format file, respectively.
For the number of comment points, refer to Appendix 8.

GX Developer

Programmable controller

Common comment (COMMENT) → Common comment (COMMENT)

Comments by program → Comments by program

Comments by program → Comments by program
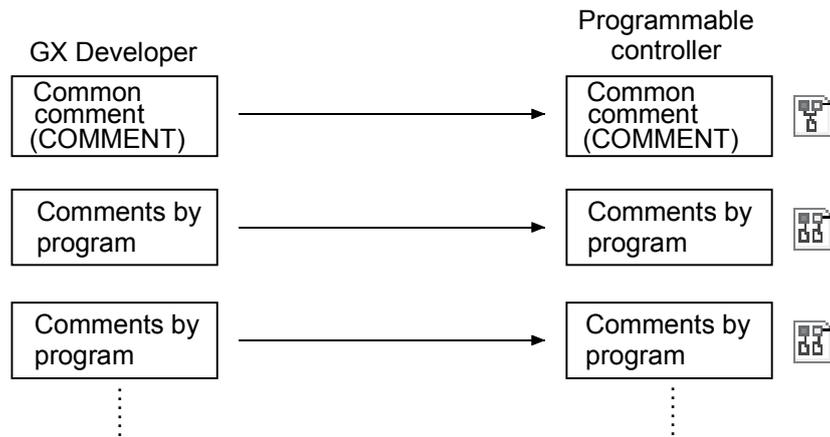
9.1.5 Reading from QCPU (Qmode) QnACPU/GPPQ file

A	Q/QnA	QS	FX
×	○	○*	×

∗: Cannot be read in GPPQ format.

(1) The comments created by GPPQ are read as they are.
The GX Developer common comments are not read.

QCPU(Qmode), QnACPU

GX Deveoper

Common comment (COMMENT) → Common comment

Comments by program → Comments by program

Comments by program → Comments by program
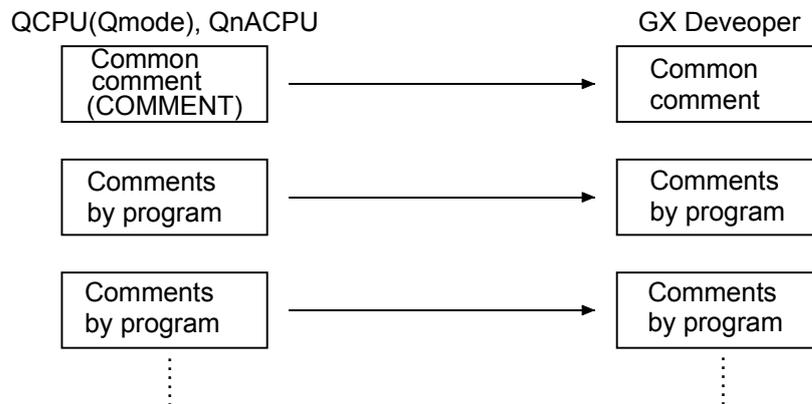
When the file "COMMENT" has been created as a QnACPU or GPPQ file, it is read into GX Developer as a common comment.

9.1.6 Writing to FXCPU/FXGP(DOS), FXGP(WIN) file

A	Q/QnA	QS	FX
×	×	×	○

(1) Writing to FXCPU can take place according to the memory size setting (comment size) and write comment range setting (Refer to Section 9.7.) in the PLC parameter.

(2) Only common comments can be input to FXCPU as device comments. Comments by program cannot be input to the programmable controller (Refer to Section 9.3.)
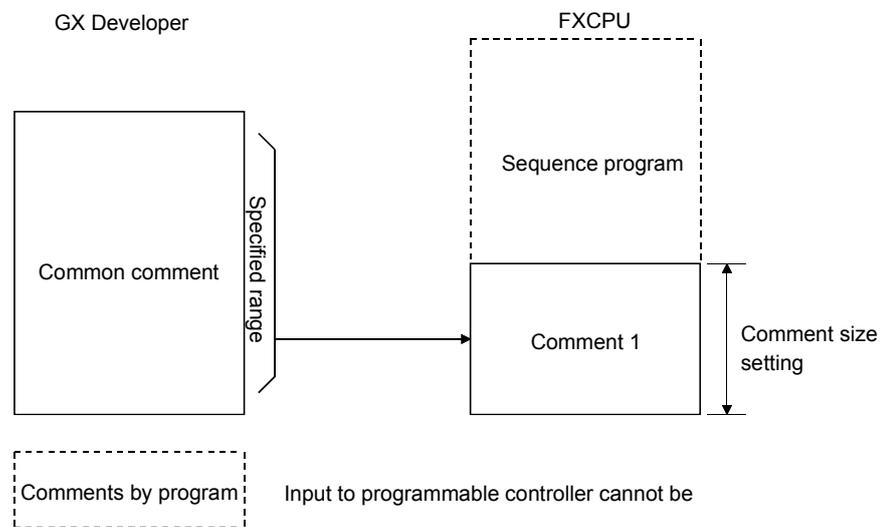
(3) The number of comment1 characters that can be input to FXCPU from GX Developer is 16 characters.
Though GX Developer allows comments of up to 32 characters, only 16 characters are input to the programmable controller.
In addition, FXGP(DOS) allows only characters to be used for Comment1 and the maximum number of characters is 15.
To display all comments normally by FXGP(DOS), device comments must be created in up to 15 characters.

(4) The number of comment1 that can be input to FXCPU varies depending on the memory size setting in the PLC parameter.

(5) All details of the common comment are written.
For the Alias, however, only the alphanumeric characters and symbols (•, + - ＊ / = . ? # $ % & : ; _) of half size are made valid (Refer to Section 9.4.1).
Those Alias containing full size characters or unspecified characters will be deleted at the time of writing.

(6) When the FX3G, FX3U or FX3UC is used, writing to the FXGP (DOS) or FXGP (WIN) format file cannot be performed.

9.1.7 Reading from FXCPU/FXGP(DOS), FXGP(WIN) file

A	Q/QnA	QS	FX
×	×	×	○

1. Comments in FXCPU are read as common comments as they are.

FXCPU

GX Developer

Sequence
program

Comment 1

Common
comment
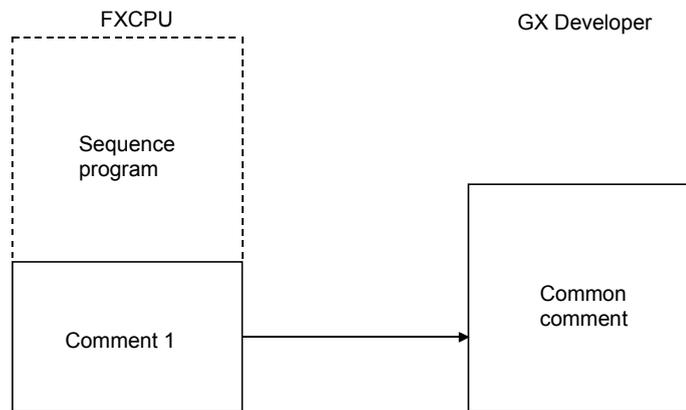
(1) Reading an FXGP(DOS) file
All comments are read.

(2) Reading an FXGP(WIN) file
Though FXGP(WIN) allows up to 50 characters to be input, only the first 32
characters are read for GX Developer input.
The number of comments is not limited and all comments are read.

(3) When the FX3G, FX3U or FX3UC is used, reading from the FXGP (DOS) or FXGP
(WIN) format file cannot be performed.

9.2 List of Device Comments

A	Q/QnA	QS	FX
○	○	○	○

The types of devices and the possibility of comment setting are listed below.

Device name	Symbol	Bit device	A *1	Q/QnA	QS	FX
Bit device	Input/Output	X/Y	○	○	○	○
	Input/Output	DX/DY	–	○	○	–
	Internal relay	M	○	○	○	○
	Step relay	S	○	×	–	–
	Latch relay	L	○	○	–	–
	Annunciator	F	○	○	○	–
	Special relay	SP.M	○	–	–	–
		SM	–	○	○	–
		M	–	–	–	○
	FB Input/FB Output	FX	–	×	×	–
	Edge relay	V	–	○	○	–
	Link relay	B	○	○	○	–
	Link special relay	SB	–	○	○	–
	State	S	–	–	–	○
Timer/Counter	Timer	T	○	○	○	○
	Counter	C	○	○	○	○
	Count timer	ST	–	○	○	–
Word device	Data register	D	○	○	○	○
	Special register	SP.D	○	–	–	–
		SD	–	○	○	–
		D	–	–	–	○
	Link register	W	○	○	○	–
	File register	R	○	○ *2	–	○ *3
	(RAM) File register	D	–	–	–	○ *4
	Sequence file R	ZR	–	○ *2	–	–
	Link special register	SW	–	○	○	–
	FB data	FD	–	×	×	–
Others	Pointer	P	○	○	–	○
	Accumulator	A	○	–	–	–
	Interrupt pointer	I	○	○	–	○
	Nesting	N	×	×	×	–
Extended specification	Index	Z	×	×	×	×
	I/O No.	U	–	○	–	○ *3
	Buffer register	U*\G*	–	○	–	○ *3
	SFC block device	BL	–	○	–	–
	Step relay (Step relay with a block specification)	BL\S	–	○	–	–

*1: When the A1FXCPU is selected, S comment or extended comment cannot be created.

*2: When the Q00J is selected, R and ZR comments cannot be created.

*3: Can be set only when the FX3U(C) is selected.
   U (module No.), U*\G* (buffer memory)

*4: Can be set only when the F3₃G or FX3U(C) is selected.
   R (extension register)

9.3 Common Comments and Comments for each Program

A	Q/QnA	QS	FX
○	○	○	○

[Device comment system]

Device comments include common comments and comments by program.

[Common comment]

A series

Settings are required when a common comment is assigned for all sequence programs in CPU types with subprograms.

Q/QnA series

Settings are required when single comment data is used in common for creation of multiple programs.

These settings can also be made even when multiple programs are not present.

FX series

Settings are required when a comment is assigned for the main program (MAIN).

In FX series connection, these settings are not related to subprograms (SUB) because only one program file is created.

The common comment name is fixed to COMMENT.
The common commnet can be changed to comments by program later.

[Comments by program]

A series

Settings are required when a comment is assigned for each program during main sequence program creation or sub-sequence program creation.

Q/QnA series

Settings are required when a comment is assigned for each program.

FX series

Settings are required when comments other than common comments are assigned for the main program (MAIN).

In FX series, only common comments are automatically created in new project creation.

When comments by program are required, they must be added newly. (refer to Section 4.9 for details.)

Comments by program cannot be input to FXCPU and FXGP(DOS) or FXGP(WIN) files. When input to FXCPU or FXGP(DOS) or FXGP(WIN) files is required, comments must be created as common comments or the comments by program must be changed to common comments for operation. (refer to Section 9.6 for details.)

[Setting of comment data by program]
Refer to Section 4.9 for details on operation methods.
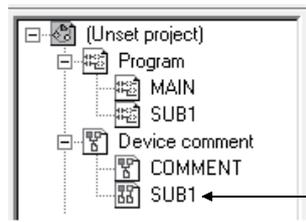
Once the comments by program are set, they are displayed as shown in the figure to the left.

[Creation of only common comments]

Schematic diagram

A series (A4UCPU selection):

| Sequence program (MAIN) |
| Sequence program (SUB1) |
| Sequence program (SUB2) |
| Sequence program (SUB3) |

COMMENT common comment

Q/QnA series:

| Sequence program A |
| Sequence program B |
| Sequence program C |

COMMENT common comment

FX series:

| Sequence program (MAIN) |

COMMENT common comment
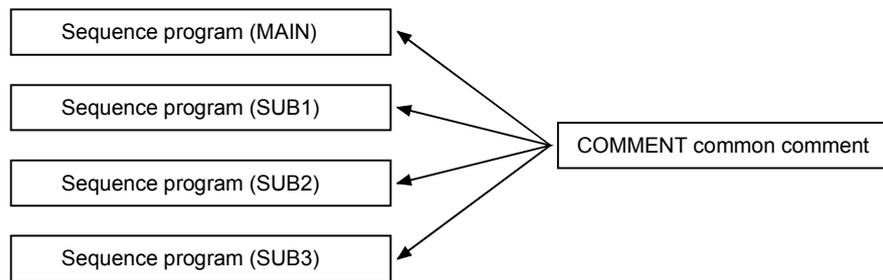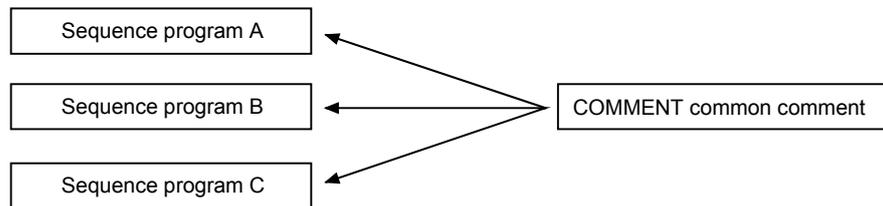
[Creation of only comments by program]

A series (A4UCPU selection):

Comments by Program

| Main sequence proagram | ← | MAIN |

| SUB1 Sequence program | ← | SUB1 |

| SUB2 Sequence program | ← | SUB2 |

| SUB3 Sequence program | ← | SUB3 |

Q/QnA series:

Comments by Program

| Sequence program A | ← | Comment A |

| Sequence program B | ← | Comment B |

| Sequence program C | ← | Comment C |

FX series:

Comments by Program

| Main sequence program | ← | MAIN |
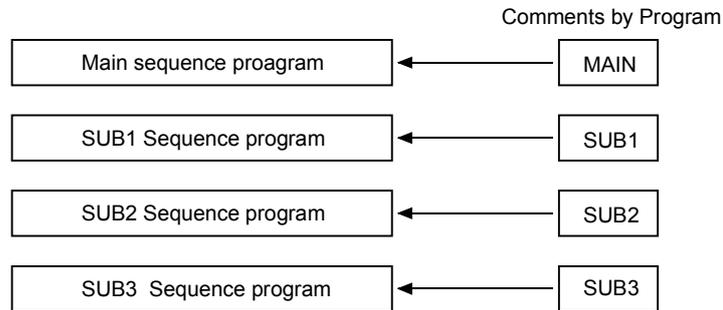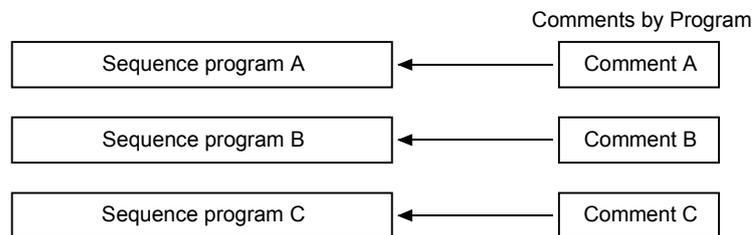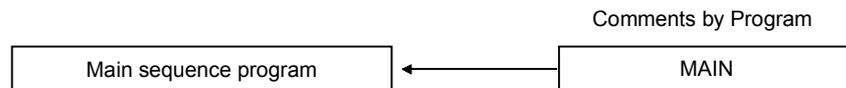
[Creation of SFC program for Basic model QCPU]

| MAIN-SFC program A | ← | MAIN |
| MAIN program C | ← | |
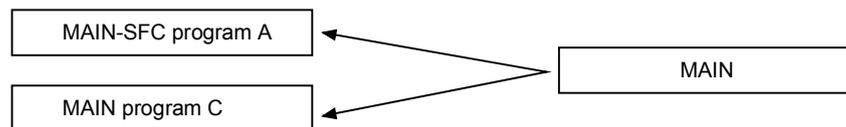
MAIN-SFC program and MAIN program refer to "MAIN" of comments by program.

```
POINT
```
• SFC comments of Basic model QCPU are stored in "MAIN" of device comment, and those of ACPU are stored in "COMMENT". Note that this causes the device comment to be deleted if PLC type is changed between ACPU and Basic model QCPU.

9.4 Creating Device Comments

9.4.1 Creating device comments on the device comment edit window

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Assigns the meaning for a device for easy-to-view programs. This function is helpful in creating the devices.

[Operating Procedure]
- For creation of common comments
  Device comment in the project data list → COMMENT
- For creation of comments by program
  Set the data type (comments by program), name of new data to be added, and title in the dialog box displayed by selecting [Project] → [Edit data] → [New].

[Dialog Box]
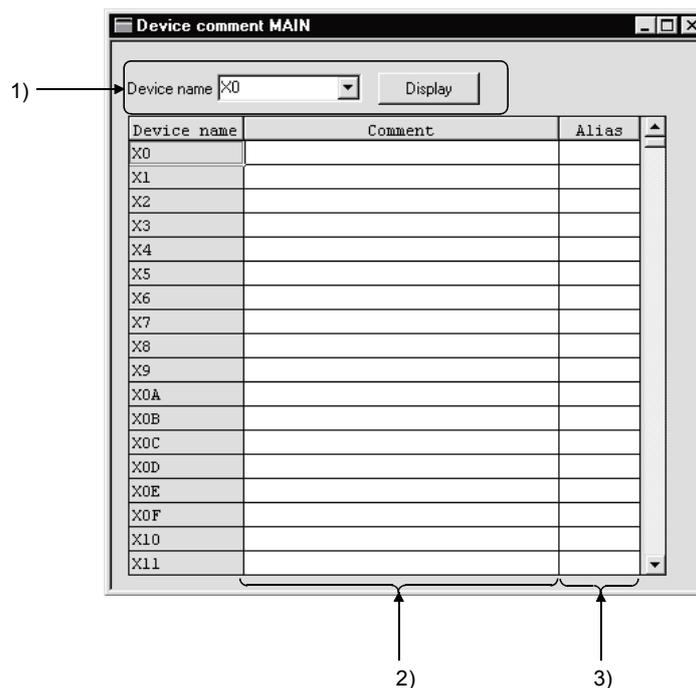
[Description]
1) Device
    Designates a device for comment creation.
    After device designation, click the Display button.
    Once the device name is set, it is registered.
    When creating SFC comments, specify the device names as follows.
    Block title   : BLm
    Step comment   : BLm\Sn
    Transition comment : BLm\TRn
    (m: block number, n: step, transition number)

2) Comment
    Sets a comment for each device.
    Comment1……….. To be created in 15 characters.
        (see APP.11.2 for comment setting in the FX programmable controller.)
    Comment2…….…. To be created in 16 characters.

3) Alias
    To be used when a device is set as an actual switch name.
    A device name must be set in up to 8 characters.

    <Example>   Difference in displaying the Alias and device comment

    Alias   Device comment
    SWITCH
    ─┤├─   ─┤├─
                                        Start
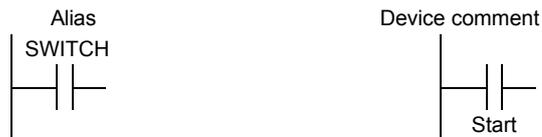
    Device names created in A Series format will not be written when [Write to GPPA file] or [Write to PLC] is executed. Caution is necessary.

┌───┐
│ ┌──────────┐   │
│ │ POINT   │   │
│ └──────────┘   │
│ • The Alias cannot be used for the project in which "Use label" is selected. │
│ • When either common comments or comments by program have already │
│   been created, the created device comments are displayed unconditionally. │
│ • When a Alias is input to an FXGP(WIN) file, it must be set only in │
│   alphanumeric characters and symbols (· + - ＊ / = . ? # $ % & : ; _). │
│   Device names including the characters not permitted are deleted in writing │
│   them.   │
│ • The number of comment characters can be changed to 32 characters in the │
│   <<Data>> sheet on the dialog box displayed by selecting [Tools] → [Options]. │
│   However, the number of comment characters is restricted as follows for input │
│   to ACPU or FXCPU (Comment1 only).   │
│   Comment1 .... Up to 15 characters (For FX series, refer to Section │
│   Appendix 11.2)   │
│   Comment2 .... Up to 16 characters   │
└───┘

9.4.2 Creating device comments for the created circuit

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Assigns the meaning for a device for easy-to-view programs.
This function is helpful in modifying or adding device comments.

[Operating Procedure]

1. Move the cursor to a device comment creation location.
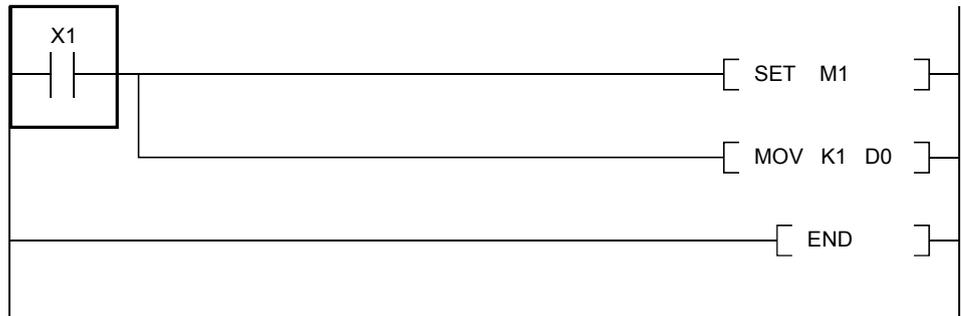
2. Press [Enter] key.

3. Make settings as follows for the circuit input dialog box. (Input two semicolons.)

Nothing is selected.

4. Comment display takes place as follows.
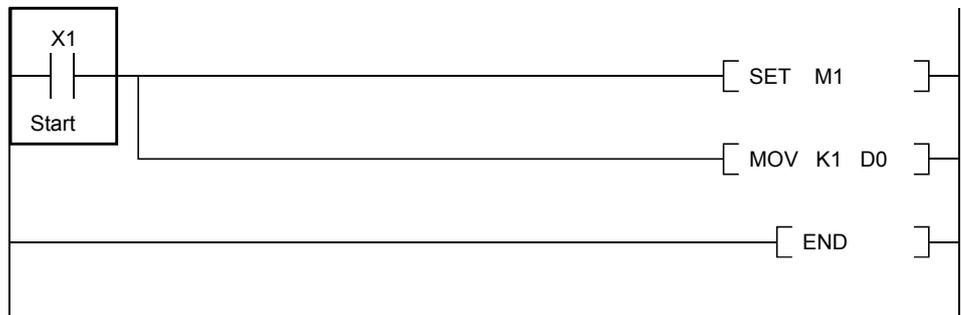
9.4.3 Creating device comments after creating a circuit

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Assigns the meaning for a device for easy-to-view programs.

This function is helpful to create device comments and the circuit at the same time.

In addition, "Enter device comment" dialog box shows how the entered comment will be actually displayed in the ladder/SFC figure (MELSAP2,3) for confirmation.

[Operating Procedure]

1. [Tools] → [Options]. Check "Continuous during command write".

2. Move the cursor to a device comment creation location.

3. Enter a contact and/or a device and click the OK button.
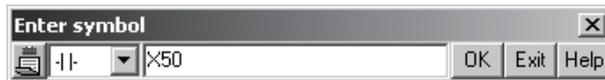
4. Enter a device comment and click the OK button.

5. Comment display takes place as follows.

9.4.4 Editing comments on the ladder editing screen

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Comments the devices for ease of program viewing. This function is useful for device comment corrections/additions.

In addition, "Enter device comment" dialog box shows how the entered comment will be actually displayed in the ladder/SFC figure (MELSAP2, 3) for confirmation.

[Setting Procedure]

1. [Edit] → [Documentation] → [Comment] (🔳).

2. Move the cursor to the position where a device comment will be created.

3. Pressing Enter shows the following dialog box.

    Enter device comment [X50] COMMENT   ✕

    [   ]

    [OK]   [Cancel]

4. Enter a device comment and click the OK button.

    Enter device comment [X50] COMMENT   ✕

    [Initialed start instruction]   Initiale
                                       d start
    [OK]   [Cancel]   instruct
                                       ion

5. Providing a comment display shows the following ladder.

```
     X50
0   ─┤ ├─                                          ─[SET      M1      ]
   Initiale
   d start
   instruct
   ion


2                                                  ─[END             ]
```
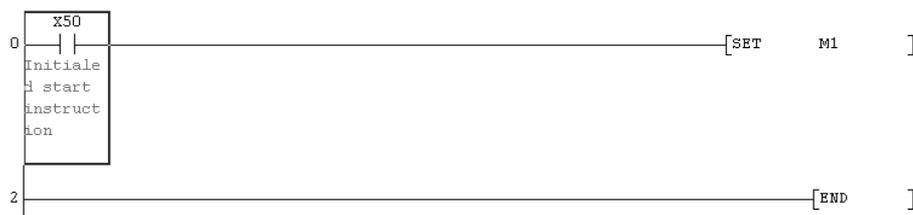
POINT

• To cancel the comment edit mode, choose this menu again and uncheck the checked menu item.
• Note that comments of M, L and S can be created on the A series.
• For the FROM/TO and other instructions which can handle multiple devices, the number of devices used can be commented.

9.5 Deleting Device Comments

9.5.1 Deleting all device comments and Alias

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Deletes all device comments and Alias set so far.

[Operating Procedure]
Display the device comment edit window, then select [Edit] → [Clear all (all devices)].

9.5.2 Deleting displayed device comments and Alias

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Deletes the device comments and Alias being displayed.

[Operating Procedure]
Display the device comment edit window, then select [Edit] → [Clear all (displayed devices)].

9.6 Setting Comment Types

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Switches the comment type from common comments to comments by program and vice versa.

<Example>
Settings are required when common comments are changed to SUB1 (comments by program) or comments by program are changed to common comments (COMMENT).

Before change		After change
COMMENT (common comment)	→	SUB1 (comments by program)
MAIN (comments by program)	→	MAIN (comments by program)

[Operating Procedure]
Display the device comment edit window, then select [Edit] → [Setup comment].

[Dialog Box]
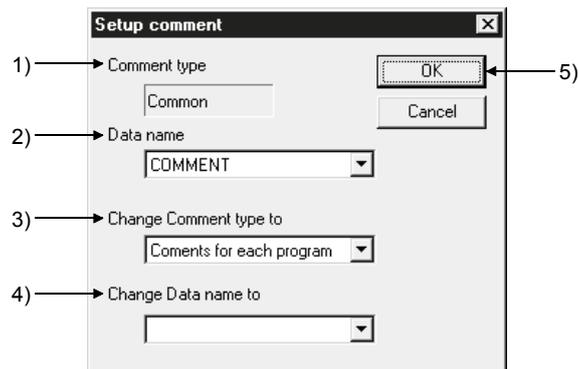
[Description]

1) Comment type
   Indicates the type of the data selected for Data name.

2) Data name
   Designates a data name for comment type change.

3) Change comment type to
   Classifies data set in the data name field into two categories: common comments and comments by program.

4) Change Data name to
   Changes the existing data name.
   This data name must be designated in up to 8 characters.

5) OK button
   Click this button after making necessary settings.

POINTS

- Common comments and comments by program can be classified from the device comment icons in the project data list.

Icon for common comments
Icon for comments by program
Icon for comments by program

[icon] .... This icon is displayed for comments corresponding to the sequence programs.

[icon] .... This icon is displayed for comments not corresponding to the sequence programs.

- One common comment is allowed within one program.
  In addition, the common comment data name is fixed to "COMMENT."
- Up to 124 comments by program can be set.

9.7 Setting Comment Ranges

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Make this setting when writing the created comments of the specified range to the programmable controller or writing comments to the other format file.

[Operating Procedure]
Display the device comment edit window, then select [Edit] → [Setup comment range].

- When A series is started

[Dialog Box]

<<Common programs>> sheet
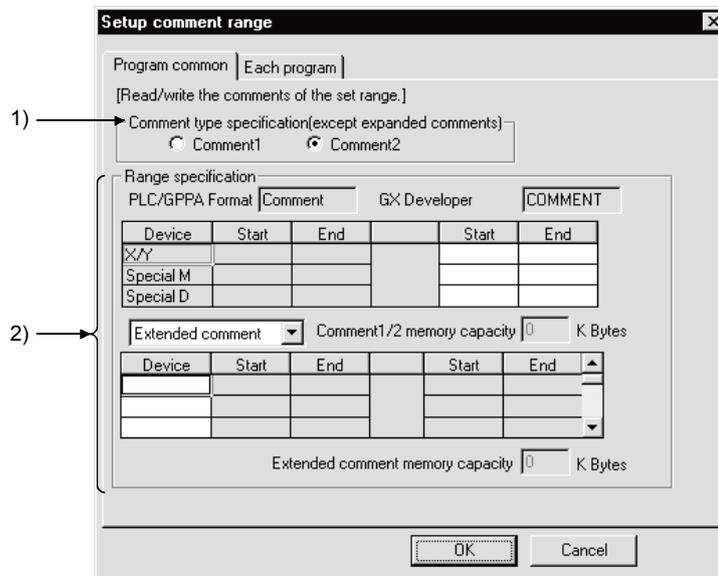
[Description]
1)   Comment type specification
⊙ Comment1
To be selected when a device comment has been created as a Comment1.
⊙ Comment2
To be set when a device comment has been created as a Comment2.

2)   Range specification

Items to be set for writing a
GPPA file to a programmable
controller or FD/HD

Items to be set for setting a
GX Developer comment range

Indicates the name of
data to be written as a
GPPA file.

Indicates a data
name for comment
range setting.

Selects a destination to
which a range-specified
device is written.

Indicates the size of
a device to be stored
in the comment.

Designates the devices to
be stored in the extended
comments 1 to 4.

Indicates the size of a
device to be stored in
the extended comment.

If the starting and end positions of a range are designated in GX Developer files,
they are reflected in the PLC /GPPA table.

[Dialog Box]
<<Each program>> sheet (for main program and subprograms)
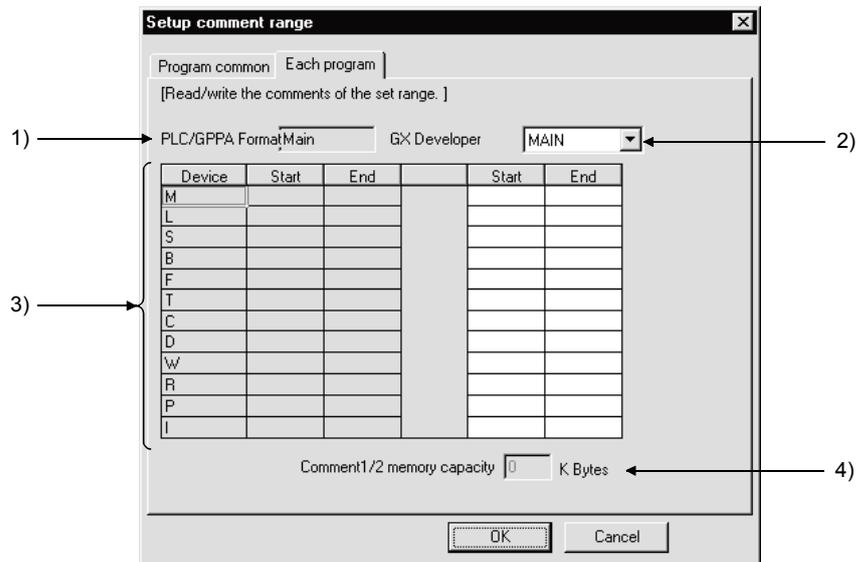
[Description]
1)   PLC/GPPA Format
Indicates the name of data to be written as a GPPA file.

2)   GX Developer Format
Designates MAIN or SUB1.
Even if SUB2, SUB3 or SUB4 is created with GX Developer, it cannot be
designated in this setting item.

3) Device range setting
Designates a range of devices to be written to a programmable controller or a Personal computer.

4) Comment1/2 memory capacity
Indicates the size of a device to be saved in the comment or extended comment.

[Operating Procedure]
• When QnA series is started

[Dialog Box]
<<Program common>> sheet
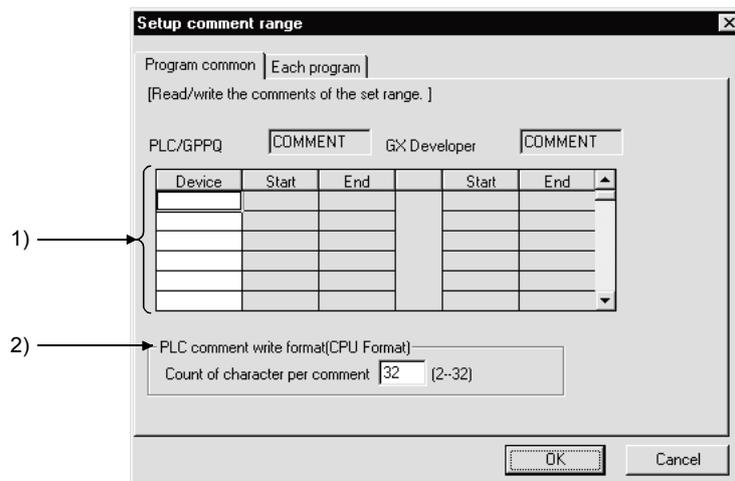
[Description]
1) Range setting

Designates the name of data to be written as a GPPQ file.

Designates the devices to be written to a PLC or FD/HD.
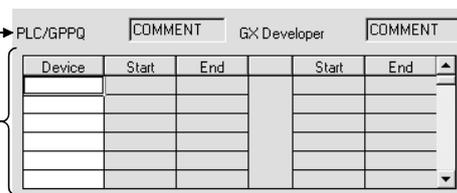
Indicates a data name for comment range setting.

If the starting and end positions of a range are designated in GX Developer files, they are reflected in the PLC /GPPA table.

2) PLC comment write format (PLC Format)
Designates how many characters are to be written to a programmable controller.

[Dialog Box]
  <<Each program>> sheet
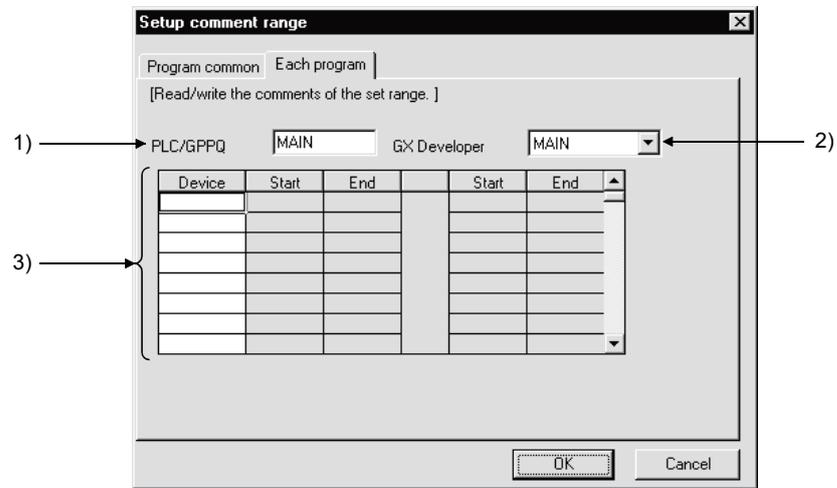
[Description]
  1) PLC /GPPQ Format
     Designates the name of data to be written as a GPPQ file.

  2) GX Developer Format
     Indicates a data name for comment range setting.

  3) Device range setting
     Designates the devices to be written to a programmable controller or Personal
     computer.

POINT

• To make input to ACPU, the comment1/2 memory size must be designated in
  the memory size parameter. (The memory size displayed here is not reflected
  to the parameter memory size.)
  If no size is designated, an error occurs.
  No settings are required when the other files are used for input.
• When the comment range is not set to write device comments to a QCPU (Q
  mode)/QnACPU or GPPQ format file, the created device comments are all
  written.

[Operating Procedure]
• When FX series is started
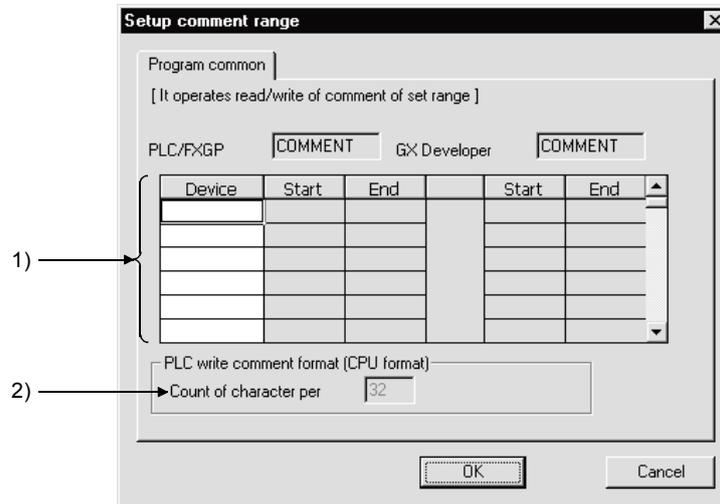
[Dialog Box]
<<Program common>> sheet

[Description]
1)   Range setting

Designates the devices to
be written to a programmable
controller or Set

Set the comment range
created by the GX Developer.

Displays the range of comments to be written.
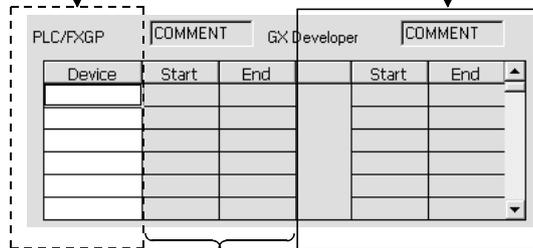
2)   PLC write comment form (PLC form).
     Setting is not possible for the FX series.

POINT

Comments by program cannot be written to programmable controller and
FD/HD (Refer to Section 9.3).

10. SETTING THE STATEMENTS AND NOTES

Sequence programs are annotated with comments for ease of understanding.
Note that the A/FX series does not have the integrated statement/integrated note function.

10.1 Statements/Notes

A	Q/QnA	QS	FX
○	○	○	○

This section describes the statements created on the Q/QnA/A/FX series.
On the FXGP(DOS) and FXGP(WIN), statements are called "ladder comments".
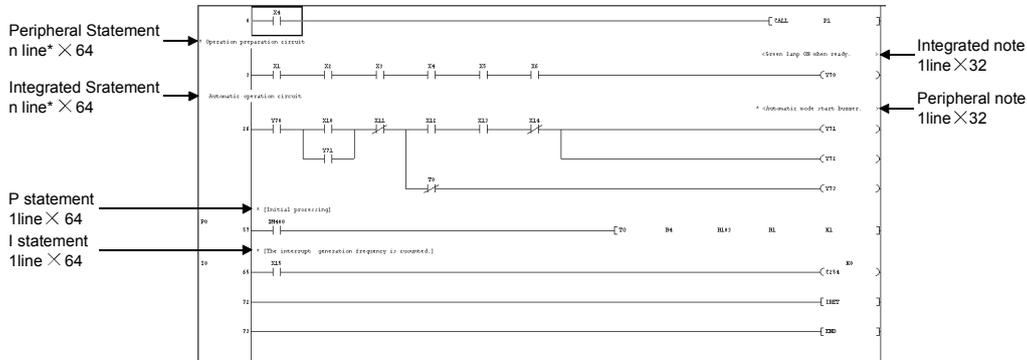
∗: About the number of lines on which a peripheral statement/integrated statement can be created
A single line accepts 64 characters. No sentence can be written over two or more lines.
For the Q/QnA series
Number of statements that may be created in a single ladder block = 15 × number of lines in a single ladder block
The following ladder block can be annotated with statements on up to 30 lines.
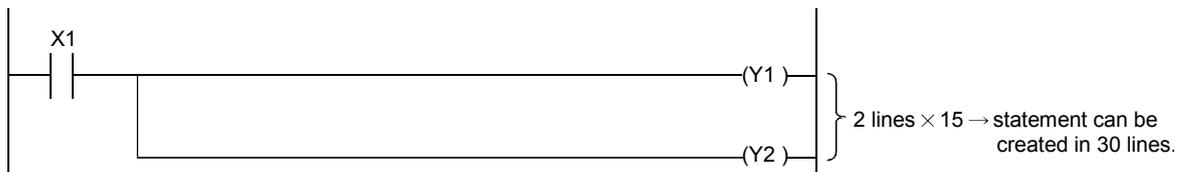
What are statements?
Statements include line, P and I statements.
Statements can annotate each ladder block with comments to ensure ease of understanding a sequence of the whole program.
The A/FX series has statements, and the Q/QnA series has integrated and peripheral statements.

10

What are notes?
  Notes include integrated and peripheral notes.
  Notes can be created for coils and application instructions.
  T he A/FX series has peripheral notes and the Q/QnA series has integrated and peripheral notes.
  However, when notes are written to the Personal computer in an ACPU or GPPA format file, only the first notes of single ladder blocks are written.
  On the FXGP(WIN), notes are called "coil comments".

About the integrated statements/notes
  Since integrated statements/notes can be displayed or edited on GX Developer or statements be handled as part of a program, they can be written/read to/from the programmable controller.
  When performing maintenance in a factory or the like, for example, statements/notes are useful because they can be read from the programmable controller.
  However, writing integrated statements/notes to the programmable controller requires much program memory. So, if the programmable controller has a small free memory area, write peripheral statements instead of integrated statements.
  <Number of steps exhausted>

$$2 + \frac{\text{Number of characters}}{2} \text{ steps (Round off decimals.)}$$

  Fixed

  A space entered in a character string is also handled as one character.

About the peripheral statements/notes
  They may be displayed or edited only on GX Developer.
  Peripheral statements/notes are preceded by "∗".
  Since they are not written to the programmable controller, the program memory area of the programmable controller can be reduced.
  However, if program correction or similar operation is performed in the field or the like, the program on GX Developer will be different from the one in the PLC CPU. Therefore, if read from PLC is performed without merging ∗, the statements on GX Developer will be discarded. (Refer to Section 10.2.)
  ∗ : Merging indicates that a program in the programmable controller and statements on GX Developer are combined.

  [A/FX series]
  The statement steps are not exhausted.
  Note that statements are not written to the programmable controller.
  The P, I statements of the FX series are not written in the FXGP(DOS) or FXGP(WIN) format.

  [Q/QnA series]
  The number of steps exhausted is 1 independently of the number of characters.
  Note that statements are not written to the programmable controller.

10

[Caution when reading statements from the PLC]
When overwriting a program without statements read from the PLC to the hard disk, the program stored in the hard disk will be overwritten by the program without statements. Before reading such a program, store the program (originally retained in the hard disk) in a floppy disk.
If any program is edited on a Personal computer and written during running, program mismatching may occur.

(1)   When programs are not merged
For the Q/QnA series
Peripheral statements on GX Developer are deleted.

For the A/FX series
Statements existing in the beginning of ladder blocks are merged.
If the program read to GX Developer is different from the program in the programmable controller, statements are not added to the correct positions, resulting in a ladder creation fault. Therefore, the statements are deleted.

- A series, FX series

  When a program with statements exists in the peripheral device, it will be displayed with the statements added to the program stored in the programmable controller. The programs will not be displayed correctly if they mismatch between the peripheral and the programmable controller.

- QnA series

  The program read from the programmable controller overwrites the program stored in the peripheral device memory.

(2)   When programs are merged
For the Q/QnA series
1) If the program on GX Developer and the program in the programmable controller differ in step No., they are merged from the beginning.
However, if the program on GX Developer has become larger due to editing, e.g. addition/correction to the program on GX Developer or deletion to the program in the programmable controller, the peripheral statements in the area greater than the program in the programmable controller are deleted.

2) If integrated statements/notes exist in the program on GX Developer, they are deleted from the program on GX Developer after merging.

3) If integrated statements/notes exist in the program within the programmable controller, they are read unchanged onto GX Developer.

For the A/FX series
1) Programs are merged independently of the positions of the statements which are added to the programs on GX Developer and in the programmable controller.
(Merging may insert statements between ladders. As it will result in an unauthorized ladder on the ladder display screen, a warning message appears. In that case, make correction in the statement block edit or list mode.)

2) If the step where a statement exists in the program on GX Developer is not found in the data within the programmable controller, that statement is discarded.

3) When choosing [Import from GPPA format file] to merge programs, statements in the data saved in the GPPA format file are the target of merging, independently of the statements added to the program opened on GX Developer.

[Caution when reading notes from the PLC]
When overwriting a program without notes read from the PLC to the hard disk, the program stored in the hard disk will be overwritten by the program without notes. Before reading such a program, store the program, (originally retained on the hard disk) in a floppy disk.
If any program is edited on a Personal computer and written during running, program mismatching may occur.

(1) When programs are not merged
   For the Q/QnA series
      Peripheral notes on GX Developer are deleted.
   For the A/FX series
      Only the coil instructions whose step numbers of the program on GX Developer and those of the program in the programmable controller are identical are merged.

• A series, FX series

Peripheral Device   Programmable controller

0 ─┤├─────( )─
      ∗(Note 1)
2 ─┤├─────( )─
      ∗(Note 2)

0 ─┤├─────( )─
2 ─┤├─────( )─

READ

0 ─┤├─────( )─
      ∗(Note 1)
2 ─┤├─────( )─
      ∗(Note 2)

When a program with notes exists in the peripheral device, it will be displayed with the notes added to the program stored in the programmable controller. The programs will not be displayed correctly if they mismatch between the periphera device and the programmable controller .

• QnA series

Peripheral Device   Programmable controller

0 ─┤├─────( )─
      ∗ (Note 1)
2 ─┤├─────( )─
      ∗ (Note 2)

0 ─┤├─────( )─
      ∗
2 ─┤├─────( )─
      ∗

Overwritten

READ

0 ─┤├─────( )─
      ∗
2 ─┤├─────( )─
      ∗

The program read from the programmable controller overwrites the program stored in the peripheral device memory.

---

(2) When programs are merged
   For the Q/QnA series
      Refer to the caution given for reading statements from the PLC.
   For the A/FX series
      Programs are merged independently of the positions where the notes on GX Developer and the notes in the programmable controller exist.
      If the program on GX Developer has become larger due to editing, e.g. addition/correction to the program on GX Developer or deletion to the program in the programmable controller, the peripheral statements in the area greater than the program in the programmable controller are deleted.

10.2 Merging Operation Procedure

The following operation procedure is used to merge the program on GX Developer and the program in the programmable controller.
Refer to Section 15.3 when merging a file saved on an FD or the like and a program on GX Developer.

[Operating Procedure]
1) Read onto GX Developer the program which is equivalent to the program written to the programmable controller.
   (For the Q/QnA series, merging cannot be done if the programs on the programmable controller and GX Developer sides have the same data name.)

2) Read setting
   (1)   For read from PLC
         Choose [Online] → [Read from PLC] → <<Program>> → "Peripheral statement/merging note". (Refer to Section 16.3.3)
   (2)   For IC memory card
         Choose [Tools] → [IC memory card] → [Read IC memory card] → "Peripheral statement/merging note ". (Refer to Section 15.6.1)
   (3)   For reading other format files
         Choose [Project] → [Import file] → [Import from GPPA format file] → "Peripheral statement/merging note". (Refer to Section 4.15.1)
         After setting, click the Execute button.

3) Statement/note block edit
   After completion of reading, perform the following operation.
   Choose [Edit] → [Documentation] → [Statement/Note block edit].
   Opening the statement/note block edit screen and clicking the OK button moves all statements/notes to the ladder.

4) Check whether the statements/notes of the program read to GX Developer are in the correct positions.

5) If they are not, reselect statement/note block edit and move them to the correct position. (Refer to Section 10.5)

6) Choose [Project] → [Name project and save] to save the program.

POINT

Merging instructions
1. Programs are merged only when the statements added to the programs on GX Developer and in the programmable controller are both peripheral statements.
2. Programs cannot be merged if their types are different.
   (Ladder and SFC programs cannot be merged.)
3. Programs cannot be merged if the program on GX Developer and the program written to the programmable controller do not match in PLC type.
4. SFC programs cannot be merged.

10.3 Creating and Deleting Statements

10.3.1 When editing the circuit window

10.3.1(1) Creating statements on the circuit edit window

A	Q/QnA	QS	FX
○	○	○	○

[Operating Procedure]

1. Enter ⌷Insert⌷ key to set the insert mode.

2. Move the cursor to the position shown in the following figure.
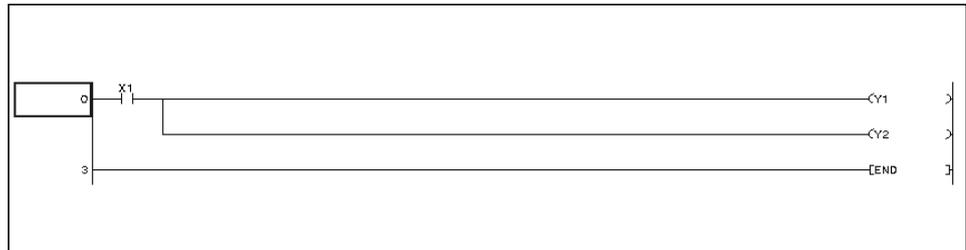
3. By entering a semicolon ";" the circuit input dialog box is displayed to enable the user to enter a statement.

To enter a P or I statement, enter a semicolon (;) after entering a P or I pointer.

(Example)   PI: P, I statement →⌷ENTER⌷ key or ⌷OK⌷ key

             Enter a desired statement.

4. After entering the statement, press ⌷Enter⌷ key or click the ⌷OK⌷ button.

POINT

- For switching integrated statements/peripheral statements on the Q/QnA series, refer to Section 6.4.13.
- For displaying statements created, refer to Section 3.9.
- Do not create a line statement starting with the following characters since the characters are for system use.
  ";FB BLOCK START ", ";FB BLOCK END", ";FB START", ";FB END", ";FB NAME", ";INSTANCE NAME", ";FB IN", ";FB OUT"

10.3.1(2) Deleting statements from the circuit edit window

A	Q/QnA	QS	FX
○	○	○	○

[Operating Procedure]

1. Move the cursor to the statement to be deleted, and press ⬚Delete key.

```
* Operation ready ladder
                                              * <Green lamp light on            >
           X0    X1    X2    X3    X4    X5    X6
    0     ─┤├───┤├───┤├───┤├───┤├───┤├───┤/├─────────────────────(Y70   )

* Automatic operation
           Y70   X10   X11   X12   X13   X14   X15
    8     ─┤├───┤├───┤/├───┤├───┤├───┤/├───┤/├─────────────────(Y71   )

                                                              (Y72   )

                                                              (Y73   )

    20                                                        [END    ]
```
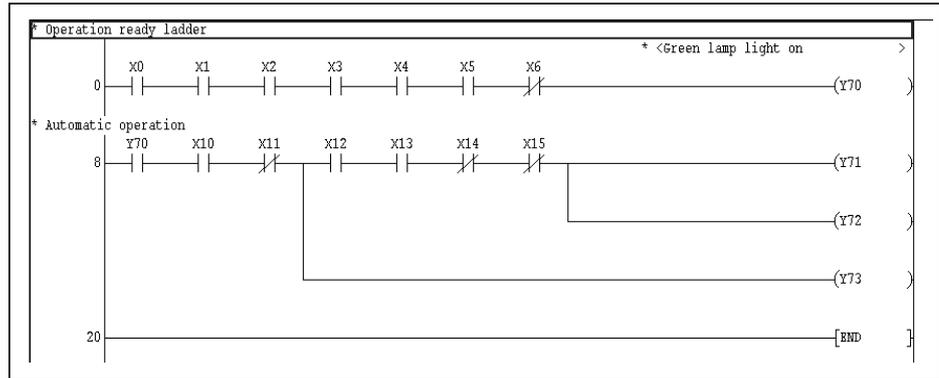
2. After the statement has been deleted, convert the program.

10.3.2 When editing the list window

10.3.2(1) Editing statements on the list edit window

A	Q/QnA	QS	FX
○	○	×	○

1.   Move the cursor to the head of the position to which a statement will be added.
      (Move the cursor to the head of the circuit block of a circuit.)

2.   By entering a semicolon ";", the list input dialog box is displayed.

```
Enter list                            ×
;                          OK  Exit  Help
```

PI: P, I statement →ENTER key or OK key
         ↑
      Enter a desired statement.

3.   Create a statement within up to 64 characters.
      Up to 255 characters can be entered in the text box.

```
POINT
```
- Statements will be displayed in the list mode at all times (it is impossible to not display statements).
- For integrated statements and peripheral statements, refer to Section 10.1.
- Do not create a line statement starting with the following characters since the characters are for system use.
  ";FB BLOCK START ", ";FB BLOCK END", ";FB START", ";FB END", ";FB NAME", ";INSTANCE NAME", ";FB IN", ";FB OUT"

10.3.2(2) Deleting statements from the list edit window

A	Q/QnA	QS	FX
○	○	×	○

1. Move the cursor to the statement to be deleted.

```
        ;* Operation ready ladder
    0  LD      X1
    1  MOV     K0          K1M1
    6  MOV     K0          K4Y60
   11  RST     C1
   14  LD      X0
   15  AND     X4
   16  AND     X5
   17  OR      Y70
   18  ANI     X1
   19  MC      N0          Y70
   24  LD      X2
   25  MPS
   26  ANI     M1
   27  ANI     Y72
   28  SET     Y71
   29  MPP
   30  SET     M1
   31  LD      Y71
   32  ANI     X2
   33  OUT     Y73
   34  END
   35
```

2. Press Delete key or Shift + Delete key.

```
    0  LD      X1
    1  MOV     K0          K1M1
    6  MOV     K0          K4Y60
   11  RST     C1
   14  LD      X0
   15  AND     X4
   16  AND     X5
   17  OR      Y70
   18  ANI     X1
   19  MC      N0          Y70
   24  LD      X2
   25  MPS
   26  ANI     M1
   27  ANI     Y72
   28  SET     Y71
   29  MPP
   30  SET     M1
   31  LD      Y71
   32  ANI     X2
   33  OUT     Y73
   34  END
   35
```

10.3.3 Creating statements in the statement edit mode

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Statements can be created easily.

[Operating Procedure]

1.   [Edit] → [Documentation] → [Statement] (🖾).

2.   Move the cursor to the ladder block where you want to attach a statement.

3.   Pressing [Enter] shows the following dialog box.
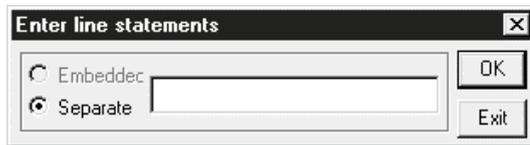
4.   Enter a statement and click the [OK] button.
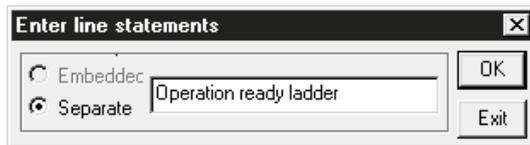
5.   Providing a statement display shows the following ladder.
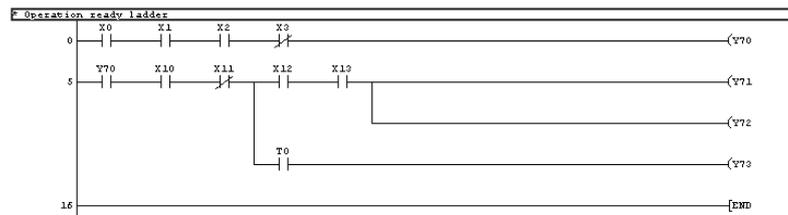
POINT

To cancel the statement edit mode, choose this menu again and uncheck the ✓ checked menu item.

• Do not create a line statement starting with the following characters since the characters are for system use.
";FB BLOCK START ", ";FB BLOCK END", ";FB START", ";FB END", ";FB NAME", ";INSTANCE NAME", ";FB IN", ";FB OUT"

10.4 Creating and Deleting Notes

10.4.1 Creating notes on the circuit edit window

10.4.1 (1) Creating notes on the circuit edit window

A	Q/QnA	QS	FX
○	○	○	○

[Operating procedure]

1. Press ⌷Insert⌷ key to set the overwrite mode.
   Note that a circuit will be added by creating a note in the insert mode.

2. Move the cursor to the position shown in the following figure.

3. By pressing ⌷Enter⌷ key, the following dialog box is displayed.

4. Add a semicolon ";" after Y1, and enter a note.

5. After the note has been entered, press ⌷Enter⌷ key or click the ⌷OK⌷ button.

POINT
• For switching integrated notes and peripheral notes on the Q/QnA series, refer to Section 6.4.13.
• For displaying notes created, refer to Section 3.10.

10.4.1 (2) Deleting notes from the circuit edit window

A	Q/QnA	QS	FX
○	○	○	○

[Operating procedure]

1. Press ⌷Insert⌷ key to set the overwrite mode.

2. Move the cursor to the note to be deleted, and press ⌷Enter⌷ key or double-click the ⌷mouse⌷ button.

```
                                                      * <Green lamp light on        >
       X1
    0 ─┤├─────────────────────────────────────────────────────────────────[Y1      ]

    2 ─────────────────────────────────────────────────────────────────────[END    ]
```
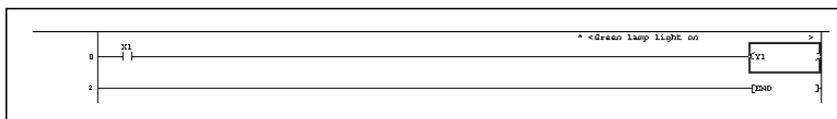
3. Delete the statement Green lamp lights when operation preparations are completed. after the semicolon ";".

```
Enter symbol                                            ☒
🖹 -()-  ▼ │Y1;Green lamp light on        │  OK │ Exit │ Help│
           └─────────┬─────────┘
            Delete this section.
```
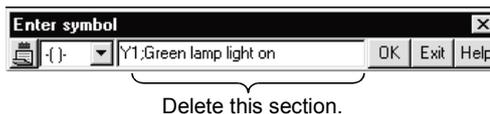
4. After the statement has been deleted, press the ⌷Enter⌷ key or click the ⌷OK⌷ button.

10.4.2 Creating notes on the list edit window

10.4.2 (1) Creating notes on the list edit window

A	Q/QnA	QS	FX
○	○	×	○

[Operating procedure]

1. Move the cursor to the head of the position to which a note will be added.
    (Move the cursor to the head of the circuit block of a circuit.)

2. By entering a semicolon ";", the list input dialog box appears.

3. Create a note within up to 64 characters.
    Up to 255 characters can be entered in the text box.

POINT

- Notes will be displayed in the list mode at all times (it is impossible to not display statements).
- For integrated notes and peripheral notes, refer to Section 10.1.

10.4.2 (2) Deleting notes from the list edit window

A	Q/QnA	QS	FX
○	○	×	○

[Operating procedure]

1. Move the cursor to the note to be deleted.

```
    ;* Operation ready ladder
 0  LD     X1
 1  MOV    K0      K1M1
 6  MOV    K0      K4Y60
11  RST    C1
14  LD     X0
15  AND    X4
16  AND    X5
17  OR     Y70
18  ANI    X1
19  MC     N0      Y70
24  LD     X2
25  MPS
26  ANI    M1
27  ANI    Y72
28  SET    Y71
29  MPP
30  SET    M1
31  LD     Y71
32  ANI    X2
33  OUT    Y73
34  END
35
```

2. Press |Delete| key or |Shift| + |Delete| key.

```
 0  LD     X1
 1  MOV    K0      K1M1
 6  MOV    K0      K4Y60
11  RST    C1
14  LD     X0
15  AND    X4
16  AND    X5
17  OR     Y70
18  ANI    X1
19  MC     N0      Y70
24  LD     X2
25  MPS
26  ANI    M1
27  ANI    Y72
28  SET    Y71
29  MPP
30  SET    M1
31  LD     Y71
32  ANI    X2
33  RST    M1
34  SET    M2
```

10.4.3 Creating notes in the note edit mode

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Notes can be created easily.

[Operating procedure]

1. [Edit] → [Documentation] → [Note] (🖉).

2. Move the cursor to the coil/application instruction where you want to attach a note.

3. Pressing ⌷Enter⌷ shows the following dialog box.

4. Enter a note and click the ⌷OK⌷ button.
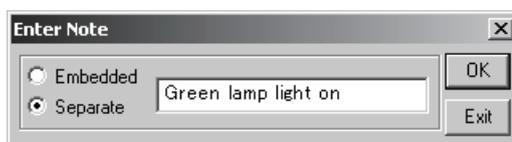
5. Providing a note display shows the following ladder.
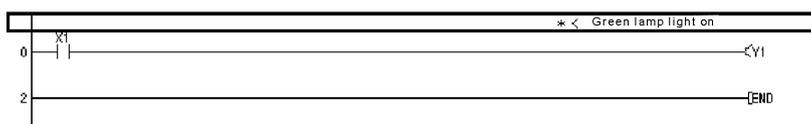
POINT

To cancel the note edit mode, choose this menu again and uncheck the ✓ checked menu item.

10.5 Editing batch of Statements/Notes

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
 You can batch-create multiple statements/notes.
 The position of statement/note can be changed easily.

[Operating Procedure]
 Select [Edit] → [Documentation] → [Statement/Note block edit].

[Dialog Box]
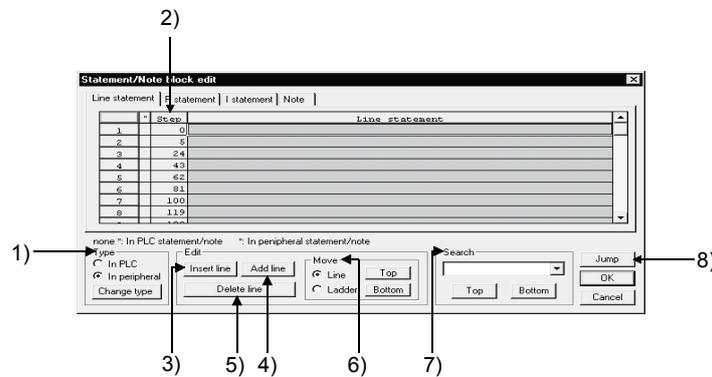
[Description]

1) Type
 ＊ :No Integrated statement/note
 ＊ :Yes Peripheral statement/note
 When changing the Type, move the cursor to the line where you want to make a
 change, choose the Type (integrated/peripheral), and click the Change type
 button.

2) Step
 Shows the steps or device numbers where the corresponding statements/notes
 exist.

 Statement　: The number of first steps in all ladder blocks in the program are
 　　　　　　　displayed.
 Note　　　　: The number of steps equivalent to all coils in the program are
 　　　　　　　displayed.
 P statement : The pointer number existing in the program is displayed.
 I statement　: The pointer number existing in the program is displayed.

3) Insert line
   Inserts one line or selected lines of blank statements above the line at the cursor.
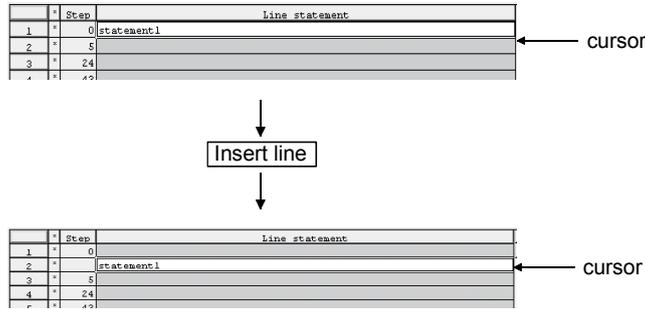
4) Add line
   Inserts one line or selected lines of blank statements under the line at the cursor.
   The inserted statement or statements are added to the ladder block at the cursor.
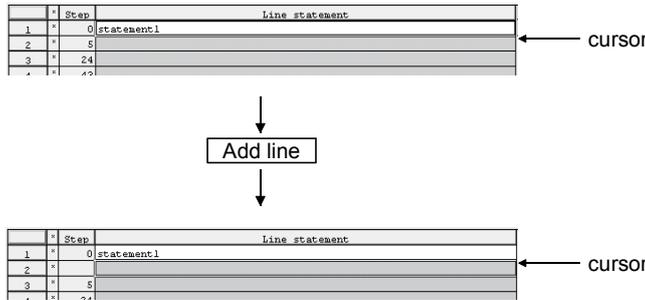
5) Delete line
   Deletes the line of statement at the cursor or the selected lines of statements.
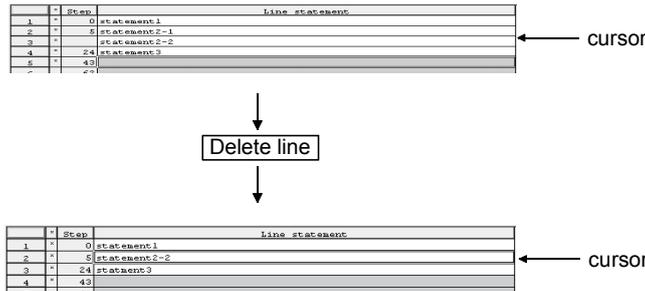
6) Move
If the statements/notes are not added to the correct positions after merge processing, they are moved to the positions which meet the purpose of the sequence program.

(1) Moving in line unit
For the Top button
Moves the statements/notes between the cursor line and bottom line up one line.
For the Bottom button
Moves the statements/notes between the cursor line and top line down one line.
In the following example, the statements are moved up.
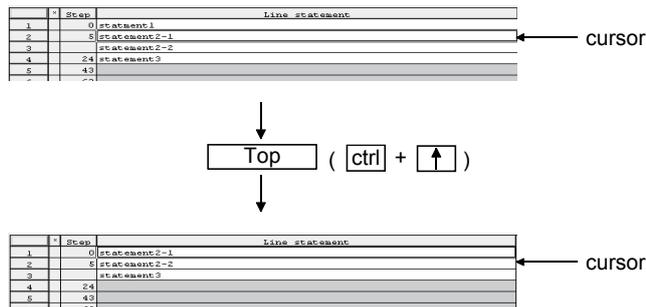
(2) Moving in ladder unit
For the Top button
Moves the statements/notes between the ladder block at the cursor and the bottom line up one ladder block.
For the Bottom button
Moves the statements/notes between the ladder block at the cursor and top line down one ladder block.
In the following example, the statements are moved down.
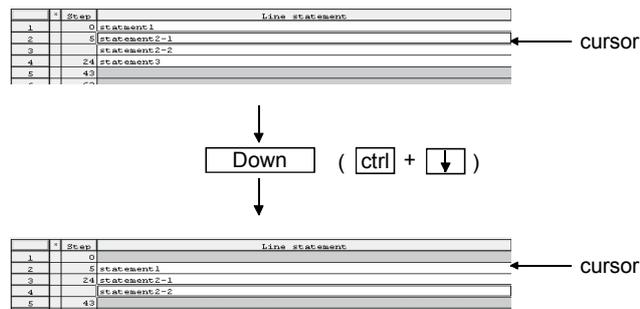
7) Search
Makes a search up or down line by line relative to the cursor.

8) Jump
Searches for the ladder having the statement specified by the cursor.

POINTS

- If a statement is created in other than the beginning of a ladder block, its step number is changed for the first step number of the ladder block and displayed when the dialog box is opened.
  Clicking the OK button moves the statement to the beginning of the ladder block.
- You cannot create a statement/note in the ladder block which does not exist in the program.
- An SFC allows only notes to be created.
- Do not edit the statements which are added for macro diversion.
- Do not create a line statement starting with the following characters since the characters are for system use.
  ";FB BLOCK START ", ";FB BLOCK END", ";FB START", ";FB END", ";FB NAME", ";INSTANCE NAME", ";FB IN", ";FB OUT"

---

11. SETTING DEVICE MEMORY (DWR SETTING)

11.1 Device Memory

A	Q/QnA	QS	FX
○	○	○	○

Using device memory, data (for example, data registers, link registers, and file registers) can be set online or read from the programmable controller and edited. Although setting data using device memory makes it unnecessary to create a program for initial setting using the sequence program, the original data will be overwritten with the operating values which will be written when the programmable controller is running.
It is necessary to re-write data when the programmable controller mode is switched from reset to run.

- When data is not set using device memory

The above program is required.

- When device memory is set

The above program is not required.

POINT
On the Q/QnA series, initial device values can be set using device memory.
Refer to the following manuals for the device init.
QnA series : QnA Programming Manual (Fundamentals)
Q series   : QnUCPU User's Manual(Function Explanation, Program Fundamentals)
Qn(H)/QnPH/QnPRHCPU User's Manual(Function Explanation, Program Fundamentals)

11.2 Inputting Device Value

11

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Edit bit device data or word device data at a time.

[Operating Procedure]

Select [Project] → [Edit data] → [New], and set the data type (device memory), the name of the data to be added, and the comment.

[Dialog Box]

For word device display (16-bit integer)
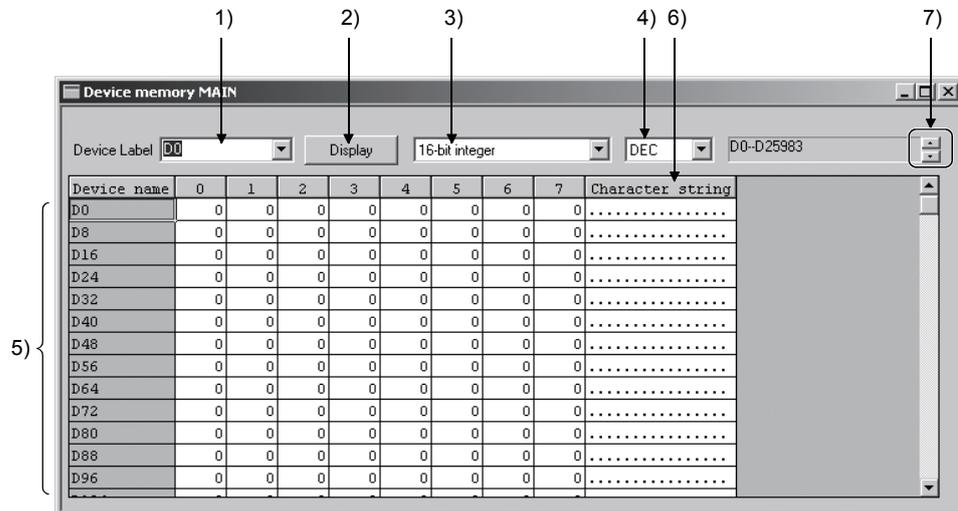
For bit device display (Bit)
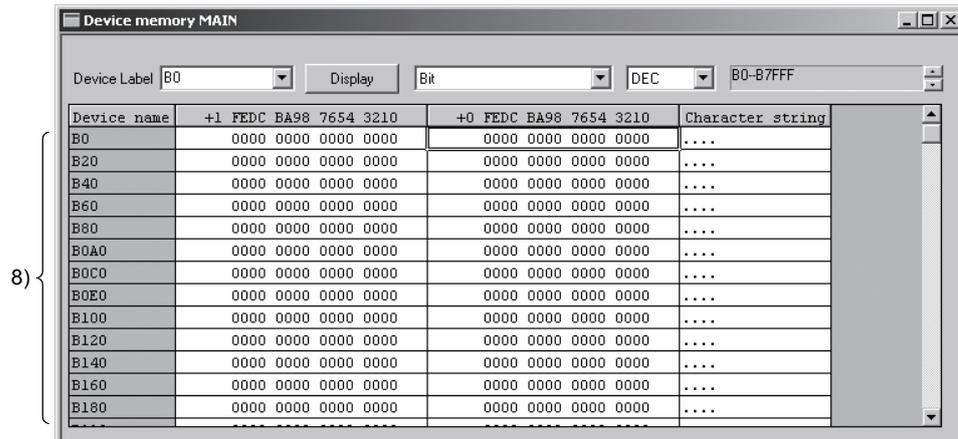
[Setting Items]
1) Device Label
Displays devices compatible with followings.

ACPU, QCPU (A mode), Motion controller (SCPU)

Device Name	Symbol	Bit/Word	Modification
Timer (Current value)	T	Word	○
Counter (Current value)	C	Word	○
Data register	D	Word	○
Special register	D9000	Word	○
Link register	W	Word	○
File register	R	Word	○
Input	X	Bit	-
Output	Y	Bit	-
Internal relay	M	Bit	○
Latch relay	L	Bit	○
Step relay	S	Bit	○
Link relay	B	Bit	○
Special relay	M9000	Bit	-
Accumulator	A	Word	-
Annunciator	F	Bit	-
Index register	Z	Word	-
Index register	V	Word	-

○: Possible

- : Impossible

QCPU (Q mode), QnACPU

Device Name	Symbol	Bit/Word	Modification
Timer (Current value)	T	Word	○
Counter (Current value)	C	Word	○
Retentive timer (Current value)	ST	Word	○
Data register	D	Word	○
Special register	SD	Word	○
Link register	W	Word	○
Link special register	SW	Word	○
File register	R *1	Word	○
Through file register	ZR *1	Word	○
I/O No. setting	U∗∗\G	Word	○
Link No. setting	J∗∗\W	Word	○
Link No. setting	J∗∗\SW	Word	○
Input	X	Bit	-
Output	Y	Bit	-
Internal relay	M	Bit	○
Latch relay	L	Bit	○
Annunciator	F	Bit	○
Edge relay	V	Bit	○
Step relay	S	Bit	-
Link special relay	SB	Bit	○
Link relay	B	Bit	○
Special relay	SM	Bit	-
Link input	J∗∗\X	Bit	-
Link output	J∗∗\Y	Bit	-
Latch relay	J∗∗\B	Bit	-
Link special relay	J∗∗\SB	Bit	-
Index register	Z	Word	-

*1: The Q00JCPU cannot use R and ZR.

FXCPU

Device Name	Symbol	FX$_0$ FX$_{0S}$	FX$_{ON}$	FX$_1$	FX FX$_2$ FX$_{2C}$	FX$_{1S}$	FX$_{1N}$	FX$_{2N}$ FX$_{2NC}$	FX$_{3G}$	FX$_{3u}$ FX$_{3uc}$
Data register	D	○	○	○	○	○	○	○	○	○
Special data register	D	○	○	○	○	○	○	○	○	○
File register	D	—	○	—	○	○	○	○	○	○
RAM file register	D	○	—	—	○	—	—	—	○	—
Extension register	R	—	—	—	—	—	—	—	○	○
Extension file register	ER	—	—	—	—	—	—	—	○	○

○ Can be edited － : No corresponding device.

2) Display button
Click this button after a device has been set.

3) Display switching
You can change the screen values to the 16-bit integer, 32 bit integer, fixed decimal point or floating decimal point.

4) Display switching
Switches the display form on the edit screen between decimal and hexa-decimal.

5) Device Value Input
The device value input ranges are as follows.

Display Format Changing	Numeric Input Range	
16-bit integer	Decimal	-32768 to 32767
	Hexadecimal	0000 to FFFF
32-bit integer	Decimal	-2147483648 to 2147483647
	Hexadecimal	00000000 to FFFFFFFF
Fixed decimal point	According to the number of integer part digits <Example> If the number of integer part digits is 9 0, 0.01 to 999999999 -999999999 to -0.01	
Floating decimal point	-3.402823e+38 to 3.402823e+38	

To enter a character string (ASCII) in the device value input field, move the cursor to the desired device number and set the data.
The number of characters accepted is 64.

6) Character string input field
Place the cursor at the position where data is to be set, enter text and then press Space, or double click the position; the following dialog box will be displayed.

Character string input

OK Cancel Read

The maximum number of characters that may be entered is 64.

If there is the existing data, the 16 characters of the character string in the selected position appear as a default.

Enter the character string (ASCII) data as follows.
<Example> To set "Device memory input"
 Entering "Device memory input" in the D0 to D7 position of the character string
 input column sets the data, starting from D0.

The first setting position of data is always the device number of a multiple of 8,
e.g. D0, D8, D16 ...

When copying/pasting the character string field that has no data, the following
dialog box appears.

Note that clicking the OK button will set ".." (2E2EH) as data.

7) Device number change (ZR only)
When setting ZR, click the ▲ or ▼ button to change the device number in steps
of 32K points.

8) Bit device value input area
Place the cursor at the position where data is to be set and then press Space,
or double click the position; the following dialog box will be displayed.
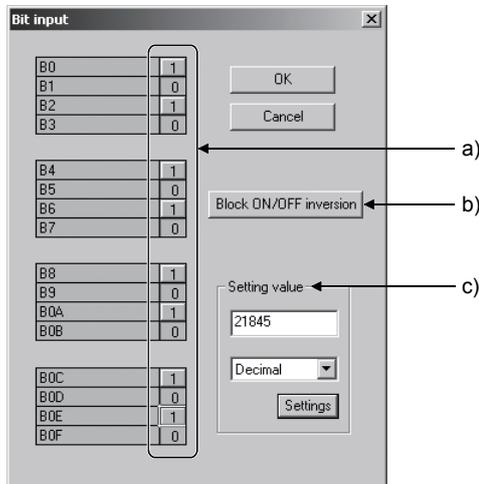
a) ON/OFF button
   1 indicates ON status: convexity
   0 indicates OFF status: concavity

   The button status is switched by pressing as shown below:
   0 → Press → **1** → Press → **0**

b) Block ON/OFF inversion button
   Bits in the dialog box are changed from ON to OFF, OFF to ON by clicking this button once.

c) Setting value

   • Input area

Display format	Numeric value input range
Decimal	-32768 to 32767
Hexadecimal	0000 to FFFF
Binary	0000000000000000 to 1111111111111111

   • Settings button
     Click this button to update the currently set value on the ON/OFF (**0** **1**) button.
     However, if the value out of the applicable range is input in decimal format, the settings are not updated, and the following error message will appear.

```
MELSOFT series GX Developer          [X]

  (i)   Setting value of device exceeds the valid range.
        Please check the input value.

              [    OK    ]
```

POINTS

• When setting the device memory on a Personal computer
  You can edit or save without following the parameter setting range.

• When performing PC write
  Write the range set in the parameter.

• Refer to Section 6.4 for retrieval and substitution of device memory.

• A2N(S1), A2A(S1), A2U(S1), and A2US(S1) are set so that the default value of the device memory is 1024 points at the read/write to them. Change the range setting to within 512 points when data is read or written to A2N, A2A, A2U, or A2US.

• Device memory data can be cut (copied)/pasted only between GX Developers. Data cannot be guaranteed if cut (copy)/paste is performed between GX Developer and another application.
  Use GX Converter to divert data between other applications.

• The device that cannot be modified will be displayed being masked.

11.3 All Clear

11.3.1 Clearing all devices

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
 Clears all device values for which device memory is set.

[Operating Procedure]
 Display the device memory edit window, and select [Edit] → [Clear all (all clear)].

11.3.2 Clearing all displayed devices

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
 Clears device values displayed in the window, for which device memory is set.

[Operating Procedure]
 Display the device memory edit window, and select [Edit] → [Clear all (displayed devices)].

11.4 Making Fill Settings

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Writes the same data to consecutive devices in batch.

[Operating Procedure]

Display the device memory edit window, and select [Edit] → [FILL] or press 🖳.

[Dialog Box]
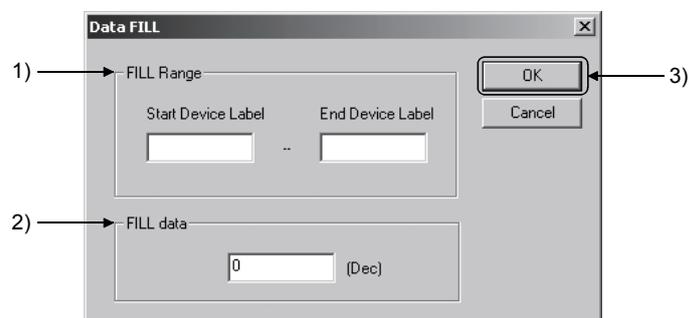
[Description]

1) FILL Range

Designates the devices to which the same data will be batch-written.

<Example of device designation>

D10-D20, T0-T30

2) FILL data

Designates the data to be batch-written.

Designate the data in the numeric form on the device memory edit window.

3) OK button

Click this button after the setting has been completed.

12. SETTING DEVICE INITIALIZATION VALUES

A	Q/QnA	QS	FX
×	○	×	×

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[Purpose]
Utilizes the device values set in the device memory edit dialog box as device initial values.

[Operating Procedure]
Set the type and name of the data to be added in the dialog box displayed by selecting [Project] → [Edit data] → [New].

[Dialog Box]
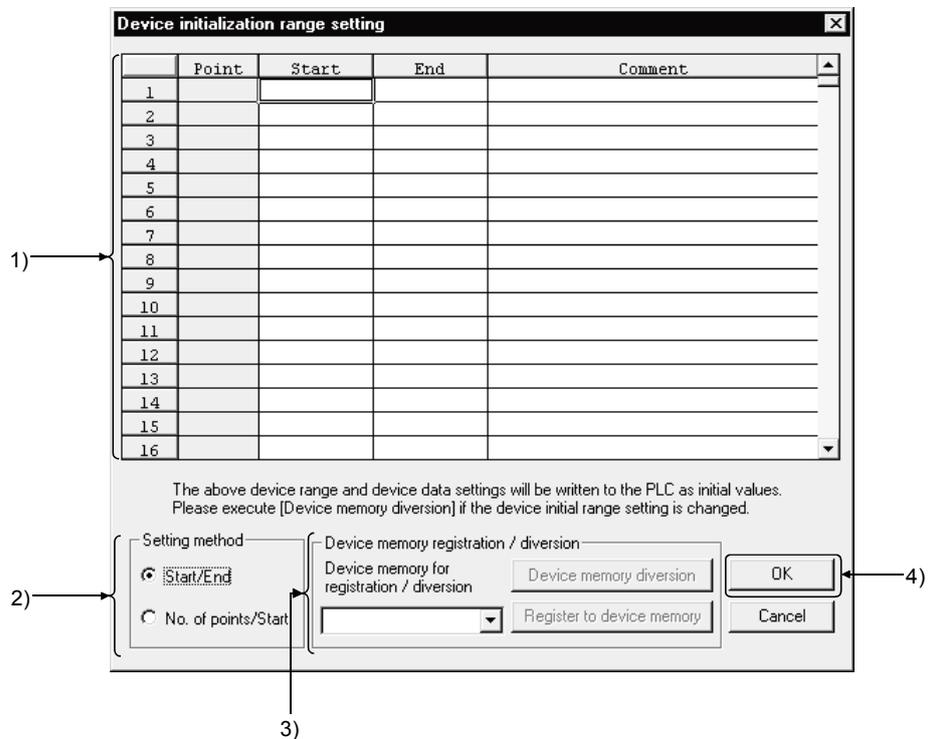
[Description]

1) Range to be set
   Up to 8,000 points (8k words) can be set within a range.
   Each comment can be set within 32 characters.

   The devices, which can be treated as initial values, are listed below:

Device Name	Device
Timer	The present value of T.
Retentive Timer	The present value of ST.
Counter	The present value of C.
Data register	D
Special register	SD
Link register	W
Link special register	SW
File register	R, ZR
Special direct device	U∗\G∗
Link direct device	J∗\W∗, J∗\SW∗

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2) Setting method
Set the range of the devices to be set for device initial values by specifying [Start/End] or [No. of point/start] Device

3) Device memory registration diversion
| Device memory diversion | button
⊙ All devices
All devices set in the device initial value range setting dialog box are entered as device initial values.

<Example>
D0-D10, W0-W30

| Register to device memory | button
The data set to the device initial values are reflected on the device memory.
The data not set to the device initial values are not reflected.

4) | OK | button
Click this button after the setting has been completed.

[Operating procedure] (Device data diversion)
1. Create new device memory.
2. Create device initial values in the device memory edit dialog box.
3. Create new device initial values.
4. Set the device initial values in the device initial value range setting dialog box.
5. Click the Device memory diversion button.
6. Choose All devices or Range to be set and click the Execute button.
7. Click the OK button in the device initial value range setting dialog box.
If you click Cancel, the data are not reflected.

| POINT |
To treat each device value, to which the range is set, as an initial value when starting the programmable controller, use the PLC file setting function for PLC parameters.

13. SETTING THE PARAMETERS

This manual explains only operations for the parameters.
For any information or particular explanation required for parameter setting, refer to the corresponding CPU user's manual and programming manual to pre-design them.
The setting items are assigned to the tab screen purpose-by-purpose.
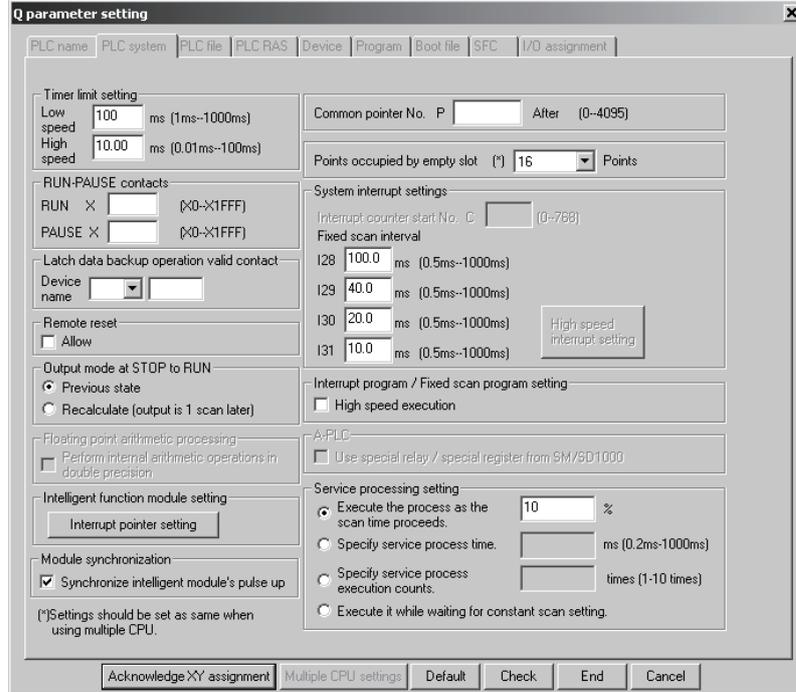
REMARK

The following comparison table indicates the parameter item setting locations of GPPA and GX Developer because of the differences between them.

GPPA	GX Developer/GPPQ
LATCH RANGE	Device
Supplementary settings	
STEP RELAY, TIMER, COUNTER	Device
RUN-PAUSE contacts, Output mode at STOP to RUN, Interrupt counter	PLC system
WDT setup, Operating mode when there is an error, Annunciator display mode	PC RAS
Data communications request batch processing	PLC system
MINI automatic refresh setting	Network parameter
Network/link setting	Network parameter

The following comparison table indicates the parameter item setting locations of FXGP(DOS), FXGP(WIN) and GX Developer because of the differences between them.

FXGP (DOS)	FXGP (WIN)	GX Developer
Latch range	Latch range	Device setting
Program title setting	Print title setting	PLC name setting
PLC mode setting	PLC mode setting	PLC system setting (1)
Serial communication setting	Serial communication setting	PLC system setting (2)
—	Device assignment	I/O assignment setting

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<Network parameter screen examples>

[Network parameters Setting the number of Ethernet/CC IE/MELSECNET cards.] (for Q series)

	Module 1	Module 2	Module 3	Module 4
Network type	MNET/H mode (Control station)	MNET/H mode (Normal station)	MNET/H mode (Control station)	Ethernet
Starting I/O No.	0000	0020	0040	0060
Network No.	1	2	3	4
Total stations	10		10	
Group No.	1	2	3	4
Station No.				1
Mode	On line	On line	On line	On line
	Network range assignment	Station inherent parameters	Network range assignment	Operational settings
	Refresh parameters	Refresh parameters	Refresh parameters	Initial settings
	Interrupt settings	Interrupt settings	Interrupt settings	Open settings
	Return as control station		Return as control station	Router relay parameter
				Station No. <->IP information
				FTP Parameters
				E-mail settings
				Interrupt settings
	Redundant settings	Redundant settings	Redundant settings	Redundant settings

[Network parameters Setting the MELSECNET MINI list.] (for QnA series)

No. of boards in module ☐ Boards
0: MELSECNET MINI module is not recognized.
Blank: Operation is by the default values.

	1	2	3	4	5	6	7	8
StartI/O No.								
Model name	MINI-S3							
Station count								
Batch refresh receive data	X1000							
Batch refresh send data	Y1000							
Retry	5							
Response	PLC							
Error data clear	Clear							
Abnormal station detection bit data								
Abnormal communication remote								
Circuit error check	Maintain							
STOP time operation	Stop							

Setting item details:

[Acknowledge XY assignment] [Clear] [Check] [End] [Cancel]

[Network parameters Setting the CC-Link list.] (for Q series)

No. of boards in module ☐ Boards   Blank: no setting.

	1	2	3	4
Start I/O No				
Operational setting	Operational settings			
Type	Master station			
Master station data link type	PLC parameter auto start			
Mode	Remote net(Ver.1 mode)			
All connect count	64			
Remote input(RX)				
Remote output(RY)				
Remote register(RWr)				
Remote register(RWw)				
Ver.2 Remote input(RX)				
Ver.2 Remote output(RY)				
Ver.2 Remote register(RWr)				
Ver.2 Remote register(RWw)				
Special relay(SB)				
Special register(SW)				
Retry count	3			
Automatic reconnection station count	1			
Stand by master station No.				
PLC down select	Stop			
Scan mode setting	Asynchronous			
Delay information setting	0			
Station information setting	Station information			
Remote device station initial setting	Initial settings			
Interrupt setting	Interrupt settings			

Indispensable settings(No setting / Already set)   Set if it is needed(No setting / Already set)
Setting item details:

[Acknowledge XY assignment] [Clear] [Check] [End] [Cancel]

13.1 Setting the PLC Parameters

A	Q/QnA	QS	FX
○	○	○*	○

∗: Refer to GX Developer Version 8
   Operating Manual (Safety
   Programmable Controller)

The following table lists the PLC parameter setting items on a series basis.
Set the parameters as required.

	A CPU	QnA CPU	QCPU				QS CPU	FX CPU
			Basic model QCPU	High performance model QCPU/ Universal model QCPU/ Process QCPU	Redundant CPU	Remote I/O		
PLC name	—	○	○	○	○	—	○	○
PLC system	○	○	○	○	○	○	○	○
PLC file	—	○	○	○	○	—	—	—
PLC RAS	○	○	○	○ ∗1	○ ∗1	○	○	—
Device	○	○	○	○	○	—	○	○
Program	—	○	—	○	○	—	—	—
Boot file	—	○	○	○ ∗2	○	—	○	—
SFC	—	○	○	○	○	—	—	—
I/O assignment	○ ∗3	○	○	○	○	○	○	○
Memory capacity	○	—	—	—	—	—	—	○
Operational settings	—	—	—	—	—	○	—	—
Built-in Ethernet port	—	—	—	○ ∗4	—	—	—	—
Serial	—	—	○	○ ∗5	—	—	—	—
Multiple CPU settings	—	—	○ ∗6	○ ∗6	—	—	—	—
Safety settings	—	—	—	—	—	—	○	—

○: Can be set
—: No setting item

∗1: When the Universal model QCPU, Process CPU, or Redundant CPU is used, the PLC
    RAS (1) and PLC RAS (2) tabs are displayed.
∗2: When the Universal model QCPU (Q00UJ/Q00U/Q01UCPU) is used, the boot file setting
    cannot be performed.
∗3: When the A1FXCPU is used, I/O assignment setting cannot be performed.
∗4: When a CPU other than the Built-in Ethernet QCPU is used, the built-in Ethernet port
    setting cannot be performed.
∗5: When a CPU other than the Universal model QCPU (Q00UJ/Q00U/Q01U/Q02UCPU) is
    used, the serial communication setting cannot be performed.
∗6: When the Q00J/Q00UJCPU is used, the multiple CPU settings cannot be performed.

13.1.1 Common Notes on Parameters

A	Q/QnA	QS	FX
○	○	○	○

[Parameter display]

This part describes the setting item tabs and network parameter setting items.

<Example>
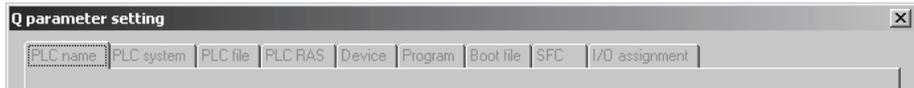
The meanings of the symbols are the same also when displayed with network parameters.

Red   : The PLC does not operate until data is set. (Data is not set.)
Blue   : Data is set.
Magenta : The PLC operates without setting data or with the default. (Data is set.)
Dark blue: Data is set. (Data is set.)

[Common notes on parameters]

This part describes the settings common to PLC and network parameters.
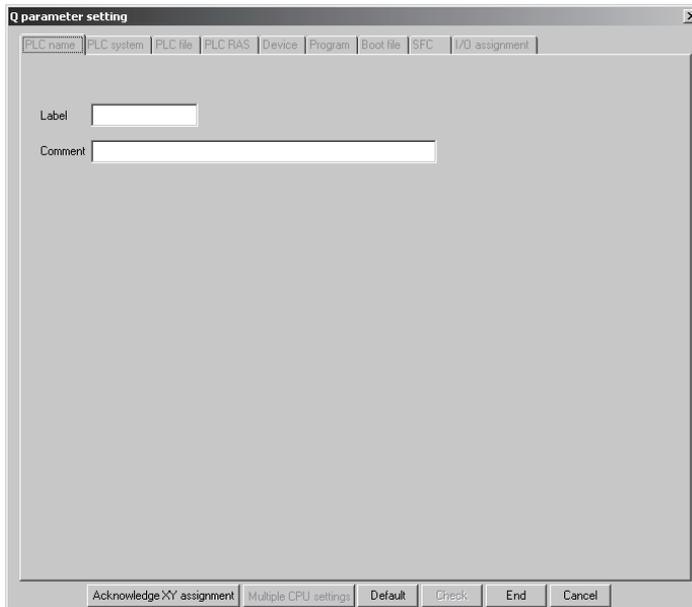
Default button
Returns all of the set items or values to the previous settings.
This button is available only for the currently open tab.

Check button
Used to check the set items or values to see if they are correct.
This button is available only for the currently open tab.

End setup
Defines the set items or values and terminates the setting.

Cancel button
Cancels the set items and terminates editing.

Acknowledge X/Y Assignment button
This button is available for the models A2ACPU(S1), A3ACPU, A2AS(S1), A2AS-S30, A2AS-S60, A2UCPU(S1), A2USCPU(S1), A2USHCPU(S1), A3UCPU, A4UCPU, and QnACPU, QCPU(Q mode).
It is used to confirm the X/Y assignment numbers of the data set in the I/O assignment setting.
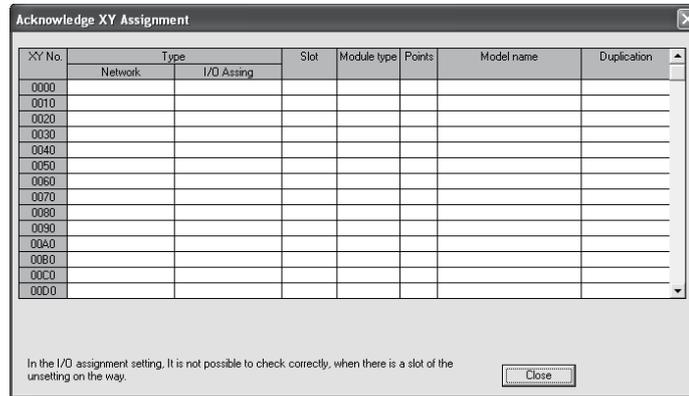
Display by type

	Display	Description
-	I/O assignment	Displays I/O assignment information.
CC-Link	CC-Link	Displays I/O assignment information and CC-Link automatic refresh setting information.
MELSECNET/MINI	MINI	Displays I/O assignment information and MINI automatic refresh setting information.
MELSECNET II	Master	Displays I/O assignment and refresh parameter information of MELSECNET II master station.
	Local	Displays I/O assignment and refresh parameter information of MELSECNET II local station.
MELSECNET/10, MELSECNET/H, CC-Link IE Controller Network	PLC network	Displays I/O assignment and refresh parameter information of PLC network.
	Remote I/O net	Displays I/O assignment and refresh parameter information of remote I/O.

The priority of display is shown below:

1. I/O assignment (AnACPU, AnUCPU, Q/QnA series)
2. Fourth MELSECNET network refresh parameter (AnUCPU, Q/QnA series)
3. Third MELSECNET network refresh parameter (AnUCPU, Q/QnA series)
4. Second MELSECNET network refresh parameter (AnUCPU, Q/QnA series)
5. First MELSECNET network refresh parameter (AnUCPU, Q/QnA series)
6. MELSECNET/MINI refresh (AnACPU, AnUCPU, QCPU (A mode)/QnA series)
7. CC-Link remote I/O (Q/QnA series)

The Duplicate Error area displays the first duplicate item detected in checking the items according to the priority.

Duplicate Error	Description
MNET(Slot1)	First MELSECNET network parameter
MNET(Slot2)	Second MELSECNET network parameter
MNET(Slot3)	Third MELSECNET network parameter
MNET(Slot4)	Fourth MELSECNET network parameter
MINI	MELSECNET/MINI refresh
CC-Link	CC-Link remote I/O

Multiple CPU settings button
    This setting is not available for remote I/O station projects.

Multiple CPU settings

— No. of PLC
    For the Basic model QCPU and Universal model QCPU (Q00U/Q01U/Q02U),
    set from one to three modules.
    For the High Performance model QCPU, Universal model QCPU (excluding
    Q00U/Q01U/Q02U), and Process CPU, set from one to four modules.

— Host CPU number
  (Universal model QCPU (excluding Q00U/Q01U/Q02U) only)
    Set the number of the host CPU.

— Operating mode
    Set the operation (stop) at programmable controller stop error.

— Multiple CPU synchronous startup setting
  (Universal model QCPU (excluding Q00U/Q01U/Q02U) only)
    Select CPU modules to synchronize the start-up.

— Online module change
  (Excluding the Basic model QCPU and Universal model QCPU
  (excluding Q00U/Q01U/Q02U))
    Check this item to perform an online module change.

— I/O sharing when using Multiple CPUs
    Reads input/output status from outside of the group.

— Multiple CPU high speed transmission area setting
  (Universal model QCPU (excluding Q00U/Q01U/Q02U) only)
    Set user setting area, automatic refresh area, and system area.
    An assignment can be checked by setting a host CPU number.

— Communication area setting (refresh setting)
    Set the CPU shared memory among multiple CPUs.
    Usable devices...B, M, Y, D, W, R, and ZR

[Description]
No. of PLC
Clicking the Default button in I/O assignment keeps the multiple PLC setting
unchanged.
When the set number of PLCs is one, a multiple CPU system configuration is not
set.

Out group input settings
When the modules are not grouped, they are all put under the control PLC of the
PLC No. 1.
OPERATION ERROR appears if access is made to any module outside the groups.

Communication area setting (refresh setting)
The maximum input range of each module is 0 to 2048 points.
Set the total number of all modules to within 4096 points.

Diversion of multiple PLC parameter button
Specify the project to be diverted from the "Open Project" screen. Setting the
source project shows the multiple PLC parameter diversion dialog box. Confirm the
message and execute.

13.1.2 PLC Parameter Item Lists

A	Q/QnA	QS	FX
◯	◯	◯∗	◯

∗: Refer to GX Developer Version 8 Operating Manual (Safety Programmable Controller)

The PLC parameter items of each series are listed below.

(1) PLC parameter item list of Basic model QCPU

PLC name

Device Label
Set the CPU label.

Comment
Set the CPU comment.

PLC system

Timer limit setup
Set the time limits of the low-/high-speed timers.

RUN-PAUSE contacts
Make setting to control RUN/PAUSE of the CPU.

Remote reset
Set enable/disable of remote reset operation.

Output mode at STOP to RUN
Set the output mode at STOP to RUN.

Intelligent function module setting
Assign the interrupt pointer(I50 to I125), and set the start I/O No. and start SI No.

Number of empty slots
Set the number of empty slots.

System interrupt settings
Set the first No. of the interrupt counters and the fixed scan intervals of the interrupt pointers.

Interrupt program/Fixed scan program setting
Set whether the interrupt/fixed scan program is run at high speed or not.

Unit synchronization
Set whether the start of the QCPU is synchronized with that of the intelligent function unit.

PLC file (Setting is disabled for Q00J)

File register
Set the file register file to be used.
(Setting is fixed)

Initial device value
Set the file of the device initial value to be used.

Device

Dev. point
Set the number of device points to be used.

Latch [1] start
Set the latch range valid for latch clear key operation.

Latch [2] start

PLC RAS
- WDT [Watchdog timer] setup
  - WDT setting
    Make WDT settings of the CPU.
- Error check
  Set whether the specified error is to be detected or not.
- Operating mode when there is an error
  Set the display mode of the CPU on detection of an error.
- Constant scanning
  Set the constant scan time.

Boot file
- Boot file setting
  Set the boot-run file, etc.

SFC
- SFC
  Make various settings required for SFC program.

I/O assignment
- I/O assignment
  ・ Set each unit loading status of the system.
  ・ Make switch settings of the intelligent function module.
    Reserve the multiple CPUs.
- Standard setting
  Set the base model, power supply module model, etc.

Serial
- Baud rate
  Set the baud rate.
- Sum check
  Set the sum check.
- Transmission weight time
  Set the transmission wait time.
- RUN write setting
  Set whether online program change can be made or not.

(2)   PLC parameter item list of High performance model QCPU, Process CPU and Universal model QCPU

PLC name

— Device Label
   Set the CPU label.
— Comment
   Set the CPU comment.

PLC system

— Timer limit setup
   Set the time limits of the low-/high-speed timers.
— RUN-PAUSE contacts
   Make setting to control RUN/PAUSE of the CPU.
— Latch data backup operation valid contact
   (Universal model QCPU only)
   Set a contact device to execute the latch data backup operation.
— Remote reset
   Set enable/disable of remote reset operation.
— Output mode at STOP to RUN
   Set the output mode at STOP to RUN.
— Floating point arithmetic processing
   (High Performance model QCPU only)
   Make setting to perform floating point arithmetic operation at high speed.
— Intelligent functional module setting
   Set the assignment of the interrupt pointers (I50 to I255) and the first I/O No. and first SI No. of the intelligent function unit.
— Common pointer
   Set the first No. of the common pointers.
— Number of empty slots
   Set the number of empty slots.
— System interrupt settings
   (Excluding the Universal model QCPU)
   Set the first No. of the interrupt counters and the fixed scan intervals of the interrupt pointers.
   High speed interrupt setting arailable for only High Performance model QCPU
— Interrupt program/Fixed scan program setting
   Set whether the interrupt/fixed scan program is run at high speed or not.
— Unit synchronization
   Set whether the start of the QCPU is synchronized with that of the intelligent function unit.
— Compatibility with A-PLC
   Set whether the special relays/special registers for MELSEC-A series (SM1000/SD1000 and later) are used or not.
— Service processing setting
   (Universal model QCPU only)
   Set the processing time and execution amount of service processing.
— PLC module change setting
   (Universal model QCPU (excluding Q00UJ/Q00U/Q00U/Q01U) only)
   Set when changing CPU modules using a memory card.

PLC file

— File register
   • Set the file register file to be used.
   • Set the file to transfer to the standard ROM at the latch data backup operation. (Universal model QCPU only)
— Comment file used in a command
   Set the comment file to be used in a command.
— Device initial value
   Set the device initial value file to be used.
— File for local device
   Set the local device file to be used.
— File used in SP.DEVST/S.DEVLD instruction
   (Universal model QCPU only)
   Set this item when using device data ROM write instruction (SP.DEVST) or read instruction (S.DEVLD) in the program.

Device

— Dev. point
   Set the number of device points to be used.
— Latch [1] start
   Set the latch range valid for latch clear key operation.
— Latch [2] start
   Set the latch range invalid for latch clear key operation.
— Local dev. start
   Set the range of the device used as a local device.
— File register extended setting
   (Universal model QCPU only)
   Set the file register, extended data register, number of device points for extended link register, latch range and 32-bit indexing. For the 32-bit indexing, set whether to specify the start number of Z modified in 32-bits or to use the index register ZZ for 32-bit indexing.

PLC RAS
(The PLC RAS (1) tab is displayed for the Universal model QCPU and Process CPU.)

WDT [Watchdog timer] setting

WDT Setting
Initial execution monitoring time
Low speed execution monitoring time
(Excluding the Universal model QCPU)
Set WDT setting of the programmable controller.

Error check
Set whether the specified error is to be detected or not.

Operating mode when there is an error
Set the display mode of the CPU on detection of an error.

Constant scanning
Set the constant scan time.

Low speed program execution time
(Excluding the Universal model QCPU)
Set the time for execution of a low-speed program.

Breakdown history
Set the storage target of the CPU's breakdown history.

PLC RAS (2)
(Setting is enabled for the Universal model QCPU and Process CPU.)

Memory check (Process CPU only)
Set whether a program memory check will be made or not.

Module error log (Intelligent function module)
(Setting is enabled for the Universal model QCPU.)
Set whether to collect the error log data of intelligent function module, and storage memory of the log data, number of log data, and number of log data to be collected.

Program

Program
Set the execution type for use of multiple programs.

Boot file

Boot file setting
Set the boot-run file, etc.

SFC

SFC
Make various settings needed for an SFC program.

I/O assignment

I/O assignment
· Set each unit loading status of the system.
· Make switch settings of the intelligent function module.
· Make switch settings of CPU module. (Available for the Universal model QCPU only)
· Reserve the multiple CPUs. (Refer to the items common to the PLC parameters for the multiple PLC setting.)

Standard setting
Set the base model, power supply module model, etc.

Built-in Ethernet port
(Built-in Ethernet port QCPU only)

IP address
Set the input format of IP address, IP address, etc.

Open settings
Set the protocol, open system, and host station port number.

FTP settings
Select whether to use the FTP function.

Time settings
Select whether to use the SNTP function, and set the timing for executing the time setting.

Serial
(Universal model QCPU (Q00UJ/Q00U/Q01U/Q02U) only)

Baud rate
Set the baud rate.

Sum check
Set the sum check.

Transmission weight time
Set the transmission wait time.

RUN write setting
Set whether online program change can be made or not.

(3) Redundant CPU parameter item list

```
PLC name
    ├── Device Label
    │       Set the CPU label.
    └── Comment
            Set the CPU comment.

PLC system
    ├── Timer limit setup
    │       Set the time limits of the low-/high-speed timers.
    ├── RUN-PAUSE contacts
    │       Make setting to control RUN/PAUSE of the CPU.
    ├── Remote reset
    │       Set enable/disable of remote reset operation.
    ├── Output mode at STOP to RUN
    │       Set the output mode at STOP to RUN.
    ├── Floating point arithmetic processing
    │       Make setting to perform floating point arithmetic operation
    │       at high speed.
    ├── Intelligent functional module setting
    │       Set the assignment of the interrupt pointers (I50 to I255) and
    │       the first I/O No. and first SI No. of the intelligent function unit.
    ├── Common pointer
    │       Set the first No. of the common pointers.
    ├── Number of empty slots
    │       Set the number of empty slots.
    ├── System interrupt settings
    │       Set the first No. of the interrupt counters and the fixed scan
    │       intervals of the interrupt pointers.
    │       High speed interrupt setting arailable for only High
    │       Performance model QCPU
    ├── Interrupt program/Fixed scan program setting
    │       Set whether the interrupt/fixed scan program is run at high
    │       speed or not.
    ├── Unit synchronization
    │       Set whether the start of the QCPU is synchronized with that
    │       of the intelligent function unit.
    └── Compatibility with A-PLC
            Set whether the special relays/special registers for MELSEC-A
            series (SM1000/SD1000 and later) are used or not.
```

```
PLC file
    ├── File register
    │       Set the file register file to be used.
    ├── Comment file used in a command
    │       Set the comment file to be used in a
    │       command.
    ├── Device initial value
    │       Set the device initial value file to be
    │       used.
    └── File for local device
            Set the local device file to be used.

Device
    ├── Dev. point
    │       Set the number of device points to be
    │       used.
    ├── Latch [1] start
    │       Set the latch range valid for latch
    │       clear key operation.
    ├── Latch [2] start
    │       Set the latch range invalid for latch
    │       clear key operation.
    └── Local dev. start
            Set the range of the device used as a
            local device.
```

PLC RAS (1)

WDT [Watchdog timer] setup

WDT Setting

Initial execution monitoring time
Set the WDT of the CPU.

Error check
Set whether the specified error is to be detected or not.

Operating mode when there is an error
Set the display mode of the CPU on detection of an error.

Constant scanning
Set the constant scan time.

Breakdown history
Set the storage target of the CPU's breakdown history.

PLC RAS (2)

Memory check
Set whether a program memory check will be made or not.

Program

Program
Set the execution type for use of multiple programs.

Boot file

Boot file setting
Set the boot-run file, etc.

SFC

SFC
Make various settings needed for an SFC program.

I/O assignment

I/O assignment
· Set each unit loading status of the system.
· Make switch settings of the intelligent function module.

Standard setting
Set the base model, power supply module model, etc.

(4)   PLC parameter item list for Q series remote I/O station

---

PLC system settings

— Number of vacant slot points
    Set the number of vacant slot points.
— Module synchronization setting
    Set whether a QCPU startup is synchronized
    with an intelligent function module startup or not.

PLC RAS settings

— Error check
    Set whether the specified error will be detected or not.
— Operating mode when there is an error
    Set whether operation will be stopped or not at occurrence
    of a fuse blown or module comparison error.

Operation settings

— Remote I/O station switch settings
    Set cyclic communication error-time output hold and
    output hold designation enable.
— Inter-device transfer parameters
    Set the link device range, etc. for communication with
    the I/O and special function modules of each remote I/O station.

I/O assignment settings

— I/O assignment settings
    ・ Set the module loading states of the system.
    ・ Make the switch settings of the intelligent
       function module.
— Basic settings
    ・ Set the base type, power supply module type,
       etc.

(5)   PLC parameter item list of the QnA series

PLC name

───── Device label
        Set the CPU label.
───── Comment
        Set the CPU comment.

PLC system

───── Timer limit setup
        Set the time limits of the low-/high-speed timers.
───── RUN-PAUSE contacts
        Make setting to control RUN/PAUSE of the CPU.
───── Remote reset
        Set enable/disable of remote reset operation.
───── Output mode at STOP to RUN
        Set the output mode at STOP to RUN.
───── General data processing
        Set the number of units to be handled by single general data
        processing.
───── Common pointer
        Set the first No. of the common pointers.
───── Number of empty slots
        Set the number of empty slots.
───── System interrupt settings
        Set the first No. of the interrupt counters and the fixed scan
        intervals of the interrupt pointers.

PLC file

───── File register
        Set the file register file to be used.
───── Comment file used in a command
        Set the comment file to be used in a
        command.
───── Device initial value
        Set the device initial value file to be
        used.
───── File for local device
        Set the local device file to be used.

Device

───── Dev. point
        Set the number of device points to be
        used.
───── Latch [1] start
        Set the latch range valid for latch
        clear key operation.
───── Latch [2] start
        Set the latch range invalid for latch
        clear key operation.
───── Local dev. start
        Set the range of the device used as a
        local device.

PLC RAS

└── WDT [Watchdog timer] setup
    ├── WDT setting
    ├── Initial execution
    └── Low speed execution
        Set the WDT timers of the CPU.
    ── Error check
        Set whether the specified error is to be detected or not.
    ── Operating mode when there is an error
        Set the display mode of the CPU on detection of an error.
    ── Constant scanning
        Set the constant scan time.
    ── Low speed program execution time
        Set the time for execution of a low-speed program.
    ── Annunciator display mode
        ├── Display F No.
        ├── Display comment
        └── Display occurrence time
            Set the display mode established when the annunciator
            has turned on.
    ── Breakdown history
        Set the storage target of the CPU's breakdown history.

Program

└── Program
    Set the execution type for use of multiple programs.

Boot file

└── Boot file setting
    Set the boot-run file, etc.

SFC

└── SFC
    Make various settings needed for an
    SFC program.

I/O assignment

└── I/O assignment
    Set each unit loading status of the
    system.
    ── Standard setting
        Set the base model, power supply
        unit model, etc.

(6)   PLC parameter item list of the A series

Memory capacity

Program capacity
Set the main, sub, microcomputer and other capacities.

Comment
Set the comment capacity.

Expanded comment
Set the extended comment capacity.

File register
Set the file register capacity.

Capacity for debugging
Set the sampling trace and status latch capacities.

Memory capacity information
Display the total of memory to be used.

PLC RAS

WDT setup
Set the WDT.

Operating mode when there is an error
Set whether operation will be stopped or continued at occurrence of a fuse blow, operation error, unit verify error or special unit access error.

Annunciator display mode
Set whether annunciator display is provided or not.

PLC system

RUN-PAUSE contacts
Set the contacts which control RUN/PAUSE of the CPU.

System interrupt setup
Set the range of the counter used in an interrupt program.

Output mode at STOP to RUN
Set the output status at STOP to RUN.

Data communications request batch processing
Set whether the transient communications request is processed or not in the END processing of its scan.

Remote I/O setting for A2C PLC
Set the occupied slot count and remote I/O assignment of each station when the A2C/A2CJCPU is selected.

I/O assignment

I/O assignment
Set the type (empty, input, output, special), model and points.

Device

Device setup
Set the points and latch range of each device used in a sequence program.

(7)   PLC parameter item list of the FX series

Memory capacity — FX1, FX0N, FX2, FX2C
FX1S, FX1N, FX2N, FX3U, FX1NC, FX2NC, FX3G, FX3UC

— Memory capacity
  Set the memory capacity that the programmable controller has.

— Comment capacity
  Set the comment capacity.

— File register capacity
  Set the file register capacity.

— Program capacity
  Set the sequence program capacity.

— Special Function Memory capacity
  FX3G series: Set the positioning of the special modules/blocks.
  FX3U and FX3UC series: Set the initial values and positioning of the special modules/blocks.

Device — FX1, FX2, FX2C, FX2N, FX3U, FX2NC, FX3UC

— Device setup
  Set the latch range.

PLC name — FX1, FX0N, FX2, FX2C
FX1S, FX1N, FX2N, FX1NC, FX2NC, FX3UC

— PLC name
  Comment the PLC program.

I/O assignment — All series

— I/O assignment
  Set the first/last values of I/O relays used on the program.

— Setting of special module
  Set the initial value of FX3U and FX3UC series special extension module/block connected to FX3U and FX3UC PLC.

PLC system (1) — FX1S, FX1N, FX2N, FX3U, FX1NC, FX2NC, FX3G, FX3UC

— Battery less mode
  Make this setting when performing operation without the memory backup battery of the FX2N, FX3G, FX3U, FX2NC, and FX3UC PLC.

— Battery mode
  Make this setting when operating with the memory backup battery of the FX3GCPU.

— MODEM initialized
  Set the modem initialization command when making remote access to the FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, and FX3UC PLC.

— RUN terminal input
  When using the input (X) of the FX1S, FX1N, FX2N, FX3U, FX1NC, FX2NC, and FX3UC PLC as the external RUN/STOP terminal, set its input number.

PLC system (2) — FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC

— Protocol
  Set the communication protocol.

— Data length
  Set the data length.

— Parity
  Set the parity.

— Stop bit
  Set the stop bit.

— Transmission speed
  Set the transmission speed.

— Header
  Set the header.

— Terminator
  Set when making the terminator valid.

— Control line
  Set when making the control line valid.

— H/W type
  Normally choose RS-232 or RS-485.

— Control mode
  Display the control mode data.

— Sum check
  Set when adding sum check.

— Transmission control procedure
  Choose format 1/format 4.

— Station number setting
  Make station number setting.

— Time out judge time
  Set the time-out period.

Positioning — FX3G, FX3U, FX3UC

— Positioning
  ▪ Set the bias speed, the max. speed, the creep speed, the zero return speed, the acceleration time, the deceleration time, the interruption input of DVIT instruction of each axis for FX3G, FX3U and FX3UC internal PLC positioning function.
  ▪ Set the details for the positioning table of each axis.

A	Q/QnA	QS	FX
×	○	○	×

13.1.3 Explanations for PLC Parameter Setting Screen

The following items are related to PLC parameter setting.

1. | Read PLC data | button

Location of | Read PLC data | button

[PLC parameter] → ⟨I/O assignment⟩ tab
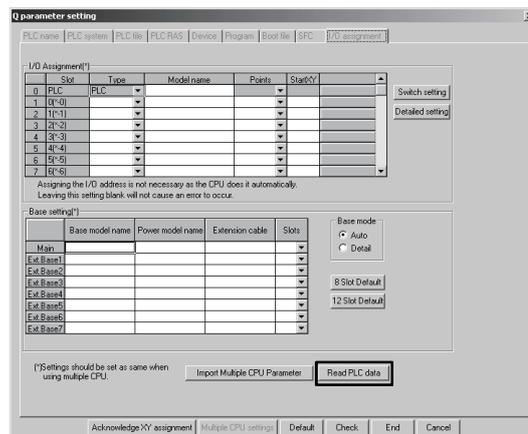
For Q series

The implementation status is read if the parameter file exists in the programmable controller.

If the unit model, first X/Y, base model, power supply unit model, extension cable model and slot count have been set on the Personal computer, the data will be deleted.

If the parameters have been set on GX Developer, the following dialog box appears to ask you if the parameter data may be overwritten.
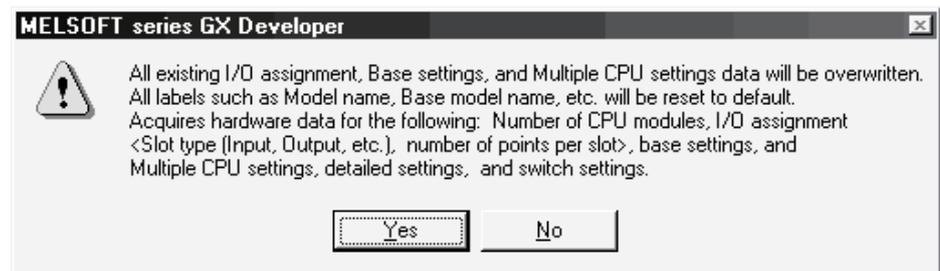
For QnA series

When the parameter file exists in the programmable controller
• The parameter file is read.

When the parameter file does not exist in the programmable controller (implementation read)
• After deleting the parameter file in the programmable controller, set the programmable controller from RESET to RUN and read the PLC data.
   If the unit model, first X/Y, base, power supply unit and extension cable have been set on the Personal computer, the data will be deleted.

2. Select button
    Location of Select button
    [PLC parameter] → ⟨I/O assignment⟩ tab
    When "Intelli." is selected for "Type" of I/O Assignment, Select button is
    displayed.
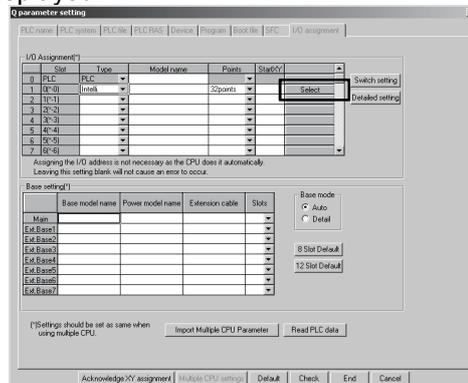
For Q series
    The switch setting of the intelligent function module can be performed by the
    following procedure.

1) Click the Select button.
2) The Module selection screen is displayed.
    Select a module type and module name, and click the OK button.
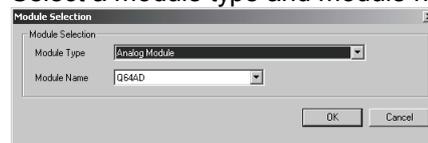
3) The Switch setting screen is displayed.
    Select each setting and click the OK button.
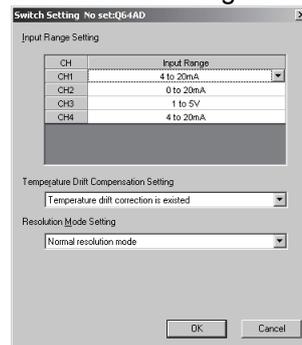
4) The settings are applied to the switch setting parameter.
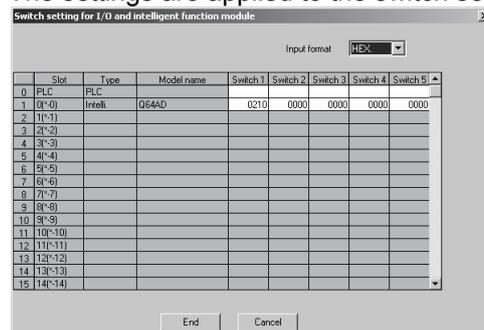
POINT
- The existing switch settings are overwritten by clicking the OK button on the Switch setting screen activated from the Select button.
  If the data out of the range, or the data that is not supported with this version are set, the settings are overwritten with the default settings.
- For the switch setting data that are not supported on the Switch setting screen activated by the Select button, set them on the Switch setting screen of the I/O module or intelligent function module activated by the Switch setting button.
- Check the switch settings when the module name is changed while data are set for the switch settings.

13.2 Setting the Network Parameters

A	Q/QnA	QS	FX
○	○	○	×

The following table lists the network parameter setting items on a series basis.
Set the parameters as required.

	A			QnA	Q		QS
	AnN	AnA	AnU Q (A mode)		CPU	Remote I/O	
CC-Link IE controller network	×	×	×	×	○*1	×	○*1
MELSECNET/H	×	×	×	×	○	×	○
MELSECNET/10	×	×	○	○	○	×	○
MELSECNET II	×	○	○	○	×	×	×
MELSECNET	○	○	○	○	×	×	×
Ethernet	×	×	×	○	○	○	○
MELSECNET/MINI	×	○	○	○	×	×	×
CC-Link	×	×	×	○	○	○	○*2

○: Available
×: Not available

*1: CPU modules with the following version or later are required when using the CC-Link IE controller network on the Process CPU, Redundant CPU, and Safety CPU.

    Q12PH/Q12PRH/Q25PH/Q25PRHCPU : First 5 digits of serial number is "10042"
    QS001CPU   : First 5 digits of serial number is "10032"

In addition, the CC-Link IE controller network module with the following version or later is required.

    QJ71GP21(S)-SX   : First 5 digits of serial number is "10041", and the function version is D.

*2: Supports CC-Link Safety only.
    For CC-Link Safety, refer to GX Developer Version 8 Operating Manual (Safety Programmable Controller).

13.2.1 Common Notes to the Network Parameters

[Purpose]

This section describes operations common to the setting of data link system and network system parameters.

The setting examples use MELSECNET II comp (Master station), MELSECNET/10 and CC-Link IE controller network range assignment parameters.

The following operations cannot be performed as those common to the parameters.

- Cut, copy, paste
- Home and End keys are invalid.

[Dialog Box]

<Example> MELSECNET II combined (master station) network range assignment parameter setting window

Setup common parameters												
Assignment method	Points/Start			Monitoring time	200	×10ms						
	Start/End			Total slave stations	10		Switch screens	First half LB/LW setting				
L/R station No.	Send range for each station First half LB			Send range for each station First half LW			M station -> R station LW			M station <- R station LW		
	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End
M 0												
L 1												
L 2												
L 3												
L 4												
L 5												
L 6												
L 7												
L 8												
L 9												

Specify local	Specify remote	Specify MNET II local	Identical points assignment to each station
Clear	Check	End	Cancel

[Description]

Specify local / Specify remote / Specify MNET II local button

Move the cursor to the L/R station No. to be specified, and click the corresponding button.

Assign the same point to each station button

Used to assign the same point to each local station.

Clear button

Used to default the preset parameters.

Check button

Used to check the preset parameter data.

End setup button

Clicking this button at the end of data setting returns to the network setting screen.

[Dialog Box]

    <Example> MELSECNET/H network range assignment
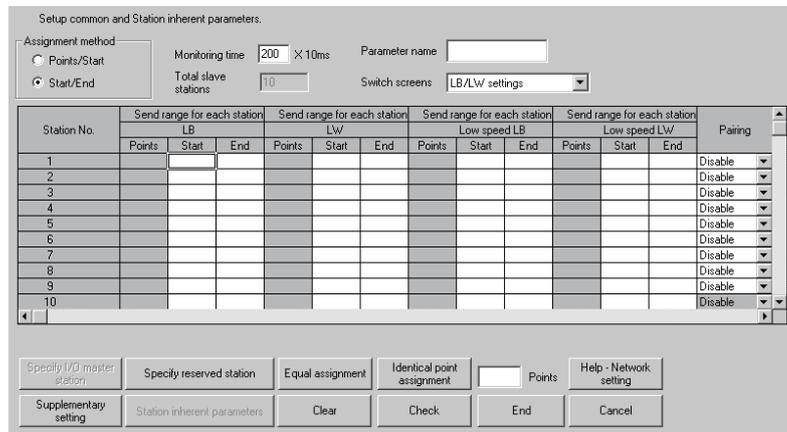
[Description]

I/O Master station specification button

    Using Switch screens to choose LX/LY settings enables the I/O master station to be specified. To set the I/O master station, specify the station number with the cursor and click the I/O Master station specification button.

Reserved station specification button

    Specify the reserved station No. and click this button.

Equal assignment button

    Used to assign the link device points of all stations equally.
    The first and last stations can be set within the number of stations between the first and last equally assigned station numbers (total number of link stations - (first station number - 1)).

Identical point assignment button

    Used to make simple assignment with the same points according to the preset total number of stations.

Help-Network setting button

    Displays conditions for 32-bit data.

Supplementary settings button

    Used to set the constant scan, max. number of reconnected stations during 1 scan, multiple transmission, communications error setting, END asynchronous settings and transient setting etc.

Station inherent parameters button

    Used to change the network unit storage locations of the link devices assigned to each station in the common parameters.

Clear button

    Used to default the parameter settings.

Check button

    Used to check the preset parameter data.

End setup button

    Clicking this button at the end of data setting returns to the network setting screen.

[Dialog Box]

<Example>CC-Link IE control network range assignment
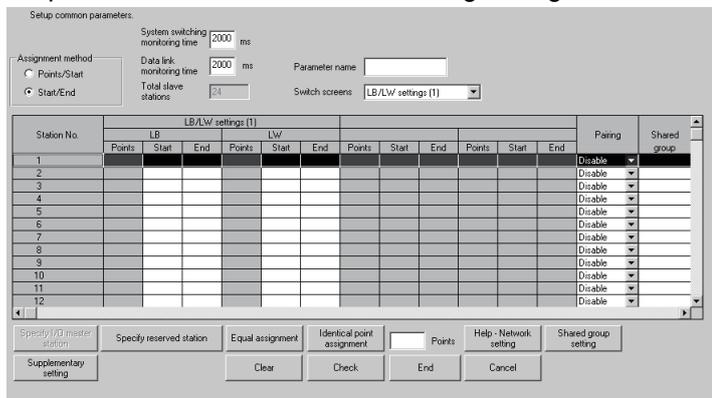
[Description]

Shared group setting button

Opens the CC IE Control shared group screen to set/confirm the shared group.
The shared group can be set only when the CC IE Control (Control station) is set in
the Universal model QCPU.

Other items are same as the MELSECNET/H network range assignment.

13.2.2 Network Parameter Item Lists

The network parameter items of each series are listed below.

(1) Network parameter items of the Q series
For the remote I/O station project, only Ethernet or CC-Link can be set.
MELSECNET/H (Multiplexed remote master) and MELSECNET/H (Multiplexed remote sub) can be selected for only Process CPU.

MELSECNET/10
MELSECNET/H
CC-Link IE controller network

— Network type
Specify the MELSECNET/H·MELSECNET/10 mode,
MELSECNET/10, CC-Link IE controller network or Ethernet.

— Starting I/O No.
Set the first I/O No.

— Network No.
Set the network No.

— Total stations
Set the total number of (slave) stations.

— Group No.
Set the group No.

— Mode
Set the mode.

— Station No. (CC-Link IE controller network only)
Set the station number.

— Network range assignment (Common parameters)

　　— I/O Master station specification
　　　Set the I/O master station on the LX/LY setting screen.

　　— Reserved station specification
　　　Specify the reserved station.

　　— Equal assignment
　　　Set when assigning the link device points of the specified stations equally.

　　— Identical point assignment
　　　Set the same points according to the preset total number of stations.

　　— Shared group setting
　　　(Only for CC-Link IE controller network (control station) of the Universal model QCPU)
　　　Set the shared group of the group cyclic function.

　　— Supplementary settings
　　　Make the transient, low-speed cyclic and other settings.

　　— Station inherent parameters (Not available for CC-Link IE controller network)
　　　Set the station inherent parameters.

— Refresh parameters
Set the refresh parameters.

— Interrupt settings
Set the device code, detection method, interrupt condition, interrupt (SI) No., etc.

— Station No. specify setting (CC-Link IE controller network only)
Set whether to set a station number by the program or parameter.
A station number can be set by the program only when the normal station is selected for the Universal model QCPU.

— Baud rate setting (MELSECNET/H (Control station) and MELSECNET/H extension board (Control station) only)
Set the baud rate for a twist bus compatible module.

— Redundant settings
Set the mode of System B.

MELSECNET/H
Remote I/O

— Network type
Specify the MELSECNET/H (remote master).

— Starting I/O No.
Set the starting I/O No.

— Network No.
Set the network No.

— Total stations
Set the total number of (slave) stations.

— Mode
Set the mode.

— Network range assignment (Common parameters)

　　— Reserved station specification
　　　Specify the reserved station.

　　— Equal assignment
　　　Set when assigning the link device points of the specified stations equally.

　　— Supplementary settings
　　　Make the constant scan and the max. number of return stations in one scan.

— Refresh parameters
Set the refresh parameters.

— Interrupt settings
Set the device code, detection method, interrupt condition, interrupt (SI) No., etc.

POINT

When clicking the [END] button or the [Check] button on the Ethernet/CC IE/ MELSECNET Setting screen, the refresh target of CC-Link IE controller network, MELSECNET/10(H), and CC-Link are checked for duplication.

CC-Link
- Unit count
  Set the number of units. (1 to 8 units) [*1]
- Start I/O No.
  Set the start I/O number.
- Operational settings
  Set the parameter name, data link, disorder station setting, number of exclusive stations, case of CPU STOP setting, expanded cyclic setting and block data assurance per station. [*1], [*2]
- Type
  Set the master/local/standby master station, etc. [*4]
- Master station data link type
  Fixed to "PLC parameter auto start".
- Mode
  Set the mode.
- All connect count
  Set the number of slave stations connected. (1 to 64 stations)
- Remote input [RX] [*3]
  Set the bit devices to be batch-refreshed.
- Remote output [RY] [*3]
  Set the bit devices to be batch-refreshed.
- Remote register [RWr] [*3]
  Set the word devices to be batch-refreshed.
- Remote register [RWw] [*3]
  Set the word devices to be batch-refreshed.
- Ver.2 Remote input [RX] [*3]
  Set the bit devices to be batch-refreshed when [Remote network]-[Addition mode] is selected.
- Ver.2 Remote output [RY] [*3]
  Set the bit devices to be batch-refreshed when [Remote network]-[Addition mode] is selected.

CC-Link
- Ver.2 Remote register [RWr] [*3]
  Set the word devices to be batch-refreshed when [Remote network]-[Addition mode] is selected.
- Ver.2 Remote register [RWw] [*3]
  Set the word devices to be batch-refreshed when [Remote network]-[Addition mode] is selected.
- Special relay [SB]
  Set the bit devices to be batch-refreshed.
- Special register [SW]
  Set the bit devices to be batch-refreshed.
- Retry count
  Set the number of transmission retries.
- Automatic reconnection station count
  Set the number of stations automatically reconnected during 1 scan.
- Wait master station No.
  Set the station number of the standby master station.
- PLC down select
  Set whether data link is continued or stopped at a stop of the CPU.
- Scan mode setting
  Specify either synchronous or asynchronous with the sequence scan.
- Delay information settings
  Set the link scan interval delay time.
- Station information settings
  Set the station type, number of occupied stations, etc.
- Remote device station initial
  Set the corresponding station number and procedure registration (operation, execution and other conditions).
- Interrupt settings
  Set the device code, detection method, interrupt condition, etc.

[*1]: Setting five modules or more at "Unit count" and the "Block data assurance per station" of "Operational settings" are available for the CPU of the following version or later.
  Q02(H)/Q06H/Q12H/Q25HCPU : First 5 digits of serial number is "08032", and the function version is B
  Q12PH/Q25PHCPU   : First 5 digits of serial number is "08032", and the function version is C
  Q12PRH/Q25PRHCPU   : First 5 digits of serial number is "09102", and the function version is D
  For details, refer to CC-Link System Master/Local Module User's Manual.
[*2]: The "Block data assurance per station" of "Operational settings" is available for the CC-Link master/local module of the following version or later.
  QJ61BT11N   : First 5 digits of serial number is "08032", and the function version is B
[*3]: The redundant CPU cannot be set.
[*4]: Either "Master station (Redundant function)" or "Master station (Extension base)" can be set for redundant CPU system.
  Redundant CPUs that can use extension base are the ones with serial number 090120000000000-D or later.
  The CC-Link module that can be mounted on the extension base unit is the QJ61BT11N.

POINT

When clicking the [END] button or the [Check] button on the CC-Link list, screen, the refresh target of CC-Link IE controller network, MELSECNET/10(H), and CC-Link are checked for duplication.

Station data setting
Set the station data by station type on the "Station information setting" screen as explain below.

Correct setting

Set Ver.1 stations before Ver.2 stations.

Set Ver.2 stations after Ver.1 stations.

CC-Link station information. Module 1

Station No.	Station type	Expanded cyclic setting	Exclusive station count	Remote station points	Reserve/invalid station select	Intelligent buffer select(word) Send	Receive	Automatic
1/ 1	Ver.1Remote I/O station	single	Exclusive station 1	32 points	No setting			
2/ 2	Ver.1Remote I/O station	single	Exclusive station 1	32 points	No setting			
3/ 3	Ver.1Remote I/O station	single	Exclusive station 1	32 points	No setting			
4/ 4	Ver.1Remote I/O station	single	Exclusive station 1	32 points	No setting			
5/ 5	Ver.2Remote device station	single	Exclusive station 1	32 points	No setting			
6/ 6	Ver.2Intelligent device station	single	Exclusive station 1	32 points	No setting	64	64	128
7/ 7	Ver.2Remote device station	single	Exclusive station 1	32 points	No setting			
8/ 8	Ver.2Remote device station	single	Exclusive station 1	32 points	No setting			

Default   Check   End   Cancel

Set all stations as Ver.1 by station type.

CC-Link station information. Module 1

Station No.	Station type	Expanded cyclic setting	Exclusive station count	Remote station points	Reserve/invalid station select	Intelligent buffer select(word) Send	Receive	Automatic
1/ 1	Ver.1Remote I/O station	single	Exclusive station 1	32 points	No setting			
2/ 2	Ver.1Remote I/O station	single	Exclusive station 1	32 points	No setting			
3/ 3	Ver.1Remote I/O station	single	Exclusive station 1	32 points	No setting			
4/ 4	Ver.1Remote I/O station	single	Exclusive station 1	32 points	No setting			
5/ 5	Ver.1Remote I/O station	single	Exclusive station 1	32 points	No setting			
6/ 6	Ver.1Intelligent device station	single	Exclusive station 1	32 points	No setting	64	64	128
7/ 7	Ver.1Remote device station	single	Exclusive station 1	32 points	No setting			
8/ 8	Ver.1Remote device station	single	Exclusive station 1	32 points	No setting			

Default   Check   End   Cancel

Incorrect setting

An error occurs if Ver.1 station is set after Ver.2 station.

CC-Link station information. Module 1

Station No.	Station type	Expanded cyclic setting	Exclusive station count	Remote station points	Reserve/invalid station select	Intelligent buffer select(word) Send	Receive	Automatic
1/ 1	Ver.1Remote I/O station	single	Exclusive station 1	32 points	No setting			
2/ 2	Ver.2Remote device station	single	Exclusive station 1	32 points	No setting			
3/ 3	Ver.1Remote I/O station	single	Exclusive station 1	32 points	No setting			
4/ 4	Ver.1Intelligent device station	single	Exclusive station 1	32 points	No setting	64	64	128
5/ 5	Ver.1Remote device station	single	Exclusive station 1	32 points	No setting			
6/ 6	Ver.2Intelligent device station	single	Exclusive station 1	32 points	No setting	64	64	128
7/ 7	Ver.2Remote device station	single	Exclusive station 1	32 points	No setting			
8/ 8	Ver.2Remote device station	single	Exclusive station 1	32 points	No setting			

Default   Check   End   Cancel

An error occurs if all stations are set as Ver.2 when Remote network addition mode is selected.

CC-Link station information. Module 1

Station No.	Station type	Expanded cyclic setting	Exclusive station count	Remote station points	Reserve/invalid station select	Intelligent buffer select(word) Send	Receive	Automatic
1/ 1	Ver.2Remote device station	single	Exclusive station 1	32 points	No setting			
2/ 2	Ver.2Remote device station	single	Exclusive station 1	32 points	No setting			
3/ 3	Ver.2Intelligent device station	single	Exclusive station 1	32 points	No setting	64	64	128
4/ 4	Ver.2Remote device station	single	Exclusive station 1	32 points	No setting			
5/ 5	Ver.2Remote device station	single	Exclusive station 1	32 points	No setting			
6/ 6	Ver.2Intelligent device station	single	Exclusive station 1	32 points	No setting	64	64	128
7/ 7	Ver.2Remote device station	single	Exclusive station 1	32 points	No setting			
8/ 8	Ver.2Remote device station	single	Exclusive station 1	32 points	No setting			

Default   Check   End   Cancel

Ethernet

├─── Network type *1
│   Specify the MELSECNET/10H mode or Ethernet.

├─── Starting I/O No.
│   Set the starting I/O No.

├─── Network No.
│   Set the network No.

├─── Group No.
│   Set the group No.

├─── Station No.
│   Set the station number.

├─── Mode
│   Set the mode.

├─── Operational settings
│   Make the communications data code setting,
│   initial timing setting and IP address setting.

├─── Initial settings
│   Make the timer setting and DNS setting.

├─── Open settings
│   Make the open settings.

├─── Router relay parameter
│   Set the router relay function, sub-net mask
│   pattern, default router IP address, etc.

├─── Station No.↔ IP information
│   Set the MNET/10 routing system, net mask
│   pattern, etc.

├─── FTP Parameters
│   Set the login name, password, command input
│   watchdog timer, CPU watchdog timer, etc.

├─── E-mail settings
│   ├─ General setting
│   │   Set the password, mail address, etc.
│   ├─ Mail server name
│   │   Set the SMTP server name and IP address.
│   ├─ Mail receive setting
│   │   Set the POP server name and IP address.
│   ├─ Send mail address setting
│   │   Set the mail address.
│   └─ News setting
│   Set the condition device, monitor condition, etc.

├─── Interrupt settings
│   Set the detection method, interrupt condition,
│   interrupt (SI) No., etc.

└─── Redundant settings
          Set System B, system switching settings when
          communication error occurs, etc.

∗1: Either "Ethernet (Main base)" or "Ethernet (Extension base)" can be set for redundant CPU system.
      The redundant setting cannot be made when "Ethernet (Extension base)" is selected.
      (Different IP addresses cannot be set for each system.)
      Redundant CPUs that can use extension base are the ones with serial number 090120000000000-D or later.
      The CC-Link modules that can be mounted on the extension base unit are the QJ71E71(N1)-B2, QJ71E71(N1)-B5, and QJ71E71(N1)-100.

(2)   Network parameter items of the QnA series

MELSECNET/10

Network type
  Specify the MELSECNET (II, /10) .

Starting I/O No.
  Set the first I/O No.

Network No.
  Set the network No.

Total stations
  Set the total number of (slave) stations.

Network range type (Common parameters)

  I/O Master station specification
    Set the I/O master station on the LX/LY
    setting screen.

  Reserved station specification
    Specify the reserved station.

  Equal assignment
    Set when assigning the link device points
    of the specified stations equally.

  Identical point assignment
    Set the same points according to the
    preset total number of stations.

  Supplementary settings
    Make the transient, low-speed cyclic and
    other settings.

  Station inherent parameters
    Set the station inherent parameters.

Refresh parameters
  Set the refresh parameters.

Ethernet

Network type
  Specify Ethernet.

Starting I/O No.
  Set the first I/O No.

Network No.
  Set the network No.

Group No.
  Set the group No.

Station No.
  Set the station number.

IP Address Settings
  Set the IP address of the Ethernet unit.

Station No.↔ IP information
  Set the MNET/10 routing system, net
  mask pattern, etc.

FTP Parameters
  Set the login name, password,
  command input watchdog timer, CPU
  watchdog timer, etc.

Router relay parameter
  Set the router relay function, sub-net
  mask pattern, default router IP address, etc.

POINT

Ethernet connection is enabled by use of the improved Q4ARPU (whose
year/month of manufacture (year (2 lower digits), month (2 digits)) is "0012" or
later and whose software version is B or later) and the QE71 of function version
B. (Refer to Appendix 7 for version check.)
Among the Ethernet parameters of the Q4ARPU, do not set the FTP and router
relay parameters since they are not supported by the Q4ARCPU.
A LINKPARA error will occur if they are set and written to the programmable
controller.

MELSECCNET/MINI

  Unit count
    Set the number of units. (1 to 8 units)

  Model name
    Set the model name of the
    MELSECNET/MINI(S3) loaded.

  Station count
    Set the total number of remote I/O
    stations.

  Batch refresh receive data
    Set the receive data for batch refresh.

  Batch refresh send data
    Set the send data for batch refresh.

  Retry
    Set the number of retries made to the
    remote I/O station where a
    communications fault occurred.

  Response
    Set whether access to the master unit
    buffer memory is assigned to "link"
    priority or "CPU" priority.

  Error data clear
    Set whether the data of the station in
    communications error is cleared or held.

  Abnormal station detection bit data
    Set the device where the abnormal station
    detection data will be stored.

  Abnormal communication remote
    Set the device where the error code at
    error occurrence will be stored.

  Circuit error check
    Set the transmission status at occurrence
    of a circuit error.

  STOP time operation
    Set whether link is stopped or continued
    at STOP of the CPU.

CC-Link

  Unit count
    Set the number of units. (1 to 8 units)

  Operational settings
    Set the parameter name and data link abnormal station.

  Type
    Set the master/local/standby master station, etc.

  Master station data link type
    Fixed to "PLC parameter auto start".

  Mode
    Set the mode.

  All connectcount
    Set the number of slave stations connected. (1 to 64 stations)

  Remote input [RX]
    Set the bit devices to be batch-refreshed.

  Remote output [RY]
    Set the bit devices to be batch-refreshed.

  Remote register [RWr]
    Set the word devices to be batch-refreshed.

  Remote register [RWw]
    Set the word devices to be batch-refreshed.

  Special relay [SB]
    Set the bit devices to be batch-refreshed.

  Special register [SW]
    Set the bit devices to be batch-refreshed.

  Retry count
    Set the number of transmission retries.

  Automatic reconnection station count
    Set the number of stations automatically reconnected
    during 1 scan.

  Wait master station No.
    Set the station number of the standby master station.

  PLC down select
    Set whether data link is continued or stopped at a stop
    of the CPU.

  Scan mode setting
    Set whether sequence scans are synchronized or not.

  Delay information settings
    Set the link scan interval delay time.

  Station information settings
    Set the station type, number of occupied stations, etc.

POINT

CC-Link parameters cannot be set to the Q4ARCPU.
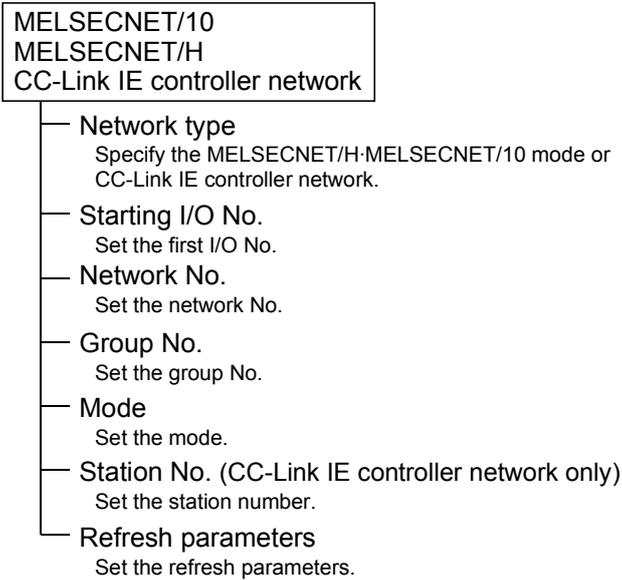
(3)   Network parameter items of the A series

MELSECNET (II, /10)

Network type
Specify the MELSECNET (II, /10) .

Starting I/O No.
Set the first I/O No.

Network No.
Set the network No.

Total stations
Set the total number of (slave) stations.

Network range type (Common parameters)

I/O Master station specification
Set the I/O master station on the LX/LY
setting screen.

Reserved station specification
Specify the reserved station.

Equal assignment
Set when assigning the link device points
of the specified stations equally.

Identical point assignment
Set the same points according to the
preset total number of stations.

Supplementary settings
Make the transient, link start indication and
other settings.

Station inherent parameters
Set the station inherent parameters.
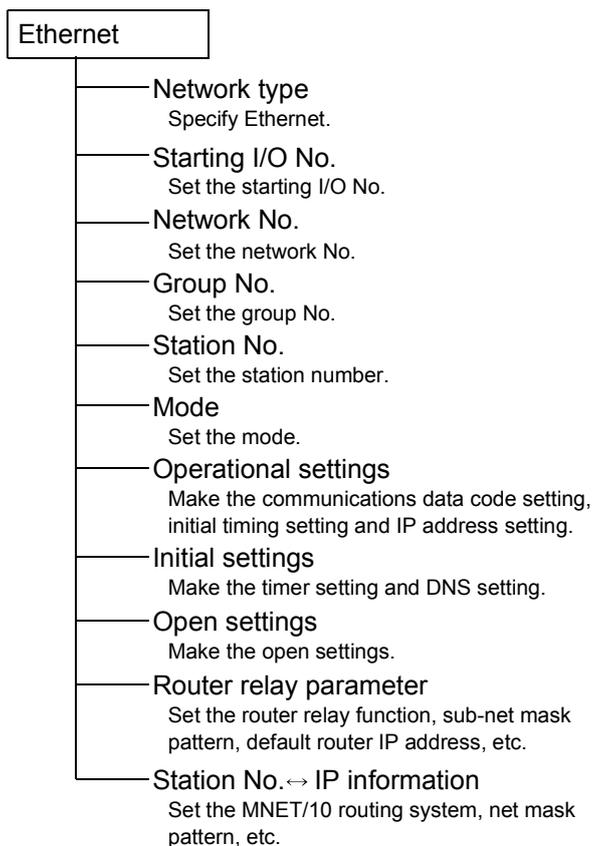
Refresh parameters
Set the refresh parameters.

MELSECNET/MINI

Unit count
Set the number of units. (1 to 8 units)

Model name
Set the model name of the MELSECNET/MINI(S3)
loaded.

Station count
Set the total number of remote I/O stations.

Batch refresh receive data
Set the receive data for batch refresh.

Batch refresh send data
Set the send data for batch refresh.

Retry
Set the number of retries made to the remote I/O
station where a communications fault occurred.

Response
Set whether access to the master unit buffer
memory is assigned to "link" priority or "CPU" priority.

Error data clear
Set whether the data of the station in communications
error is cleared or held.

Abnormal station detection bit data
Set the device where the abnormal station detection
data will be stored.

Abnormal communication remote
Set the device where the error code at error
occurrence will be stored.

Circuit error check
Set the transmission status at occurrence of a circuit
error.

STOP time operation
Cannot be set for the A series.

(4)   Network parameter items of the QS series

```
┌─────────────────────────────────┐
│ MELSECNET/10                    │
│ MELSECNET/H                     │
│ CC-Link IE controller network   │
└─────────────────────────────────┘
        ├─── Network type
        │      Specify the MELSECNET/H·MELSECNET/10 mode or
        │      CC-Link IE controller network.
        ├─── Starting I/O No.
        │      Set the first I/O No.
        ├─── Network No.
        │      Set the network No.
        ├─── Group No.
        │      Set the group No.
        ├─── Mode
        │      Set the mode.
        ├─── Station No. (CC-Link IE controller network only)
        │      Set the station number.
        └─── Refresh parameters
               Set the refresh parameters.
```

POINT

When clicking the ⌷END⌷ button or the ⌷Check⌷ button on the Ethernet/CC IE/
MELSECNET Setting screen, the refresh target of CC-Link IE controller network,
MELSECNET/10(H), and CC-Link are checked for duplication.

Ethernet

— Network type
    Specify Ethernet.

— Starting I/O No.
    Set the starting I/O No.

— Network No.
    Set the network No.

— Group No.
    Set the group No.

— Station No.
    Set the station number.

— Mode
    Set the mode.

— Operational settings
    Make the communications data code setting,
    initial timing setting and IP address setting.

— Initial settings
    Make the timer setting and DNS setting.

— Open settings
    Make the open settings.

— Router relay parameter
    Set the router relay function, sub-net mask
    pattern, default router IP address, etc.

— Station No.↔ IP information
    Set the MNET/10 routing system, net mask
    pattern, etc.

13.2.3 Explanations for Network Parameter Setting Screen

The following items are related to network parameter setting.

(1) Unit valid for other station access (Except MELSECNET/H remote I/O)
This setting is made valid when there are multiple units which are used without specifying the network No. or when the network No. has not been set for access to the other station.

(2) ｜Read PLC data｜ button
Reads the implementation status.

For QnA series
Always delete the parameter file of the programmable controller before reading the implementation status.
The parameter file is read if the parameter file exists in the programmable controller.

(3) Remote I/O project (Q series only)
You can set up to four Ethernet modules and CC-Link modules, respectively.

(4) "MELSOFT connection" in Ethernet connection (Q series only)
This setting is used when connecting multiple MELSOFT products such as GX Developer (a maximum of 17 units) using the TCP/IP communication system.
Setting procedure
Ethernet → Open settings → Protocol (TCP) → Open system (MELSOFT connection)
The screen below gives a setting example when user connections 14 to 16 are used to connect MELSOFT products, while connections 1 to 5 are used to communicate with non-MELSOFT products via a MC protocol communication, fixed-buffer communication, etc.

REMARK

For the Q series, Read PLC data is not available for the network parameters.

(5) ｜Group settings｜ button (Redundant CPU only)
Can be set for the Ethernet modules.
When group setting is made, control can be continued without system switching if an error occurs in one Ethernet module.
System switching will be performed if errors occur in two Ethernet modules.

13.3 Setting the Remote Password

A	Q/QnA	QS	FX
×	○∗	○	×

∗: Compatible with the QCPU(Q mode).

[Purpose]

Set the password to prevent access by other than the intended user since remote access can be made via the Q-compatible E71 or serial communication module (Q series).
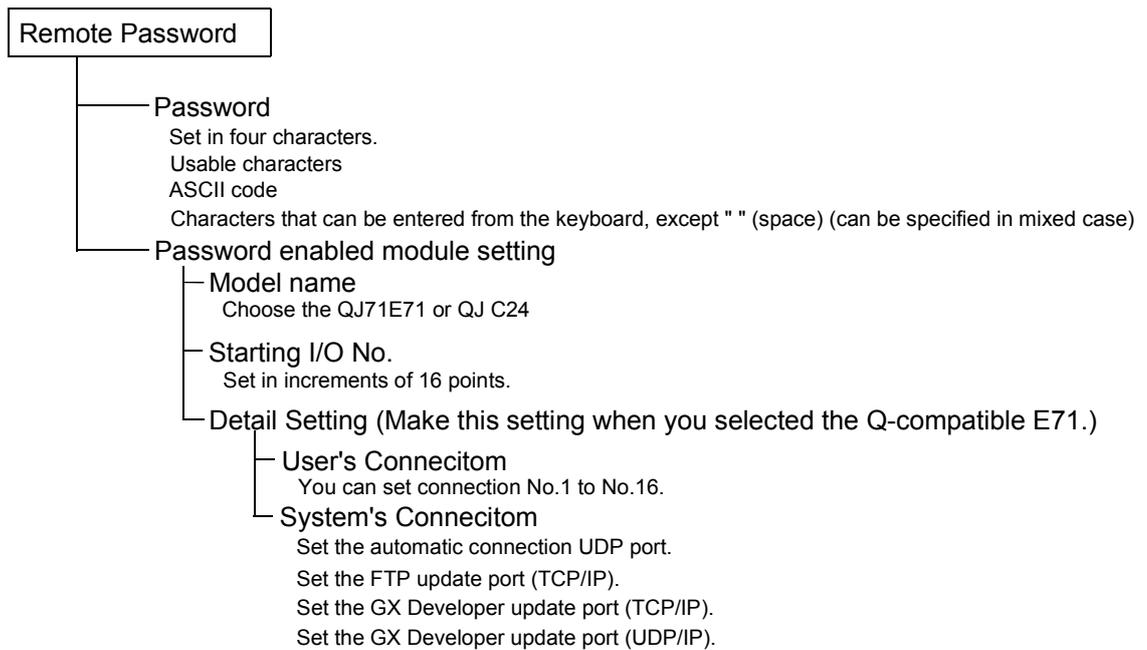
For the versions of the programmable controller, Q-compatible E71 and serial communication module (Q series) which support this function, refer to the user's manuals of the corresponding modules.

Refer to Appendix 7 for check of the module versions.

[Operating Procedure]

Select Project data list - [Parameter] - [Remote Pass].

Select Toolbar project data list change - [Parameter] - [Remote Pass].

Remote Password

Password
  Set in four characters.
  Usable characters
  ASCII code
  Characters that can be entered from the keyboard, except " " (space) (can be specified in mixed case)

Password enabled module setting
  Model name
    Choose the QJ71E71 or QJ C24
  Starting I/O No.
    Set in increments of 16 points.
  Detail Setting (Make this setting when you selected the Q-compatible E71.)
    User's Connecitom
      You can set connection No.1 to No.16.
    System's Connecitom
      Set the automatic connection UDP port.
      Set the FTP update port (TCP/IP).
      Set the GX Developer update port (TCP/IP).
      Set the GX Developer update port (UDP/IP).

```
POINT

• Refer to Section 16.3 for the operating procedure used to access the
  programmable controller where the remote password has been registered.

• The following shows the conditions that invalidate the unlocked status of a
  remote password.
  (1) The project ends.
  (2) The connection setup is changed.
  (3) The PLC type is changed (only when the PLC series changes).
```

13.4 Setting the Redundant Parameters

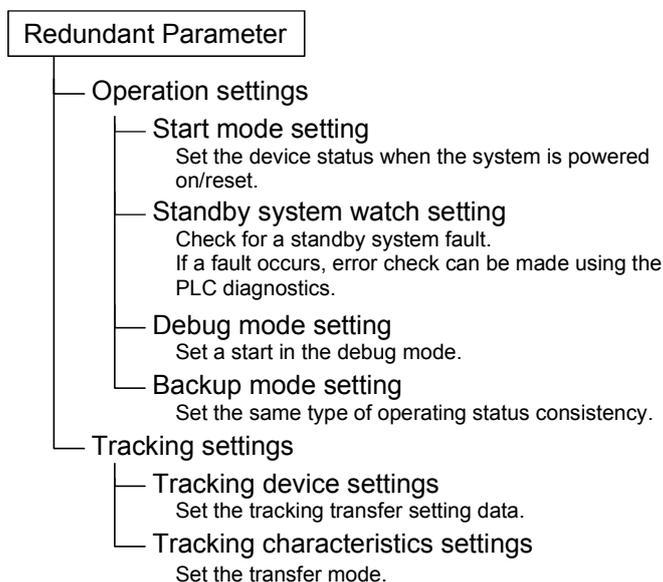| A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with the redundant CPU (Q mode).

[Purpose]

Set the operation mode and tracking of the redundant CPU.

[Operating Procedure]

Select Project data list - [Parameter] - [Redundant Parameter].
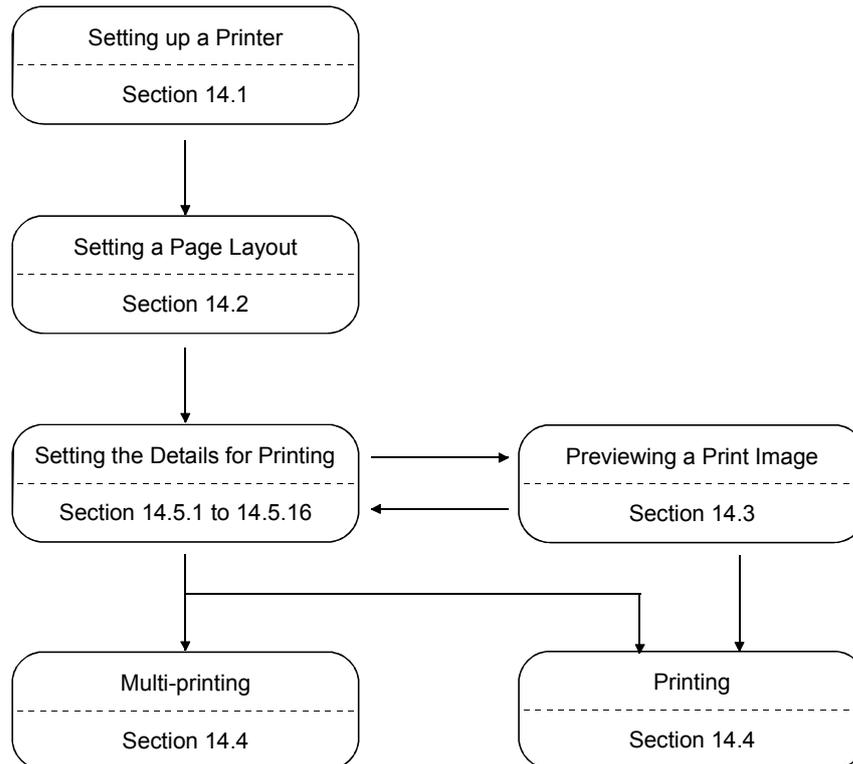Select Toolbar data list - [Parameter] - [Redundant Parameter].

```
Redundant Parameter
    ├── Operation settings
    │       ├── Start mode setting
    │       │       Set the device status when the system is powered
    │       │       on/reset.
    │       ├── Standby system watch setting
    │       │       Check for a standby system fault.
    │       │       If a fault occurs, error check can be made using the
    │       │       PLC diagnostics.
    │       ├── Debug mode setting
    │       │       Set a start in the debug mode.
    │       └── Backup mode setting
    │               Set the same type of operating status consistency.
    └── Tracking settings
            ├── Tracking device settings
            │       Set the tracking transfer setting data.
            └── Tracking characteristics settings
                    Set the transfer mode.
```

POINT

For details of the redundant parameter setting method, refer to the QCPU User's Manual (Function Explanation, Program Fundamentals).

14. PRINT

This chapter describes how to print data, including sequence programs created by a GX Developer, device comments, and set parameters, on a printer from a personal computer.

[Outline of operations to printing]
Shown below is the basic flow of steps to printing.

```
┌─────────────────────────┐
│  Setting up a Printer    │
│ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─  │
│      Section 14.1        │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│  Setting a Page Layout   │
│ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─  │
│      Section 14.2        │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐         ┌─────────────────────────┐
│ Setting the Details      │────────▶│ Previewing a Print Image │
│  for Printing            │         │ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─  │
│ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─  │◀────────│      Section 14.3        │
│ Section 14.5.1 to 14.5.16│         └─────────────────────────┘
└─────────────────────────┘
            │                                     │
            ▼                                     ▼
┌─────────────────────────┐         ┌─────────────────────────┐
│     Multi-printing       │         │        Printing          │
│ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─  │         │ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─  │
│      Section 14.4        │         │      Section 14.4        │
└─────────────────────────┘         └─────────────────────────┘
```

14

14.1 Setting Up a Printer

	A	Q/QnA	QS	FX
	○	○	○	○

[Purpose]
  Selects a printer for printing and sets the paper size, the printing orientation, and
  other printing format-related items.

[Operating procedure]
  Select [Project] → [Printer setup] or click 🖨 (Ctrl + P) and the Printer setup
  button.

[Dialog box]
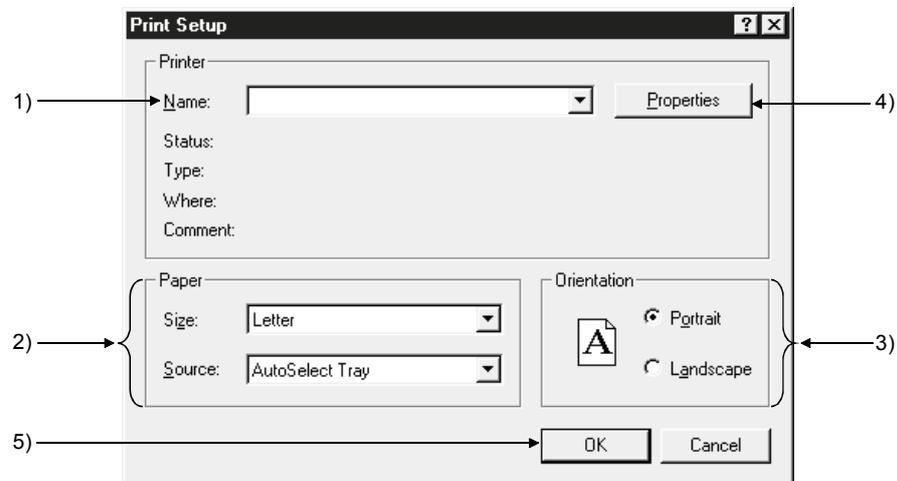
[Description]

  1) Printer
      Selects a printer for printing.

  2) Paper
      Sets the size of the paper for printing and the paper feed method of the printer.
      The setting range depends on the printer.

  3) Orientation
      ⦿ Portrait
        Characters will be printed along the paper feed direction.
      ⦿ Landscape
        Characters will be printed across the paper feed direction.

  4) Properties button
      Clicking this button displays the properties dialog box.
      The printer property option is used to make the basic settings of the printer.

  5) OK button
      Click this button after the printer setting is completed.

POINT

- A printer model operable, whose performance was verified by Mitsubishi, is available.
  HP Laser Jet 4000N

- Consult the operation manual for the selected printer for the printer properties that depend on the printer manufacturer and the printer model.

- To print large quantities of data, open the printer property window from the control panel of Windows$^{®}$ 95, and select "Print directly to the printer" for the spool setting.

14.2 Setting a Page Layout

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Makes settings related paper, page number, header, and so on.

[Operating procedure]
Select [Project] → [Printing] and click the Page setup button, or click 🖨 (Ctrl + P) then the Page setup button.

[Dialog box]
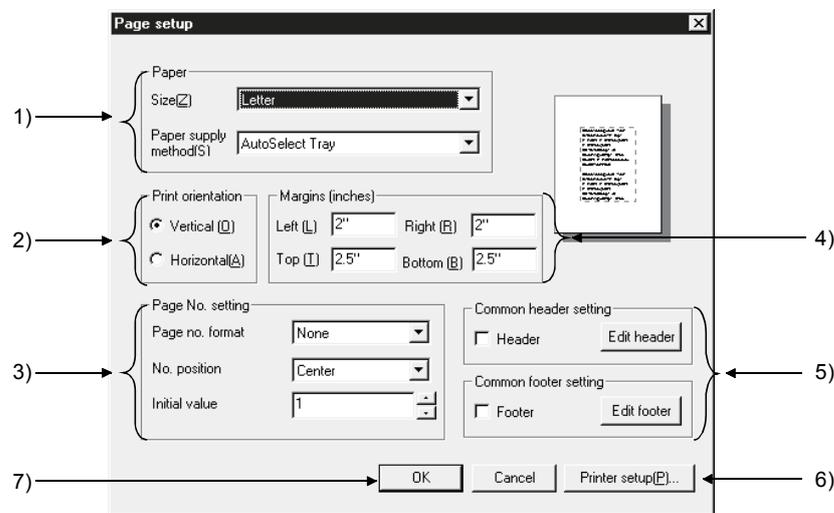
[Description]

1) Paper
   Sets paper size and paper feed method.

2) Print orientation
   Sets the orientation of printing on paper.

3) Page No. setting
   Page no. form ············ When page numbers are not required, set "None"
   The symbol "-✳✳-" indicates that page numbers starting from the initial value will be printed by item.
   However, serial number will be printed when the data to be printed is more than one page long.
   The symbol "✳✳-✳✳" indicates that page numbers starting from the initial number will be printed according to the printing order set in the Multi-Printing dialog box.
   No. position ··············· Sets the position of page numbers.
   Initial value ················ Sets the page number to be printed on the first page.

4) Margins
   Sets the margins of the page.

5) Common header setting
   By checking off the check box, a header will be printed on each page.
   Click the Edit header button, and the Header Edit dialog box as shown below will be displayed.
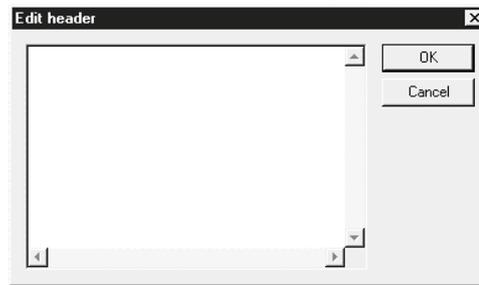
   Alternatively, clicking the Edit footer button displays the Footer Edit dialog box like the Header Edit dialog box.
   The header (or footer) can be edited within the range of 64 characters x seven lines.
   Lines and images cannot be edited, and characters cannot be decorated.

6) Printer setup button
   By clicking this button, the printer dialog box will be displayed (Refer to Section 14.1.).

7) OK button
   Click this button after the page setting is completed.

POINT

- If the print characters are small, reduce the value of margin setting.

POINT

• The printing date will be printed automatically in the header (footer) by setting "#YY-MM-DD#" in the Header (Footer) Edit dialog box.
The PC type will also be printed automatically in the header (footer) by setting "#CPU#."

<Example>   <Printing example>

| #YY-MM-DD# |
| #CPU# |

| 98-03-01 |
| A3U |

• Entered character patterns and printed characters

Character Pattern	Function	Remarks
#YY-MM-DD#	Date (year-month-day)	
#YYYY-MM-DD#	Date (year-month-day)	
#YY/MM/DD#	Date (year/month/day)	
#YYYY/MM/DD#	Date (year/month/day)	
#YY#	Year (last two digits)	
#YYYY#	Year (four digits)	
#MM#	Month	
#DD#	Day	
#CPU#	CPU model	When setting characters after the CPU model, the total length of characters including the CPU model must not exceed 64 characters. Otherwise the CPU model may not be printed.
#PROJECT#	Project name	
#PROJ_COMMENT#	Quick reference title of project	
#DATA#	Data name (MAIN, SUB1, etc.)	
#DATA_COMMENT#	Quick reference title of data name	

To add a fixed character after the character pattern, insert a space after #CPU#.
<Example> Printed characters when A2USHCPU-S1 is selected

When no space is inserted after CPU

#CPU#____ABCD → Print → A2USH-S1ABCD

Insert a space.

14.3 Previewing a Print Image

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

The image of the entire page when it is printed will be displayed.

[Operating procedure]

Select [Project] → [Print] and click the Print preview button, or click 🖨 (Ctrl + P), then the Print preview button.

[Preview Window]

1)   2)   3)
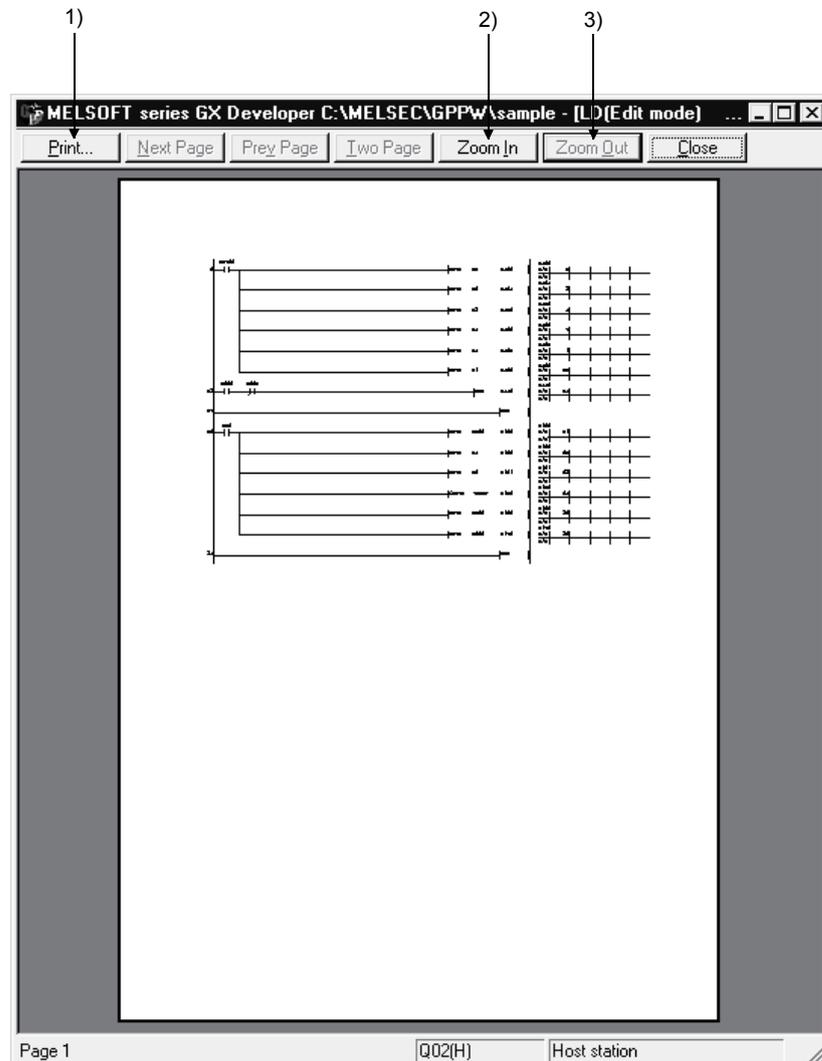
[Description]
1) Print button
    The data displayed on the print preview window will be printed.

2) Zoom In button
    The displayed image will be enlarged by clicking this button.
    Data will be displayed in three different scales.

3) Zoom Out button
    The displayed image will be reduced by clicking this button.

POINT

- The print preview may be displayed only on page 1.

  (It cannot be displayed on page 2 or later.)
  However, only the parameters can be previewed on all pages. (Except X/Y assignment confirmation)

- When the mouse button is clicked while the shape of the mouse pointer is 🔍, the window zooms in.
  When the mouse button is clicked while the shape of the mouse pointer is ⬐, the data is displayed in the standard scale.

14.4 Printing

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Prints data, such as sequence programs and device comments.

Data can be printed in two ways: each volume of data will be printed or two or more volumes of data will be printed at a time.

[Operating procedure]

Select [Project] → [Print], or click 🖨 (Ctrl + P), then the Print preview button.

[Dialog box]
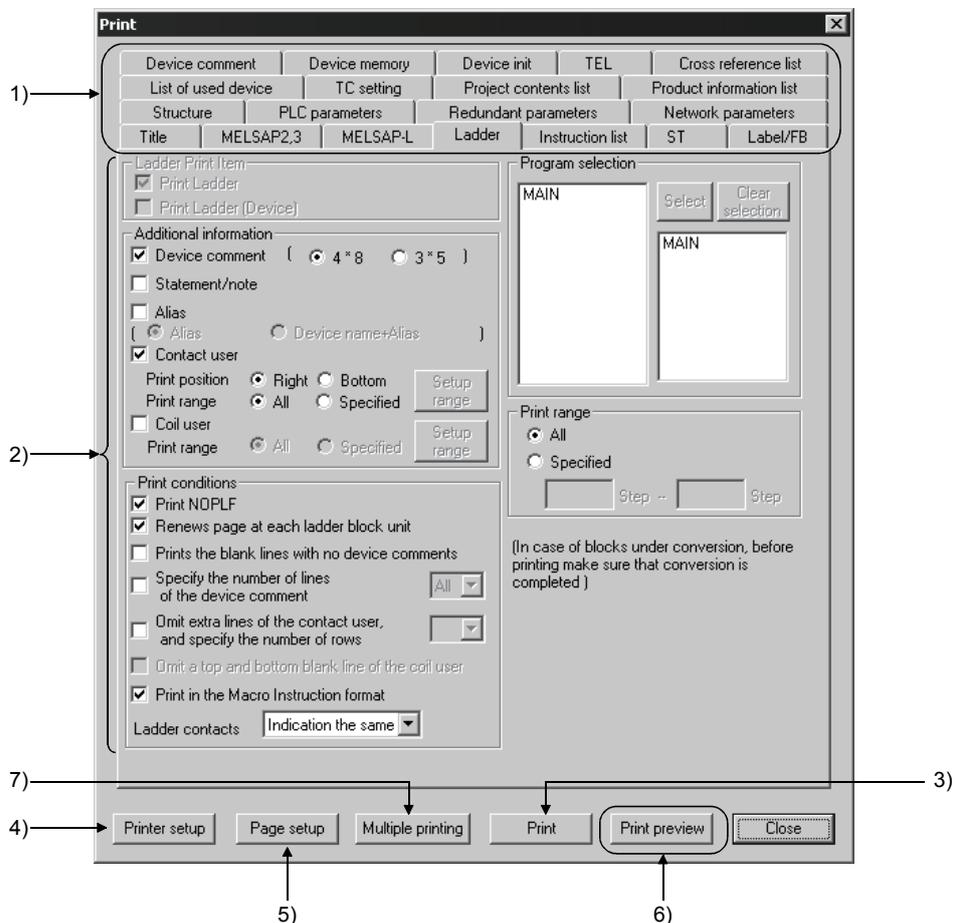
[Description]

1) Data print tabs

Clicking the required tab switches to the detail setting screen.

2) Sheet

Each sheet provides the items to be set to designate items and range of the data to be printed and other details.

Select each item by checking the check box to the left.

For details on each sheet, refer to Sections 14.5.1 to 14.5.17.

3) Print button

Click this button after details have been set on each sheet.

The data of the displayed sheet will be printed.

4) | Printer setup |
Refer to Sections 14.1.

5) | Page setup |
Refer to Sections 14.2.

6) | Print preview |
Refer to Sections 14.3.

7) | Multiple printing | button
By clicking this button, the Multiple Data Printing dialog box shown below will be displayed.
Two or more volumes of data will be printed at a time.
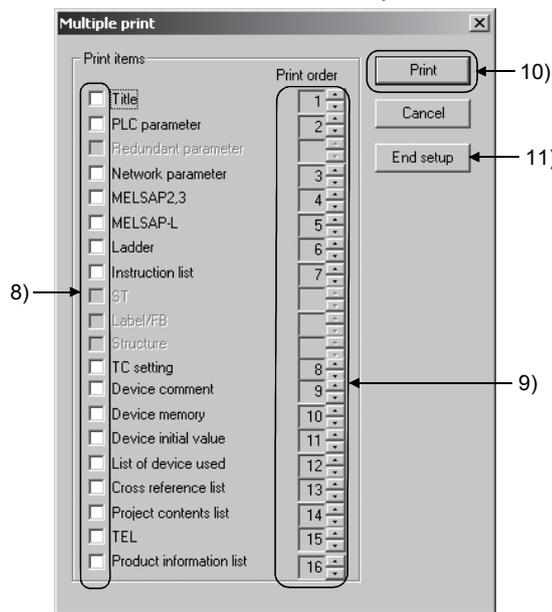
8) Print items
Select the data items to batch-print by checking the check box.

9) Print order
Sets the order in which each data will be printed.
Set the order number of each item using ÷

The order number of any data, which is not set to be printed, will be ignored.

10) | Print | button
By clicking this button, the data items with a checkmark ✓ will be batch-printed.
Select data items to batch-print by checking their check boxes.

11) | End setup | button
The data items to print will be set, and the initial setting dialog box will be displayed.

[Setting procedure]
1. After the printer setting is completed, display the print dialog box.

2. Open the page setting dialog box, and set the page format.

3. Open each sheet, and set details.

4. To confirm the image of the data when it is printed, click [Print preview].

5. Click the Print button 3) when printing data one by one.
    The data displayed on the current sheet will be printed.
    To batch-print two or more volumes of data, click the Multiple printing button
    5).
    The multiple data printing dialog box will be displayed.

6. Set the items to print 6) and the printing orders 7).

7. By clicking the Print button 8), the selected volumes of data will be batch-
    printed.

```
┌──────────────────────────────────────────────────────────────────────┐
│   POINT                                                                │
│                                                                        │
│  • In data-by-data printing, a ladder will be printed by clicking the  Print  button │
│    when the <<Ladder>> sheet is displayed, or a device comment will be │
│    printed by clicking on the  Print  button when the <<Device comment>> is │
│    displayed.                                                          │
│                                                                        │
│  • When the page number form "-✳✳-" is set in page setting for multiple data │
│    printing, the data will be printed in the set printing order, and serial page │
│    numbers will be printed.                                            │
│                                                                        │
│  • Depending on the printer type, printer driver type/version, or set data, a part │
│    of the data may not be printed.  If this problem occurs, change the setting of │
│    the printer driver.                                                 │
└──────────────────────────────────────────────────────────────────────┘
```

14.5 Setting the Details for Printing

Set details for printing, such as the range and contents of each data.
For a printing example of each data, refer to Section 14.6.

14.5.1 Creating a title

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
  Creates a title for the project to be printed.

[Operating procedure]
  Select [Project] → [Print] and click the <<Title>> tab, or click 🖨 (Ctrl + P), then
 the <<Title>> tab.

[Dialog box]
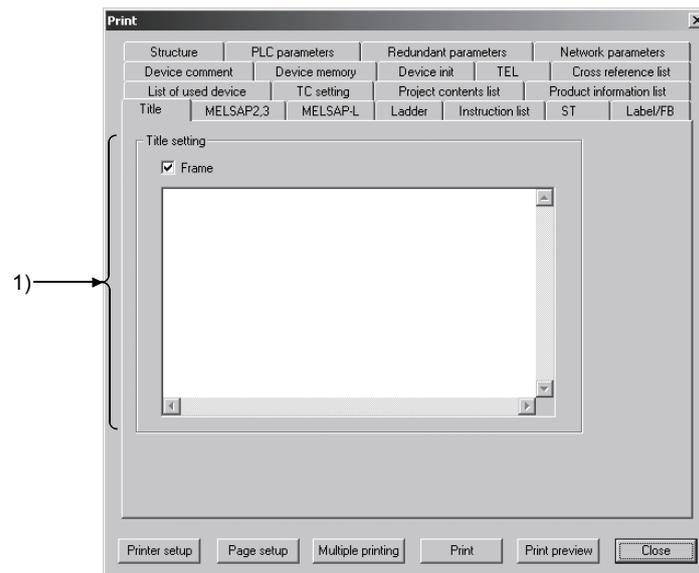
[Description of item]

1) Title setting
   Edit the title within 64 characters x ten lines.
   Lines and images cannot be edited, and characters cannot be decorated.
   By checking the check box, the title edited will be framed.
   The date will be printed automatically when a character pattern, such as "#YY-
   MM-DD#," is set.
   On this dialog box, the date (#YY-MM-DD#) and the CPU model (#CPU#) can
   be set.
   For input characters patterns, refer to Section 14.2.

14.5.2 Setting a ladder print range

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
  Sets details about ladder printing, such as the ladder print range and additional
  information.

[Operating procedure]
  Select [Project] → [Print] and click the <<Ladder>> tab, or click 🖨 (Ctrl + P),
  then the <<Ladder>> tab.

[Dialog box]
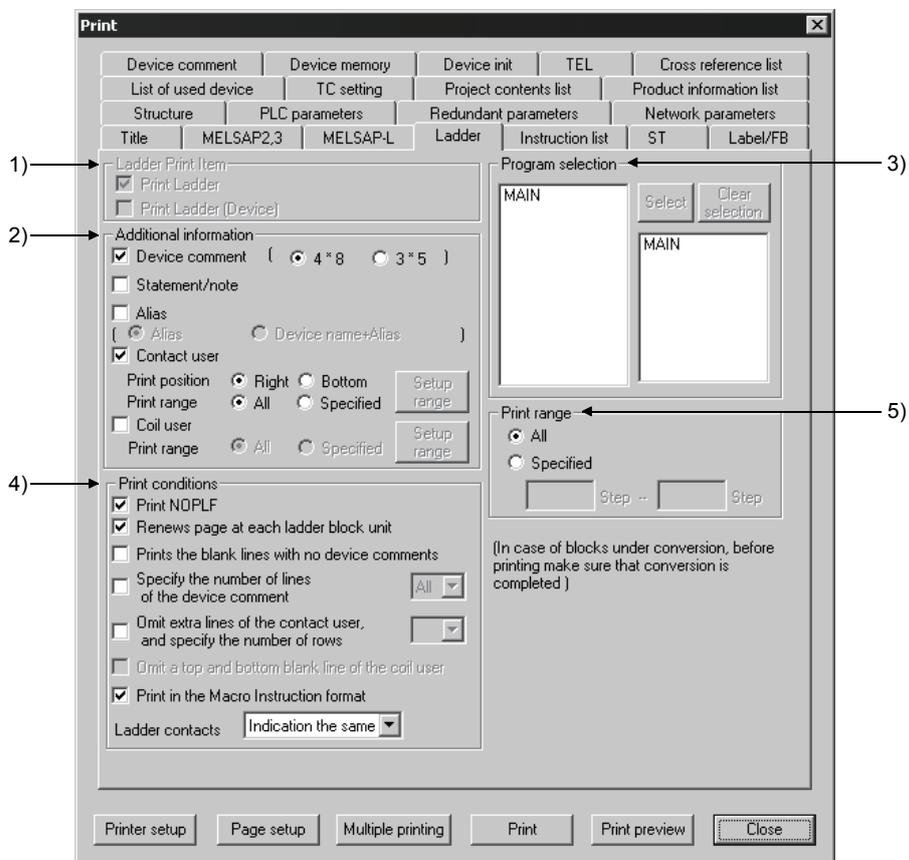
[Description]
  1) Ladder print item (Label programming only)
      Print Ladder........................ Printed as label name.
      Print Ladder (Device) .... Printed as actual device.

2) Additional information

Any item with a checkmark $\checkmark$ will be added to the ladder to be printed.
By clicking the [Setup range] button for contact using data or for coil using data, the following Device Range Setting dialog box appears.
Set the head and final devices or the number of points and the head device of each range to be specified.
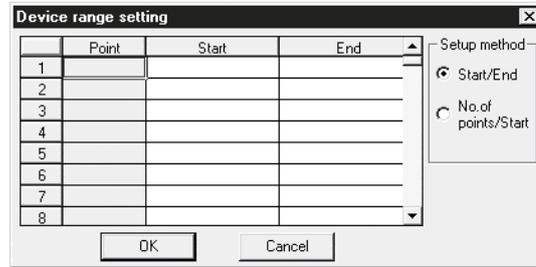
Destinations where contacts and coils are used
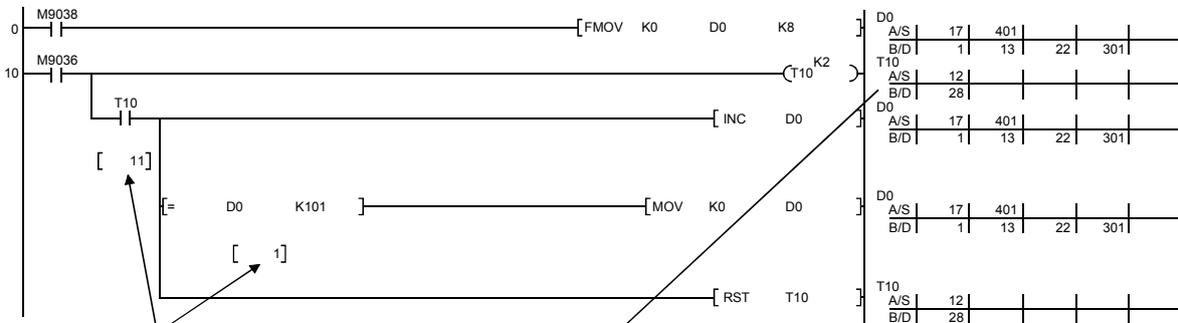
Indicate the number of steps at destination where coils are used.

• Destination where contacts are used

a contact

Source

Number of steps when T10 is used at source.

Destination

Number of steps when T10 is used at destination.

b contact
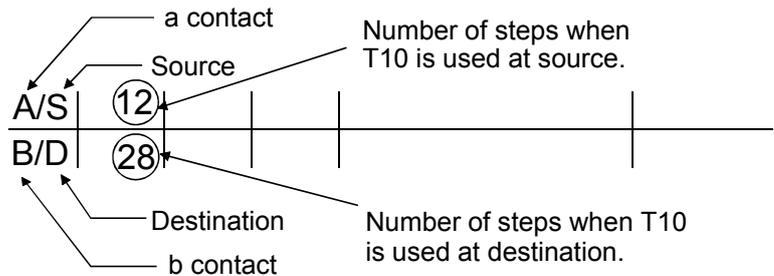
3) Program selection

If the program to be printed is not yet set, the data name of the program which is active in the ladder mode is automatically selected.
If the program to be printed is already set, the set program name appears.
Using the mouse, select on the list a program to print, and click the [Select] button to set the selection.
Also, you can select and batch-print multiple sequence programs.

4) Print conditions

Sets the condition for printing the ladder.

• Print NOPLF (Except the FX series)
NOPLF will be printed by checking the check box.

• Renews page at each ladder block unit
Pages will be renewed by ladder block by checking the check box.
When the check box is not checked, pages will be renewed by ladder line.

- Prints the blank lines with no device comments
  Any line without a device comment will also be printed by checking the check box.

- Specify the number of lines of the device comment
  Checking this item enables to specify the number of device comment lines to be printed with the combo box.

- Omit extra lines of the contact user, and specify the number of rows
  Select the check box to close up blanks between steps where contacts are used at printing.
  The number of steps where contacts are used can be specified with the combo box for printing (5 or 8 rows).

(Print examples when "Omit extra lines of the contact user, and specify the number of rows" is checked/unchecked.)

Unchecked (5 rows)   Checked and 8 rows are selected

- Omit a top and bottom blank line of the coil user
  Select the check box to close up blanks above and below of coils at printing.

(Print examples when "Omit a top and bottom blank line of the coil user" is checked/unchecked.)

Checked
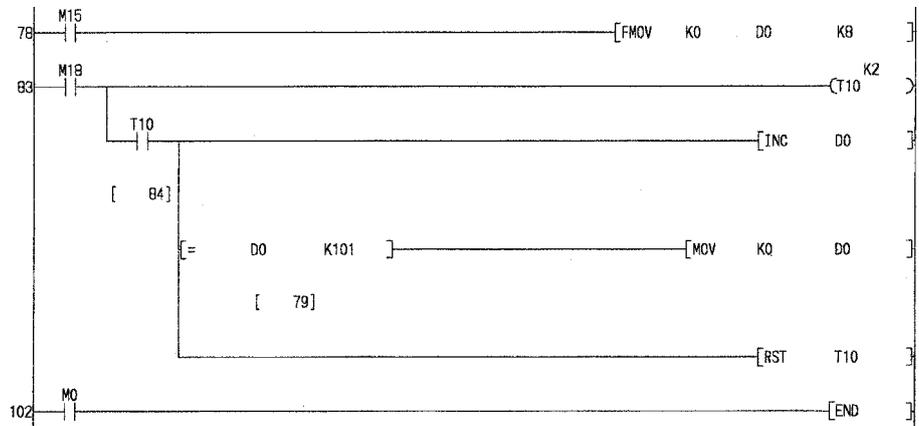
Unchecked
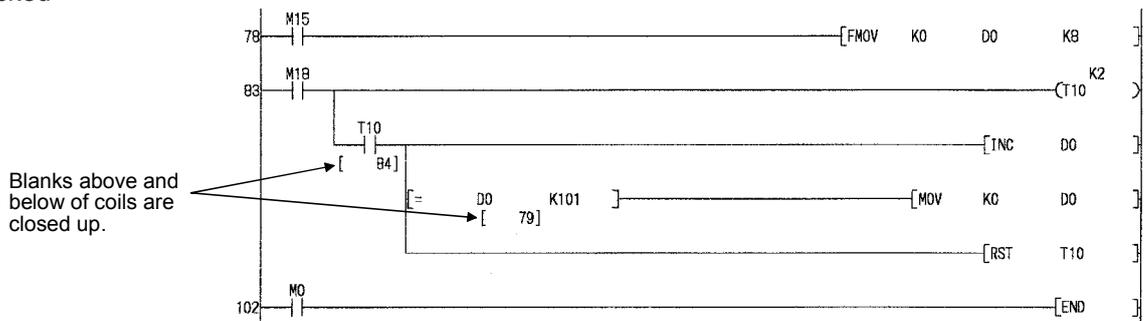
Blanks above and below of coils are closed up.

• Printing in the macro instruction format (Except the FX series)
  Prints the macro-input instructions in the macro format.

• Ladder contacts
  Choose "indication the same", "9 contacts" or "11 contacts".

5) Print range
   Sets the print range of the ladder.

   ⊙ All
     The entire range from step 0 to the END instruction of the program will be printed.

   ⊙ Specified
     The range between the specified steps will be printed.

POINT

Precautions
Printing condition
Pages will be fed at the position following an NOPLF instruction even if the NOPLF check box is not checked. (Except the FX series)

If the program is read from the GPPA by selecting [Project] → [Import file], the number of contacts to be displayed on a line is different between the GX Developer and the GPPA and the number of lines printed by the GPPA may therefore vary.

When feeding pages

Selected

Not selected

If there are two or more lines of contact using data under the above settings, pages will be fed in the middle of the lines. Pages will not be fed in the middle of the ladder and the coil using data.

14.5.3 Setting a Instruction list print range

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]
Sets details about Instruction list printing, such as the list print range and additional information.

[Operating procedure]
Select [Project] → [Print] and click the <<Instruction list>> tab, or click 🖨 (Ctrl + P), then the <<Instruction list>> tab.

[Dialog box]
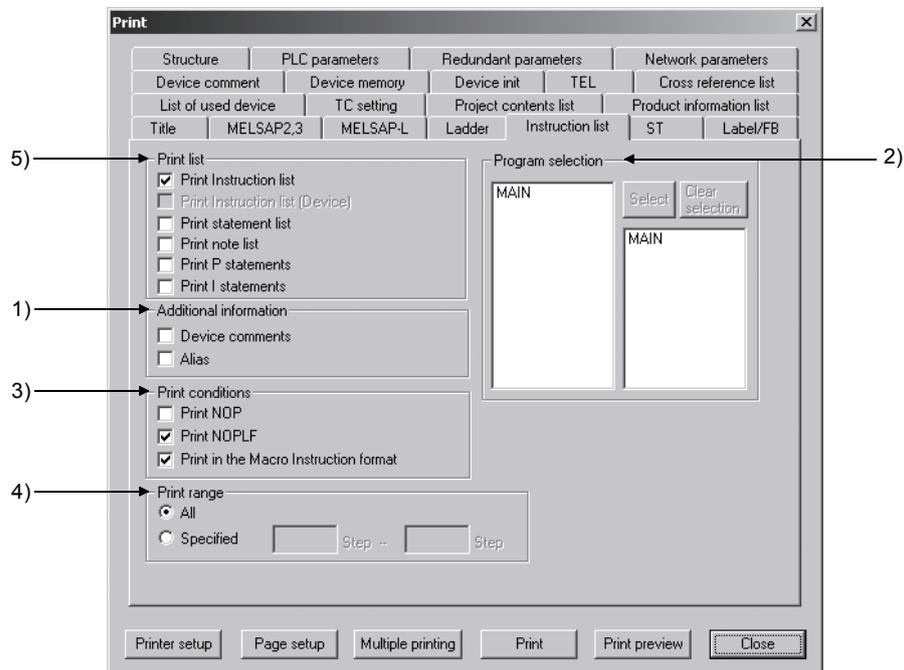
[Description]

1) Additional information
A device name will be added to the Instruction list.
Select this item by checking the check box.

2) Program selection
If the program to be printed is not yet set, the data name of the program which is active in the ladder mode is automatically selected.
If the program to be printed is already set, the set program name appears.
Using the mouse, select on the list a program to print, and click the Select button to set the selection.
Press the Clear selection button to clear the program selected.

3) Print conditions
Prints NOP
NOP will be printed by checking the check box.
Print NOPLF (Except the FX series)
NOPLF will be printed by checking the check box.
Printing in the macro instruction format (Except the FX series)
Prints the macro-input instructions in the macro format.

4) Print range
   Set the print range of the list.
   ⊙ All
   The entire range from step 0 to the END instruction of the program will be printed.
   ⊙ Specified
   The range between the specified steps will be printed.

5) Print list
   Print Instruction list (Device) prints the execute program in label programming.
   Choose [Edit] → [Documentation] → [Statement/Note block edit] to print the created statements/notes.

POINT

Precautions
    Printing condition
    Pages will be fed at the position following an NOPLF instruction even if the Printing NOPLF check box is not checked. (Except the FX series)

    Print range
    In setting the print range, enter both the start step and the end step, and the former must be larger than the latter.
    When two or more steps are specified as the start or end step for an instruction, or when the instruction includes the steps specified, the instruction will also be printed.

    When printing data on A4 portrait paper
    If the number of device characters of an instruction exceeds 80 on A4 portrait paper or 130 on A4 landscape paper, the excessive characters may not be printed. Any entire instruction or device within eight characters will be printed. If a device is more than eight characters long, the third device will not be printed completely. (All device characters will be printed on A3 landscape paper even if the number of characters is maximum.)
    <Example> Printing on A4 portrait paper

```
            1          2          3          4          5          6          7          8
1234567890 1234567890 1234567890 1234567890 1234567890 1234567890 1234567890 1234567890

   123  ECALL    "File001" P0      ZR1000Z0 ZR1100Z0 ZR1200Z1 ZR1300Z0 ZR1400Z0
   123  ECALL    "File001" P0      J123\W100Z12    J123\W100Z12    J123\W100Z12
```

80 characters

Will not be printed.

14.5.4 Setting a TC setting value print range

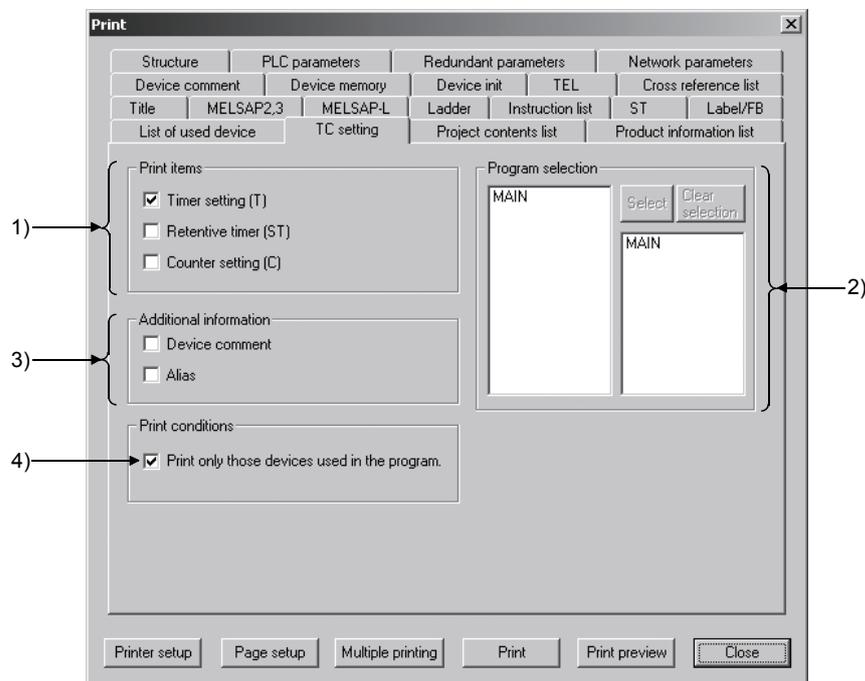| A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Sets details about timer or counter settings, such as the items to be printed and additional information.

[Operating procedure]
Select [Project] → [Print] and click the <<TC setting>> tab, or click 🖨 (Ctrl + P), then the <<TC setting>> tab.

[Dialog box]

[Description]

1) Print items
The item with a checkmark ✓ will be printed.

2) Program selection
If the program to be printed is not yet set, the data name of the program which is active in the ladder mode is automatically selected.
If the program to be printed is already set, the set program name appears.
Select on the list a program for which timer or counter settings will be made, and click the Select button to set the selection.

3) Additional information
The item with a checkmark ✓ will be added.

4) Print conditions
Only the timer or counter used in the program will be printed by checking this check box.

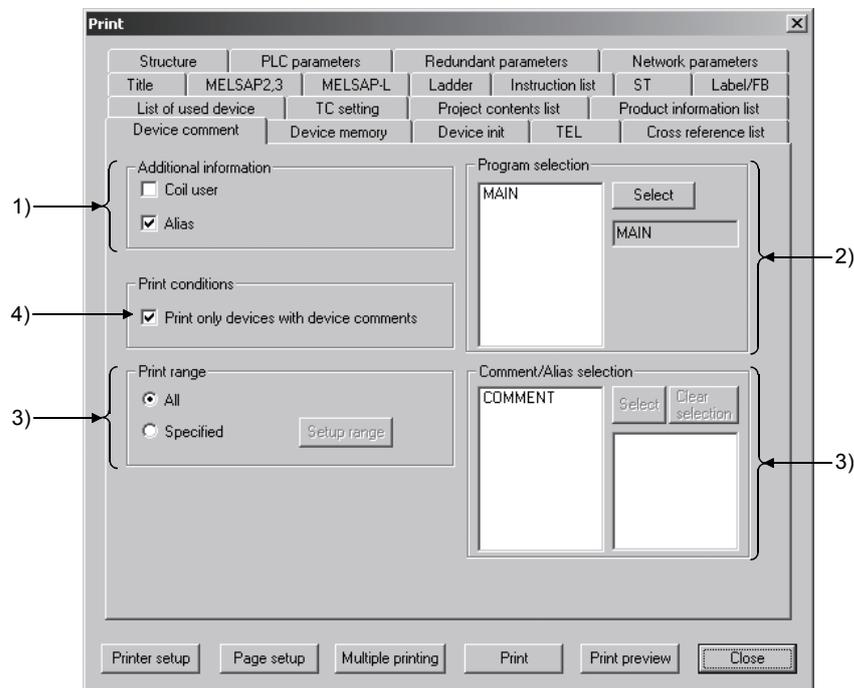## 14.5.5 Setting a device comment print range

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Sets the print range of device comments and so on.

[Operating procedure]

Select [Project] → [Print] and click the <<Device comment>> tab, or click 🖨 (Ctrl + P), then the <<Device comment>> tab.

[Dialog box]

[Description]

1) Additional information
Device comments will be printed with additional information.
Check the desired check box.

2) Program selection
Select on the list a program as the coil using data specified for Additional information, and click the Select button to set the selection.

3) Comment/Device Label selection
Select on the list the device comment data to be printed, and click the Select button to set the selection.

4) Print conditions
Only devices with a comment will be printed.
Select this item by checking the check box.

5) Print range
Set the range of the device comments to be printed.
⊙ All
All device comments of the data selected will be printed.
⊙ Specified
The device comments within the specified range will be printed.
By clicking the setup range button, the Device Range Setting dialog box shown below will be displayed.
Set the head and final devices or the number of points and the head device of the range to be designated.
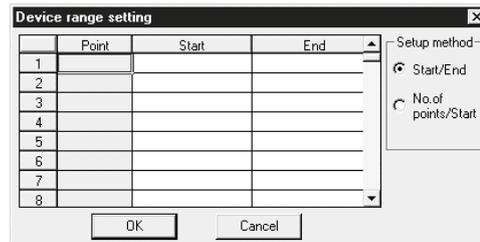
POINT
Whenever device comments are read from the GPPA, GPPQ, FXGP(DOS) or FXGP(WIN) from the [Import file] menu, confirm before printing whether the data is read properly. If the data is not read properly, check whether the comment range is set according to Chapter 9 "Setting Device Comments."

14.5.6 Setting a device use list print range

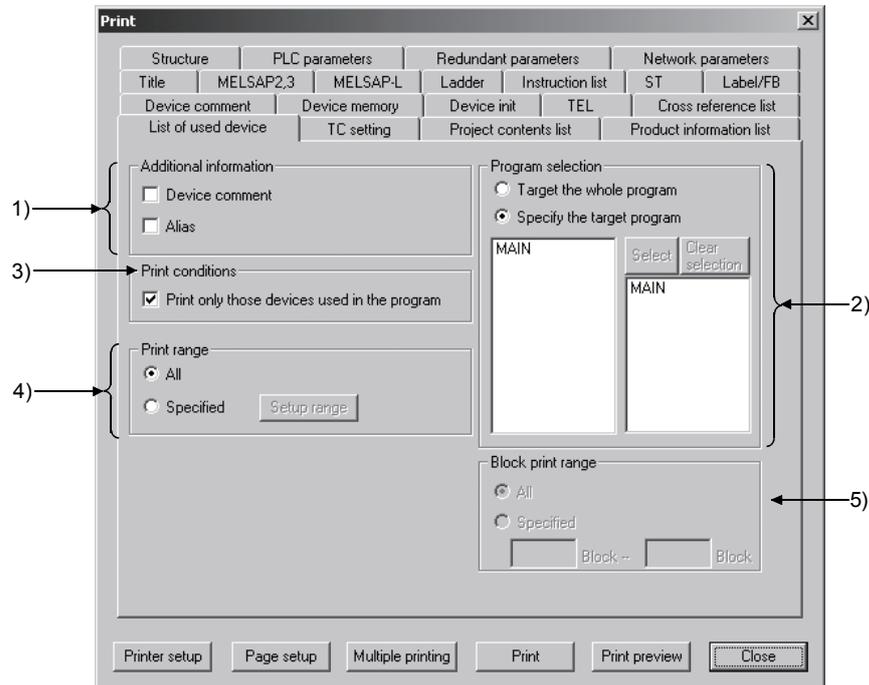| A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Sets the print range of device using data and so on.

[Operating procedure]

Select [Project] → [Print] and click the <<List of used device>> tab, or click 🖨
(Ctrl + P), then the <<List of used device>> tab.

[Dialog box]

[Description]

1) Additional information
    A device use list will be printed with additional information.
    Check the desired check box.

2) Program selection
    When changing or adding the program to be printed, specify the data name
    from program selection and click the Select button to set it.
    ⊙ Target the whole program
    Prints the device use lists of all programs in the project.
    When the comment/device name of "Additional information" has been selected,
    only the data name displayed at the beginning of the project data list is printed.

    ```
    ⊟ 🗂 Samp1
       ⊟ 📑 Program
          📑 MAIN
          📑 MAIN1
    ```
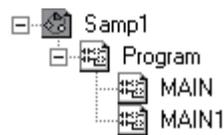
Program Name	Device	Comment	Device Name
MAIN	X0	ABCDE	12345
MAIN1	X0	FGHIJ	67890

    In this case, the comment or device name of MAIN is printed.
    ⊙ Specify the target program
    Prints only the device use lift of the specified program.
    By default, the data name of the active program is automatically selected.
    If the program to be printed has already been set, the set program name is
    displayed.

3) Print conditions
Prints only devices being used during the program.
Select this item by checking the check box.

4) Print range
Sets the range of the device use list to be printed.
⊙ All
All device use lists of the data selected will be printed.
⊙ Specified
The device use lists within the specified range will be printed.
At the Device Range Setting dialog box displayed by clicking the
setup range button, set the head and final devices or the number of points
and the head device of the range to be designated.

5) Block print range (only for SFC selection)
Set when block printing SFC programs.

14.5.7 Setting a device memory print range

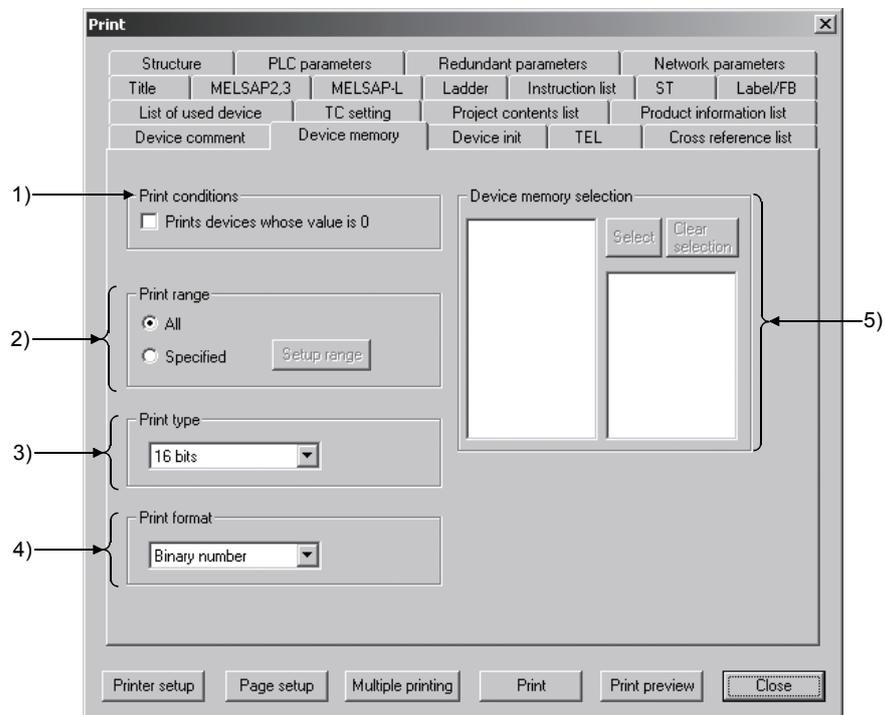| A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Sets the print range of the device memory using data and so on.

[Operating procedure]

Select [Project] → [Print] and click the <<Device memory>> tab, or click 🖨 (Ctrl
+ P), then the <<Device memory>> tab.

[Dialog box]

[Description]

1) Print conditions
   Any device whose value is "0" will also be printed.
   Select this item by checking the check box.

2) Print range
   Sets the print range of the device memory.

   ⊙ All
   The entire device memory will be printed.

   ⊙ Specified
   The specified range of the device memory will be printed.
   By clicking the Specified range button, the Device Range Setting dialog box
   will be displayed. Set the head and final devices or the number of points and
   the head device of the range to be designated.

3) Print type
Set device memory values in 16-bit integers, 32-bit integers or real numbers.

4) Printing format
Sets device memory values in binary, decimal or hexadecimal.

5) Device memory selection
Allows multiple device memories to be selected.

14.5.8 Setting a device initial value print range

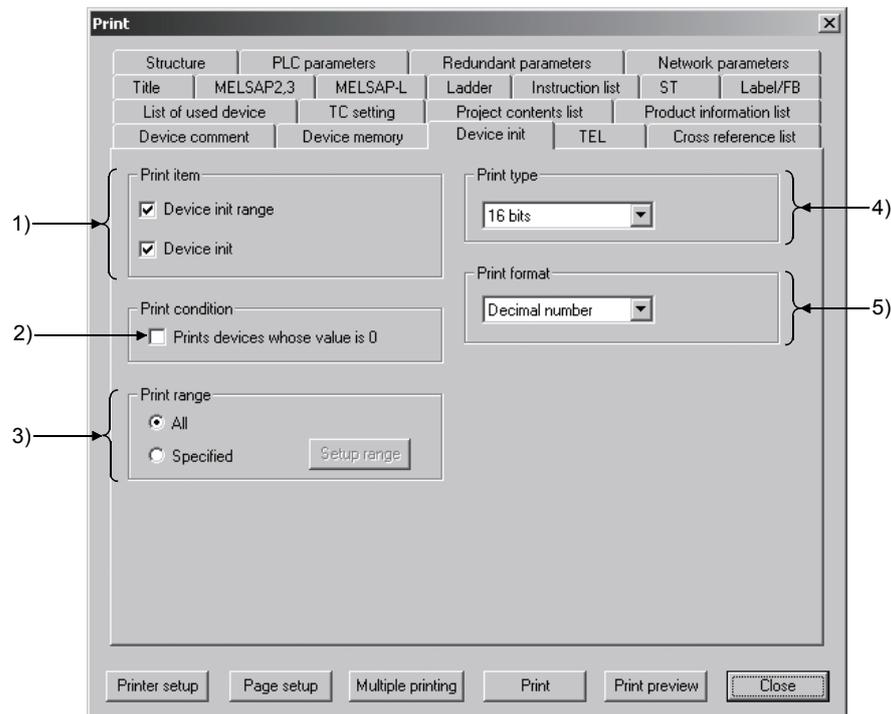| A	Q/QnA	QS	FX
×	○	×	×

[Purpose]
Sets the print range of the QnA series device initial values and so on.

[Operating procedure]
Select [Project] → [Print] and click the <<Device init>> tab, or click 🖨
(Ctrl + P), then the <<Device init>> tab.

[Dialog box]

[Description]

1) Print item
The items selected will be printed.
Select the desired item by checking the check box.

2) Print condition
Any device whose value is "0" will also be printed.
Select this item by checking the check box.

3) Print range
Sets the print range of the device initial values.
⊙ All
All device initial values will be printed.

⊙ Specified
The device initial values within the specified range will be printed.
By clicking the ⬚Setup range⬚ button, the Device Range Setting dialog box will
be displayed. Set the head and final devices or the number of points and the
head device of the range to be designated.

4) Print type
Sets device initial values in 16-bit integers, 32-bit integers or real numbers.

5) Print format
Sets device initial values in binary, decimal or hexadecimal.

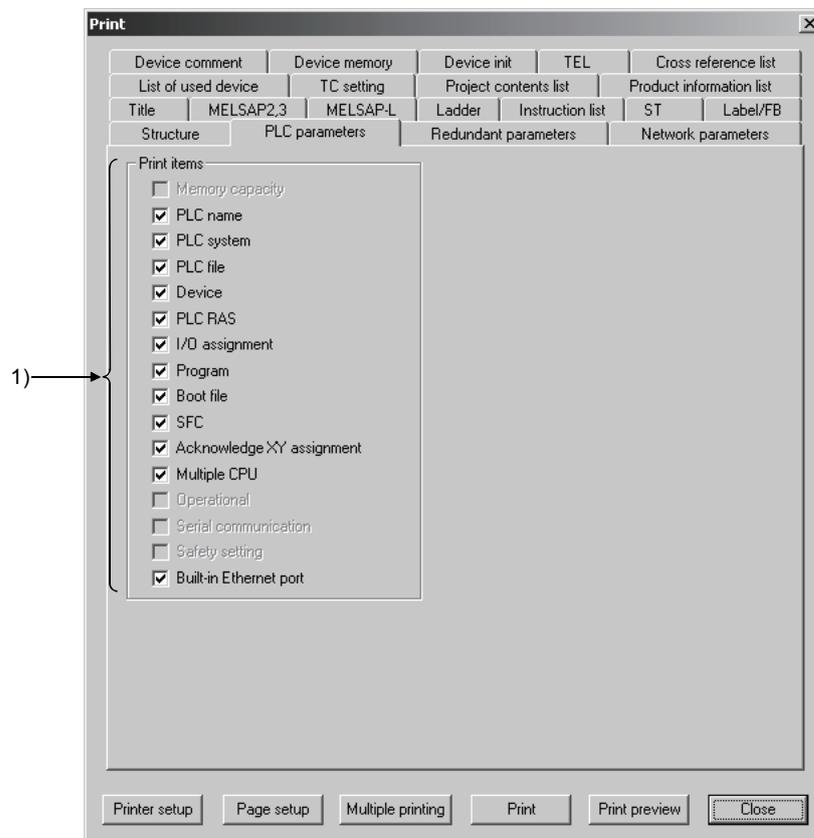## 14.5.9 Setting a PLC parameter print item

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Sets the PLC parameter items to be printed.

[Operating procedure]
Select [Project] → [Print] and click the <<PLC parameters>> tab, or click 🖨 (Ctrl + P), then the <<PLC parameters>> tab.

[Dialog box]

[Description]
1) Print items
The items selected will be printed.
Select each desired item by checking the check box.
PLC name setting, PLC file setting, Program setting/Boot file setting, and SFC setting are not required and cannot therefore be selected for the A series.
Memory capacity setting is not required and cannot therefore be selected for the Q/QnA series.
PLC file setting, PLC RAS setting, Program setting, Boot file setting, and SFC setting are not required and cannot therefore be selected for the FX series.
X/Y assignment check can be selected only for the AnA, AnU, Q, and QnA series.

14.5.10 Setting a network parameter print item

A	Q/QnA	QS	FX
○	○＊	○	×

＊: Compatible with the MELSECNET/H remote station

[Purpose]
Sets the network parameter items to be printed.

[Operating procedure]
Select [Project] → [Print] and click the <<Network parameters>> tab, or click 🖨
(Ctrl + P), then the <<Network parameters>> tab.

[Dialog box]
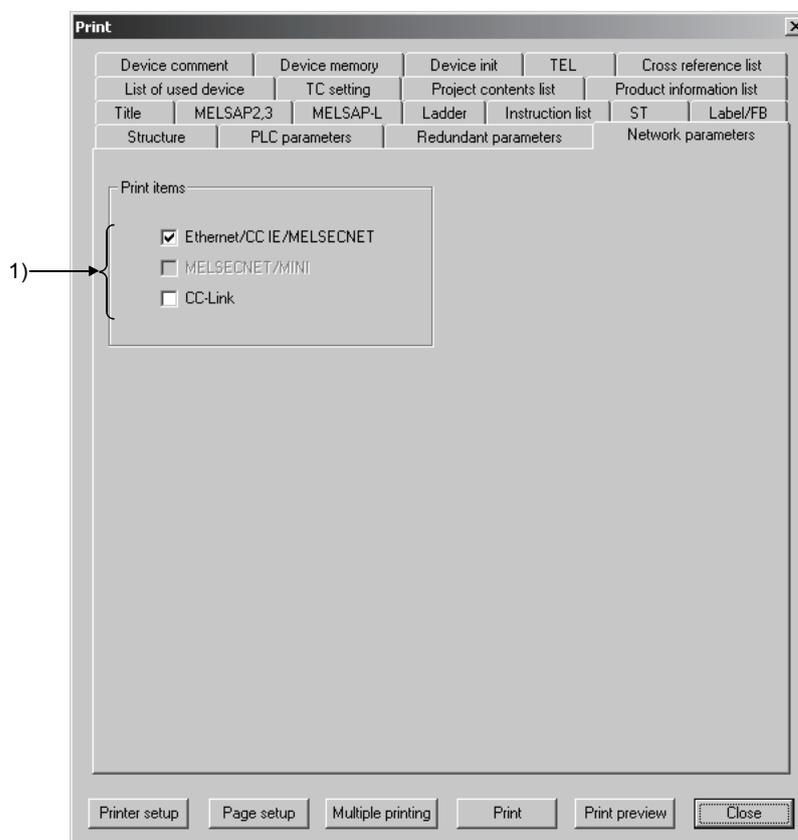
[Description]
1) Print items
   The items selected will be printed.
   Select each desired item by checking the check box.
   CC-link setting is not available and cannot therefore be selected for the A
   series.

14.5.11 Setting a list of contact coil used

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Sets the print range of the devices used for contacts or coils and so on.

[Operating procedure]
Select [Project] → [Print] and click the <<Cross reference list>> tab, or click 🖨
(Ctrl + P), then the <<Cross reference list>> tab.

[Dialog box]
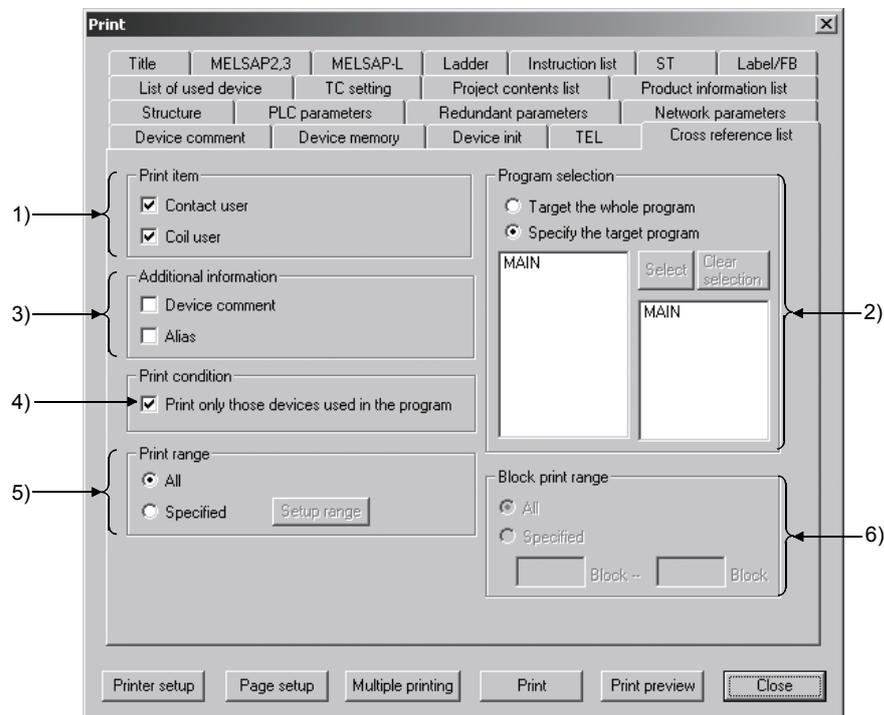
[Description]

1) Print item
A list will be printed with the selected items added.
Check the desired check box.

2) Program selection
If the program to be printed is not yet set, the data name of the program which is active in the ladder mode is automatically selected.
If the program to be printed is already set, the set program name appears.
Select on the list a program as the contact or coil using data, and click the Select button to set the selection.

3) Additional information
The list will be printed with additional information.
Select this item by checking the check box.

4) Print condition
Only devices used in the program selected will be printed.

5) Print range
   Set the range of the contact/coil use list to be printed.
   ⊙ All
      The entire range from step 0 to the END instruction of the program will be
      printed.
   ⊙ Specified
      The range specified by the step numbers will be printed.
   To specify the range, set the head and final devices or the number of points and
   the head device in the Device Range Setting dialog box.

6) Block print range (only for SFC selection)
   Set when block printing SFC programs.

POINT

- Block start step of BLn device in print range is also printed when "Coil user" is
  selected in Print item for SFC program.
  On the instruction field, "BLOCK" (with END check) or "BLOCK-S" (without END
  check) is printed.

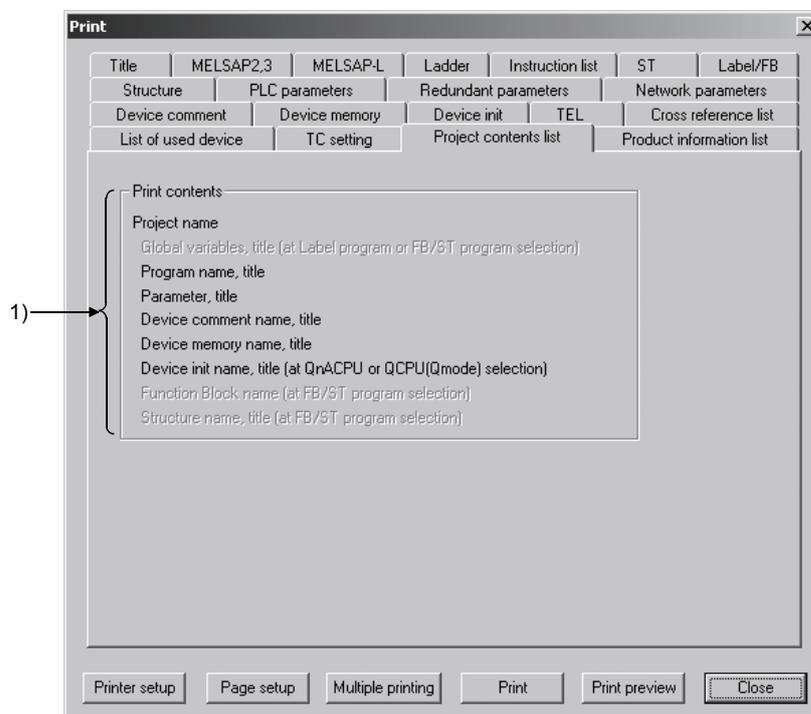## 14.5.12 Displaying a project contents list

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
  Displays a list of project data.

[Operating procedure]
  Select [Project] → [Print] and click the <<Project contents list>> tab, or click 🖨
  (Ctrl + P), then the <<Project contents list>> tab.

[Dialog box]

```
Print                                                                    ×

  Title   | MELSAP2,3 | MELSAP-L  |  Ladder  | Instruction list |  ST  | Label/FB
    Structure    |   PLC parameters   |  Redundant parameters  |   Network parameters
  Device comment  |  Device memory  |  Device init  |   TEL   |  Cross reference list
    List of used device  |   TC setting   |  Project contents list  | Product information list

  ┌ Print contents ────────────────────────────────────────────┐
  │                                                              │
  │  Project name                                                │
  │  Global variables, title (at Label program or FB/ST program selection) │
  │  Program name, title                                         │
  │  Parameter, title                                            │
1)→  Device comment name, title                                   │
  │  Device memory name, title                                   │
  │  Device init name, title (at QnACPU or QCPU(Qmode) selection) │
  │  Function Block name (at FB/ST program selection)            │
  │  Structure name, title (at FB/ST program selection)          │
  │                                                              │
  └──────────────────────────────────────────────────────────────┘


  Printer setup | Page setup | Multiple printing | Print | Print preview | Close
```

[Description]
  1) Print contents
     The items to be printed on a list of project data are displayed.

14.5.13 Setting the TEL data print area

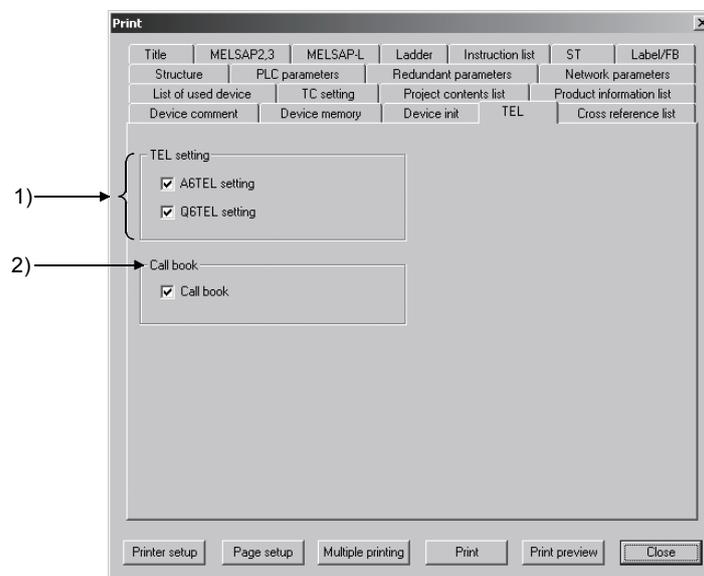| A	Q/QnA	QS	FX
○	○	×	×

[Purpose]
  Prints the data set on the TEL data creation screen.

[Operating Procedure]
  [Project] → [Print] →<<TEL>> tab or 🖨 (Ctrl + P) → <<TEL>> tab.

[Dialog Box]

[Description]
  1) TEL setting
      Prints the data set on the TEL data creation screen.

  2) Phone book
      Prints the data registered on the phone number book setting screen.

14.5.14 Displaying a product information list

A	Q/QnA	QS	FX
×	○∗	○	×

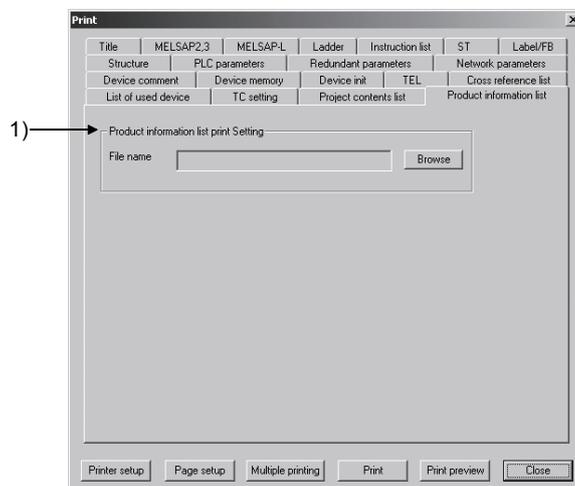∗: Compatible with only the QCPU (Q mode)

[Purpose]

Prints the production information list of System monitor.

[Operating Procedure]

Select [Project] → [Print] →<< Product information list >> tab or 🖨 (Ctrl + P) →
<< Product information list >> tab.

[Dialog Box]

[Description]

1) File name

Set the product information list file (CSV format).
Make setting from only the Browse button.

POINT

Before starting printing, always save the file when you have selected [Diagnostics]
→ [System monitor] → <<Product information list>> tab. (Refer to Section 21.6)
An error will occur if you set the file other than the product information list file.

14.5.15 Printing labels/FB

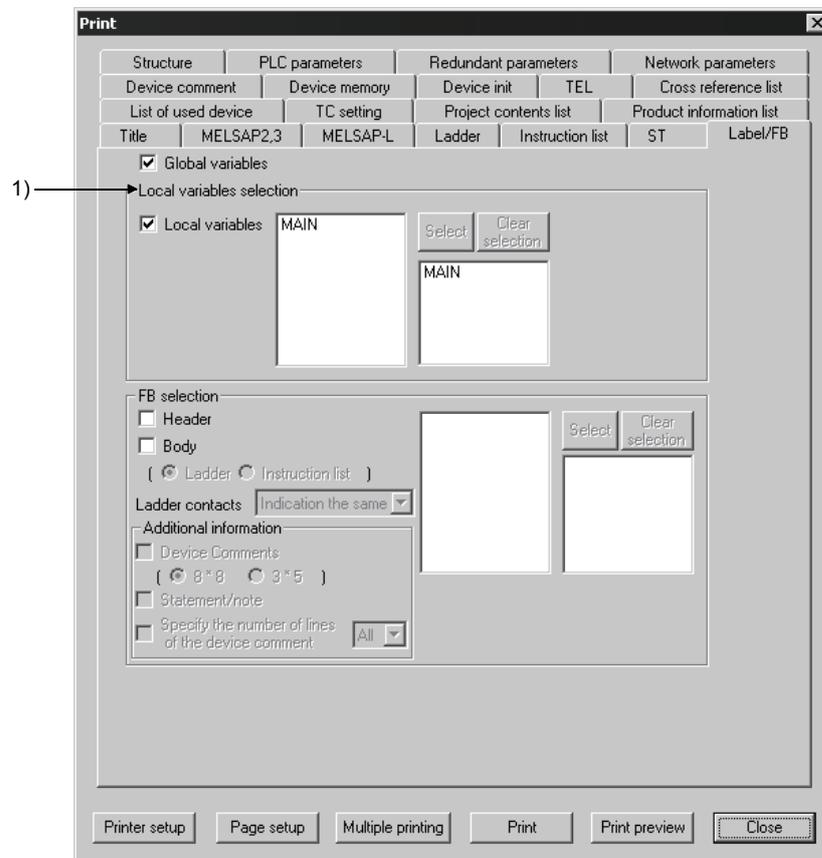| A	Q/QnA	QS	FX
×	○	○	×

[Purpose]

Prints global and local variable data created by label programming.

[Operating Procedure]

Choose [Project] → [Print] → <<Label/FB>> tab or ![print] (Ctrl + P) →
<<Label/FB>> tab.

[Dialog Box]

[Description]

1) Local variables selection
    When the program to be printed is not yet specified, the data name of the active
    program is automatically selected.
    When the program to be printed is already set, the preset program name
    appears.
    When changing or adding the label program to be printed, specify the data
    name from program selection and click the Select button to make setting.

14.5.16 Printing structure

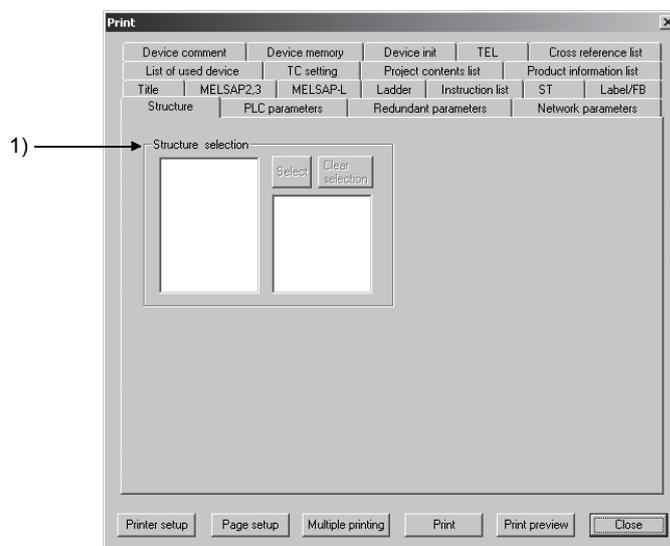| A	Q/QnA	QS	FX
×	○	○	×

[Purpose]
  Print out the created structure labels.

[Operating procedure]
  [Project] → [Print] → <<Structure>> tab, or 🖨 (Ctrl + P) → <<Structure>> tab.

[Setting screen]

[Setting item explanation]
  1)   Structure selection
      If no structure is set to be printed, the data name of active structure will be
      automatically selected.
      When changing or adding the structure to be printed, specify the data name
      from "Program selection" and click on the Select button.

14.5.17 Setting the Print Items of the Redundant Parameters

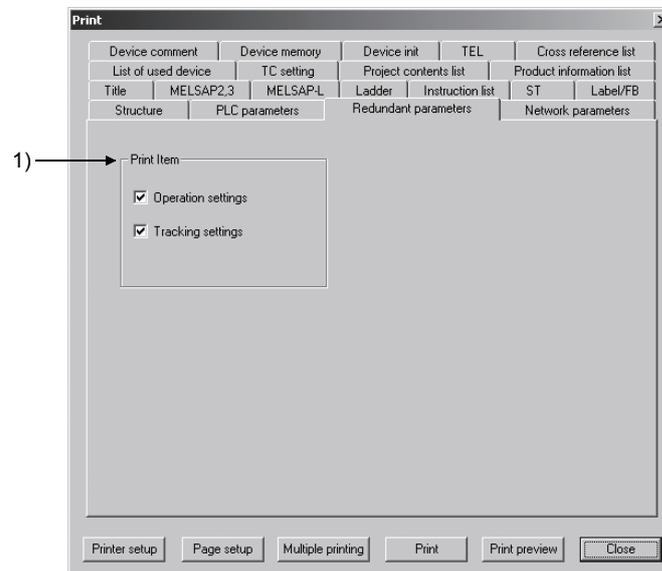| A	Q/QnA	QS	FX
×	○	×	×

[Purpose]
  Print the redundant parameters.

[Operating procedure]
  [Project] → [Print] → <<Redundant PLC>> tab, or 🖨 (Ctrl + P) →
  <<Redundant PLC>> tab.

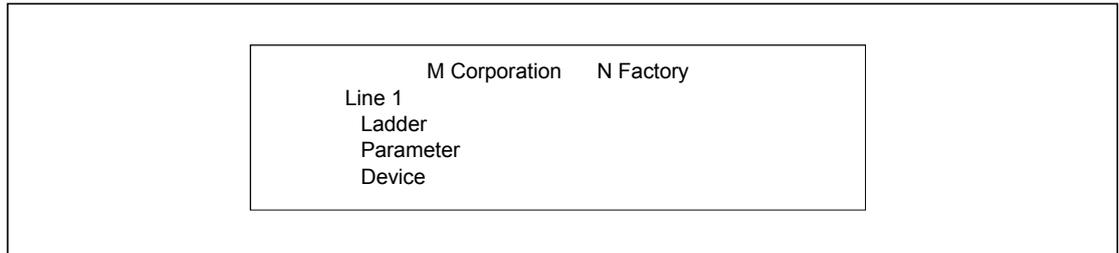[Setting screen]

[Setting item explanation]
  1) Print item
      The item whose check box is marked is printed.

14.6 Print Examples

A	Q/QnA	QS	FX
○	○	○	○

Print examples are shown below.

<<Title>>

M Corporation   N Factory
Line 1
  Ladder
  Parameter
  Device

<<Ladder>>

<<TC setting>>

Time set val list

Device	Setting	Device	Setting	Device	Setting
T0	K1000				
T1	K120				
T2	K6000				
T3	K50				
T4	K850				

<<Device comment>>
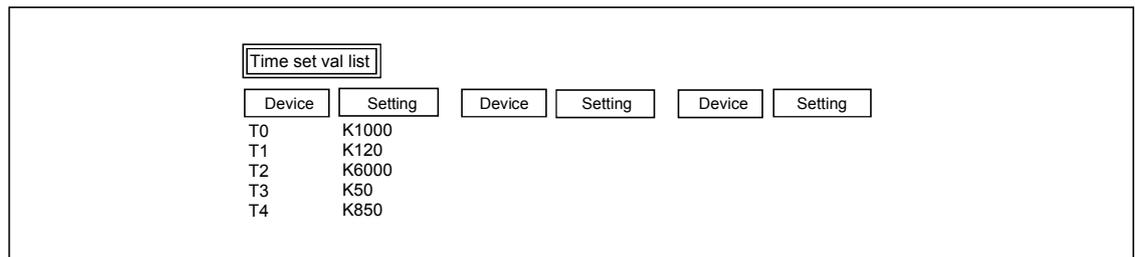
Device comment list		
Device	Device comment	Dev Lbl
M10	Operation ready	
X0	Safety equipment	SAFETY
X1	Safety cover	COVER
X2	Operation ready	READY
X3	Oil pressure	OIL-M

<<List of used device>>

Device use list					
Device	Use/Not use	No.	Error	Device comment	Dev Lbl
X0	─┤ ├─	0		Safety equipment	SAFETY
X2	─┤ ├─	0		Cycle stop	READY
X3	─┤ ├─	0		Sensor1	OIL-M
X7	─┤ ├─	0		Safety cover	
Y70	〈 〉	1	ERROR		
M10	─┤ ├─ 〈 〉	1		Operation ready	

<<Device memory>>

Device memory list									
	16 bits	Type	decimal						
Device	+0	+1	+2	+3	+4	+5	+6	+7	Character string
D0	7086	37	3786	898	3	8798	4641	1697	
D6	9678	8860	7697	35	4400	736	16	4	
D16	67	3	7376	767	2000	373	43	774	
D24	100	738	737	6767	7463	234	55	7799	
D32	1156	878	763	4343	800	7438	4	777	
D40	343	7895	64	867	364	343	360	3	
D48	8381	137	434	789	43	1587	7888	796	
D56	100	0	0	0	0	0	0	0	

<<Device init >>
Q/QnA series only

Dev init set range				
No.	Items	Start device	End device	Comment
1	50	D0	D49	
2	100	D100	D199	

Device memory list									
	16 bit	Type	decimal						
Device	+0	+1	+2	+3	+4	+5	+6	+7	Character string
D0	374	4687	6	746	76	37	3	387	
D6	354	37	3	76	64	35	76	37	
D16	697	879	6	78	3	3789	379	3794	
D24	3998	3687	489	1579	3794	874	679	7897	
D32	57	4	486	7	867	687	68	76	
D40	87	8676	87	7767	6	76	7	687	
D48	687	78							

<<PC parameters>>

PLC system set					
1	Timer limit setting		9	System interruption	
	Slow	100ms		Int count setting No	------
	Fast	10.00ms		I28 intval	100.0ms
2	RUN-PAUSE connect			I29 intval	40.0ms
	RUN	Not Used		I30 intval	20.0ms
	PAUSE	Not Used		I31 intval	10.0ms
3	Latch data backup valid	Not Used	10	Interrupt Program Setting	No Hgh.Sped Ex

<<Network parameters>>
Except the FX series

For other than Redundant CPU

Set unit count		

1	MELSECNET (II/10) No. of units		[2] Unit(s)	
	Unit 1	<MELSECNET/10 (Ctrl sta) >		
	Unit 2	<MELSECNET/10 (Ctrl sta) >		
	Unit 3	< >		
	Unit 4	< >		
2	Valid unit accessing other st		[1] (Older of unit)	

Network setting				

	Unit 1 NET/10 Ctrl Sta	Unit 2 NET/10 Ctrl Sta	Unit 3	Unit 4
Start I/O No.	[0]	[30]	[ ]	[ ]
Network No.	[1]	[2]	[ ]	[ ]

For Redundant CPU

Ethernet / CC IE / MELSECNET Settings	

Valid mdl. accesing other st	Slot1
Inter data link TX parameter	No setting
Routing parameter	No setting

	Mdl. 1	Mdl. 2
Network type	Ethernet	
Start I/O No.	0000	
Network No.	1	
Total stations	----------	
Group No.	1	
Station No.	3	
Mode	Online	

<<List contact coil used>>

List of Contact-Coil				

Device	Step	Ld sym	Ins	Pos
X0	0	⊣⊢	LD	＊
X2	4	⊣/⊢	LDI	＊
X3	5	Ч Ⴒ	OR	＊
X7	2	⊣/⊢	ANI	＊
Y70	7	( )	OUT	＊
M10	1	Ч Ⴒ	OR	＊
M10	3	( )	OUT	＊
M10	6	⊣⊢	AND	＊

<<Project contents list>>

Drive/Path	A:\
Project name	TESTA
Title	

Data name	Size	Creation data	Title
• Program			
└─ MAIN	13KB	1998/ 9/19 16:22:50	
• Device comment			
├───── COMMENT	1KB	1998/ 9/19 16:22:54	
└───── MAIN	1KB	1998/ 9/19 16:40:56	
• Device memory			
└─ MAIN	1KB	1998/ 9/19 16:45:00	
• Parameter			
├───── PC parameter		1998/ 9/19 16:44:56	
└───── Network parameter		1998/ 9/19 16:44:56	

<<A6TEL/Q6TEL data list>>

A6TEL data list

Title	Modem
AT command	ATQ0E1V1X1S0=1
Line type	Tone
Main/Sub switching time	11min

NO.	Register item and condition					
	Title	TEST DATA				
	Reporting	Report 1 time.				
	Report Information	Main	Call number	0123456789	An outside line number	
1			Setting	Select time	Time	30sec
		Sub	Call number	--	An outside line number	--
			Setting	--	Time	--
	Trigger condition	Device		Word device C0		
		Condition		=	Value	Dec. 10
	Pager message				History	D100

<<Product information list>> *1

Slot	Type	Series	Type name	Items	StartI/O	ControlPLC	Serial No.	Ver
PLC	PLC	Q	Q25HCPU	-	-	-	SYS001000000000	B
0-0	Input	Q	QX41	32pt	0000	-	-	-
0-1	Output	Q	QY41P	32pt	0020	-	-	-
0-2	Intelli.	Q	QJ71C24-R2	32pt	0040	-	020510000000000	B
0-3	Intelli.	Q	QJ71LP21	32pt	0060	-	010810000000000	A
0-4	-	-	None	-	-	-	-	-
0-5	-	-	None	-	-	-	-	-
0-6	-	-	None	-	-	-	-	-
0-7	-	-	None	-	-	-	-	-
0-8	-	-	None	-	-	-	-	-
0-9	-	-	None	-	-	-	-	-
0-10	-	-	None	-	-	-	-	-
0-11	-	-	None	-	-	-	-	-

*1: Product numbers are also printed for the Universal model QCPU.

<<Label>>

```
┌─────────┐
│ Label   │
└─────────┘
```
Local variables Program name : MAIN   Title :

```
Set_value          K1000          INT
Storage_register   D12287         INT
Analog_value       D12286         INT
PB1                X1             BOOL
PB2                X2             BOOL
Output_ineiburu    Y0BB           BOOL
DA_convert_READY   X0A1           BOOL
Head_No            H0             INT
```

<<Structure>>

```
┌──────────────────┐
│    Structure     │
└──────────────────┘
```
Structure name : QD62   Title : QD62

Label	Device kind	Comment
Preset	DINT	Preset value setting
Present	DINT	Present value
Output1	DINT	Agreement output point No.1 setting
Output2	DINT	Agreement output point No.2 setting
Overflow	INT	Overflow detection
Counterset	INT	Counter function selection setting
Samplingtime	INT	Sampling/period hour setting
Samplingcounter	INT	Sampling/Counter flag of cycle
Latch	DINT	Count rate of latch
Samplingcount	DINT	Sampling count rate
Countprevious	DINT	Value the periodic pulse count last
Countpresent	DINT	Value the periodic pulse count this time
Minimum	DINT	Setting of lower limit of ring counter
Maximum	DINT	Setting of upper limit of ring counter

<<Redundant parameters>>

```
┌──────────────┐ ┌────────────────────┐
│ Redundant PLC│ │ Operation settings │
└──────────────┘ └────────────────────┘
```

1	Start mode	Initial start mode
2	Error in standby system	Check
3	Debug mode	Do not start
4	Operat. status consistency	Check

15. OTHER FUNCTIONS

15.1 Checking Programs

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Checks for logical errors and input errors in programs.

[Operating Procedure]
Select [Tools] → [Check program], or click 🔍.

[Dialog Box]
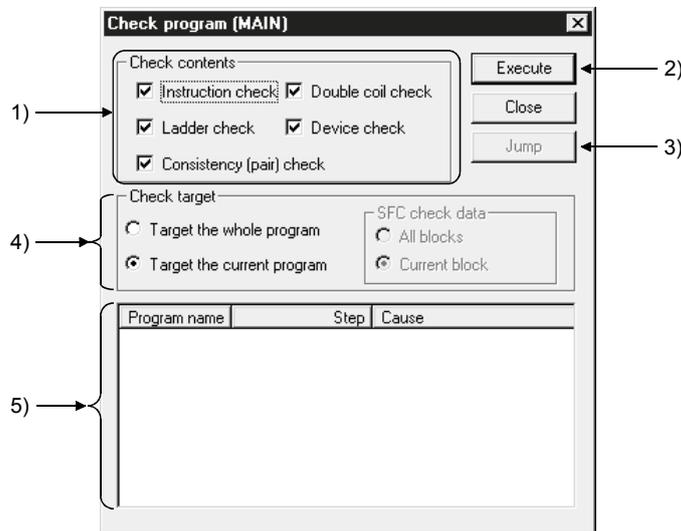
[Description]

1) Check contents
   Selects the item to be checked.
   Check range: 0 step to last of the program
   If an error occurs at END instruction or later, modify the program from that
   instruction or later in list mode.
   • Instruction check
     Check the checkbox to check if instructions can be used, depending on the
     PC type.
   • Ladder check
     Check the checkbox to check whether the program is a valid ladder.
   • Consistency (pair) check
     Check the checkbox to check for consistency in the program, for example
     whether there are pointers at jump destinations and if there are RET
     instructions for subroutines.
   • Double coil check
     Check the checkbox to check for duplicate coils.

- Device check
  Check the checkbox to check if device numbers are within the parameter range.
  For the A series, an error will not occur if the T/C outside the parameter range setting is used besides contacts and coils.

2) Execute button
   Click this button after making the necessary settings.

3) Jump button
   If there is a step with an error, designating the error in the check result and clicking this button moves the cursor to the relevant step of the ladder.

4) Check target
   ⊙ Target the whole program
     Checks all programs in the project.
   ⊙ Target the current program
     Checks only the currently open program.

5) Check result
   Displays the result of the project check.

15

15.2 Confirming Memory Size

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Incompatible with the QnA CPU and Remote I/O.

Whether any given project data can be written to the programmable controller or not can be confirmed.
The memory size can be calculated either in offline or online mode. (For how to switch the mode between online and offline, refer to (2).)

- Offline mode
  The screen displays the memory sizes available after writing the target data to the programmable controller memory cleared by formatting, etc.
  For the system file size, enter the value obtained in online mode.

- Online mode
  The screen displays the memory size available after actually writing the selected file(s) to the programmable controller.
  The available memory size can be confirmed based on the amount of the data already written to the programmable controller.

(1) Setting the target data for memory size calculation

[Purpose]
 Sets the target data for memory size calculation

[Operating Procedure]
 Select [Tools] → [Memory size calculation].

[Dialog Box]
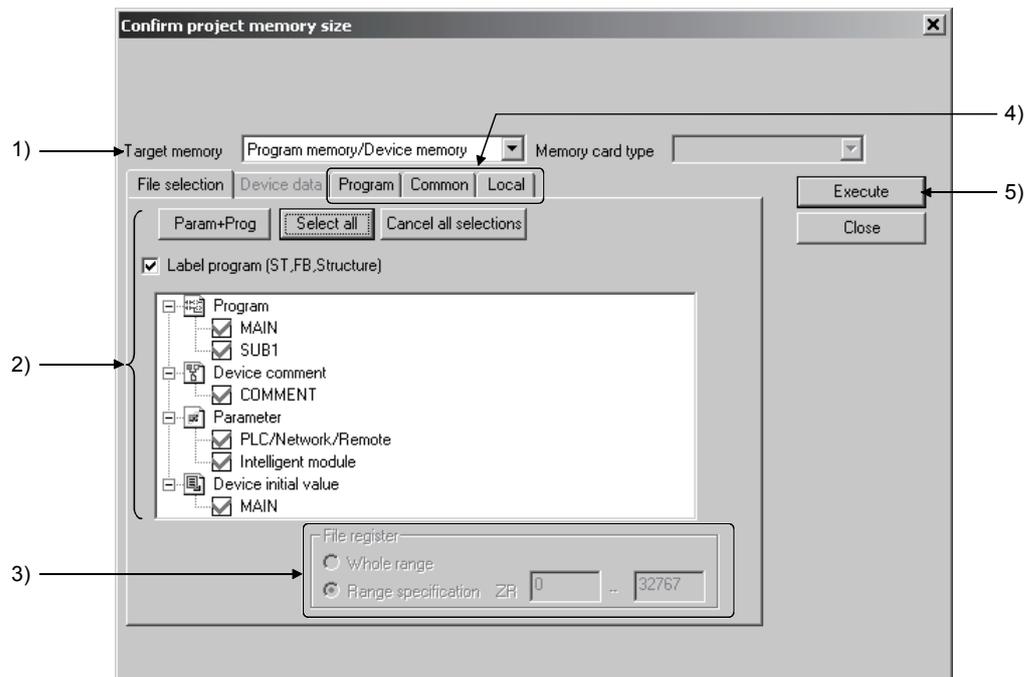
[Description]

1) Target memory/Memory card type
   Specify the target drive for memory size calculation.
   In Target memory, Program memory, Standard RAM, Standard ROM, Memory card (RAM) or Memory card (ROM) can be selected.
   For available memory card types, refer to the following manual:
   • QnUCPU User's Manual(Function Explanation, Program Fundamentals)
   • Qn(H)/QnPH/QnPRHCPU User's Manual(Function Explanation, Program Fundamentals)

2) Active data
   • A data list of the opened project is displayed
     Specify the target data in this area.
     There are restrictions on the number of files when specifying the target data.
     For details, refer to POINT.
   • Select the parameters and all programs of the project with the Param + Prog buttons.
   • Clicking the Select all button selects all of the data displayed in the data list.
   • Clear all data with the Cancel all selections button.
   • The intelligent function module parameters are displayed on the screen if their values have been set.
   • Place a check mark in the "Label program (ST, FB. Structure)" box when writing a label program to the programmable controller.

3) File register
   • You cannot choose Whole range.
   • For multiple file registers, the size of each file register is calculated according to the range specification.
   • When the Q00JCPU or Q00UJCPU is selected, this setting cannot be configured.

   File register
   ○ Whole range
   ⦿ Range specification   ZR 0 .. 32767
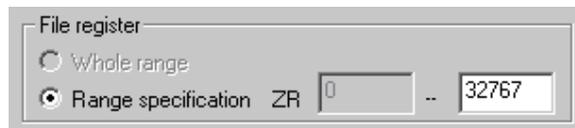
4) Data range setting for memory size calculation
   <<Program>> tab
   Set the range of the target program for memory size calculation.
   Refer to Section 16.3.3 for details.

   <<Common>> tab, <<Local>> tab
   Set the range of the target device comment for memory size calculation.
   Refer to Section 16.3.4 for details.
   Comment range setting can also be made by choosing [Edit] → [Setup comment range] on the comment editing screen.

5) Execute button
   Clicking the Execute button displays the Actual project memory size screen.

[Setting Procedure]
1. Display the Confirm project memory size screen.
2. Select the target memory for memory size calculation as shown by 1).
3. Mark the checkbox of the target for memory size calculation as shown by 2).
4. If any of programs or device comments is selected, specify the range on each tab.
5. Click the Execute button.

(2) Displaying the actual project memory size

[Purpose]
Displays the actual size of the target memory. In addition, the mode can be
switched between offline and online.

[Operating Procedure]
Select [Tools] → [Confirm project memory size] → [Execute]

[Dialog Box]
The actual memory sizes are displayed. Data are displayed in offline mode
immediately after execution of the memory size calculation.

In offline mode

Actual project memory size

Target memory: Program memory/Device memory

1)

Target	Target file	File size	Size *1	Size *2
Program	MAIN	2820	4096	3072
Program	SUB1	2820	4096	3072
Device comment	COMMENT	12014	12288	12288
Parameter	-	564	4096	1024
Inteli-Parameter	-	296	4096	512
Device initial value	MAIN	66	4096	512
Label program		934	4096	1024
System file(s)			0	0
Total actual size			36864	21504
Drive capacity			245760	245760
Available size			208896	224256

2)

Drive capacity is a size after performing Format PLC memory.
Available size is uncertain value.
Please input the system file size acquired in online mode.
Please do not exceed the number of maximum files.

3) Detail (offline)

*1 : The CPU whose serial No. is 04121 or earlier.
*2 : The CPU whose serial No. is 04122 or later.

If PLC write fails though enough available memory exists,
please execute "Arragne PLC Memory "

4) Display option
Display unit   ⊙ Byte   ○ Step

5) Mode selection   Offline ▼   Display   Close   6)

In online mode
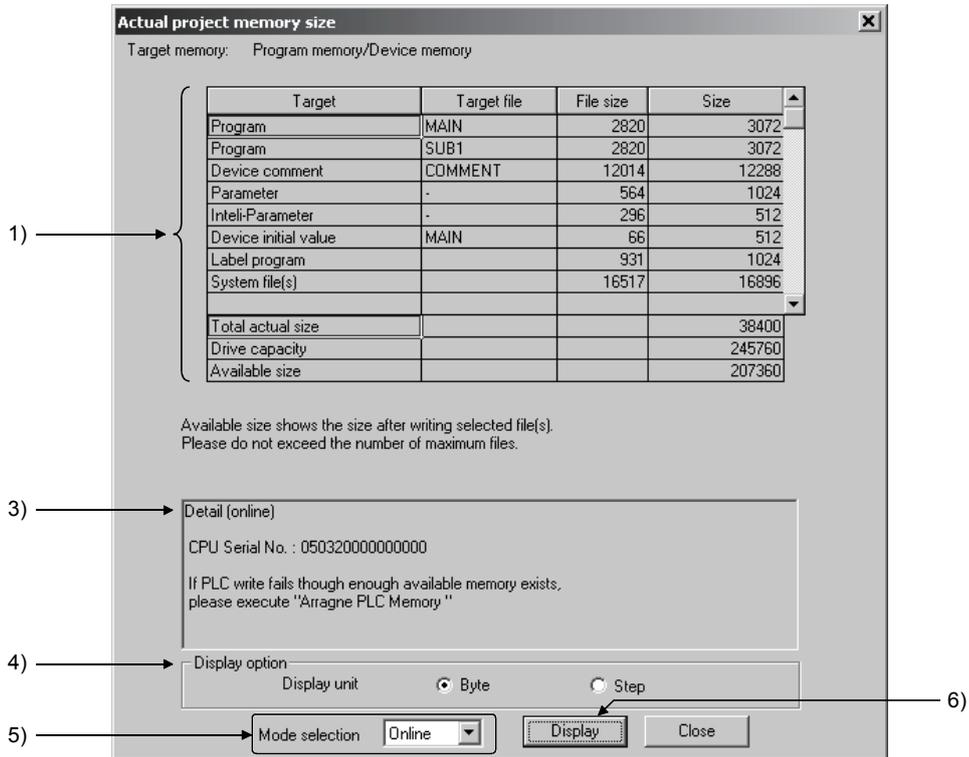
1) Calculation result display area
   This area displays the target file(s)[*1] selected on the Confirm project memory
   size screen, file sizes, memory sizes[*2][*3], total memory sizes, drive capacities
   and available sizes.

   *1: Label programs are compressed each time the memory size calculation or
       write to PLC is performed. At this time, because the date information is
       included, the memory size may change even if no modification has been
       made in the label programs.
   *2: The programmable controller memory is occupied by files in units of file
       size. Therefore, the required memory size may be greater than the actual
       file size.
       For details on the file size unit, refer to the following manual:
       • QCPU User's Manual(Function Explanation, Program Fundamentals)
       • Qn(H)/QnPH/QnPRHCPU User's Manual(Function Explanation, Program
         Fundamentals)
   *3: Parameter and System file(s) consist of multiple files shown in the table on
       the next page.
       The memory size required for storing Parameter and System file(s) is the
       total size of the memory areas occupied by respective files.

<Example> Display of System file(s)
(The Q12HCPU, whose first 5 digits of serial No. is "04122")
- Sampling trace
  File size   : 2422 bytes
  Memory size : 3072 bytes
- Error history data
  File size   : 5472 bytes
  Memory size : 6144 bytes
  ↓
- Display of System file(s)
  File size   : 7894 bytes
  Memory size : 9216 bytes

The following files are included in Parameter or System file(s).

	File	Description
Parameter	Parameter file	Contains PLC parameters, network parameters and/or redundant PLC parameters.
	Boot file	Created when the boot file setting has been made.
	Remote password	Created when the remote password setting has been made.
System file	Sampling trace	Refer to QnUCPU User's Manual(Function Explanation, Program Fundamentals) or Qn(H)/QnPH/QnPRHCPU User's Manual(Function Explanation, Program Fundamentals)
	Error history data	
	Local device	
	User setting system area	The area specified at the time of PLC memory formatting. For details of the PLC memory formatting, refer to Section 20.2.
	PLC user data	Any data given by the user.
	Graphic data file of PX Developer	User-created graphic data.

2) System file(s) memory size entry fields (Offline mode only)
Enter the system file memory size.
In offline mode, the value is defaulted to "0". When using the system file(s), enter a memory size. For the exact memory size, switch the mode to online (Refer to 5)) and confirm the size.
Note that the system file memory size varies depending on the target memory.

3) Detail area
Information on the calculation result is displayed.

4) Display option
The unit used for displaying the data such as file size, memory size, etc. can be switched (Byte/Step).

5) Mode selection
The mode can be switched between offline and online. After selecting the mode, click the | Display | button.
However, when the Flash card and the standard ROM is set as the target memory, the mode can not be switched to online.

6) Display button
   Clicking the Display button displays the memory size calculation result in the
   mode selected in 5).
   If Online is selected, data are displayed based on the settings of Connection
   Setup.
   For details of Connection Setup, refer to Section 16.1.

POINT

- When calculating the memory size in offline mode
  The system file memory size varies depending on the target memory. Check
  the value for the system file in online mode and enter it in offline mode. If not,
  an accurate calculation result may not be obtained.

- Restrictions on the number of files
  Although there are restrictions on the number of files storable in a
  programmable controller, they are ignored in the memory size calculation.
  When setting the target data, pay attention to the number of files (including
  those already stored in the programmable controller) so that it will not exceed
  the limit.
  For the number of files storable in a programmable controller, refer to the
  following manual:
  QnUCPU User's Manual(Function Explanation, Program Fundamentals)
  Qn(H)/QnPH/QnPRHCPU User's Manual(Function Explanation, Program
  Fundamentals)

- Range specification of file register
  In online mode, if the range value set on the Confirm project memory size
  screen is smaller than the file register value already written to the
  programmable controller, the memory size for the already written file register
  is displayed.

- When calculating the memory size of Flash card/Standard ROM
  The memory size for execution of "Write to PLC (Flash ROM) is displayed.
  For execution of "Copy program memory data into ROM", set Program
  memory in Target memory to check the memory size.
  The memory size for Flash card/Standard ROM can be confirmed in offline
  mode only.

- When Write to PLC is not executable
  If data cannot be written to the PLC even though sufficient free space is
  identified, arrange the PLC memory to make a contiguous memory area. For
  details on arranging the PLC memory, refer to Section 20.3.

- Calculating the memory size of ATA card
  Check the accurate value of memory size in online mode for Q2MEM-
  8/16/32MBA.
  Depending on the versions of Q2MEM-8/16/32MBA or CPU, the memory size
  may be calculated based on the value less than the actual drive capacity in
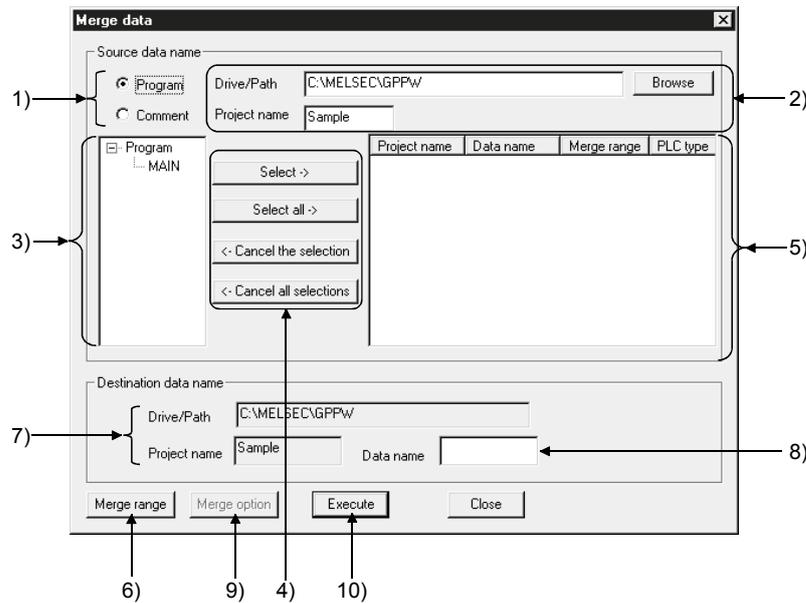 offline mode.

15.3 Merging Programs

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Merges multiple programs/comment data.
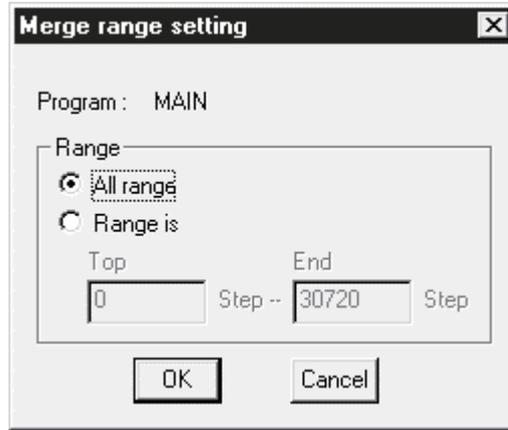
[Operating Procedure]

[Tools] → [Merge data].

[Dialog Box]

[Description]

1) Merged data type setting
   Specify the data (programs/comments) to be merged.

2) Merge source drive/path, project name
   Set the drive/path and project name of the data to be merged.
   You can also set the drive/path and project name from the Browse button.

3) Merge source program list
   Lists the programs of the merge source project.
   Lists only label programs for label programming.

4) Merged program selection buttons
   Press the Select button to choose the data specified in the merge source data list.
   Press the Select all button to choose all data in the merge source data list.
   Press the Cancel the selection button to clear the selected data.
   Press the Cancel all selections button to clear all selected data.

5) Merged data setting
   Shows up to 128 pieces of data to be merged.
   Data are merged in displayed order.
   When concatenating the data you are currently editing, first save the data and then add the name of the edited data to the selection.

6) | Merge range | button (Program only)
Specifies the step numbers of the program specified as a merge source.
The default is All range.
For label programming, the program names and local variables specified as the
merge range are merged unconditionally.

```
Merge range setting                    [X]

Program :   MAIN
─Range──────────────────────────
  (•) All range
  (  ) Range is
      Top              End
      [0]      Step -- [30720]    Step

         [  OK  ]    [ Cancel ]
```

7) Merge destination drive/path, project list
Specifies the currently open project name and drive/path.

8) Merge destination data name
Set the data name used after merging.
If you specified the existing data name, the data overwrite confirmation dialog
box appears.
When the Q00J/Q00/Q01CPU is selected, the data name is fixed at "MAIN".

9) | Merge option | button (Comment only)
Data are merged in the order of selected data names.
(Equipment names are not the object of an overlap check.)

For label programming (programs only)

```
Merge option                    [X]        Merge option                       [X]

─If device comments is overlapping─       ─If label is overlapping────────────
  (•) Overwrite last data                    (•) Overwrite last data
  (  ) Not overwrite                         (  ) Not overwrite
  (  ) Error (merge canceled by error)       (  ) Ignore (merge process continue)

     [  OK  ]    [ Cancel ]                     [  OK  ]    [ Cancel ]
```

If the data to be merged include the data which exceeds the device range of the
merge destination CPU, the comment data in the excess area is deleted.

For A series
The capacity set in the parameter/comment capacity setting of the merge
destination is not checked. Data are merged after they are checked within the
device range of the CPU.

For Q/QnA series
The device range of the merge destination is the maximum points of the CPU type of the merge destination project, and the range check by the device setting of the parameter is not performed.
Also, the number of ZR devices merged is up to 32K points.

For label programming
• If label names overlap at the time of local variable merging, they are merged according to the merge option setting.
• If the number of labels exceeds 5120 at the time of local variable merging, the 5121th and latter labels are not merged.

If the program/local variable capacity for label programming is exceeded by merging, the area in excess of the capacity is not merged.

10) | Execute | button
Click this button when the setting is finished.
When data are merged, the END instruction at any point in the program is deleted automatically and an END instruction is inserted at the end of the program.

[Setting Procedure]
1) When programs are merged in the entire range
   1. Choose the data type to be merged.

   2. Set the drive/path and project name of the merge source data from the | Browse | button.

   3. Choose the data to be merged at 5) from the data displayed at 3).

   4. Repeat steps 1 and 2. When the data to be merged are all selected, set 8).

   5. When the setting is over, click 10).

2) When programs are merged in the specified range
   1. Choose the data type to be merged.

   2. Set the drive/path and project name of the merge source data from the | Browse | button

   3. Choose the data to be merged at 5) from the data displayed at 3).

   4. Repeat steps 1 and 2. When the data to be merged are all selected, set 8).

   5. After selecting the program data to be range-specified from 5), click 6).

   6. Click 6) to set the merge range.
       (Range setting may also be made by double-clicking the data name at 5).)

   7. Repeat steps 5 and 6 until the merge range is set to all files that need the merge range setting.

   8. When the setting is over, click 10).

POINT

- Any programs not saved in the peripheral device cannot be merged.

- After programs are merged, make a program check.

- Programs cannot be merged between different PLC series, e.g. A series and QnA series.
  However, they can be merged between the ACPU and QCPU(Amode).

- When merging programs of the A or FX series, the program capacity is as set in the parameter of the merge destination project.

- When merging the programs of the Q/QnA series, the maximum number of steps corresponds to the PLC type of the merge destination project.

QnACPU		QCPU(Qmode)	
PLC Type	Max. Number of Steps	PLC Type	Max. Number of Steps
Q2A, Q2AS(H)	28K	Q00J, Q00	8K
Q2AS1, Q2AS(H)S1	60K	Q00UJ, Q00U	10K
Q3A	92K	Q01	14K
Q4A, Q4AR	124K	Q01U	15K
-	-	Q02U, Q02PH	20K
-	-	Q02(H)	28K
-	-	Q03UD(E)	30K
-	-	Q04UD(E)	40K
-	-	Q06H, Q06PH, Q06UD(E)H	60K
-	-	Q10UD(E)H	100K
-	-	Q12H, Q12PH, Q12PRH	124K
-	-	Q13UD(E)H	130K
-	-	Q20UD(E)H	200K
-	-	Q25H, Q25PH, Q25PRH	256K
-	-	Q26UD(E)H	260K

- If the capacity is exceeded after merging, data are merged on a program basis up to the capacity. (Data that may only be merged to a midway point are not merged.)

- SFC programs cannot be merged.

- "Merge data" cannot be performed during monitoring of a programmable controller.
  To perform, place all open ladder editing screens in write or read mode, and close all monitor screens.

15.4 Checking Parameters

A	Q/QnA	QS	FX
○	○∗	○	○

∗: Compatible with the QCPU (Q mode) and MELSECNET/H remote station.

[Purpose]
  Checks for errors in the parameter settings.

[Operating Procedure]
  Select [Tools] → [Check parameter], or click 🔍.

[Dialog Box]
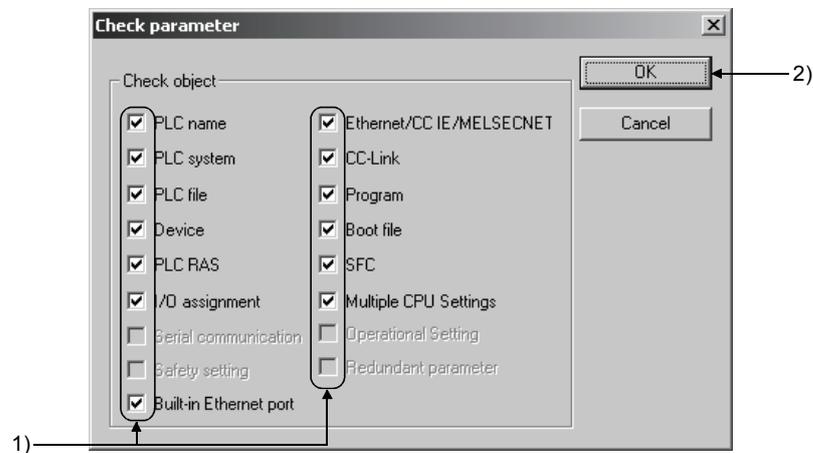
[Description]
  1) Check object
     Select the items you want to check by clicking the unchecked checkboxes of the items.
     Operational setting can be selected for a remote I/O project.
     When you selected the Basic Model, you can choose the Serial item.

```
POINT
```
  • "Check parameters" cannot be performed during monitoring of a programmable controller.
    To perform, place all open ladder editing screens in write or read mode, and close all monitor screens.
  • When clicking the OK button with Ethernet/CC IE/MELSECNET or CC-Link is selected in the Check parameter screen, the refresh target of CC-Link IE controller network, MELSECNET/10(H), and CC-Link are checked for duplication.

15.5 Clearing all Parameters

A	Q/QnA	QS	FX
○	○∗	○	○

∗: Compatible with the QCPU (Q mode)
and MELSECNET/H remote station.

[Purpose]
 Clears all parameter settings and sets their default values.

[Operating Procedure]
 Select [Tools] → [Clear all Parameters].

[Dialog Box]
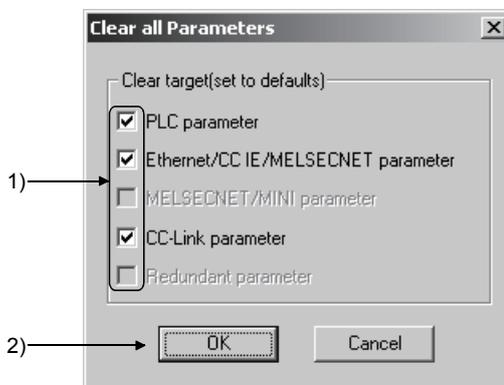
[Description]
1) Clear target
   Select the items you want to clear by clicking the unchecked checkboxes of the
   items.

POINT

- "Clear all parameters" cannot be performed during monitoring of a
  programmable controller.
  To perform, place all open ladder editing screens in write or read mode, and
  close all monitor screens.

15.6 IC Memory Card (GX Developer ↔ IC Memory Card)

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Only Basic model QCPU is incompatible.

Insert the IC memory card into the PC card slot of the personal computer, and then read/write data.

(1) IC memory card overview

(a) About driver

PLC	IC Memory Card	Function		Driver			
		Read	Write	Windows® 95/98∗3	Windows® Me/2000	Windows NT® 4.0	Windows® XP
Q series	SRAM card	○∗1	○∗1	Using Windows driver	—	—	CardUT-XP
	ATA card	○∗2	○∗2	Using Windows driver	Using Windows driver	—	Using Windows driver
	Flash card	×	×	—	—	—	

∗1: SRAM cards cannot be used for Windows® Me and Windows® 2000.
∗2: If it takes a long time to read/write the ATA data from GX Developer when Windows® 95 is used, change the driver from Hardware Controller ([Start] → [Control Panel] → [Hardware]) to "SunDisk (SunDisk ATA FlashDisk)".
∗3: When using SRAM, set the driver to CONFIG.SYS.
(For details, refer to Windows help.)
When ATA is used, Windows recognizes it automatically.
If it is not recognized, set it after choosing [Control Panel] → [System].
Remove the driver for SRAM if it has been set to CONFIG.SYS.

(b) About loading of IC memory card into PC card slot
An adaptor is required to load the IC memory card into the PC card slot.

	Mitsubishi Electric Make (Model)
PLC card adaptor	Q2MEM-ADP

(c) About formatting of IC memory card
To format the IC memory card, choose [Online] → [Format PLC memory] on GX Developer. (For more information, refer to Section 20.2.)

IC Memory Card	Memory Card Name on Setting Screen
SRAM card	Memory card (RAM)
ATA card	Memory card (ROM)

POINT

Make sure to use the following method to format the ATA card: Choose [Online] →
[Format PLC memory] on GX Developer.
(If a method other than above, e.g., Windows® format function is used to format the
ATA card, the card will not work when inserted to programmable controller.)

(2) About PLC user data
For read/write of PC user data from/to the IC memory card, GX Developer
cannot directly access the IC memory card.
Use Explorer of Windows or the like.
Refer to Section 16.8 for the operation to read/write PLC user data when the IC
memory card is loaded in the programmable controller.

15.6.1 Reading the data from the IC memory card

A	Q/QnA	QS	FX
×	○*	×	×

∗: Only Basic model QCPU is incompatible.

This section explains the operation to read the data of the IC memory card with the personal computer which has a PLC card slot.
Refer to Section 16.3 for reading data when the IC memory card is loaded in the programmable controller.

[Purpose]
 Reads the data of the IC memory card.

[Operating Procedure]
  Select [Tools] → [IC memory card] → [Read IC memory card].

[Dialog Box]
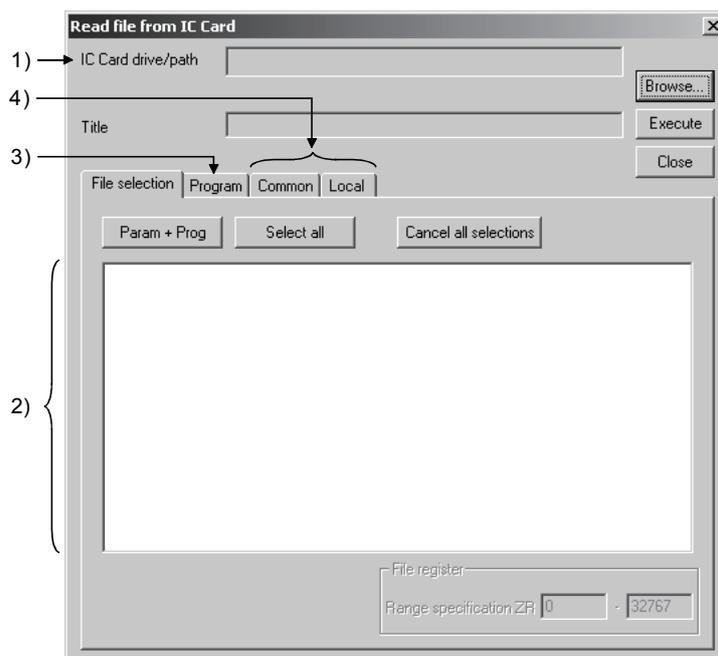
[Description]
1) IC memory card drive/path
   Set a drive/path in which data to be read are stored.

2) Read data list
   Choose the data to be read.

3) <<Program>> tab
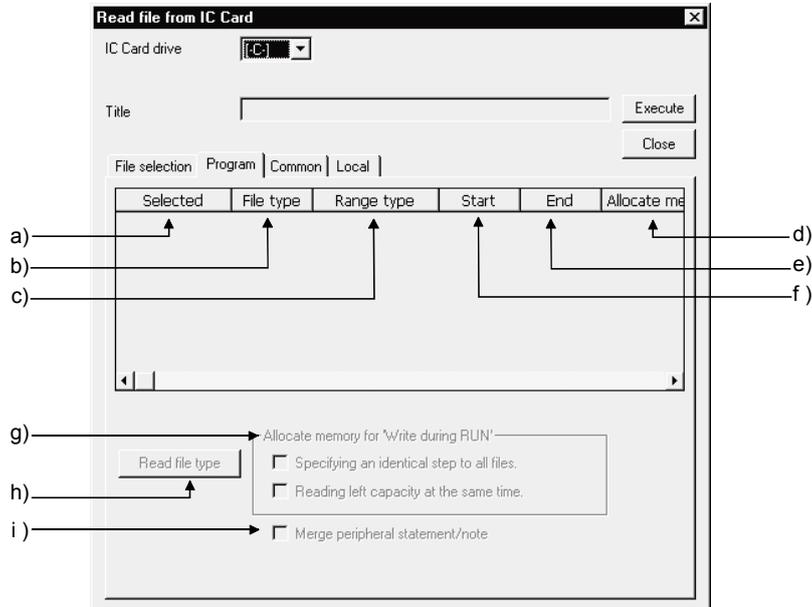
a) Selected
   Displays the data name of the program selected on the <<File selection>>
   tab.
b) File type
   Displays the program type.
   File type can be displayed by clicking the $\boxed{\text{Read file type}}$ button.
c) Range type
   "Whole range" will be set.
d) Allocate memory for "Write during RUN" (Available for Q/QnA Series only)
   Displays the status of reservation step for write during RUN in each program.
   Default value is 500 steps.
e) End
   This setting is not available.
f) Start
   This setting is not available.
g) Allocate memory for "Write during RUN" (Available for Q/QnA Series only)
   • Specify the same number of steps for all files.
     This setting is not available.
   • Read out the remaining number of reservation steps for write during RUN
     as well.
   Reads out the remaining number of reservation steps for write during RUN
   for the stored file and displays in "Reservation step for write during RUN"
   display area.
h) $\boxed{\text{Read file type}}$ button
   Reads the file type of the selected program from IC memory card.
i) Merge peripheral statement/note
   Refer to Section 10.2.

4)   <<Common>> tab and <<Local>> tab
Selected when setting the read range of comment and reading the set range.
For more information, refer to Section 9.7.

POINT

When there is a password already set, the confirmation dialog box appears at the time of read execution.
For details of the passwords, refer to Section 19.2.

15.6.2 Writing data to the IC memory card

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Only Basic model QCPU is incompatible.

This section explains the operation to write data to the IC memory card with the personal computer which has a PLC card slot. (Q series only)
Refer to Section 16.3 for writing data when the IC memory card is loaded in the programmable controller.

[Purpose]

Writes data to the IC memory card.

[Operating Procedure]

Select [Tools] → [IC memory card] → [Write IC memory card].

[Dialog Box]
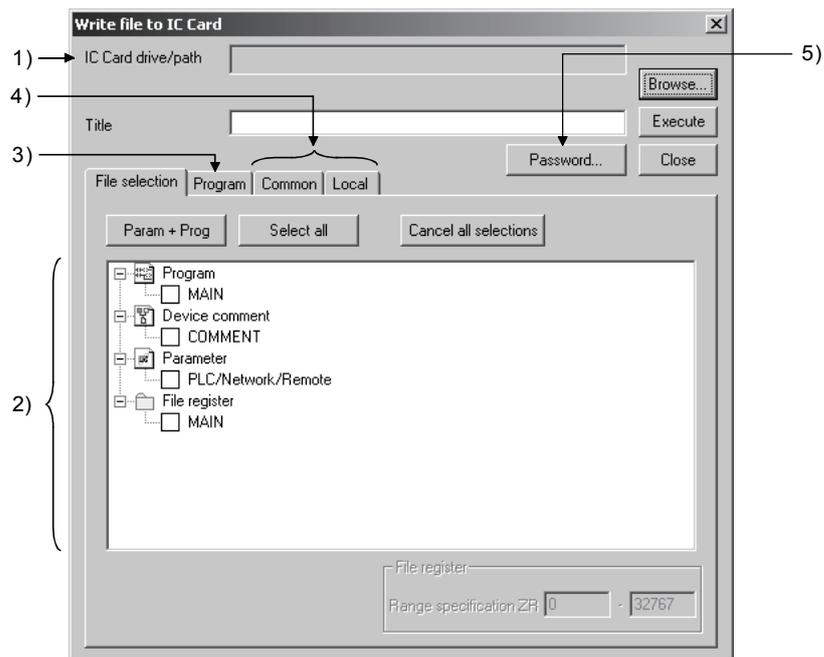
[Description]
1) IC memory card drive/path
   Set a drive/path to which data to be written.
2) Written data list
   Choose the data to be written.
3) <<Program>> tab
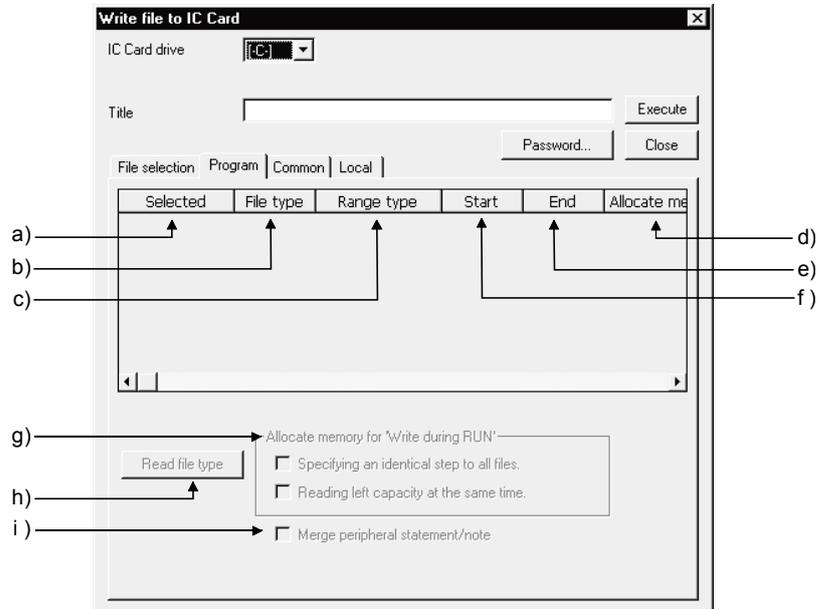
a) File selection
   Displays the data name of the program selected on the <<File selection>> tab.
b) File type
   Displays the program type.
   File type can be displayed by clicking the [Read file type] button.
c) Range type
   "Whole range" will be set.
d) Allocate memory for "Write during RUN" (Available for Q/QnA Series only)
   Set to 500 steps by default.
   Input range is up to the maximum number of steps for each programmable controller.
e) End
   This setting is not available.
f) Start
   This setting is not available.
g) Allocate memory for "Write during RUN" (Available for Q/QnA Series only)
   • Specify the same number of steps for all files.
     Set the number of steps in the first line within the "Reservation step for write during RUN" display area.
     The set number of steps will be updated on all programs.
   • Read out the remaining number of reservation steps for write during RUN as well.
     This setting is not available.
h) [Read file type] button
   This setting is not available.
i) Merge peripheral statement/note
   This setting is not available.

4)   <<Common>> tab, <<Local>> tab
Choose either tab when setting a range to comments to read.
For details, refer to Section 9.7.

5) | Password | button
Sets the password from the password setting dialog box.
For details, refer to Section 19.2.

| CAUTION |

If the same file name already exists, the overwrite confirmation dialog box
appears. Click the | Yes | button to abandon and overwrite the existing data.

15.7 Intelligent Function Utility

A	Q/QnA	QS	FX
×	○*	×	×

∗: Compatible with the High Performance Model QCPU.

The corresponding intelligent function utilities must be installed.

(1) Utility list (Q series only)
Show the utility list by selecting [Tools] → [Intelligent function utility] → [Utility list].
This displays the list of the intelligent function utilities required to edit the intelligent function utility parameters in the currently edited project.
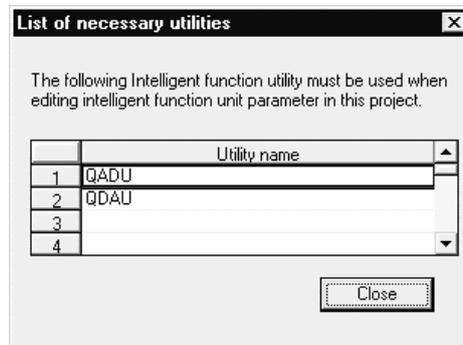
The list does not appear if the intelligent function utility parameters do not exist in the currently edited project or if the project name has not yet been set.

(2) Starting the intelligent function utilities (Q series only)
Start the intelligent function utilities by selecting [Tools] → [Intelligent function utility] → [Start].

(3) Intelligent function utility parameters on GX Developer (Q series only)
The intelligent function utility parameters are not displayed in the project list.
However, they are displayed in the Read from/Write to/Delete PLC, Copy project and Read/Write IC memory card dialog boxes.
In this case, if the Param+Prog button in the corresponding dialog box is used to make selection, the intelligent function utility parameters are also selected. (Except for copying the project)

(4) Intelligent function utility parameters for operations (Q series only)
When the following operations are performed, the intelligent function utility parameters will be as described below.
If the intelligent function utilities have already used the intelligent function utility parameters, any of the following operations and others cannot be performed. Start any operation after closing the intelligent function utilities.

Operation		Description
Read from PLC/Read IC memory card		The intelligent function module parameters of the project are overwritten by the intelligent function module parameters read from the PLC. For not overwriting the intelligent function module parameters of the project, save the project with the different name in advance.
Write to PLC/Write IC memory card		The intelligent function utility parameters in the GX Developer project are written to the PLC/IC memory card. If the project name has not yet been set, the intelligent function utility parameters cannot be written.
Newly read from PLC		Operation cannot be performed.
Password		Setting cannot be made.
Delete PLC data		The intelligent function utility parameters are deleted.
Verify PLC		Operation cannot be performed.
Save project		
	Save	The intelligent function utility parameters are not changed.
	Save as	The intelligent function utility parameters are added to the project to be saved.
Verify project		Operation cannot be performed.
Copy project		Copy cannot be performed if the copy source/destination is used in the intelligent function utilities.
Change PLC type		
	Q series → Q series	The intelligent function utility parameters are retained intact.
	Q series → other than Q series	The intelligent function utility parameters are deleted.
Delete intelligent function utility parameters saved in GX Developer project		The intelligent function utility parameters cannot be deleted using GX Developer. Use the intelligent function utilities to delete.

POINT
- Data in the PLC/IC memory card cannot be read/written directly from/to the intelligent function utilities.
  Use the corresponding read/write function of GX Developer to read/write them to the intelligent function utilities.
- For more information on the intelligent function utility parameters, refer to the corresponding module user's manual.

15.8 Transferring ROM Data

A	Q/QnA	QS	FX
◯	×	×	◯

Reads, writes, and verifies data from the GX Developer, either with respect to the EP-ROM installed in an A series memory cassette, or an FX series memory cassette.

(1)   System configuration for ROM writer transfer
      The system configuration for reading/writing/verification with a ROM writer is indicated below.

| Personal computer (GX Developer already installed) | RS-232 | ROM Writer |
| EPROM Cassette | ROM Socket | ROM |
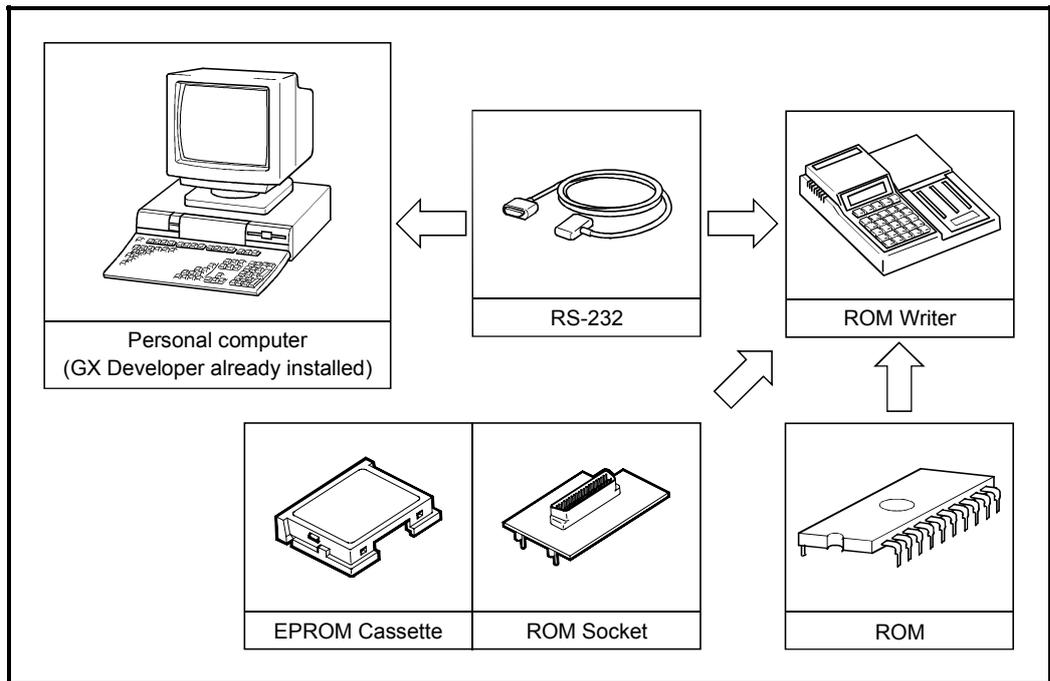
＊1: Refer to Appendix 6 for an example of connecting cable wiring.

The correctness of the operation was confirmed for the ROM writers shown below.
- PECKER-10 (PKW-1000)
- PECKER-11 (PKW-1100)
- PECKER-30 (PKW-3100)

(2)   Making settings at the ROM writer
      Before reading/writing/verification with the ROM writer, make the following settings at it.

Item		Details
Data format	Data length	8-bit
	Stop bit	1 bit
	Parity	Odd
	Transmission speed	9600 bps
X ON/OFF		Provided

"A" series program memory configuration

(1)   Memory capacity setting
The data written to the ROM is classified into two types: main program and main + subprogram.
A memory capacity setting must be made for each data type.

(a)   Setting main program capacity
When a main program is set, the main program capacity set in the PLC parameters and automatically added parameters (fixed at 4K bytes) are written to the ROM.
Set the main program capacity in the PLC parameters so as to satisfy the following condition:

| Main program capacity | $\leq$ | Total memory capacity of ROM - parameters (4K bytes) |

In the case of an AnUCPU, QCPU(Amode) for which network parameters are set, up to 16K bytes (a maximum of 4K bytes for each network unit) is added.
Check the memory capacity in the network parameters on the PLC parameter memory capacity setting dialog box, then set the main program capacity.

| Main program capacity | $\leq$ | Total memory capacity of ROM - parameters (4K bytes) - network parameters |

If the writing capacity exceeds the capacity of the ROM, either make the setting for the main program memory capacity in the PLC parameters smaller, or replace the existing ROM with one with a larger capacity.

<Example> : Memory capacity setting for AnUCPU, QCPU(Amode) with network parameters set)

For A2U(S1)CPU

| Parameters 4K bytes |
| Main program (sequense + microcomputer) Max. 14K steps (28K bytes) |
| Network parameters Max. 16K bytes |

Max. total 48K bytes

For A3U, A4UCPU, QCPU-A

Parameters 4K bytes (fixed)	
Main program (sequense + microcomputer) Max. 30K steps (60K bytes)	Total not to exceed 60K bytes
Network parameters Max. 16K bytes	

Max. total 64K bytes

| 1K step (1024 steps) | = | 2K bytes |
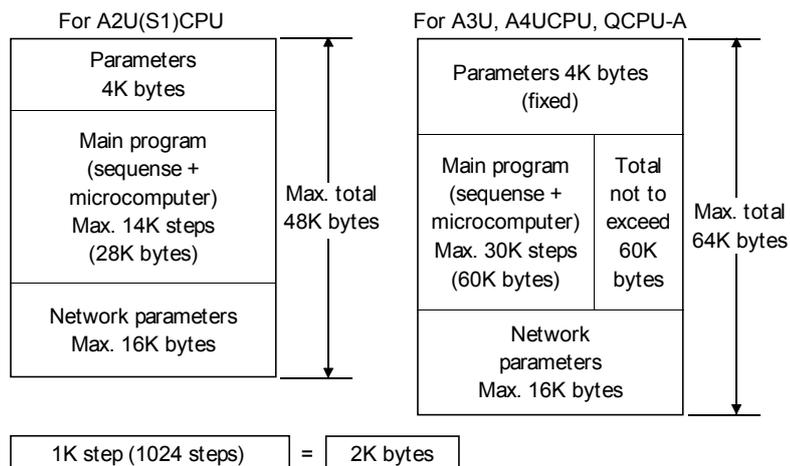
(b) Setting main program + subprogram capacity
Write A3U/A4UCPU, QCPU(Amode) subprograms together with the main program. It is not possible to write a subprogram by itself.
When writing a main program + subprogram, the main program capacity set in the PLC parameters, the automatically added parameters (fixed at 4K bytes), and the subprogram capacity, are written to the ROM.
The subprogram capacity is automatically set at 64K bytes per subprogram.

For A3UCPU

Parameters 4K bytes (fixed)		Max. total 64K bytes
Main program Max. 30K steps (60K bytes)	Total not to exceed 60K bytes	
Network parameters Max. 16K bytes		
Subprogram T/C set valuese 1K byte		64K bytes
Subprograms 30K steps (60K bytes)		
Free 3K bytes		

For A4UCPU, QCPU(Amode)

Parameters 4K bytes (fixed)		Max. total 64K bytes
Main program 30K steps (60K bytes)	Total not to exceed 60K bytes	
Network parameters Max. 16K bytes		
Subprogram 1 T/C set valuese 1K byte		64K bytes
Subprogram 1 30K steps (60K bytes)		
Free 3K bytes		
Subprogram 2 T/C set valuese 1K byte		64K bytes
Subprogram 2 30K steps (60K bytes)		
Free 3K bytes		
Subprogram 3 T/C set valuese 1K byte		64K bytes
Subprogram 3 30K steps (60K bytes)		
Free 3K bytes		

Example: Memory capacity setting for A3U/A4UCPU, QCPU(Amode)

POINT

The ROMs to which A3U/A4UCPU, QCPU(Amode) subprograms can be written are the 32KROM and the 64KROM.
The 32KROM and 64KROM are capable of ROM operation with a subprogram written to them.
The 32KROM and 64KROM can only be used with the A4UMCA-128 memory cassette.

The total memory capacity, including main program and subprograms, for each ROM, is indicated below.

Model Name	ROM Type	Program Memory Capacity						
		A0J2H, A2C, A2CJ	A1N *1	A2N(S1), *1 A2A(S1), A2U(S1)	A3A, A3N *1	A3U, A4U *1	A1S, A1SJ, A1SH, A1SJH	A2S(S1), A2USH-S1, A2AS(S1), A2AS-S30, A2AS-S60
4KROM	2764	2K steps (0 to 2046)	6K steps (0 to 6142)	6K steps (0 to 6142)	6K steps (0 to 6142)	6K steps (0 to 6142)	—	—
4KEROM	X2864A	—	6K steps (0 to 6142)	—	—	—	—	—
8KROM	27128	6K steps (0 to 6142)	—	14K steps (0 to 14334)	14K steps (0 to 14334)	14K steps (0 to 14334)	—	—
16KROM	27256	14K steps (0 to 14334)	—	14K steps (0 to 14334)	30K steps (0 to 30178)	30K steps (0 to 30718)	—	—
32KROM *2	27512	—	—	—	—	30K steps (0 to 30718) + 30K bytes	—	—
64KROM *3	27010	—	—	—	—	30K steps (0 to 30718) 30K + bytes×3	—	—
A1SNMCA-8KP *4		—	—	—	—	—	8K steps (0 to 8190)	—
A2SMCA-14KP *5		—	—	—	—	—	—	14K steps (0 to 14334)

*1: Two ROMs of the same model are used (for odd addresses and even addresses).

*2: Only the A4UMCA-128 memory cassette can be installed.
A main program and subprogram 1 can be written, and ROM operation with a subprogram is possible.

*3: Only the A4UMCA-128 memory cassette can be installed.
With A4UCPU, QCPU(Amode), a main program and subprograms 1, 2, 3 can be written, and ROM operation with a subprogram is possible.
With A3UCPU, a main program and subprogram 1 can be written, and ROM operation with a subprogram is possible.

*4: An A6WA-28P memory rewrite adapter is required.
Only models PECKER-11 and 30 can perform write function.
Other ROM writers (including PECKER-10) cannot perform write function.
For occasions such as reading and writing, set the ROM type as "27256".

*5: An A2SWA-28P memory rewrite adapter is required.
Only models PECKER-11 and 30 can perform write function.
Other ROM writers (including PECKER-10) cannot perform write function.
For occasions such as reading and writing, set the ROM type as "27256".
Switch between odd and even addresses with the ODD/EVEN setting pins of the A2SWA-28P rewrite adapter.

POINT

- The A1SMCA-8KP conventional mode EP-ROM is not compatible with A1SHCPU.
  Note also that there is no EP-ROM cassette compatible with A2SHCPU.

- Since data writing with a ROM writer is not possible when using A1SNMCA-2KE/ 8KE or A2SNMCA-30KE E^2P-ROM cassettes, write data using the PLC write function.

(4) Address type

Depending on the CPU type, the ROM may have either of two address types (writing methods). The correspondence between CPU types and address types is indicated below.

Address Type	Writing Method	CPU Type
Odd *1 Even *1	Addresses are divided into odd and even, and the data written to two ROM's. *2	A1N, A2N(S1), A3N, A2A(S1), A3A, A2U(S1), A3U, A4U, A2S(S1), A2AS(S1), A2AS-S30, A2AS-S60, A2SH, A2US-S1, A2USH-S1
Contiguous	Data is written to one ROM without division into odd and even addresses.	A0J2H, A1S, A1SJ, A1SH, A1SJH, A2C, A2CJ

*1: Two EP-ROMs of the same model are used (one for odd, one for even)
   However, note that the EP-ROM cassettes that can be used with A2S, A2SH, A2US(S1), and A2USH-S1 have two ROMs built in.

*2: When there is one ROM writer socket, divide the data into odd and even addresses before writing to the ROM.
   Note also that because the memory write adapter has to be switched over with A2S, A2SH, A2US(S1), and A2USH-S1, odd and even address data cannot be written at the same time.

<Example 1> : Writing the main program of an A1NCPU (4K steps) to a 4KROM

Peripheral device memory | Automatically added (fixed at 4K bytes) | 4KROM (for odd)

| Parameter data |
| Main program 4K steps (8K bytes) |

4KROM (for odd)
Odd-addressed parameters	2K bytes
Odd main program steps	2K bytes (4K bytes)
Free area	2K bytes

4KROM (for even)
Even-addressed parameters	2K bytes
Even main program steps	2K bytes (4K bytes)
Free area	2K bytes
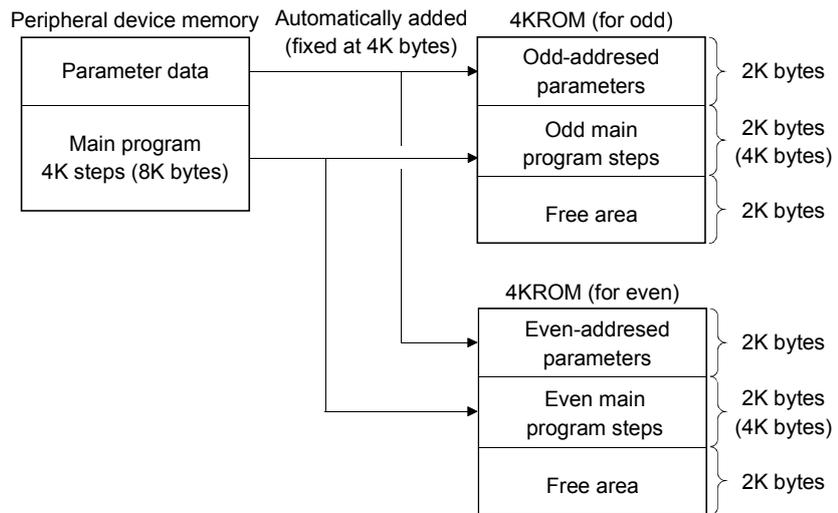
<Example 2> : Writing the main program of an A1SCPU to an A1S8MCA-8KP

Peripheral device memory | Automatically added (fixed at 4K bytes) | A1SMCA-8KP

| Parameter data |
| Main program 4K steps (8K bytes) |

A1SMCA-8KP
Parameter data	4K bytes
Main program	4K bytes (8K bytes)
Free area	4K bytes
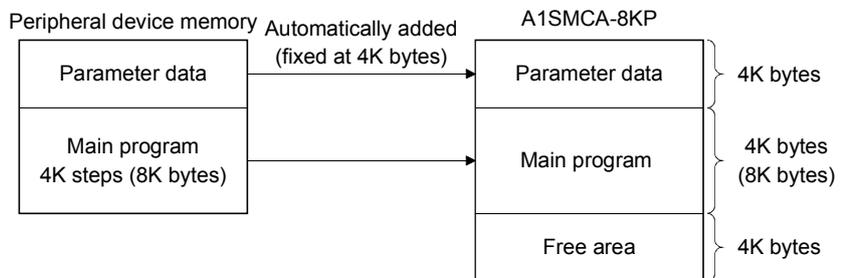
Program memory configuration of the FX series

(1) Memory capacity setting
The program memory of the programmable controller allows writing of sequence program (including parameters), file resisters, and device comments. The capacity setting ranges for each type of data are indicated below.

Type	Setting Details	Capacity Setting Range
FX0 FX0S	Sequence programs	800 [1]
	File registers	—
	Comments	—
	Total	800
FX0N	Sequence programs	500 to 2000
	File registers	0 to 1500
	Comments	0 to 1500
	Total	2000
FX1	Sequence programs	500 to 2000
	File registers	—
	Comments	0 to 3500 [2]
	Total	2000/4000
FX FX2 FX2C	Sequence programs	500 to 8000
	File registers	0 to 2000
	Comments	0 to 4000
	Total	2000/4000/8000
FX1S	Sequence programs	500 to 2000
	File registers	0 to 1500
	Comments	0 to 1500
	Total	2000
FX1N FX1NC	Sequence programs	500 to 8000
	File registers	0 to 7000
	Comments	0 to 7500
	Total	2000/4000/8000
FX2N FX2NC	Sequence programs	500 to 16000
	File registers	0 to 7000
	Comments	0 to 15500
	Total	2000/4000/8000/16000
FX3G	Sequence programs	500 to 32000
	File registers	0 to 7000
	Comments	0 to 31500
	Total	2000/4000/8000/16000/32000
FX3U FX3UC	Sequence programs	500 to 64000
	File registers	0 to 7000
	Comments	0 to 63500
	Total	2000/4000/8000/16000/32000/64000

(Units: steps)

[1]: Although "2000" is displayed as "memory capacity" on the dialog box, "800" is set as sequence program capacity.

[2]: The maximum program capacity is 2000 steps. However, when using a memory cassette it is possible to write comments up to 2000 steps outside the program area too.

(2)   ROM cassette
The ROM cassette applicable for the FX CPU is the FX-EPROM-8 (27256 or equivalent).
Set the cassette to the FX-ROM-SOC-1 ROM socket and read or write data using a commercially available ROM writer. The following table indicates the memory capacity transferable to the FX-EPROM-8 and whether it can be set to each FXCPU or not.

Model	Memory capacity (Steps)	Compatibility
FX0	800 *1	—
FX0S	800 *1	—
FX0N	2000	◯
FX1	2000/4000	◯
FX2	2000/4000/8000	◯
FX2C	2000/4000/8000	◯
FX1S	2000	—
FX1N	2000/4000/8000	—
FX1NC	2000/4000/8000	—
FX2N	2000/4000/8000/16000	◯
FX2NC	2000/4000/8000/16000	—
FX3G *2	—	—
FX3U *2	—	—
FX3UC *2	—	—

◯: Compatible —: Not compatible

*1: For the FX0 and FX0S, 800 steps are written though the memory capacity setting of the PLC parameter is indicated 2000 steps.

*2: The FX3G, FX3U, and FX3UC do not support ROM transfer.

15.8.1 ROM reading, writing, and verification

A	Q/QnA	QS	FX
○	×	×	○

[Purpose]
Using a ROM writer connected to the personal computer, reads from the ROM, writes to the ROM, or verifies the data in the personal computer against the data in the ROM.

[Operating Procedure]
Select [Tools] → [Transfer ROM] → [Read] ([Write] / [Compare].)

[Dialog Box]
The dialog box for ROM reading is shown here; similar dialog boxes are displayed for writing and verification.
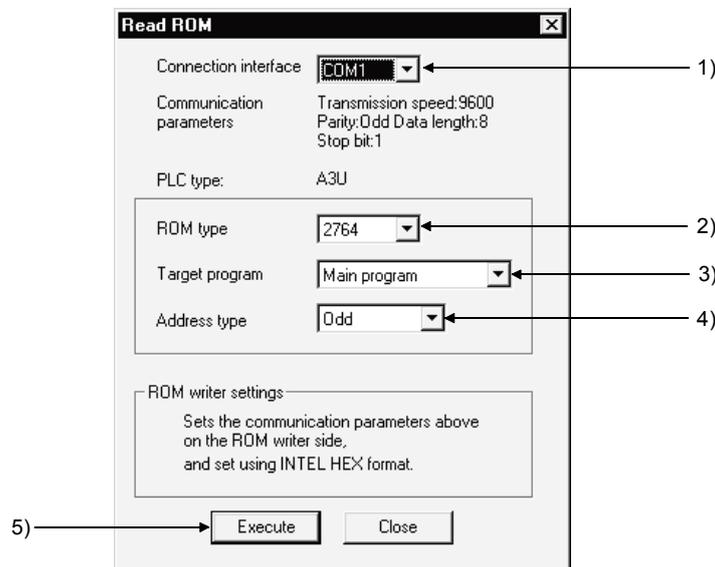
[Description]

1) Connection
   Selects the interface at the personal computer connected to the ROM writer.

2) ROM (A series only)
   Selects the type of ROM used.
   "Automatic" cannot be selected for writing.

3) Target program (A series only)
   Selects the type of data to be read, written, or verified.

4) Address type (A series only)
   Sets the address type of the ROM.
   The address type is sequential for the following CPU types: A0J2H, A1S, A1S(S1) A1SJ, A1SH, A2C, A2CJ, and either odd or even for other CPU types.
   Note that when there are two ROM writer sockets it is possible to write simultaneously to odd and even addresses.
   However, when writing to an A2SMCA-14KP, ODD and EVEN settings are made at the memory write adapter, making simultaneous writing impossible.

5) | Execute | button
   Click this button after setting the necessary settings.

[Operating Procedure]

- For ROM reading/verification
    1. Install the ROM at the ROM writer, connect to the personal computer and make the necessary settings.

    2. Set the memory capacity in the PLC parameters at the reading (verification) destination.

    3. Operate the ROM writer to read the ROM data into the buffer memory. *1

    4. Set (1) through (4) in the ROM reading (verification) dialog box.

    5. Click (5) after setting the necessary settings.

- For ROM writing
    1. Install the ROM at the ROM writer, connect to the personal computer and make the necessary settings.

    2. Set the memory capacity in the PLC parameters.

    3. Set (1) through (4) in the ROM writing dialog box.

    4. Click (5) after setting the necessary settings.

    5. Operate the ROM writer to write the buffer memory data to the ROM. *1

        *1: For details on how to operate the ROM writer, refer to the instruction manual for the model used.

POINT

- When data is written to the ROM, the ROM writer checks in advance whether the data in the ROM has been deleted.

- If the address type setting is incorrect, reading, writing and verification with the ROM writer will not be possible.
  Affix labels to ROMs or use some other method to distinguish among them.

- When the ROM type is set to automatic for reading or verification, an error will occur if there is a discrepancy between the memory capacity settings at the ROM side and personal computer side.
  Alter the setting at the personal computer side.

15.8.2 Writing to files in ROM format

A	Q/QnA	QS	FX
○	×	×	○

[Purpose]
Writes data to the HD, FD, etc., of a personal computer in a file format like the address type for writing to a ROM.

[Operating Procedure]
Select [Tools] → [Transfer ROM] → [Write to file].

[Dialog Box]
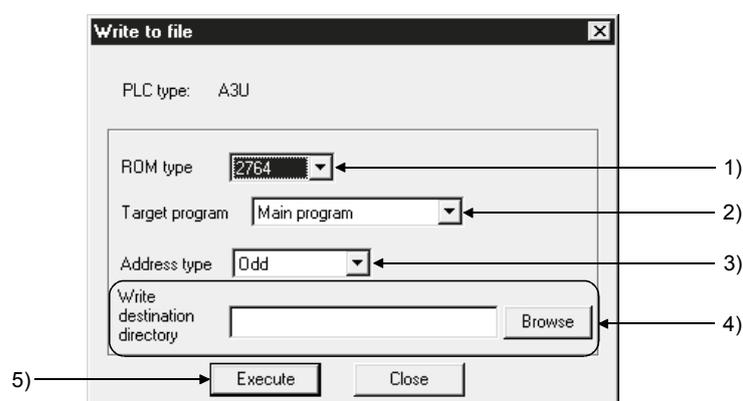
[Description]

1) ROM type (A series only)
   Set the same type as the ROM used.

2) Target program (A series only)
   Selects the type of data for file writing.

3) Address type (A series only)
   Set the same address type as the ROM used
   If the CPU type is A0J2H, A1S, A1S(S1), A1SJ, A1SH, A2C, or A2CJ, the address type is "sequential."
   In other cases it is odd, even, or odd/even.

4) Write destination directory
   Sets the folder of file writing destinations.

5) | Execute | button
   Click this button after setting the necessary settings.

> **POINT**
>
> Some examples of how files are saved, and the address type-dependent extensions used, when file writing operations are executed are given below.
>
> Saving example
>
>   W s512 .hex
>   └── Identifier (common)
>   └── File name (depends on ROM type, applicable program)
>   └── Extension (depends on address type)
>
> Extension
>
>   W........ Odd/even addresses
>   O..........Odd addresses
>   E..........Even addresses
>   S..........Sequential addresses
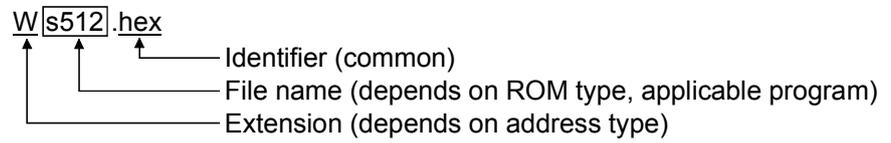
15.9 Deleting the batch of Unused Device Comments

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Batch-deletes comments not used in the program.

[Operating Procedure]
[Tools] → [Delete unused comments].

[Description]
Comments to be deleted should satisfy the following conditions.

1. Comments attached to the devices not used in the program are batch-deleted. Device comments not searched for in the device use list, if any, by a device search are deleted.

2. Common comments of the devices not used in all programs are deleted.

3. Comments by program which are not used in the corresponding program are deleted.

4. Comments by program whose program does not exist are deleted together with data.

5. Common comments and comments by program which are set to the same device used are not deleted.

6. Click the Yes button to perform batch delete.

POINT

Device comments are batch-deleted under the following conditions.
- Any device using index qualification is handled as not being qualified.
  <Example>
    (1) MOV D0 D100Z0
        D0 and D100 will be the target of deletion and the device specified indirectly by Z0 will not be the target of deletion.
    (2) Two words of any indirectly specified device will be the target of deletion.
        MOV D0 @D10
        D0, D10 and D11 will be the target of deletion, and the device number stored in D10 will not be the target of deletion.
- Comments not deleted are indicated below.
  SP.M (A series), SP.D (A series), SM (QnA series), SD (QnA series), Jn\SB, Jn\SW

15.10 Customizing Keys

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Sets the key allocations for ladder creation as GPPA format, GPPQ format, or MEDOC format.

[Operating Procedure]

Select [Tools] → [Customize keys].

[Dialog Box]
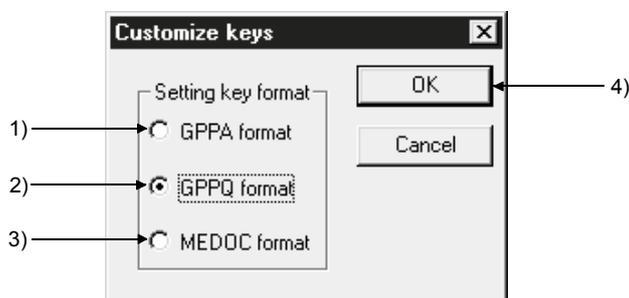
[Description]

1) GPPA format

Sets the key allocations corresponding to GPPA.

2) GPPQ format

Sets the key allocations corresponding to GPPQ.

3) MEDOC format

Sets the key allocations corresponding to MELSEC MEDOC. *1

4) OK button

Click this button after setting the necessary settings.

*1: "MELSEC MEDOC" is a programming and document creation system retailed by Mitsubishi Electric Europe GMBH.

15.11 Changing the Display Color

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Changes the GX Developer screen to any color.

[Operating Procedure]
Select [Tool] → [Change display color].

[Dialog Box]
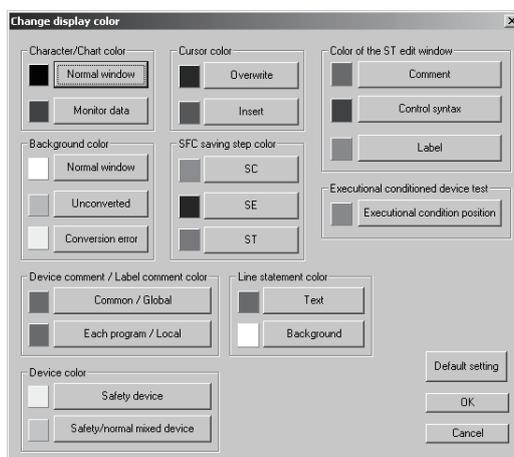
[Description]
Ladder, list, SFC and MELSAP-L screens can be changed in color.
Parameter, device memory, device comment edit and similar screens are not
compatible with this function.

Clicking the Default setting button returns to the initial status.

POINT
Unless the personal computer of 256 or more colors is used, the screen may not be displayed properly.

15.12 Setting Options

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Sets the options for data creation.

[Operating Procedure]
Select [Tools] → [Options].

[Dialog Box]

<<Program common>> sheet
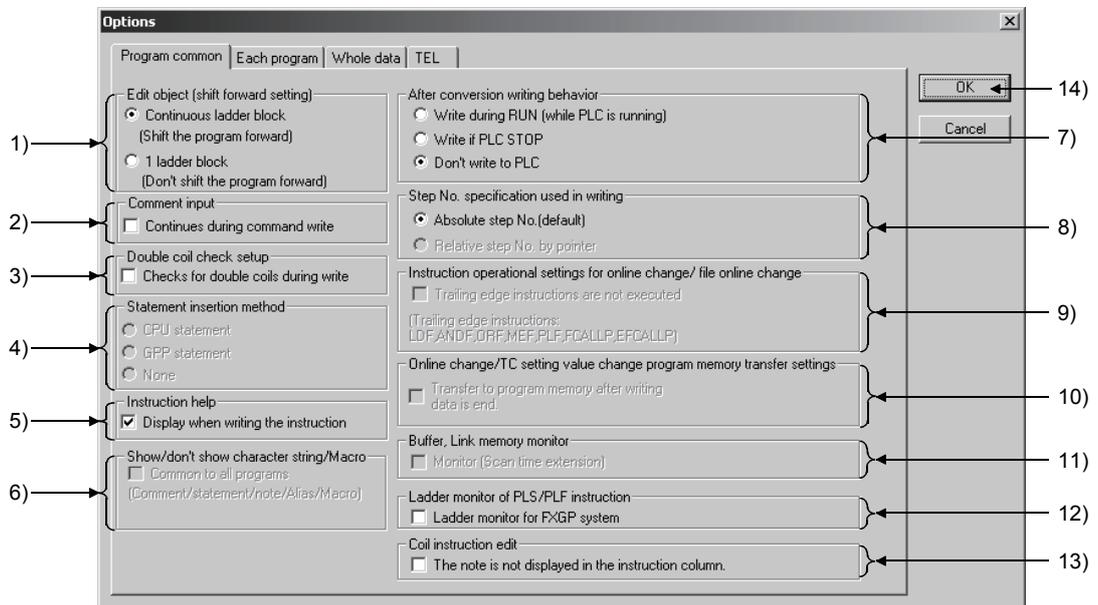
[Description]

1) Edit object (shift forward setting)

⊙ Continuous ladder block (Shift the program forward)
If the edited ladder is shorter than it was before conversion, it is shifted forward on conversion.

⊙ 1 ladder block (Don't shift the program forward)
If the edited ladder is shorter than it was before conversion, NOP instructions are written at the missing steps on conversion.

2) Comment input
Check the checkbox to select.
After ladder input the comment input window opens, allowing device comments to be set.

3) Double coil check setup
   Sets whether a duplicate coil check is to be performed at program creation.
   The devices and instructions to which the duplicate coil check applies are
   indicated below.

A series

	OUT	SET	SFT	PLS	PLF	MC
Y, M, L, B.F	○	○	○	○	○	○
T, C	○	—	—	—	—	—

○: Applicable —: Not applicable

Q/QnA series

	OUT	SET	SFT	PLS	PLF	EGP, EGF	MC	FF	DELTA
Y, M, L, B.F.SM, DY, SB	○	○	○	○	○	—	○	○	○
D, SD, W, SW, R, ZR	○	—	○	○	○	—	○	○	○
T, C	○	—	—	—	—	—	—	—	—
Z	—	—	—	—	—	○	—	—	—

○: Applicable —: Not applicable

FX series

	OUT	SET	PLS	PLF	MC
Y, M	○	○	○	○	○
S	○	○	○	○	—
T, C	○	—	—	—	—

○: Applicable —: Not applicable

It is possible to use the same coil, but attention must be paid to program
operation.
In program editing by copying and pasting, no duplicate coil check is performed;
for this reason you should perform a program check after editing.
Refer to Section 15.1 for details of program checks.

4) Statement insertion method (Q/QnA series only)
   At macro registration, regardless of the option, the statements registered
   together with ladder are expanded. If no statements have been registered,
   before expanding the macro select "CPU statement", "GPP statement", or
   "None".

⊙ CPU statement
   When writing to the programmable controller, the statements are written as
   part of the program.
   However, the number of steps taken up increases.

⊙ GPP statement
   The statements of the macro are displayed only at the personal computer.
   The number of steps taken up does not increase, but the statements cannot
   be written to the programmable controller.

⊙ None
   Statements of the macro are not displayed.

5) Instruction help
   If an incorrect instruction is specified during program creation, the instruction
   help dialog box is displayed.

6) Show/don't show character string/Macro (Except the FX series)
   Displays comments/statements/notes/device names for all programs.

7) After conversion writing behavior
   Sets writing of the program to the programmable controller after conversion.

   ⊙ Write during RUN (while PLC is running)
     The program is unconditionally written to the programmable controller during
     the RUN status.
     LD[R Edit mode]" is displayed to the Title bar.

   ⊙ Write if PLC is STOP
     The program is written to the programmable controller if its status is STOP
     (PAUSE).
     "LD[R Edit mode]" is displayed to the Title bar.

   ⊙ Don't write to PLC
     The program is not written to the programmable controller.

8) Step No. specification used in writing (Q/QnA series only)
   Sets the method for online program change (write during RUN).

   ⊙ Absolute step No.(default)
     Online program change (write during RUN) is executed based on absolute step numbers.

   ⊙ Relative step No. by pointer (Setting is disabled for Basic Model QCPU)
     Online program change (write during RUN) is executed based on relative step numbers, using pointers.

   Only the pointer identified areas of a program created by several operators on a pointer-by-pointer basis can be written during RUN.
   This method is useful when a program is to be debugged by several people.
   When performing the relative step number type online program change, do not annotate the program with a line statement. (Refer to the following program.)
   Making online program change to the program annotated with a line statement may result in a program mismatch.
   In that case, perform read from PLC and make the absolute step number type online program change.

Do not create line statement. ⟶

```
                    Samp
                        [Test1]
            P2          X1
                12       ┤├                                    (Y21    )
```
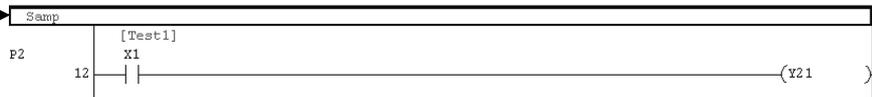
Example:
   Online program change (write during RUN) of the program at the personal computer and the program in the programmable controller in different states, for example when a single program is being written and debugged by several people.

Write During Normal RUN	Relative Write by Pointer During RUN
When another programmer has made an addition to the program in the programmable controller, normal write during RUN overwrites the steps before the addition, and the program discrepancy makes the writing impossible.	Even in a case where another programmer has made an addition to the program in the programmable controller from P1, since the writing is to relative steps, with respect to P2, no program discrepancy occurs.
GX Developer side	GX Developer side
Online change not possible	Online change possible
CPU side	CPU side

9) Instruction operational settings for online change/file online change
    (Q series other than Basic Model QCPU only)
    To disable the execution of the fall instruction within the writing range at the
    time of online change or file online change, check the relevant button.
    For details, refer to Section 16.9.3.

10) Online change/TC setting value change program memory transfer settings
    (Universal model QCPU only)
    Check this item when transferring the contents of program cash memory to
    program memory after online change or TC setting value change.
    If the program memory was not transferred by unchecking it, perform program
    batch transfer before powering OFF or reset (Refer to Section 16.10).

11) Buffer, Link memory monitor (Except ACPU and FX series other than FX3U and
    FX3UC CPU)
    Checking the checkbox causes monitoring of the buffer memory and link
    memory during ladder monitoring.
    When the buffer memory and link memory are monitored, the scan time of the
    programmable controller is further increased.
    Refer to 17.5 for monitor operation.

12) Ladder monitor of PLS/PLF instruction (FX series only)
    Checking the checkbox causes the monitor display of PLS/PLF instructions to
    be actuated in FXGP(DOS) and FXGP(WIN) formats. When the checkbox is
    cleared, monitor display is actuated in the GX Developer format. The default is
    the GX Developer format.
    (Refer to Appendix 11.)

13) Coil instruction edit
    Set whether to display notes during editing the coil instruction.

14) $\boxed{\text{OK}}$ button
    Click this button after setting all the necessary settings in each dialog box.

[Dialog Box]
<<Each program>> sheet
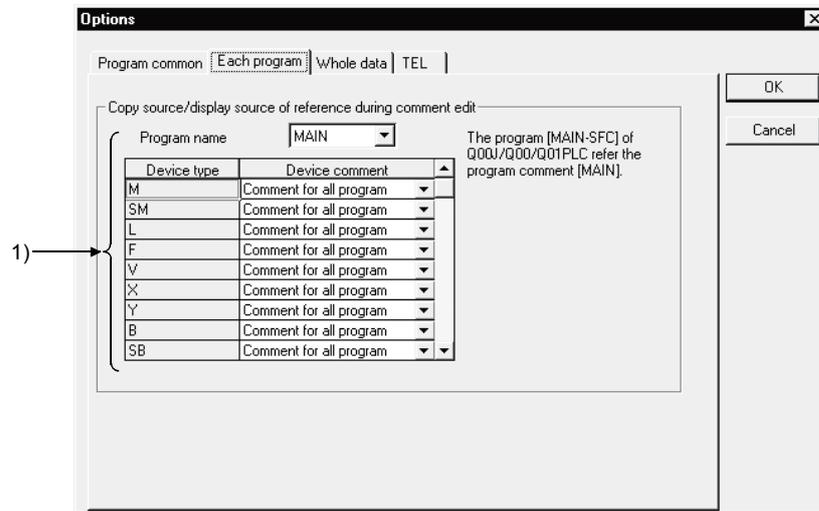
[Description]
1) Copy source/display source of reference during comment edit
    When both a comment common to all programs and a comment specific to the
    individual program have been assigned to the same device, specifies which of
    these is to be displayed in the ladder window.
    However, where only a comment common to all programs or only a program-
    specific comment is set for a device, the set comment is automatically displayed
    and therefore this setting is invalidated.
    When the program for Basic model QCPU is created using SFC, the comments
    created in the sequence program "MAIN-SFC" refer to the comments by
    program "MAIN".

[Dialog Box]
<<Whole data>> sheet
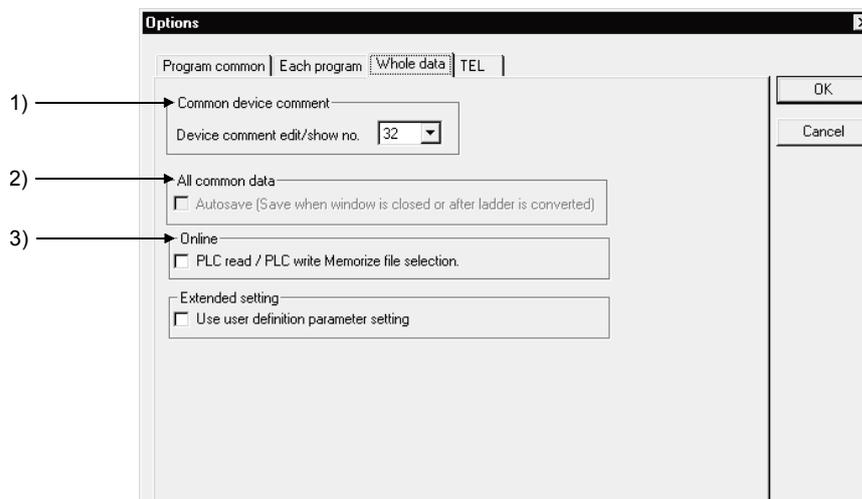
[Description]
1) Common device comment
    Sets the largest number of characters that can be set for a device comment as
    16 characters or 32 characters.

2) All common data
    Checking this checkbox causes the data to be saved automatically when the
    window is closed.
    The data is also automatically saved when ladder changes are made.
    However, if no project name has been set when creating a new project this
    setting is not possible because there is no saving destination.

3) Online
    Saves the file selection status set on the Read/Write from/to PLC screen.
    The setting is canceled if the PLC type change, connection setup change,
    project end or target memory change is performed.
    Also, the A series comment selection status is not saved.

4) Extended setting (Q series only)
    Do not make this setting.

[Dialog Box]
When the GX Developer is connected via modem, set each item in correspondence with the error condition.

<<TEL function>> tab screen
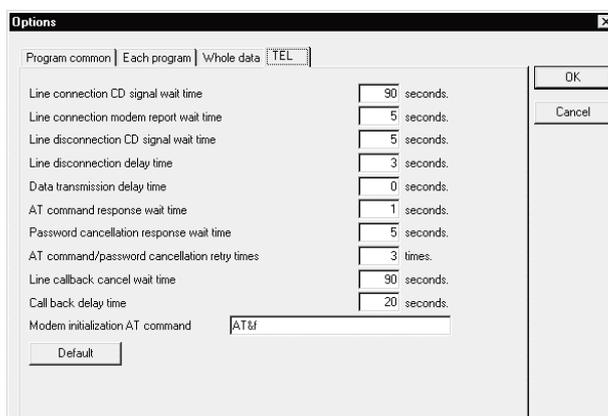
Setting Items	Contents/measures
Line connection CD signal wait time	Depending on the region (e.g., overseas) where line connection is made, extend the set time if the CD signal does not turn ON within the time.
Line connection modem report wait time	Extend the set time when the model response speed is slow.
Line disconnection CD signal wait time	Depending on the region (e.g., overseas) where line is being disconnected, extend the set time if the CD signal does not turn OFF within the time.
Line disconnection delay time	Extend the set time when the model response speed is slow.
Data transmission delay time	Extend the set time when the model response speed is slow.
AT command response wait time	Extend the set time when the model response speed is slow.
Password cancellation response wait time	Extend the set time when the quality of line connection with the opposite party is poor.
AT command/password cancellation retry times	Increase the set number of retries.
Line callback cancel wait time	Depending on the region (e.g. overseas) where line connection is made, extend the set time if the line of the other end (Q series C24 side) is not disconnected within the set time.
Call back delay time	Extend the set time when the equipment for relaying connection to the line (e.g. modem) must have a given time for reconnection of the line after disconnection.
Modem initialization AT command	The number of input characters is up to 70.

15.13 Displaying Multiple Windows

A	Q/QnA	QS	FX
◯	◯	◯	◯

[Purpose]
Adjusts the size and position of windows when multiple windows are opened.
However, when four or more windows are arranged horizontally or vertically, the number of lines and columns changes.

[Operating Procedure]
Select [Window] → [Cascade] ([Tile vertically], [Tile horizontally], [Arrange icons]).

[Dialog Box]
This is an example where windows are displayed cascaded.
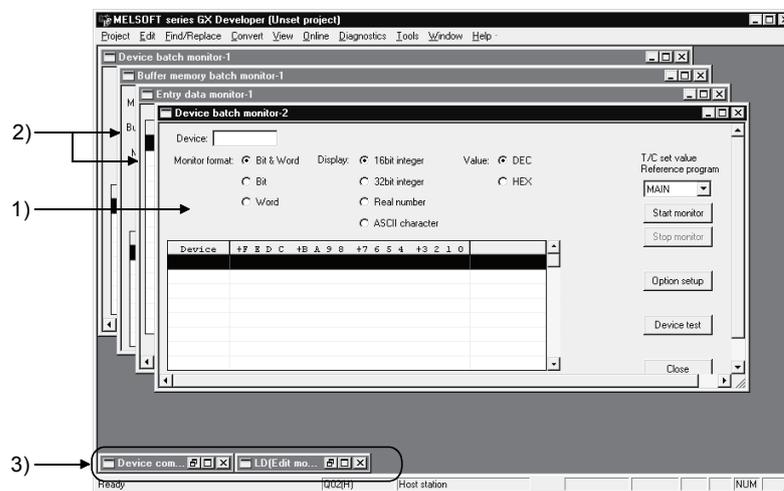
[Description]
1) Active window
   If [Cascade] is selected, the sheet currently being edited is brought to the top. When [Arrange horizontally] or [Arrange vertically] is selected, the window being edited is brought to the top left of the screen.

2) Non-active window
   When [Cascade] is selected, windows that are not being edited are moved to the back.

3) Icon
   When [Arrange icons] is executed, icons (minimized windows) are arranged on the bottom line of the screen.

POINT
To close multiple windows at once, select [Window] → [Close all windows].

15.14 Opening a Specific Project Using a Shortcut

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Creates the start setting file that is to act as the shortcut to a particular project.
Just by opening the start setting file, or double-clicking an icon, GX Developer can
be started up and a project opened.

[Operating Procedure]
Select [Tools] → [Create Start-up setting file].

[Dialog Box]
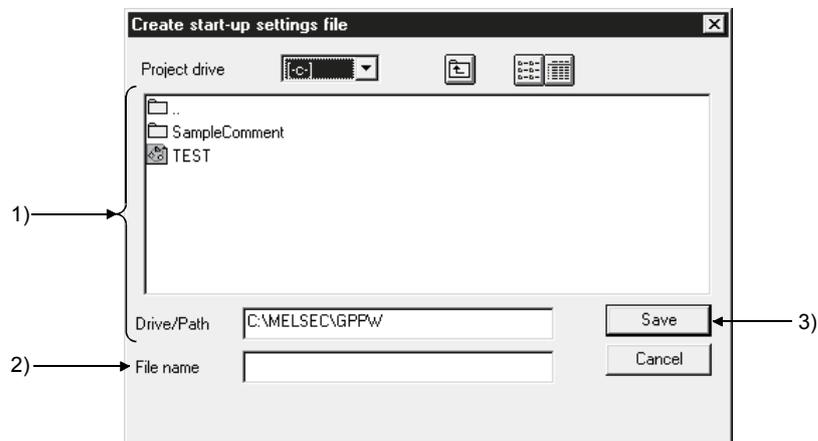
[Description]
1) Project drive, Drive/path
   Sets where the start setting file is saved.

2) File name
   Sets the start setting file name.

3) Save button
   Click this button after setting all the necessary settings.

POINT

- It is convenient to set the start setting files of frequently opened projects in the desktop.
- Initialization files have the extension "~.GPS."
  The icon at initial setting is as follows.

Test.gps

15.15 Starting the Ladder Logic Test Tool

A	Q/QnA	QS	FX
◯	◯	×	◯

[Purpose]

Starts the GX Simulator from GX Developer and carries out debugging offline.

[Operating Procedure]

Select [Tools] → [Start ladder logic test], or click 🔲.

[Description]

Starting GX Simulator causes the ladder displayed on GX Developer to be automatically put in the monitor mode.

For label programming

For label programs, only execute programs compiled may be executed.

For programs not yet compiled, perform [Convert] → [Compile].

For details of various functions of GX Simulator, refer to the GX Simulator Operating Manual.

POINT
The GX Simulator is available as an option. It must be purchased separately to debug programs offline.

15.16 Outline of Help Function

A	Q/QnA	QS	FX
○	○	○	○

The help function reproduces some of the information in this manual and the programmable controller manual.
Information can be checked on the screen of the personal computer during GX Developer operations.
The help menu is explained below.

Help menu	Details
CPU error	Displays details of the error codes listed in the User's Manuals for each CPU and elsewhere. Error codes read during PLC diagnosis can be checked at the personal computer.
Special relays/registers	Displays explanations of special relays and special registers, classified by function and device number. Allows you to check special relays and special registers during program creation and monitoring.
Shortcut key list	Displays shortcut keys for shortcuts to the menu in GX Developer, and lists the key allocations for key customization for ladder creation.
Product information	Displays information about the product, such as the GX Developer version.
Connect to MELFANSweb	Connect to MELFANSweb.

POINT

When Help is run using Windows Vista® , the following "Windows Help and Support" screen may appear, and the Help screen is not displayed.

Perform the following procedure to install "WinHlp32.exe" which is needed to display the Help screen. (Note: The personal computer needs to be connected to the internet.)
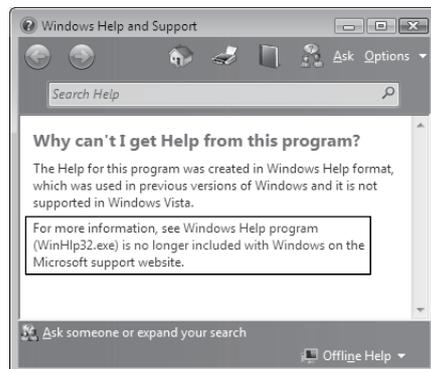
(1) Click the Help button.

(2) The screen shown left opens. Click the link section.

(3) The Microsoft Support Knowledge Base page opens.
(http://support.microsoft.com/kb/917607/en-us)
Follow the instruction and download the Windows Help program for Windows Vista® (WinHlp32.exe).

(4) Install the file that has been downloaded.

15.17 Starting CC-Link Configurator

A	Q/QnA	QS	FX
×	○*	×	×

∗: Compatible with QCPU (Q mode).

Installing GX Configurator-CC Version 1.10L (SW0D5C-J61P) or later enables
[Tools] → [Start CC-Link Configurator] to be selected.
This menu does not appear if GX Configurator-CC Version 1.10L (SW0D5C-J61P)
or later is installed in GX Developer (SW6D5C-GPPW) or earlier.

15.18 Starting Protocol FB Support Function

A	Q/QnA	QS	FX
×	○*	×	×

∗: Compatible with QCPU (Q mode) only.

When GX Configurator-SC Version 2.00A (SW2D5C-QSCU) or later is installed,
[Tools] → [FB support function] can be selected.
The above menu will not be displayed even when GX Configurator-SC Version 2.00A
(SW2D5C-QSCU) or later is installed to GX Developer Version 7 (SWED5C-GPPW)
or earlier.

MEMO

16. CONNECTING A PROGRAMMABLE CONTROLLER

16.1 Specifying the Connection Target

POINT

(1) "Transfer setup" cannot be performed during monitoring of a programmable controller.
To perform, place all open ladder editing screens in write or read mode, and close all monitor screens.

(2) Precautions for access to the other stations of the MELSECNET (II, /10) via the computer link unit (for A series) or E71
GX Developer recognizes the MELSECNET/10 as the MELSECNET (II) when the other stations are to be accessed via the computer link unit (for A series) or E71. When the same station exists on the MELSECNET (II) and MELSECNET/10, the other stations beyond the MELSECNET/10 may not be accessed if Via MELSECNET/10 has been selected in Connection Setup. (Because communications from the station of the unit set in the "Unit valid for other station access" network parameter are executed.)
When you want to access all other stations via the computer link unit (for A series) or E71, do not set the same station number on the networks.

(3) When the MELSECNET/10 /CC-Link card is used, the time check is fixed to 30 seconds.

(4) Precautions for access to the motion controller (SCPU) via the MELSECNET (II, /10)
• Set the A171SH/A172SH as the A2SH.
• Set the A273UH(S3) as the A3U.
In this case, the instructions dedicated to the motion controller (SCPU) cannot be used.

(5) A communications error may occur if communications are made with the programmable controller after setting the resume function, suspend setting, power-saving function or standby mode of the personal computer. Hence, any of the above functions should not be set for making communications with the programmable controller.

(6) Connecting/disconnecting the USB cable, resetting the programmable controller, or switching power OFF/ON frequently during communications with the programmable controller can cause a communication error, from which recovery may not be made.
Hence, place GX Developer in an offline status∗ where possible before connecting/disconnecting the USB cable, resetting the programmable controller, or switching power OFF/ON.
If recovery cannot be made from the communications error, completely disconnect the USB cable once and reconnect it in more than five seconds. (Even after this operation, an error may occur at the initial communication, but communications will be made properly at the second time and later.)
∗ Offline status: Indicates the status other than PLC write/read, monitor, test and PLC diagnostic

(7) Communication errors may occur depending on the type of personal computer used or USB cable assembly In this case.
Please execute communication again according to the error message contents.

POINT

(8) When fast communication is made after the transmission speed has been changed on the personal computer's serial port (personal computer side interface), communications may not be made or communications retries may take place to delay communications, depending on the performance of the personal computer.
If communications cannot be made in fast communication, reduce the transmission speed and make communication.

(9) Other station access cannot be made for the 171SHCPU and A172SHCPU of the motion controller (SCPU).
Access may be made to only the own station.

(10)Do not reset the programmable controller when starting GX Developer on Windows® 2000 and making communications with the programmable controller using the USB cable.
If you reset the programmable controller during communications using the USB cable, the following dialog box will appear and the USB driver will be removed.
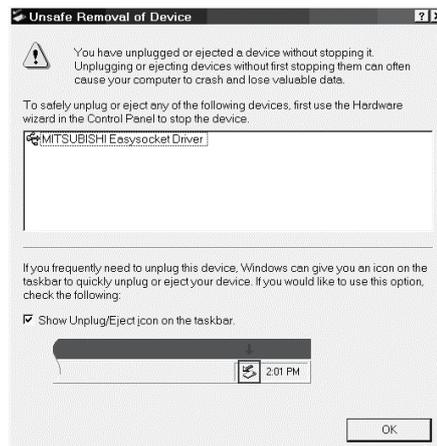
Take the following action when the above dialog box has appeared.
• Click the OK button and remove the USB driver once.

(11)When the serial communication function is used to make communication between the Basic Model QCPU and external device, perform the following operation to change the other end device for GX Developer.

When making connection from GX Developer, match the transmission speed to that set in Serial communication setting.
Refer to Section 16.1.1 for operation.

16.1.1 When accessing the host station

POINT
(1) An underline on the setting screen indicates that detailed setting can be made by double-clicking it. The icons displayed can be selected. The icon shown yellow means that it has already been selected.
(2) When GX Developer is running on an the OS (e.g. Windows NT® Workstation 4.0) that does not support the USB interface, "USB" will not be displayed in the personal computer side interface setting.

16.1.1(1) When accessing the host station (serial/USB connection)

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
  Specify the connection target when accessing the host station via serial port or USB.

[Operating Procedure]
  Select [Online] → [Transfer setup].

[Dialog Box]
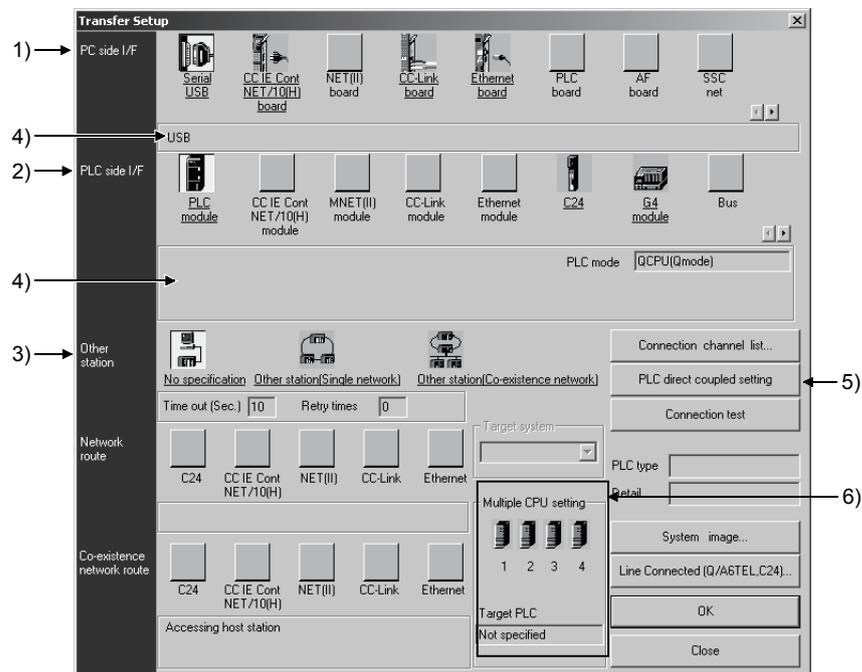
[Description]
1) PC side I/F

For Q series

PC side I/F Serial setting

○ RS-232C   OK

○ USB   Cancel

COM port   COM 1

Transmission speed   115.2Kbps
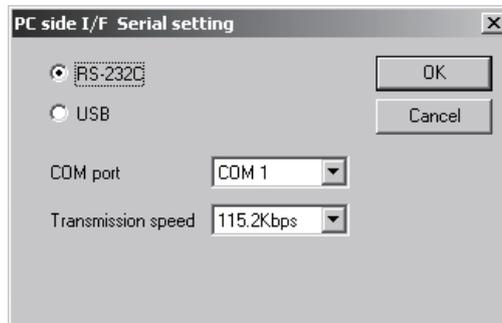
- USB may be set only when the QCPU (Q mode) has been selected.
- Precautions for communication at 115.2/57.6kbps
  Fast communication cannot be made if the personal computer used is not compatible with the communication speed of 115.2/57.6kbps.
  If communications delay due to communications tries or a communication error occurs, reduce the transmission speed setting and restart communication.
- Refer to (5), (6), (7) in POINT of Section 16.1 for precautions for making USB communication.

QnA/A series

PC side I/F Serial setting

COM port   COM 1   OK

Transmission speed   19.2Kbps   Cancel
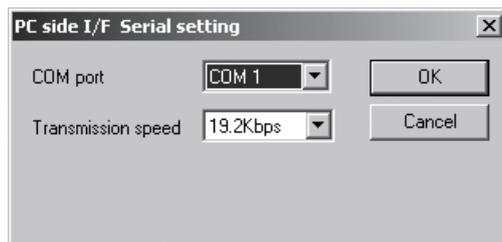
- The transmission speed value that may be chosen differs between the PLC series and PLC types.
- Select 9.6kbps for the A series.
- For the QnA series, the CPU that can communicate at the communication speed of 38.4kbps is the QnACPU whose function version is B or later. Refer to Appendix 7 for the way to identify the unit version.

FX series
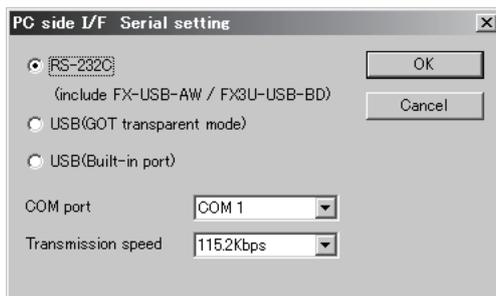
- "USB (Built-in port)" is displayed only when "FX3G" is selected at "PLC Type".
- The following table shows the FX series and the compatible transmission speeds.

Communication speed	FX0 FX0S	FX0N	FX1	FX2 FX2C	FX1S	FX1N FX1NC	FX2N FX2NC	FX3G	FX3U FX3UC
9.6kbps	○	○	○	○	○	○	○	○	○
19.2kbps	—	—	—	—	—	○	○	○	○
38.4kbps	—	—	—	—	—	—	—	○	○
57.6kbps	—	—	—	—	—	—	—	○	○
115.2kbps	—	—	—	—	—	—	—	○	○

- When the FX3G, FX3U and FX3UC are connected, the FX-232AWC-H or FX-USB-AW is required for communication at 38.4kbps, 57.6kbps or 115.2kbps.

2) PLC side I/F
Choose the PLC series of the programmable controller to be connected with GX Developer.
For A series
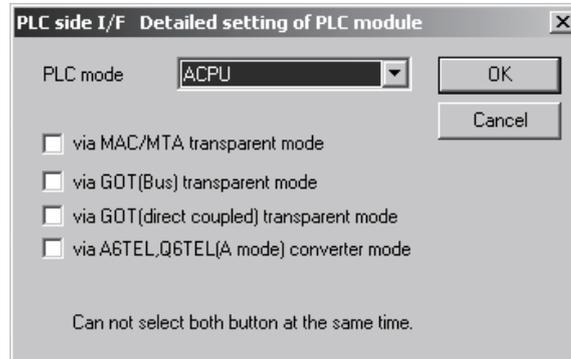
- Via MAC/MTA transparent mode (A/FX only)
  Please make settings only when using MAC/MTA.
- For details on GOT transparent mode, refer to Section 16.2.5.
- Refer to Section 22.3.3 when using the A6TEL, Q6TEL (A mode) as a converter.
- In the FX series, "via GOT (Bus) transparent mode" and "via A6TEL, Q6TEL(A mode) converter mode" are not displayed.
  "via GOT-F900 transparent mode" is displayed for the FX3GCPU, FX3UCPU, and FX3UCCPU instead of "via GOT (direct coupled) transparent mode".

3) Other station
Choose No specification when specifying the own station.
When power-off, hardware reset or the like of the programmable controller is performed during ladder monitor, it will take time until a communications error appears.
Until the error appears, during execution is displayed in Monitor status.
The longest time until the error appears can be found by the following expression.
(Time specified for communications time check) $\times 3 \times$ (Count specified for the number of retries + 1)
For example, when the communications time check is specified as 30 seconds and the number of retries as 0 times, the resultant time is (30 seconds) $\times 3 \times$ (0 + 1) = 90 seconds, and the error appears after a maximum of 90 seconds have elapsed.

4) Detailed setting display field
This field displays the setting status.

5) $\boxed{\text{PLC direct coupled setting}}$ button
This button is useful to change from Other station to the own station.

6) Multiple CPU Setting
Refer to Section 16.1.3 (1).

16.1.1(2) When accessing the host station (Ethernet connection)

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with the Built-in Ethernet port QCPU only.

[Purpose]

Specify the connection target when accessing the Built-in Ethernet port QCPU via Ethernet.

[Operating Procedure]

Select [Online] → [Transfer setup].

[Dialog Box]
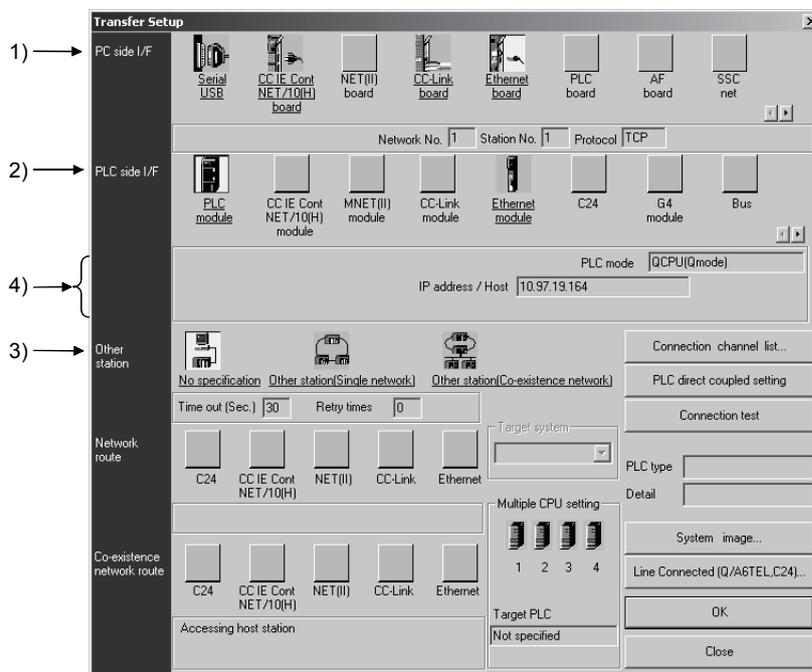
[Description]
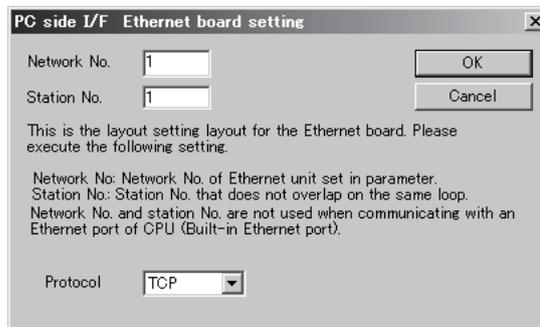
1) PC side I/F

- Setting Network No. and Station No. are unnecessary since they are not used.

2) PLC side I/F
Select a series of the programmable controller CPU to be connected to GX Developer.
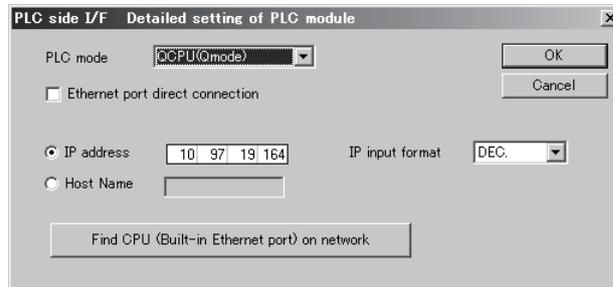
- Select Ethernet port direct connection when connecting the personal computer and programmable controller CPU with Ethernet cable directly.
- Set an IP address assigned to the CPU module to be connected at IP address.
  When selecting Host Name, set the name set to hosts file within 64 characters.
- Clicking the | Find CPU (Built-in Ethernet port) on network | button opens the Find CPU (Built-in Ethernet port) screen.
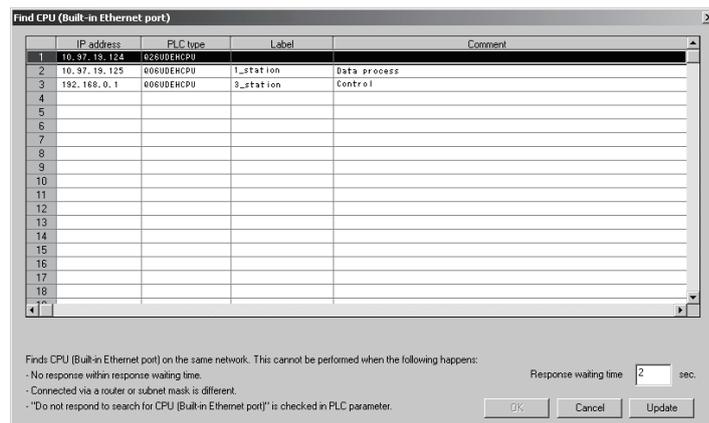
When this screen is open, CPUs on the network are searched and the search result is displayed.
To change the response wait time of built-in Ethernet port CPU, input a value of 1 to 99 and click the | Update | button.
Clicking the | OK | button sets the IP address on selected line to IP address field on the PLC side I/F Detailed setting of PLC module screen.

3) Other station
Choose No specification when specifying the host station.
If powering off the programmable controller CPU or resetting the hardware during ladder monitoring, it will take time until a communication error is displayed.
Until an error is displayed, during execution is displayed in Monitor status.

4) Detailed setting display field
This field shows the setting status.

16.1.2 When accessing another station

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
  • A series and Q/QnA series
Specify another station when accessing another station.
  • FX series (FX3UCPU and FX3UCCPU only)
Specify another station when accessing another station (single network) via the QCPU
(Q mode) in CC-Link connection.

[Operating Procedure]
  Select [Online] → [Transfer Setup].

[Dialog Box]
  When specifying another station, it will be convenient to specify the connection
  target while looking at the connection channel diagram from Connection channel list.

POINT

An underline on the setting screen indicates that detailed setting can be made by
double-clicking it.
The icons displayed can be selected.
The icon shown yellow means that it has already been selected.

[Description]
1) PC side I/F
Refer to Section 16.1.1
When using GX Developer on the PC CPU module
The following six access paths are supported.

Path	Remarks
Serial	—
USB	—
Q series bus	Choose 🖳 to access the other CPU.
MELSECNET/H MELSECNET/10 CC-Link IE controller network	• Choose the CC-Link IE controller network board, MELSECNET/10(H) board. • Access to the other station requires the PPC-DRV-01 bus interface driver.
CC-Link	• Choose the CC-Link board. • Access to the other station requires the PPC-DRV-01 bus interface driver.
Ethernet	Access to the other station can be made by the Ethernet module communication port equipped for the PC CPU module as standard.

2) PLC side I/F
Choose the unit to be connected with the personal computer.
Refer to Section 16.1.1

3) Other station
What is Single network?
It is a system which is configured by a single network (such as
MELSECNET/10(H), Ethernet) and a multilevel system.
(Ethernet is regarded as the CC-Link IE controller network and
MELSECNET/10(H), specify Single network for Ethernet, CC-Link IE
controller network, and MELSECNET/10(H) mixed system.)

What is Coexistence network?
Set this network when making access to the other station programmable
controller via two different networks.
This network indicates a system which is made up of different networks, e.g.
from MELSECNET/10(H) to CC-Link unit or from Q-compatible C24/QC24 to
MELSECNET/10(H).
This item cannot be selected for the A series and FX series.

4) Network route
When Single network is selected
Choose the network type, network No., station number and first I/O No. to be
accessed.
The setting items depend on the network type that has been set.
When Coexistence network is selected
Choose this when making access to the network different from the one
where the personal computer is connected.

5) Coexistence network route
Choose the network type, network No., station number and first I/O No. to be
accessed.
The setting items depend on the network type that has been set.

6) Detailed setting display field
    This field displays the setting status.

7) Connection channel list button
    You can set the connection target while looking at the Connection channel list.
    As clicking OK automatically sets the connection channel on the Connection
    Setup screen, settings can be made easily if a complicated system is
    configured. Set the network number, station number and others as desired
    according to the access target.

Click OK
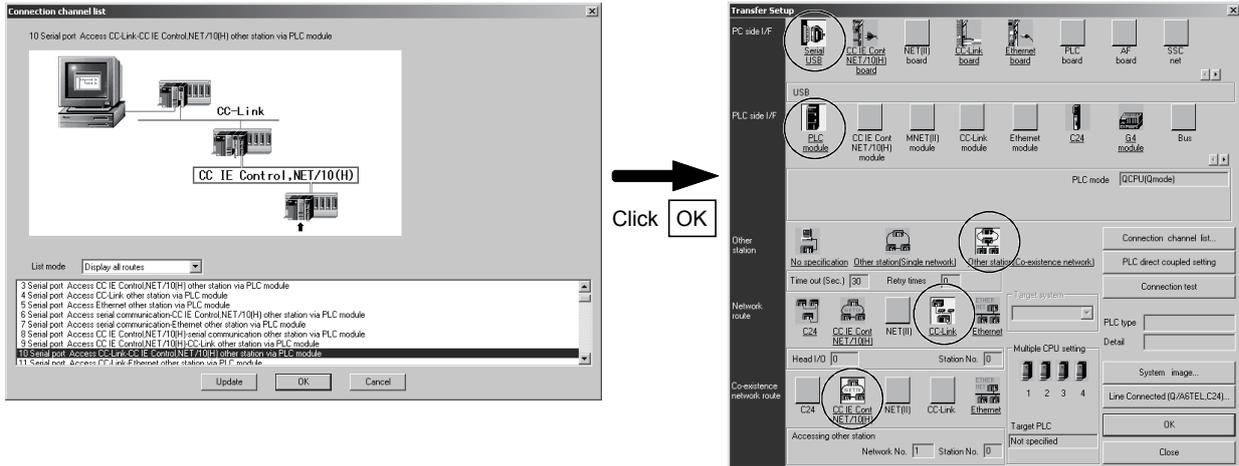
Clicking the OK button automatically sets the connection channel (areas
enclosed by circles) on the Connection Setup screen.

Changing from one display to another
Convenient usage of Display selected routes
When Display selected routes are selected by specifying the PC side I/F and
PLC side I/F on the Connection Setup screen, only the routes in the accessible
range are displayed from among the other station, network route and
coexistence network route.

A list of system configurations different in series can also be displayed.

Request Source	PC-Connected programmable controller	Relay Station	Access Target
Personal computer	QCPU (Q mode)	QCPU (Q mode)	Q series
			QnA series
			A series
			FX series (FX3U and FX3UC only)

QCPU (Q mode)

QnA,ACPU
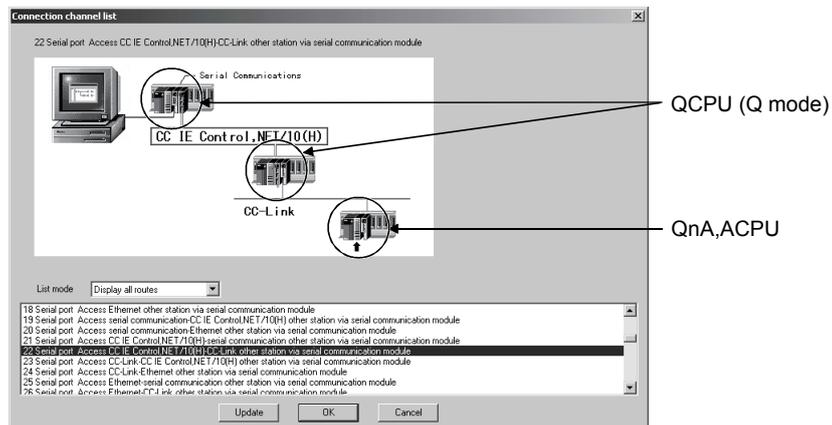
8) Connection test button
Tests whether proper access can be made to the programmable controller set as the access target on the Connection Setup screen.
If proper access can be made, the model name of the programmable controller as the access target appears in the CPU type field.

9) System image button
Illustrates the preset connection channel.

10) Line connection (Q/A6TEL, C24) button
Set when using a telephone line to make communication.
Refer to Section 22.4 for the way to set the Line connection setting screen.
In the FX series, the TEL(FXCPU) button is displayed instead.

11) Multiple CPU setting
Specify when the access target is multiple CPUs.
For details, refer to Section 16.1.3 (2).
This item cannot be specified for the FX series.

[Connection Setup screen setting example]

(1)   Screen setting for CC-Link IE controller network, MELSECNET/10(H) and
Ethernet combined system (Single network)

In an CC-Link IE controller network, MELSECNET/10(H) and Ethernet mixed
system configuration, specify Single network to access the other station. (Since
Ethernet is equivalent to the MELSECNET/10)

An example of the Connection Setup setting screen is provided for the following
system configuration (Q/QnA only).

For access to the other station or multilevel system, not only the Connection Setup but also the
routing parameters should be set to enable communications.

(2) Screen setting for MELSECNET/H, MELSECNET/10(H) and C24 mixed system (Coexistence network)

Specify Coexistence network when accessing the other station via different networks, e.g. from MELSECNET/H, MELSECNET/10(H) to Q-compatible C24/QC24.

An example of the Connection Setup setting screen is provided for the following system configuration (Q/QnA only).
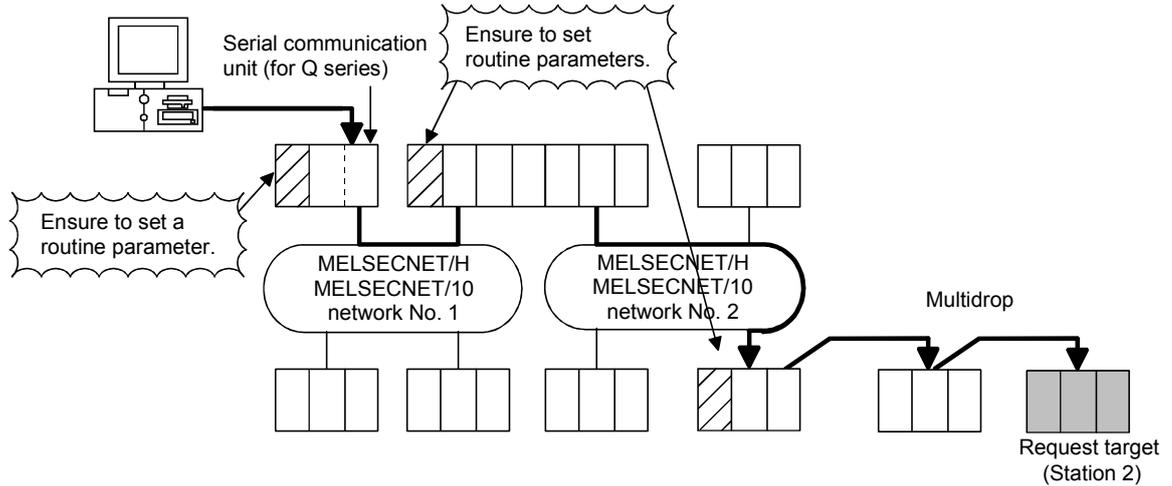
REMARK

(1) Precautions are indicated for when accessing to other station like the following system example.
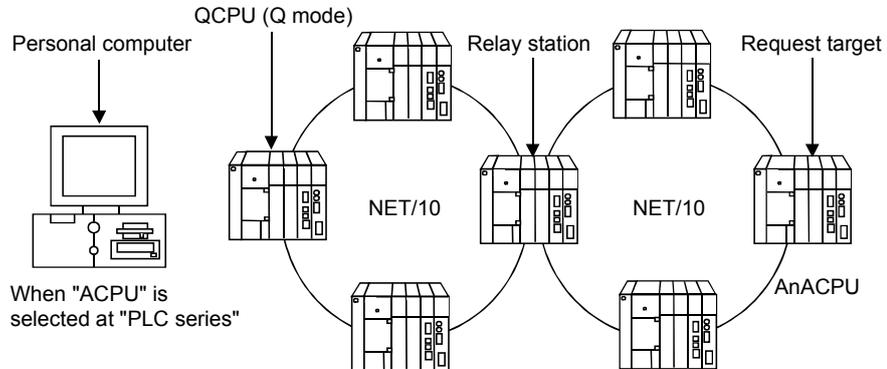
1. Change the personal computer to the PLC type of the request target. Communication cannot be made if the PLC type differs.
2. The relay station used should be the QCPU (Q mode), AnUCPU.

(2) The following shows setting procedure when the FX3U series or FX3UC series is accessed via the QCPU (Q mode).
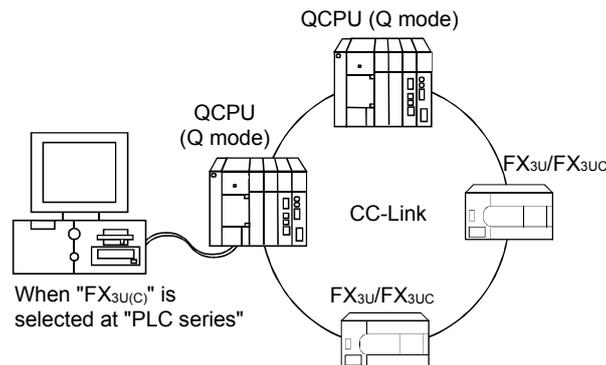
1. Open the FX3U(C) project.
2. Set "QCPU (Q mode)" at "PLC mode" in the "PLC side I/F Detailed setting of PLC module".
3. Make setting for communication with the QCPU (Q mode) in the "PC side I/F Serial setting."
4. Make settings in the "Other station Detailed setting".
5. Set "Station No." of the FX3U(C) and "Head I/O" of the CC-Link module mounted with the QCPU (Q mode) in the "Network communication route Detailed setting of CC-Link".

16.1.3 When accessing multiple CPU system

16.1.3 (1) Access to other CPU in multiple CPU system

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with QCPU (Q mode) only.
(Q00JCPU, Redundant CPU is not relevant.)

[Purpose]
Specify when accessing multiple CPU system.

[Operating Procedure]
Select [Online] → [Connection setup].

[Dialog Box]
The following setting example assumes that the personal computer is connected to the PLC No. 1 by a cable to access the PLC No. 4.
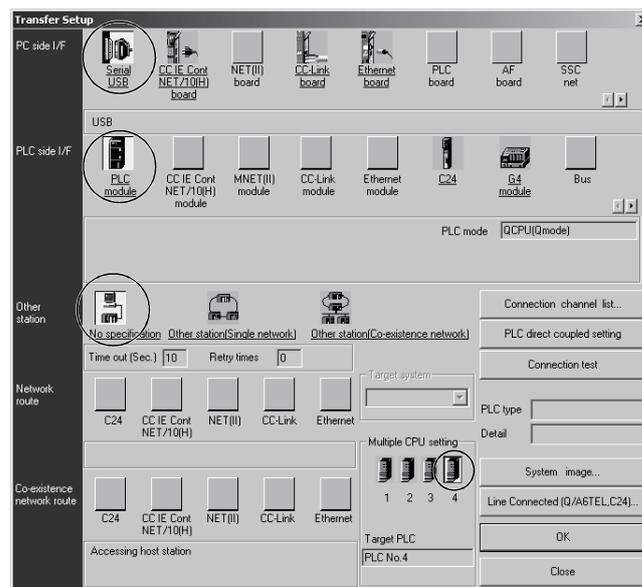
[Description]
When accessing other than the connected programmable controller, always specify the PLC No. to be accessed in Multiple CPU setting.
In the case of Basic model QCPU, PLC No. 1 to 3 can be specified.
In the case of High Performance model QCPU or Process CPU, Universal model QCPU, PLC No. 1 to 4 can be specified.
Note that if it is not specified in Multiple CPU setting, access will be made to the programmable controller with which the cable is connected.

How to set "No PLC No. specified" in Multiple CPU setting
No PLC No. specified is indicated by the icons of the PLC No. 1 to PLC No. 4 modules in Multiple CPU setting which are not selected (when selected, the icons are shown yellow).
When the icons of the PLC No. 1 to PLC No. 4 modules have been selected, clicking the selected icon sets it to "No PLC No. specified".
When "No PLC No. specified" has been set, access is made to the programmable controller connected by the RS232/USB cable.

An example on the above setting screen is shown by the following image sketch.

Cable

Power
supply

1) :PLC No.1
2) :PLC No.2
3) :PLC No.3
4) :PLC No.4

1)   2)   3)   4)

QCPU (Q mode)
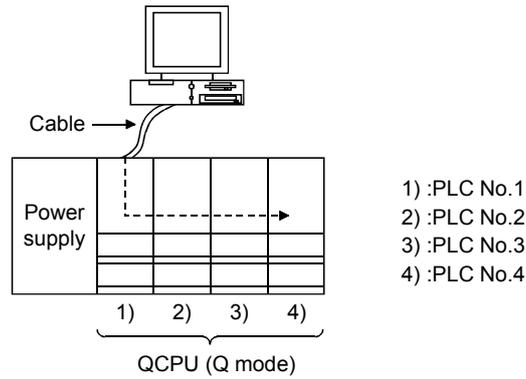
Restrictions on access to the programmable controller and Q motion CPU
You cannot start GX Developer and GSV to access the programmable controller
and Q motion controller at the same time.

<Connection example>

QCPU (Q mode)   Q motion controller CPU

GX Developer   GX Developer   GSV
                           GSV
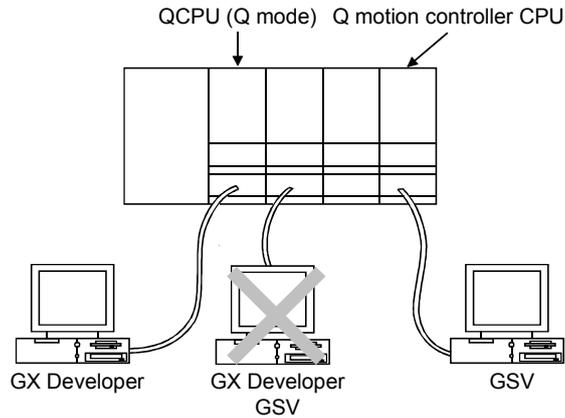
POINT
• The Q motion CPU is incompatible with GX Developer. Accordingly, do not connect GX Developer to the Q motion CPU. Accidental connection will cause a communication error. In that case, reconnect it to the PLC CPU.

16.1.3 (2) Network access via multiple CPU system

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Compatible with QCPU (Q mode)
(except Q00JCPU).

[Purpose]
Access is made to any network station under control of the own module.

[Operating Procedure]
Select [Online] → [Connection setup].

[Dialog Box]
The following setting assumes that access will be made to the accessed station
(PLC No. 1 to PLC No. 4 modules) in [Description].
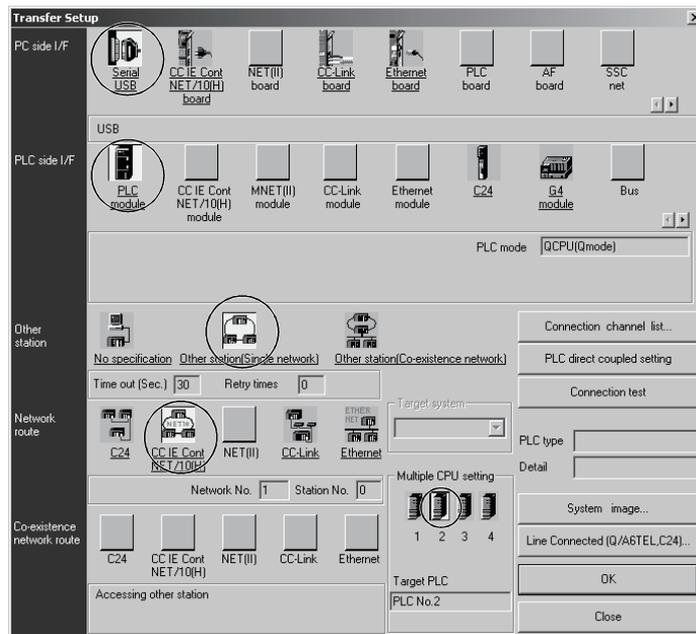
[Description]
 The concept of an access path in the following system configuration will be
 described.
 When access is made to non-control PLC as module used for routing of the
 accessed other station in a Multiple CPU system, the relay modules and QCPUs of
 the own station, all relay stations and accessed station should be the modules of
 function version B.
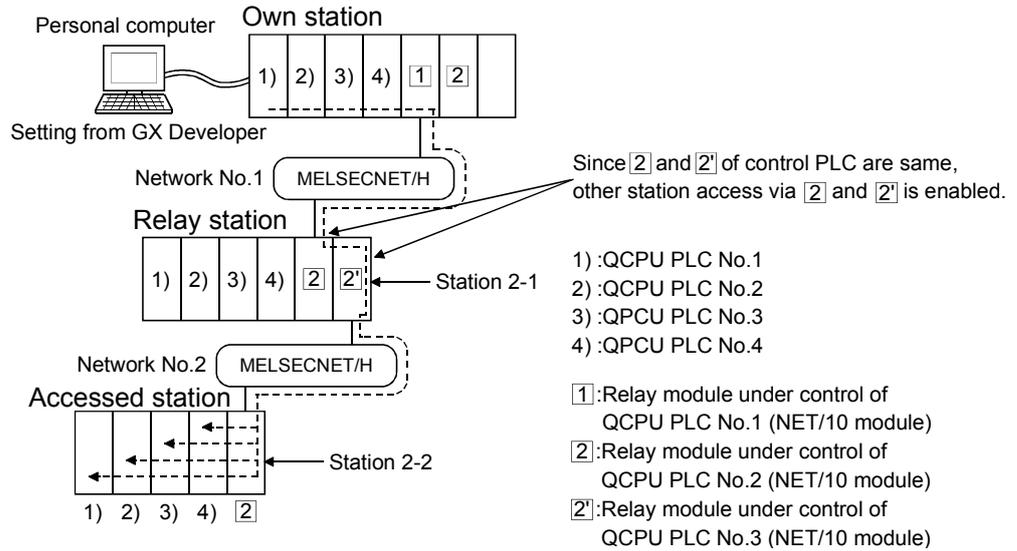
Precautions for and restrictions on access to other station
(1)   When accessing the CPU controlled or not controlled by the accessed station,
      change the accessed module in "Multiple CPU setting" on the Connection setup
      screen.
(2)   Assign the two network modules on the relay station to the same control CPU.

(3)   When the network module of the accessed station is that of function version B,
      access can be made to PLC No. 1 to PLC No. 4 modules.
      When the network module of the accessed station is that of function version A,
      access may be made to only the control CPU by the network module (PLC No.
      1).
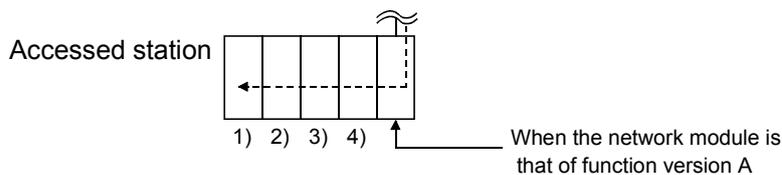
┌───┐
│   POINT   │
├───┤
│ Setting the routing parameters of the MELSECNET/H, MELSECNET/10, CC-Link │
│ IE controller network (including Ethernet) allows access to the other station CPU │
│ within the range of the network system specifications.   │
└───┘

16.1.4 When accessing the Redundant CPU

A	Q/QnA	QS	FX
×	○∗	×	×

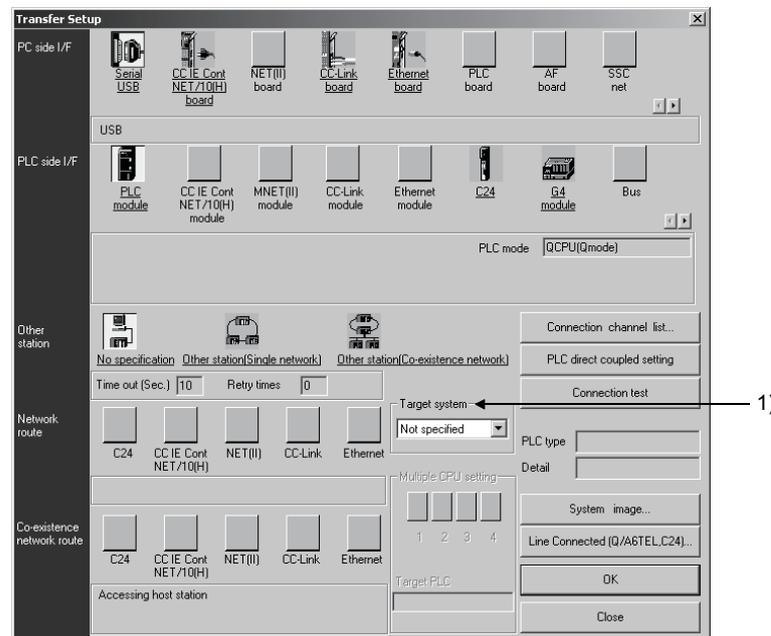∗: Compatible with Redundant CPU only.

[Purpose]
Make setting when accessing the Redundant CPU.

[Operation Procedure]
Select [Online] - [Transfer setup].

[Dialog Box]

[Explanation]
1) Target system
When configuring a system with the redundant CPU, specify the connection destination as described below. ∗1, ∗2

Choice	Connection destination
No specified system	When CPU is directly connected: 　Programmable controller directly connected to the personal computer Via main base unit: 　Programmable controller at the station where the network module of the specified station No. is installed in the network communication path Via extension base unit: 　Connecting to the programmable controller set as the control system
Control system	Programmable controller whose system type is the control system
Standby system	Programmable controller whose system type is the standby system
System A	Programmable controller fitted with the A side connector of the tracking cable
System B	Programmable controller fitted with the B side connector of the tracking cable

∗1: When the following functions are executed on GX Developer of 1) and 2) with the system shown in the following figure, select No specified system, System A, or System B for "Target system".

- Sampling trace
- Monitor condition setup
- Monitor stop condition setup
- Program monitor list
- Interrupt program monitor list

- Online module change
- Local device monitor
- Scan time measurement
- Forced input output registration/cancellation

<Connecting GX Developer with Redundant CPU>
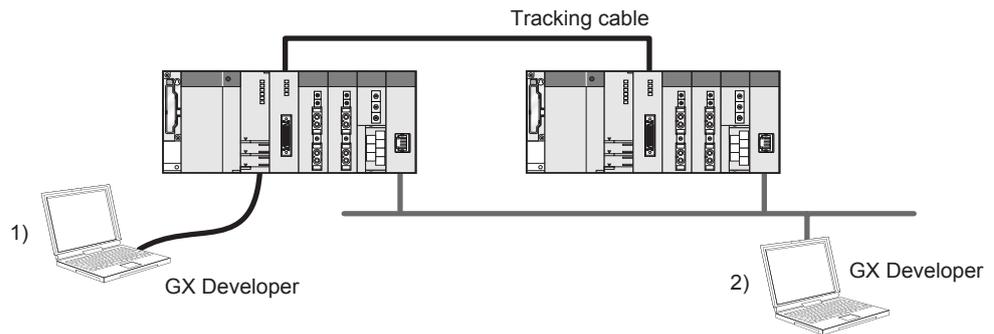
1) Connection when the CPU is directly connected
2) Connection via the intelligent function module on the main base

∗2: When Redundant CPU is accessed via the intelligent function module on the extension base, some functions with the target system on the Transfer Setup screen cannot be executed as shown in the next page.

<Connecting GX Developer with Redundant CPU>
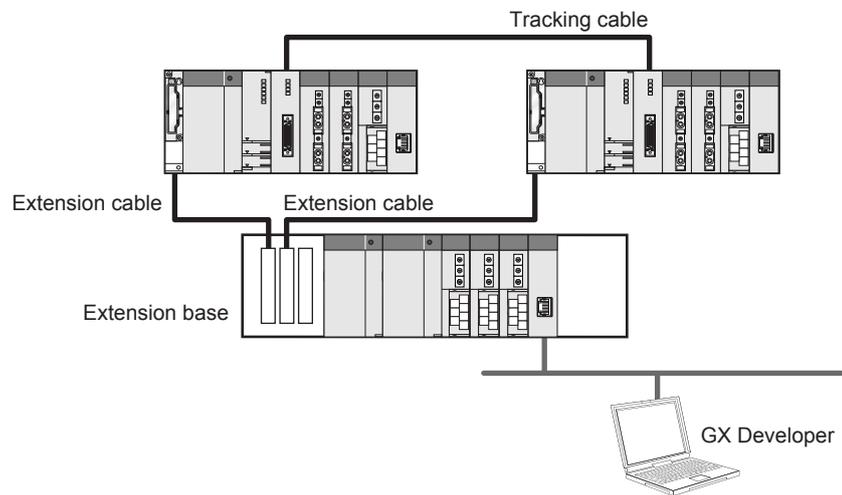
Inexecutable functions with Target system via extension base unit

Function / Target system	System A System B	No specified system Control system Standby system	Restrictions
online change	×	×	
Change TC setting	×	×	
Read from PLC	○	×	
Write to PLC	×	×	
Verify with PLC	○	×	
Delete PLC data	○	×	
Redundant operation	○	△	The system switching and the mode switching cannot be executed.
Clear PLC memory	○	△	The clear all file registers cannot be executed.
Arrange PLC memory	×	×	
Write the program memory to ROM	×	×	
Write to PLC (Flash ROM)	×	×	
Read PLC user data	○	×	
Write PLC user data	×	×	
Delete PLC user data	○	×	
Monitor mode	○	△	Monitoring SFC programs cannot be executed.
Monitor (Write mode)	○	△	Monitoring SFC programs cannot be executed. The data verify cannot be executed.
Start monitor (All windows)	○	△	Monitoring SFC programs cannot be executed.
Stop monitor (All windows)	○	△	Monitoring SFC programs cannot be executed.
Start monitor	○	△	Monitoring SFC programs cannot be executed.
Stop monitor	○	△	Monitoring SFC programs cannot be executed.
Local device monitor	○	×	
Monitor condition setup	×	×	
Program monitor list	○	×	
Interrupt program monitor list	○	×	
Scan time measurement	○	×	
All Block Batch Monitor(SFC)	○	×	
Automatic scroll monitoring	○	×	
Trace(Sampling trace)	×	×	
password registration	Register keyword	○	×	
password registration	Delete keyword	○	×	
password registration	Disable keyword	○	×	
MELSECNET diagnostics	△	×	Network test, loop test, setup confirmation test, station order check test, and communication test cannot be executed.
Online module change	○	×	
Confirming project memory size	○	△	The confirming project memory size cannot be executed with the online mode.

○: Executable   △: Executable with restrictions   ×: Inexecutable

POINT

Connection, Target system
In this manual, the following connection system/target system terms are used to express the redundant CPUs.

Connection system: Redundant CPU selected on the connection setup screen.

Target system   : The other redundant CPU connected to the connection system by the tracking cable.

1) When CPU is directly connects
   The following provides an example of access made by direct connection to the target system.

   • When the target system is set to "Target system"

Connection system   Target system

Tracking cable

GX Developer

The transfer setup is the setting shown on the [Dialog Box] on the previous page.

2) When network is routed
   The following gives an example of access to the Redundant CPU via the station No. 1 network module on Ethernet network No. 1.

   • When the target system is set to "No settings have been made"

Connection system   Network No.: 1   Target system   Network No.: 1
                           Station No.: 1   Station No.: 2

Tracking cable

Ethernet

GX Developer

[Operation performed when system switching occurs in Redundant CPU]

When system switching occurs during access to the Redundant CPU, access is continued as described below.

This becomes valid when the target system on the Transfer setup screen is set to the "Control system" or "Standby system".

Example of "Control system" setting

GX Developer

Control system   Standby system

Tracking cable

Connection to control system via standby

GX Developer

Standby system   Control system

Tracking cable
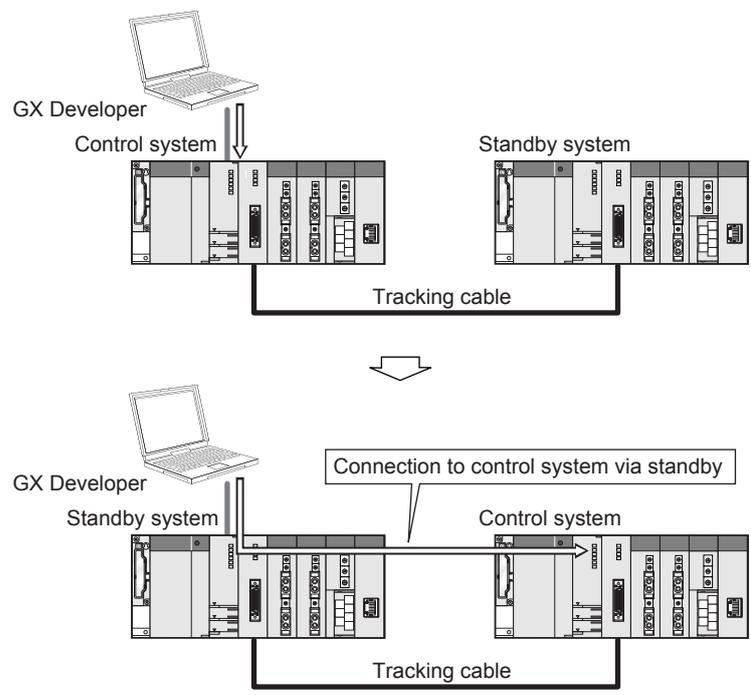
[Operation performed when communication error occurs during monitor (route switching)]

If a communication error occurs on the route of communication with the Redundant CPU, the communication route is automatically switched to continue monitor of the system specified in the transfer setup. This automatic switching of the communication route is called route switching.

(1) Route switching conditions

When the following conditions (a) to (c) are satisfied, access to the Redundant CPU is continued by route switching.

(a) Functions that enable route switching

Function	Restrictions
1. Ladder monitor 2. List monitor 3. ST monitor 4. Device batch monitor 5. Device registration monitor	• When the monitor function other than 1 to 5 indicated on the left is being used, all monitor functions are put in a monitor stop status. • The function is placed in a monitor stop status when the local device monitor target program is changed after route switching. • When any of the following statuses has occurred at the point of a communication start, communication by route switching cannot be continued, resulting in a communication error. 1) Access cannot be made to the connection system. 2) Either Redundant CPU has been powered off or reset. 3) Communication is disabled between the Redundant CPUs due to the occurrence of a tracking error.

(b) Monitor conditions

	Condition that enable continuation of monitor
Operation mode	Backup mode, separate mode
"Target system" in Transfer setup	Control system, standby system, System A, System B

(c) Communication route conditions

Personal computer side interface	PLC side interface	Other station setup	Network communication route	Coexistence network communication route
Serial/USB	CPU module	Other station (single network)	CC IE Cont, NET/10(H)	—
			Ethernet	---
		Other station (coexistence network)	C24	CC IE Cont, NET/10(H)
				Ethernet
			CC-Link	CC IE Cont, NET/10(H)
				Ethernet
	C24	Other station (single network)	CC IE Cont, NET/10(H)	—
			Ethernet	—
		Other station (coexistence network)	C24	CC IE Cont, NET/10(H)
			CC-Link	Ethernet
	G4 module	Other station (single network)	CC-Link	CC IE Cont, NET/10(H)
				Ethernet
CC IE Cont, NET/10(H) board	CC IE Cont, NET/10(H) module	Other station (coexistence network)	CC IE Cont, NET/10(H)	—
CC-Link board	CC-Link module	Other station (single network)	CC-Link	CC IE Cont, NET/10(H)
				Ethernet
Ethernet	Ethernet module	Other station (coexistence network)	Ethernet	—

(2) Example of access by route switching
The following shows an example of access made when route switching occurs due to a communication error during monitor of the control system in Ethernet connection.
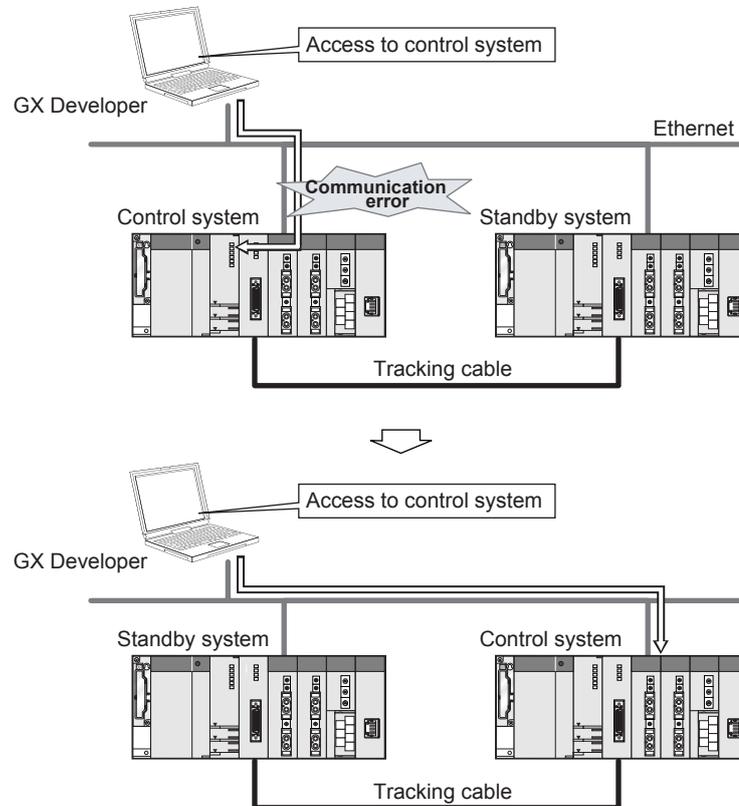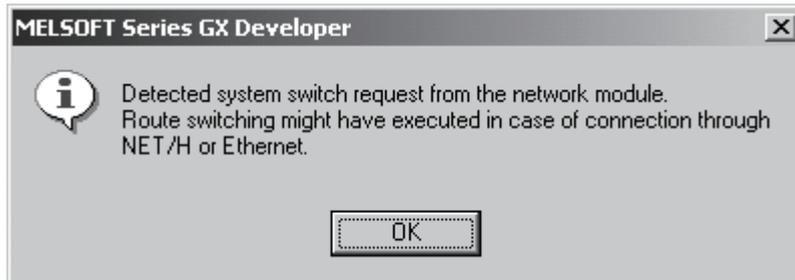
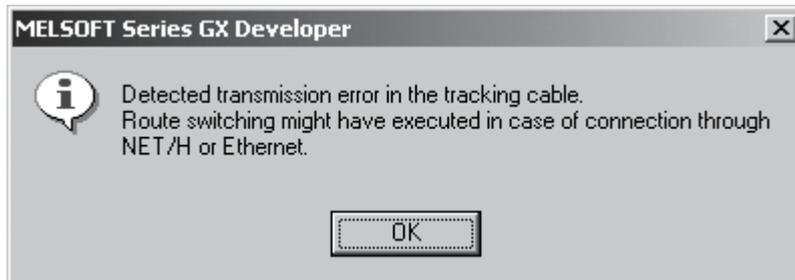**[Route switching occurrence watch function]**

(a) When the following dialog box appears during monitor, route switching may have been executed.
Following the messages displayed on the dialog box, check the corresponding position and take corrective action to remove the route switching occurrence condition.

<When system switching request is issued from network module>

MELSOFT Series GX Developer	✕
ⓘ Detected system switch request from the network module. Route switching might have executed in case of connection through NET/H or Ethernet.	
OK	

<When tracking cable error occurred>

MELSOFT Series GX Developer	✕
ⓘ Detected transmission error in the tracking cable. Route switching might have executed in case of connection through NET/H or Ethernet.	
OK	

(b) Validate the following items in the redundant settings of the Ethernet parameter dialog box. (If they are not validated, route switching cannot be detected.)
   • Issue system switching request at broken wire detection
   • Issue system switching request at communication error

POINT
When route switching occurred, any function other than those indicated in (a) Functions that enable route switching in (1) under [When communication error occurs during monitor] is unavailable. When the above dialog box appears, check the occurrence condition, and re-set the transfer setup as necessary.

16.2 Access via Ethernet, CC-Link, G4 module, C24, telephone line or GOT

16.2.1 Setting method for communication via the Ethernet board

16.2.1 (1) For A series

A	Q/QnA	QS	FX
○	×	×	×

For communication from GX Developer via the E71, there are the following setting items and precautions. The explanations in this section will be made for the following system configuration.

E71(192.168.0.1)

E71(192.168.0.2)
Port No. 500
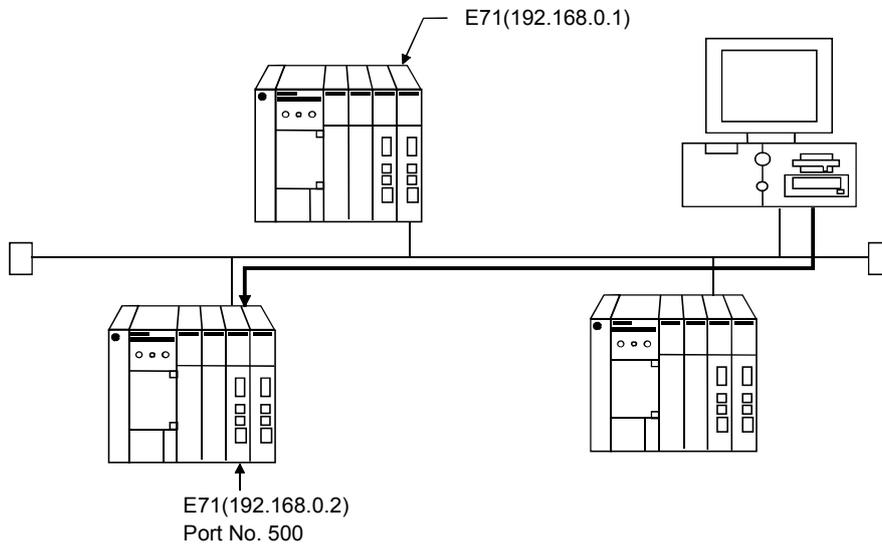
Procedure for communications via E71

Restrictions

(a)   When the AnUCPU type has been started on the personal computer, change the PLC type to the AnACPU.

(b)   Communications can be made only within the same segment. Communication cannot be made via the router or gateway.

(1)   Compatible models

(a)   AJ71E71-S3, AJ71E71N-B2, AJ71E71N-B5T, A1SJ71E71N-B2, A1SJ71E71N-B5T, AJ71E71N-T, A1SJ71E71N-T, AJ71E71N-B5, A1SJ71E71N-B5, AJ71E71N3-T, A1SJ71E71N3-T

(b)   A1SJ71E71-B2-S3, A1SJ71E71-B5-S3

(2)   E71 switch settings

	E71	
	Modules of above (1) Compatible models (a)	Modules of above (1) Compatible models (b)
Operation mode setting switch	0 (online mode)	0 (online mode)
Communications condition setting switch	SW2 OFF (BIN code)	SW2 OFF (BIN code)
CPU communications timing setting switch	SW7 ON (online program correction enabled)	SW3 ON (online program correction enabled)

(3) Sequence program
An initial processing and communication line open processing sequence program is required.
Required communications parameters and a sequence program example are given below.

(a) Communications parameters
The following is an example of setting the communications parameters.

Item	Setting
Application settings＊1	100H
E71's IP address	192.168.0.2
E71 port number	500H
Other node IP address	FFFFFFFF
Other node port number	FFFF(＊2)

＊1: Values specified for application settings

The details of application settings are indicated below.

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6)						5)	4)	3)					2)	1)

The settings of 1), 2), 3) can be changed by the user.
The settings of 4), 5), 6) are fixed.

1) Fixed buffer application
   0: For send/no communications
   1: For receive
2) Existence check
   0: No
   1: Yes
3) Pairing open
   0: No
   1: Yes
4) Communication system (Set to 1: UDP/IP.)
   0: TCP/IP
   1: UDP/IP
5) Fixed buffer communications (Set to 0: With protocol.)
   0: With protocol
   1: Without protocol
6) Open system (Set to 00: Active, UDP/IP.)
   00: Active, UDP/IP
   10: Unpassive
   11: Fullpassive

＊2: The other node port number is fixed.
    The other settings can be changed by the user.

```
* Initial processing
        M9038     X1F                                    * <IPaddress 192.168.0.2        >
    0 ──┤├────────┤/├──────────────────────────[DMOV     H0C0A80002            D100    ]
        Initial   WDT EPF
        processi  detactio
        ng        n
                                                         * <Set IP address              >
                           ├──────────────────────[TO   H0      K0      D100    K2     ]

                                                         * <TURN on Initial request signal >
                           ├───────────────────────────────────[SET     Y19            ]
                                                                          Initial
                                                                          request
        X1A       X1F                                    * <Read initial error code     >
   19 ──┤├────────┤/├──────────────────────────[FROM     H0      K80     D200    K1    ]
        Initial   WDT EPF
        error     detactio
                  n
                                                         * <Turn OFF initial request signal >
                           ├───────────────────────────────────[RST     Y19            ]
                                                                          Initial
                                                                          request
                                                         * <Initial request             >
                           ├───────────────────────────────────[PLF     M102           ]

        M102
   34 ──┤├──┬─────────────────────────────────────────────────[SET     Y17            ]
           │                                                              COM,ERR
           │                                                              OFF
           │                                             * <Clear initial error code    >
           ├──────────────────────────────────[TO      H0      K80     K0      K1     ]

           │                                                    ─────────[RST     Y17            ]
           └──                                                                    COM,ERR
                                                                                  OFF
* Communication open file
        Y19                                              * <Enable stop y8,y19 are OFF   >
   46 ──┤├──────────────────────────────────────[TO     H0      H1F0    H8001   K1     ]
        Initial
        request
        X10       X19
   56 ──┤├────────┤/├──┬────────────────────────────────[MOVP    H100            D110   ]
        Open com  Initial │                                                       Setting
        plte No.  normal c│                                                       use purp
        1         omplete │                                                       ose
                          │                            * <Communication method set UDP/IP >
                          ├───────────────────[TOP     H0      K16     D110    K1     ]
                          │                                                       Setting
                          │                                                       use purp
                          │                                                       ose
                          │                            * <Set necessity GPPW transfer set >
                          ├───────────────────────────[MOVP    H500            D111   ]
                          │                                                       E71 port
                          │                                                       number
                          │                            * <FFFFFFFF when used by GPPW >
                          ├───────────────────────────[DMOVP   H0FFFFFFFF      D112   ]
                          │                                                       Other no
                          │                                                       de IP ad
                          │                                                       dress
                          │                            * <FFFF when used by GPPW   >
                          ├───────────────────────────[MOVP    H0FFFF          D114   ]
                          │                                                       Other no
                          │                                                       de portn
                          │                                                       umber
                          ├───────────────────[TOP     H0      K24     D111    K4     ]
                          │                                                       E71 port
                          │                                                       number
                          │                                                       ─[SET     Y8             ]
                          └──                                                            Open req
                                                                                        uest No.
                                                                                        1
   99 ──────────────────────────────────────────────────────────[END            ]
```

In a communications-ready status, the E71's RUN LED comes on and RDY LED flickers.

(4) Setting on the personal computer
Set the IP address.

(5) Connection Setup screen
Setting screen for communication via Ethernet unit
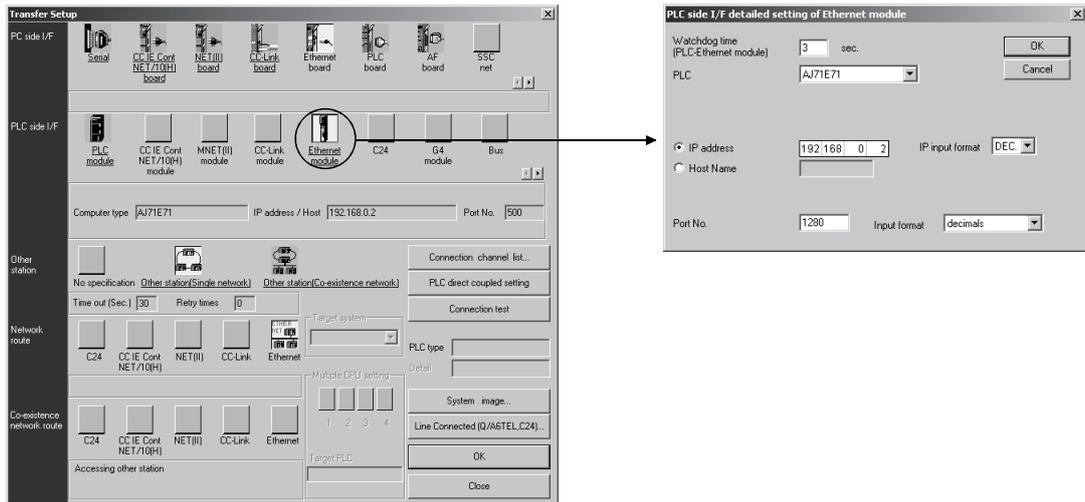
- PLC side I/F detailed setting of Ethernet module

Double-click on the "Ethernet module" icon to display "PLC side I/F detailed setting of Ethernet module" screen.

- PLC ....Select the programmable controller to be connected.
- Watchdog time ....Set the check time for the communication
  (PLC-Ethernet module) time between programmable controller and Ethernet module.

If the watchdog time error occurs, increase the setting time.
Make the setting in order that "Other station communication time check" is longer than "Watchdog time (PLC-Ethernet module) for PLC side I/F".
The setting range: 1 to 9999 seconds.

IP address .... Set the IP address assigned to the E71 to be connected.
(When the host name has been selected, specify the name preset in the hosts file within 64 characters.)
Port No. .... As the port No., set the port No. of the connected E71 set in the sequence program.

(6) Communications check
When the preparations for communications via the E71 are complete, execute a Ping test. Refer to Section 21.5.9 for the operation method.

When connections are OK

```
C:\ping 192.    168. 0. 2
Reply from 192. 168. 0. 2:bytes=32 time<10ms TTL=32
```

When connections are not good

```
C:\>ping 192. 168. 0. 2
Request timed out.
```

If ping does not pass through, check the cable and unit connections and Windows® side IP address and other settings.

POINT

- To connect to QCPU (A mode) or AnUCPU via Ethernet, set the PLC to "AnACPU" when creating a project.
  Access can be made within the range that can be handled by the AnACPU, e.g. sequence programs or device memory. Therefore, access cannot be made to the devices and network parameters that have been extended by subprogram 2/3, QCPU (A mode) or AnACPU.

- However, the PLC that is set when creating a project can be specified by AnUCPU, as long as access is made via the Q series E71 or MELSECNET/10 (as the following system shows). It is not required to set the project to AnUCPU. In this case, all AnUCPU devices can be handled.
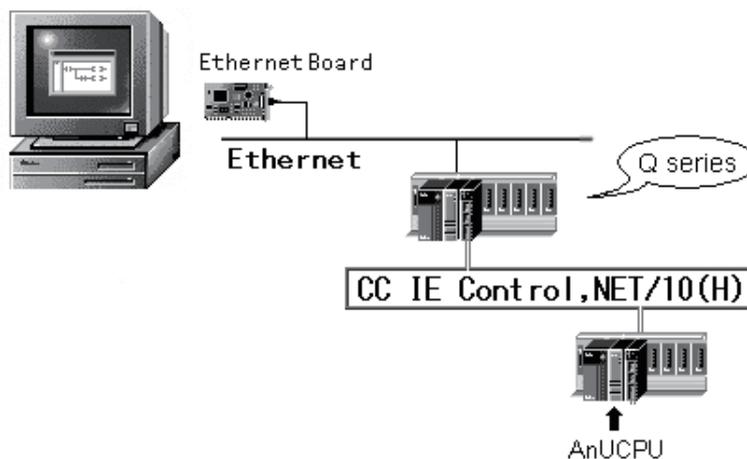
- When accessing the A173SHCPU/A273UHCPU of the motion controller (SCPU), specify the A3ACPU to start the project.
  When accessing the A171SHCPU/A172SHCPU, specify the PLC type of the access target to start the project.

16.2.1 (2) For QnA series

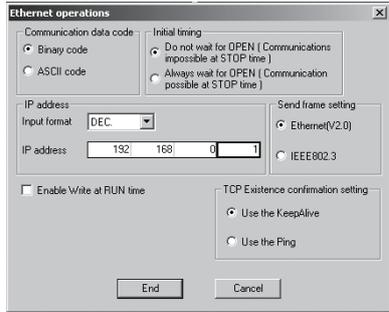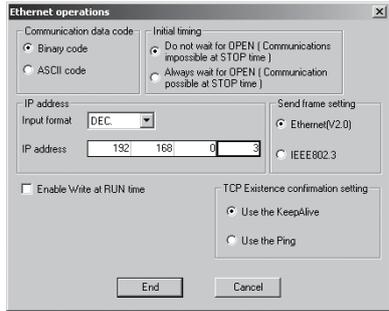| A	Q/QnA	QS	FX
×	○*	×	×

∗: Compatible with the Q series.

For communication from GX Developer via the QE71, there are the following setting items and precautions. The explanations in this section will be made for the following system configuration.
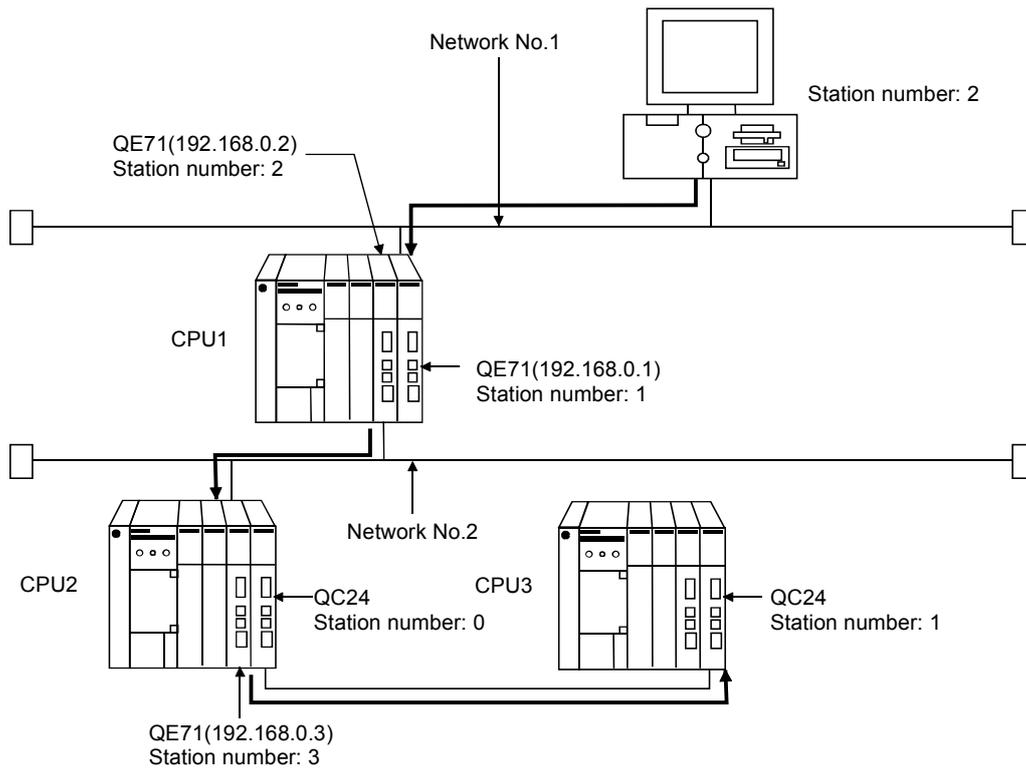
Procedure for communications via QE71

Restrictions

    (a) Communications cannot be made via the MELSECNET(II).

    (b) Communications can be made only within the same segment.
        Communication cannot be made via the router or gateway.

(1) Compatible models
Use the QE71*1 and programmable controller whose function version is B or later.

    *1: When using the modules other than AJ71QE71, AJ71QE71-B5, A1SJ71QE71-B2 and A1SJ71QE-B5, they are not inhibited depending on the function version.

(2) QE71 switch settings
Operation mode setting switch............................ 0 (online)
Automatic start mode.. SW3 ON
When SW3 is ON, initial processing is performed independently of Y19 (initial processing request). Communications are also enabled if the CPU module is stopped.
For the way to perform initial processing using Y19 (initial processing request), refer to the AJ71QE71 User's Manual and create an initial processing program.

(3) Parameter setting
On the Ethernet/CC IE/ MELSECNET network parameter setting screen, set the network type, starting I/O No., network No., group No., station number and IP address.

	Setting Screen Examples
CPU1	**Ethernet parameters** 		Module No.1	Module No.2	 	Network type	Ethernet ▼	Ethernet ▼	 	Start I/O No.	0040	0060	 	Network No.	2	1	 	Total stations			 	Group No.	0	0	 	Station No.	2	1	 	IP addressDEC	192.168. 0. 2	192.168. 0. 1	 		Station No.<->IP information	Station No.<->IP information	 		FTP Parameters	FTP Parameters	 		Router relay parameter	Router relay parameter	 **IP address setting** IP Address ☒ Input format DEC. ▼ IP address 192 168 0 2 OK Cancel
CPU2	**Ethernet parameters** 		Module No.1	Module No.2	 	Network type	Ethernet ▼	None ▼	 	Start I/O No.	0040		 	Network No.	2		 	Total stations			 	Group No.	0		 	Station No.	3		 	IP addressDEC	192.168. 0. 3		 		Station No.<->IP information		 		FTP Parameters		 		Router relay parameter		 **IP address setting** IP Address ☒ Input format DEC. ▼ IP address 192 168 0 3 OK Cancel
CPU3	Set the station number with the rotary switches of the module.

(4) Routing parameter setting
Set the routing parameters on the Ethernet parameter setting screen. Refer to
Section 16.12 for the concept of the routing parameters.

	Setting Screen Examples			
CPU1		Target networkNo.	Relay networkNo.	Relay StationNo.	Via StationNo.

Setting Screen Examples — CPU1:

	Target networkNo.	Relay networkNo.	Relay StationNo.	Via StationNo.
1	1	2	2	
2	2	1	1	
3				

Setting Screen Examples — CPU2:

	Target networkNo.	Relay networkNo.	Relay StationNo.	Via StationNo.
1	1	2	2	
2				
3				

After parameter setting is over, write the parameters to the programmable
controller using Write to PLC.
In a communications-ready status, the QE71's RUN LED comes on and RDY
LED flickers.

(5) Connection Setup screen

Item	Description
PC side I/F	Set the network No. and station number. ∗1
PLC side I/F	Set the model name, station number, IP address, etc. of the unit connected to the personal computer.
Network route	As access is made to the other station via the Ethernet unit, choose "Other station in the same loop or access to multilevel system".
Coexistence network route	Set the first I/O address and station number of the station to be accessed.

∗1: Set the station number so that it may not overlap with the ones assigned for
existing system and other Ethernet modules.

(6) Communications check
Refer to Section 16.2.1 (1) for communications check.

16.2.1 (3) For Q series

A	Q/QnA	QS	FX
×	○*	×	×

*: Compatible with the QCPU (Q mode).

For communication from GX Developer via the Q-compatible E71, there are the following setting items and precautions. The explanations in this section will be made for the following system configuration.
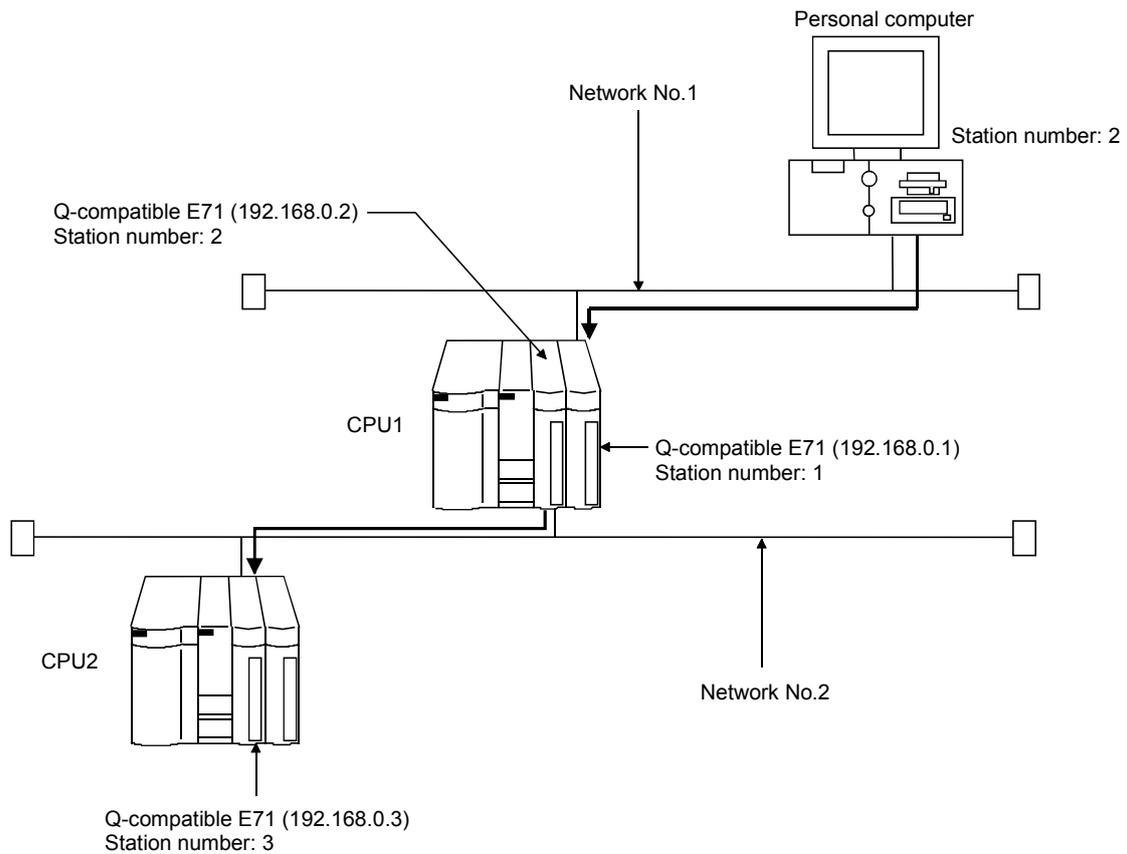
Procedure for and restrictions on communications via Q-compatible E71

(1) Compatible models
QJ71E71, QJ71E71-B2, QJ71E71-B5, QJ71E-100

(2) Network parameter setting
Parameter setting can be made from the Ethernet/CC IE/ MELSECNET network parameter setting screen.
Set the network type, first I/O No., network No., group No., station number, mode and operation setting.

	Setting Screen Examples		
	Ethernet parameters		**Operation setting**
CPU1			
CPU2			

∗: Operation settings
To make communications with GX Developer, ask the person in charge of the network about the IP address setting to confirm, and set the IP address. Since "any" values may be set to the other items, set them according to the specifications of the other node and application connected to the Q series-compatible E71.
The following are the operation setting items that may be set to "any" values on GX Developer.
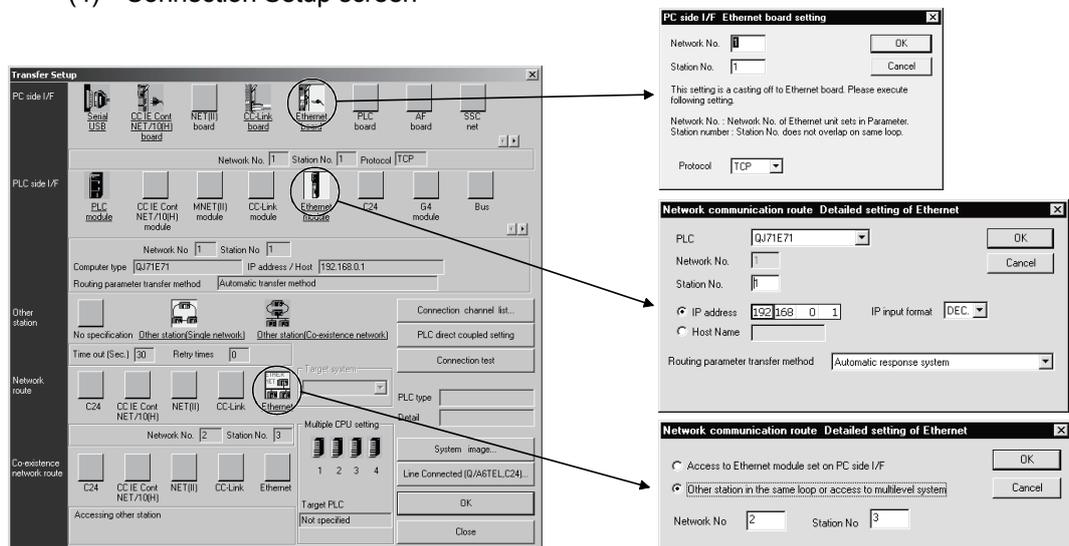
(1) Communication data code
Either "Binary code" or "ASCII code" may be specified.

(2) Initial Timing
Independently of this setting, communications can be made from GX Developer if the programmable controller is at a STOP.

(3) Enable Write at RUN time
Independently of this setting, online program correction or device test can be performed from GX Developer.

(3)   Routing parameter setting
Set the routing parameters on the Ethernet parameter setting screen. Refer to
Section 16.12 for the concept of the routing parameters.

	Setting Screen Examples		
CPU1		Transfer to network No.	Intermediate network No.	Intermediate station No.

		Transfer to network No.	Intermediate network No.	Intermediate station No.
CPU1	1	1	2	2
	2	2	1	1
	3			
CPU2	1	1	2	2
	2			
	3			

After parameter setting is over, write the parameters to the programmable controller
using Write to PLC.
In a communications-ready status, the RUN LED and INIT. LED of the Q-compatible
E71 are lit.

(4)   Connection Setup screen

Item	Description
PC side I/F	Set the network No. and station number [*]1.
PLC side I/F	Set the model name, station number, IP address, etc. of the unit connected to the personal computer. Set the routing parameter method so that it matches the method set to "Station No. ↔ IP information" of the Ethernet parameters.
Network route	Set the network number and station number of the station to be accessed.

[*]1: Set the station number so that it may not overlap with the ones assigned for
existing system and other Ethernet modules.

For details of the parameter setting made to access the programmable controller
via the Q series-compatible E71, refer to the Q Corresponding Ethernet Interface
Module User's Manual (Application).

POINT

TCP/IP or UDP/IP can be used to make communications when multiple GX
Developers are connected. (TCP/IP communications can be made by combining GX
Developer (SW6D5C-GPPW 6.05F or later) and Q series-compatible E71 (whose
function version is B and whose serial number's five upper digits are 02122 or later).)
Refer to Section 13.2.3 for parameter setting to be made for communications using TCP/IP.

(5)   Communications check
Refer to Section 16.2.1 (1) for communications check.

16.2.2 Setting Method for Communication Via CC-Link (AJ65BT-G4)

16.2.2 (1) For A series

A	Q/QnA	QS	FX
◯	×	×	×

This section indicates the setting examples of the switches, parameters, program and others of the unit based on the following system configuration.

AJ61BT11
Station number: 0

AJ65BT-G4
Station number: 1
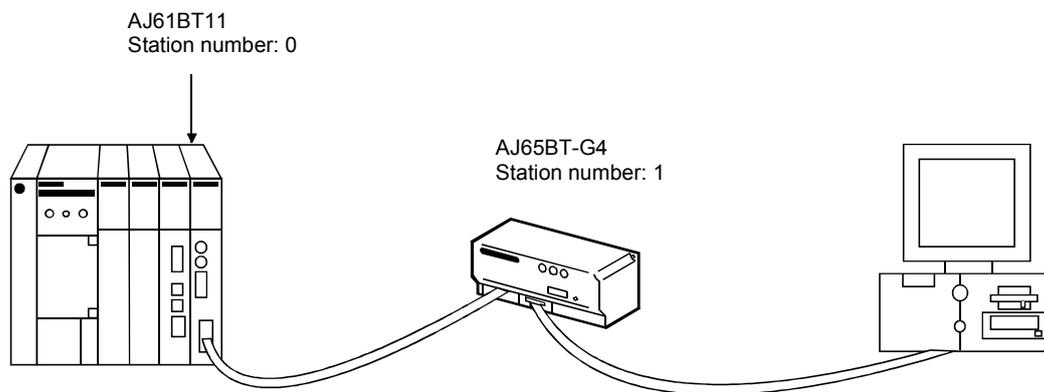
(1) Module switch settings

For G4 Module

Unit Name	Name			Setting	Description
AJ61BT11	STATION No. (station number setting switches)			0	Station 0 (master station)
	MODE (mode setting switch)			0	Online
	B RATE (transmission speed setting switch)			4	10Mbps
	Condition setting switches			All OFF	All OFF
AJ65BT-G4	STATION No. (station number setting switches)			1	Station 1 (local station)
	B RATE (data link transmission speed setting switch)			4	10Mbps
	Operation setting DIP switches	Operation mode setting	SW1	OFF	A mode
		To-personal computer transmission speed setting	SW2	OFF	Fixed to 9600bps
			SW3	OFF	
		Parity bit yes/no setting	SW4	OFF	Fixed
			SW5	OFF	
		Not used	SW6	OFF	—
		Not used	SW7	OFF	—
		Test mode setting	SW8	OFF	Online mode

G4 unit or G4-S3 unit

Unit Name	Switch Name			Setting	Description
AJ61BT11	STATION No. (station number setting switches)			0	Station 0 (master station)
	MODE (mode setting switch)			0	Online
	B RATE (transmission speed setting switch)			4	10Mbps
	Condition setting switches			All OFF	All OFF
AJ65BT-G4-S3	STATION No. (station number setting switches)			1	Station 1 (local station)
	B RATE (data link transmission speed setting switch)			4	10Mbps
	Operation setting DIP switches ＊1	Operation mode setting	SW1	OFF	Q mode set by combination of SW1 and SW6
		To-personal computer transmission speed setting	SW2	No need to set	Invalid in A mode (Automatic setting)
			SW3		
		Parity bit yes/no setting	SW4	OFF	Fixed
			SW5	OFF	
		Operation mode	SW6	ON	Q mode set by combination of SW1 and SW6
		Not used	SW7	OFF	—
		Test mode setting	SW8	OFF	Online mode

＊1: Can be connected with the programmable controller using the setting for Q series shown in Section 16.2.2 (3).

(2)   Cable connection
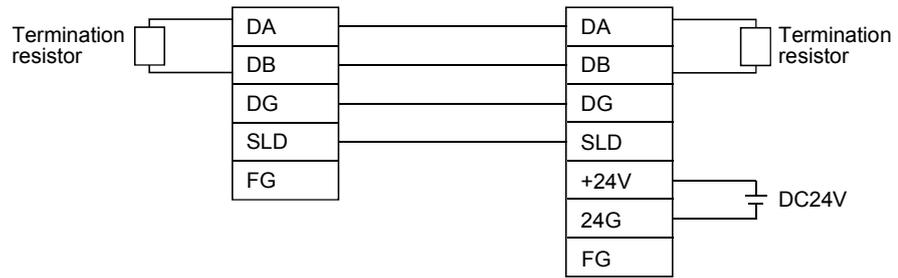
(3)   Parameter setting
The parameter setting items and sequence program example for data link are given below.

Parameter setting items

Address	Item	Description	Setting
1H	Number of connected modules	Set the number of remote station/local station modules connected.	1H
20H	Station information	G4 module or G4-S3 module	2101H

Sequence program
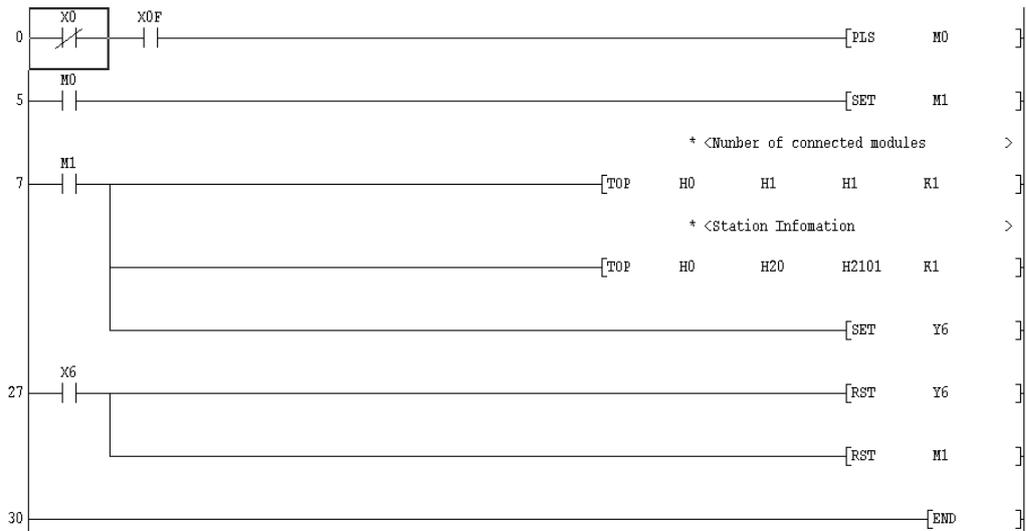
POINT

When the G4 module or G4-S3 module is connected, accessible stations are stations 0 to 64 in other station access via CC-Link.

16.2.2 (2) For QnA series

A	Q/QnA	QS	FX
×	○*	×	×

*: Compatible with the QnACPU.

For the Q series, omit this section.

This section indicates the setting examples of the switches, parameters, program and others of the unit based on the following system configuration.

AJ61QBT11
Station number: 0

AJ65BT-G4
Station number: 1
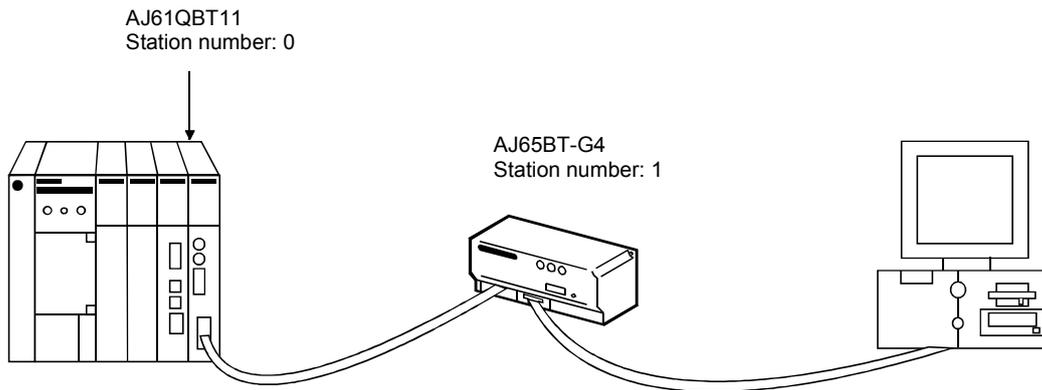
(1)   Module switch settings

G4 module

Unit Name	Name			Setting			Description
AJ61QBT11	STATION No. (station number setting switches)			0			Station 0 (master station)
	MODE (mode setting switch)			0			Online
	B RATE (transmission speed setting switch)			4			10Mbps
	Condition setting switches			All OFF			All OFF
AJ65BT-G4	STATION No. (station number setting switches)			1			Station 1 (local station)
	B RATE (data link transmission speed setting switch)			4			10Mbps
	Operation setting DIP switches	Operation mode setting	SW1	OFF			QnA mode
		To-personal computer transmission speed setting (kbps)		9.6	19.2	38.4	Set to the same transmission speed as that of GX Developer.
			SW2	OFF	ON	OFF	
			SW3	OFF	OFF	ON	
		Parity bit yes/no setting	SW4	OFF			Fixed
			SW5	OFF			
		Not used	SW6	OFF			—
		Not used	SW7	OFF			—
		Test mode setting	SW8	OFF			Online mode

For G4-S3 module

Unit Name	Switch Name			Setting			Description
AJ61QBT11	STATION No. (station number setting switches)			0			Station 0 (master station)
	MODE (mode setting switch)			0			Online
	B RATE (transmission speed setting switch)			4			10Mbps
	Condition setting switches			All OFF			All OFF
AJ65BT-G4-S3		STATION No. (station number setting switches)		1			Station 1 (local station)
		B RATE (data link transmission speed setting switch)		4			10Mbps
	Operation setting DIP switches *1	Operation mode setting	SW1	OFF			Q mode set by combination of SW1 and SW6
		To-personal computer transmission speed setting (kbps)		9.6	19.2	38.4	Matched to transmission of GX Developer
			SW2	OFF	ON	OFF	
			SW3	OFF	OFF	ON	
		Parity bit yes/no setting	SW4	OFF			Fixed
			SW5	OFF			
		Operation mode setting	SW6	ON			Q mode set by combination of SW1 and SW6
		Not used	SW7	OFF			—
		Test mode setting	SW8	OFF			Online mode

*1: Can be connected with the programmable controller using the setting for Q series shown in Section 16.2.2 (3).

(2)   Cable connection

(3)   Parameter setting
Parameter setting can be made from either the CC-Link network parameter setting screen or the sequence program.

(a)   Setting the parameters on the CC-Link setting screen
Set the first I/O No., type, total number of connected units, and station information.
Set the other items as required.

CC-Link parameter setting screen

No. of boards in   [1 ▼]   Boards   Blank: no setting   0 boards: Set by the sequence program.

	1	2	3	4
Start I/O No.	0000			
Type	Master station ▼	▼	▼	
All connect count	1			
Remote input(RX)				
Remote output(RY)				
Remote register(RWr)				
Remote register(RWw)				
Special relay(SB)				
Special register(SW)				
Retry count	3			
Automatic reconnection station count	1			
Wait master station No.	0			
PLC down select	Stop ▼	▼	▼	
Scan mode setting	Asynchronously ▼	▼	▼	
Delay information setting	0			
Station information setting	Station information			

Station information setting screen

CC-Link station information unit 1   ☒

StationNo.	Station type	Exclusive station count	Reserve/invalid station select	Intelligent buffer select(word)		
				Send	Receive	Automatic ic
1/ 1	RemoteI/O station ▼	Exclusive station 1 ▼	No setting ▼			▼

[Default]   [Check]   [End setup]   [Cancel]

After setting the CC-Link parameters, write them to the programmable controller.

(b) Setting the parameters in the sequence program
The parameter setting items and sequence program example for
parameter setting in the sequence program are given below.

Parameter setting items

Address	Item	Description	Setting
1H	Number of connected modules	Set the number of remote station/local station modules connected.	1H
20H	Station information	G4 module or G4-S3 module	2101H

When creating the network parameters in the sequence program, set the
number of units to 0 on the CC-Link setting screen.

Sequence program

POINT

- When connection is made to the CPU directly or via computer link, accessible
  stations are stations 0 (master) to 63 in other station access via CC-Link.

- When the G4 module or G4-S3 module is connected, accessible stations are
  stations 0 to 64 in other station access via CC-Link.

16.2.2 (3) For Q series

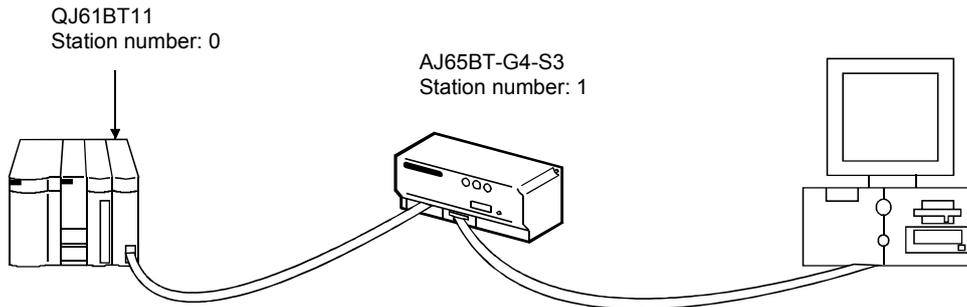| A	Q/QnA	QS	FX
×	○*	×	×

*: Compatible with the QCPU (Q mode).

This section gives a setting example of the switches, parameters, program and others of the units based on the following system configuration.

QJ61BT11
Station number: 0

AJ65BT-G4-S3
Station number: 1

(1)   Module switch settings

For G4-S3 module

Unit Name	Switch Name			Setting	Description
QJ61BT11	STATION No. (station number setting switches)			0	Station 0 (master station)
	MODE (mode setting switch)			0	Online
	B RATE (transmission speed setting switch)			4	10Mbps
	Condition setting switches			All OFF	All OFF
AJ65BT-G4-S3	STATION No. (station number setting switches)			1	Station 1 (local station)
	B RATE (data link transmission speed setting switch)			4	10Mbps
	Operation setting DIP switches	Operation mode setting	SW1	OFF	Q mode set by combination of SW1 and SW6
		To-personal computer transmission speed setting (kbps)	SW2	No need to set	Invalid in Q mode (Automatic setting)
			SW3		
		Parity bit yes/no setting	SW4	OFF	Fixed
			SW5	OFF	
		Operation mode setting	SW6	ON	Q mode set by combination of SW1 and SW6
		Not used	SW7	OFF	—
		Test mode setting	SW8	OFF	Online mode

(2)   Cable connection
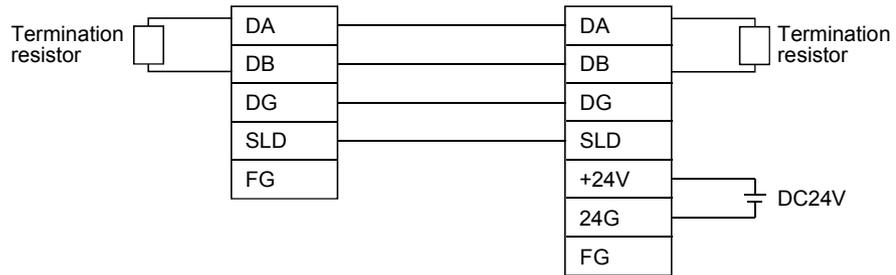
(3)   Parameter setting
Parameter setting may either be made from the CC-Link network parameter setting screen or the sequence program.
(a)   Setting the parameters on the CC-Link setting screen
Set the starting I/O No., type, total number of connected units, and station information.
Set the other items as required.

CC-Link parameter setting screen

	1	2	3
Start I/O No	0000		
Operational setting	Operational settings		
Type	Master station		
Master station data link type	PLC parameter auto start		
Mode	Remote net(Ver.1 mode)		
All connect count	64		
Remote input(RX)			
Remote output(RY)			
Remote register(RWr)			
Remote register(RWw)			
Ver.2 Remote input(RX)			
Ver.2 Remote output(RY)			
Ver.2 Remote register(RWr)			
Ver.2 Remote register(RWw)			
Special relay(SB)			
Special register(SW)			
Retry count	3		
Automatic reconnection station count	1		
Stand by master station No.			
PLC down select	Stop		
Scan mode setting	Asynchronous		
Delay infomation setting	0		
Station information setting	Station information		
Remote device station initial setting	Initial settings		
Interrupt setting	Interrupt settings		

Station information setting screen

After setting the CC-Link parameters, write them to the programmable controller.
(b)   Setting the parameters with the sequence program
The following parameter setting items and sequence program example are used when the parameter values are set with the sequence program.

Parameter setting items

Address	Item	Description	Setting
1H	Number of units connected	Set the number of remote/local station units connected.	1H
20H	Station information	G4-S3 module	2101H

When creating network parameters using the sequence program, set the number of units to 0 on the CC-Link setting screen.

Sequence program


```
       X0     X0F
   0  ─┤/├────┤├───────────────────────────────────[PLS    M0   ]

       M0
   5  ─┤├──────────────────────────────────────────[SET    M1   ]

                                  * <Number of connected modules        >
       M1
   7  ─┤├──────────────┬──────────[TOP   H0    H1    H1    K1    ]

                                  * <Station Infomation               >

                       ├──────────[TOP   H0    H20   H2101 K1    ]

                       └──────────────────────────[SET    Y6   ]

       X6
  27  ─┤├──────────────┬──────────────────────────[RST    Y6   ]

                       └──────────────────────────[RST    M1   ]

  30  ──────────────────────────────────────────────[END   ]
```
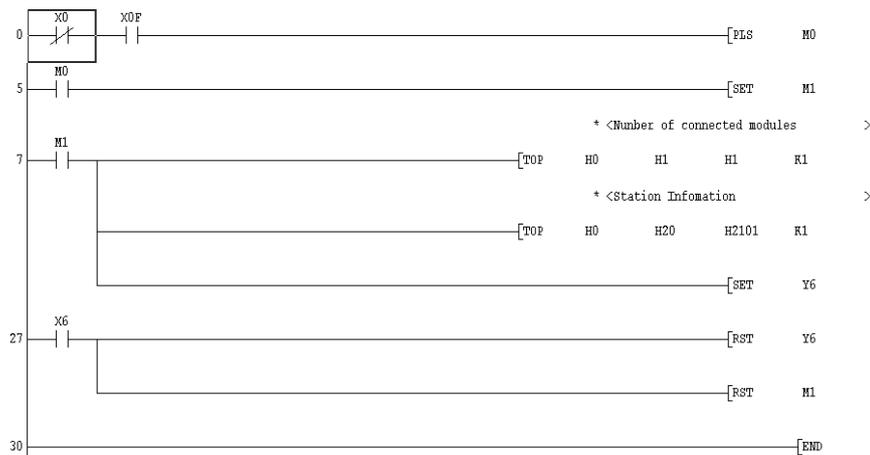
POINT

- When connection is made to the CPU directly or via computer link, accessible station numbers are stations 0 (master) to 63 in other station access via CC-Link.

- When the G4-S3 module is connected, accessible stations are stations 0 to 64 in other station access via CC-Link.

16.2.3 Setting Method for Communication Via C24

16.2.3 (1) Connection in the form of one-for-one

A	Q/QnA	QS	FX
◯	◯	×	×

This section indicates the setting examples of the switches and others of the unit based on the following system configuration.

C24

(1) UC24 switch settings

Item	Setting
Mode setting switch	1
STATION No.	0
Main channel setting	RS-232
Data bit setting	8
Transmission speed setting	9600bps/19200bps
Parity bit yes/no setting	Odd
Stop bit setting	1
Sum check yes/no setting	Yes
Online change enable/disable setting	Disable
Computer link/multidrop link setting	Computer link (set computer link also for multidrop)

A cable of AC30N2A can be diverted for this connection.
Refer to Appendix 5.1 for the pin assignment of the cable.
When GX Developer is connected to the 2) loaded UC24 and the 9-25 pin conversion connector + AC30N2A equivalent are used, write 1 (CD terminal not checked) to 10B of the buffer memory.
The A1SJ71UC24-R24 or A1SJ71C24-R4 cannot be connected.

(2) Serial communication unit (QnA series) switch settings

Item	Setting	Item	Setting
Mode setting switch	5	Sum check yes/no setting	Yes
STATION No.	0	Online change enable/disable setting	Enable
Operation setting	Independent setting	Setting change enable/disable setting	Enable
Data bit setting	8	Transmission speed setting	9600bps/19200bps
Parity bit yes/no setting	Odd	—	SW13 to SW15 are all OFF.
Stop bit setting	1	—	—

A cable of AC30N2A can be diverted for this connection.
Refer to Appendix 5.2 for the pin assignment of the cable.
When an AC30N2A cable is connected, use the 9-25 pin conversion connector.

(3) Serial communication unit (for Q series) switch settings
Make switch settings of the units on the GX Developer I/O assignment setting screen.
For details of switch settings, refer to the Q-compatible C24 serial communication unit user's manual (basic manual).

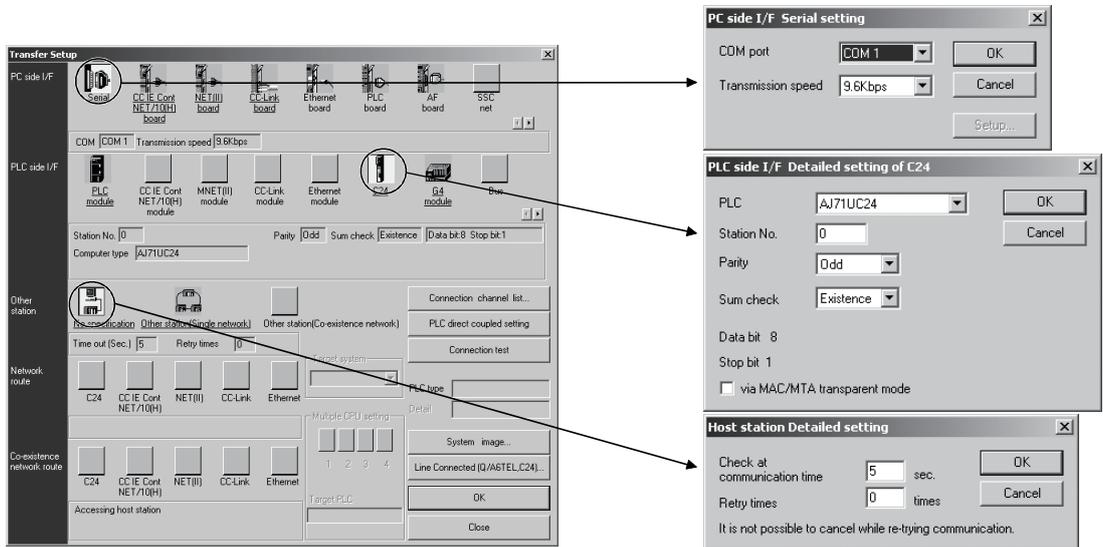| Item	Description		Setting
Switch 1	CH1 communication speed	CH1 transmission setting	0000H
Switch 2	—	CH1 communications protocol	0000H
Switch 3	CH2 communication speed	CH2 transmission setting	Set according to the application on CH2 side.
Switch 4	—	CH2 communications protocol	Set according to the application on CH2 side.
Switch 5	Module station number		0000H

For the connection cable, refer to Appendix 5.3.
As switch 5 is used to set the station number, set the value (0 to 31 (decimal)) as required. (Note that if the value is other than 0, match it with the value which was set by choosing Connection Setup → PC side I/F → Station number.)

Detailed description of settings

Item	Setting
Operation setting	Independent setting
Data bit setting	8
Parity bit yes/no setting	Yes
Odd/even parity bit	Odd
Stop bit setting	1
Sum check yes/no setting	Yes
Online change enable/disable setting	Enable
Setting change enable/disable setting	Disable
Transmission speed setting	19200bps
Communications protocol	GX Developer link

(4)   Connection target setting
The screen setting example for access from GX Developer to C24 is given below.

| Item	Description
PC side I/F	Set the COM port and transmission speed.
PLC side I/F	Set the model name, station number, etc. of the C24 connected.
Network route	Set no specification of other station.

16.2.3 (2) 1:n connection

A	Q/QnA	QS	FX
○*	○	×	×

*: Direct connection with programmable controller is not allowed.

This section gives the setting examples of the switches and others of the modules based on the following system configurations.

[Via serial communication/computer link module]
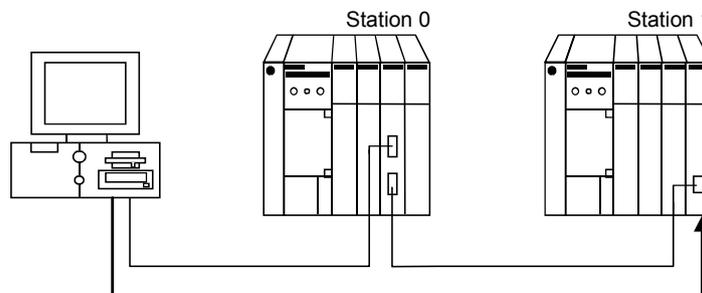
(1) Computer link module switch settings
Station 0 (Connect GX Developer to the RS-232 connector of the computer link module.)

Item	Setting
Mode setting switch	A
STATION No.	0
Main channel setting	RS-232
Data bit setting	8
Transmission speed setting	9600bps
Parity bit yes/no setting	Odd
Stop bit setting	1
Sum check yes/no setting	Yes
Online change enable/disable setting	Disable
Computer link/multidrop link setting	Computer link (set computer link also for multidrop)

A cable of AC30N2A can be diverted for this connection.
Refer to Appendix 5.1 for the pin assignment of the cable.
When GX Developer is connected to the UC24 and the 9-25 pin conversion connector + AC30N2A are used, write 1 (CD terminal not checked) to 10B of the buffer memory.

Station 1

Item	Setting
Mode setting switch	5
STATION No.	1
Main channel setting	RS-422
Data bit setting	8
Transmission speed setting	9600bps
Parity bit yes/no setting	Odd
Stop bit setting	1
Sum check yes/no setting	Yes
Online change enable/disable setting	Disable
Computer link/multidrop link setting	Computer link (set computer link also for multidrop)

(2) Serial communication module (for QnA series) switch settings
Station 0 (Connect GX Developer to the RS-232 connector of the serial communication module.)

Item		Setting
Mode setting switch	CH 1	0
	CH 2	5
STATION No.		0
Operation setting		Interlock setting
Data bit setting		8
Parity bit yes/no setting		Odd
Stop bit setting		1
Sum check yes/no setting		Yes
Online change enable/disable setting		Enable
Setting change enable/disable setting		Enable
Transmission speed setting		9600bps

A cable of AC30N2A can be diverted for this connection.
Refer to Appendix 5.2 for the pin assignment of the cable.
When an AC30N2A cable is used, use a 9-25 pin conversion connector.
The AJ71QC24-R4 or A1SJ71QC24-R4 cannot be connected.

Station 1

Item		Setting
Mode setting switch	CH 1	Set to meet the application of CH1.
	CH 2	5
STATION No.		1
Operation setting		Independent setting
Data bit setting		8
Parity bit yes/no setting		Odd
Stop bit setting		1
Sum check yes/no setting		Yes
Online change enable/disable setting		Enable
Setting change enable/disable setting		Enable
Transmission speed setting		9600bps

(3) Serial communication module (for Q series) switch settings
Make switch settings of the units on the GX Developer I/O assignment setting window.
For details of the switch settings, refer to the Q-compatible C24 serial communication unit user's manual (basic manual).

Station 0

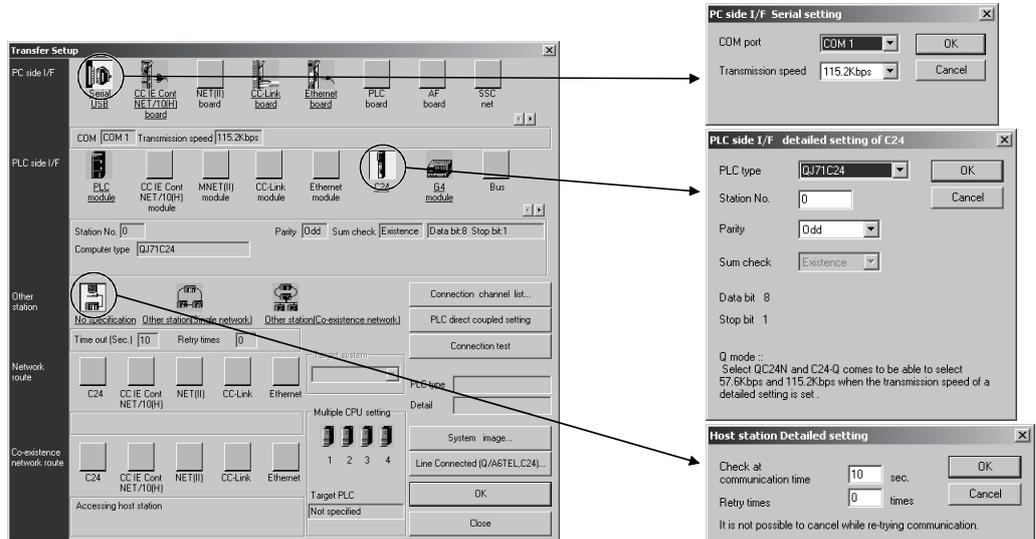| Item	Description		Setting
Switch 1	CH1 communication speed	CH1 transmission setting	07E6H
Switch 2	—	CH1 communications protocol	0008H
Switch 3	CH2 communication speed	CH2 transmission setting	07E7H
Switch 4	—	CH2 communications protocol	0000H
Switch 5	Module station number		0000H

For the connection cable, refer to Appendix 5.3.

Station 1

Item	Description		Setting
Switch 1	CH1 communication speed	CH1 transmission setting	Set to meet the application of CH1.
Switch 2	—	CH1 communications protocol	
Switch 3	CH2 communication speed	CH2 transmission setting	07E6H
Switch 4	—	CH2 communications protocol	0005H
Switch 5	Module station number		0001H

Detailed description of settings

Item		Setting
Operation setting	Station 0	Linked operation
	Station 1	Independent operation
Data bit setting		8
Parity bit yes/no setting		Yes
Odd/even parity bit		Odd
Stop bit setting		1
Sum check yes/no setting		Yes
Online change enable/disable setting		Enable
Setting change enable/disable setting		Disable
Transmission speed setting		19200bps
Communications protocol	Station 0	GX Developer connection
	Station 1	CH1: Set to meet the application CH2: MC protocol format 5

(4)   Connection target setting
The screen setting example for access from GX Developer to C24 is given
below.

Item	Description
PC side I/F	Set the COM port and transmission speed.
PLC side I/F	Set the model name, station number, etc. of the C24 connected.
Other station designation	Set no specification of other station.

[Direct connection with programmable controller]
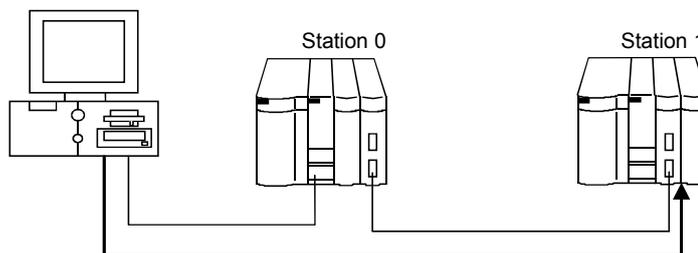
(1) Switch settings of serial communication module (for QnA series)
With the exception of the STATION No. setting, set Station 0 and Station 1 to the same settings.

Station 0 and Station 1 settings

Item		Setting
Mode setting switch	CH 1	Set to meet the application of CH1.
	CH 2	5
STATION No.	Station 1	0
	Station 2	1
Operation setting		Independent setting
Data bit setting		8
Parity bit yes/no setting		Yes
Odd/even parity bit		Odd
Stop bit setting		1
Sum check yes/no setting		Yes
Online change enable/disable setting		Enable
Setting change enable/disable setting		Enable
Transmission speed setting		9600bps

(2) Switch settings of serial communication module (for Q series)
With the exception of the module station number setting, set Station 0 and Station 1 to the same settings.

Station 0 and Station 1 settings

Item	Description		Setting
Switch 1	CH1 communication speed	CH1 transmission setting	Set to meet the application of CH1.
Switch 2	—	CH1 communications protocol	
Switch 3	CH2 communication speed	CH2 transmission setting	07E6H
Switch 4	—	CH2 communications protocol	0005H
Switch 5	Module station number	Station 0	0000H
		Station 1	0001H

Detailed description of setting

Item	Setting
Operation setting	Independent setting
Data bit setting	8
Parity bit yes/no setting	Yes
Odd/even parity bit	Odd
Stop bit setting	1
Sum check yes/no setting	Yes
Online change enable/disable setting	Enable
Setting change enable/disable setting	Enable
Transmission speed setting	19200bps
Communications protocol	CH1: Set to meet the application CH2: MC protocol format 5

(3) Target setup
The following shows the screen setting example for access from GX Developer to the C24.

Item	Explanation
PC side I/F	Select RS-232C or USB. When selecting RS-232C, set the COM port and transmission speed.
PLC side I/F	Set the CPU module.
Other station	Set the other station (single network).
Network route	Specify the starting I/O No. of the station connected to GX Developer and the station number of the access target.

## 16.2.4 Setting method for communication via a modem interface module

A	Q/QnA	QS	FX
○	○	×	○

This section provides how to set the functions and information on line connection to line disconnection for use of the A6TEL modem interface module (hereafter called the A6TEL) and the Q6TEL modem interface module (hereafter called the Q6TEL).
The A6TEL is a modem interface module designed to connect the A series programmable controller and modem.
The Q6TEL is a modem interface module designed to connect the A/QnA series programmable controller and modem. (The Q6TEL can connect to either the ACPU or QnACPU using the A mode/QnA mode select switch.)
The modems shown in the following system configuration include the external type, modem built in personal computer, PC card modem (PIMCIA) and TA (terminal adapter).

(1)   Between programmable controller and A6TEL/Q6TEL (A/QnA series only)
Functions such as monitoring, test and program write/read can be performed via remote access over the telephone line.
For the operation procedures, refer to Sections 22.2.1 and 22.2.2.
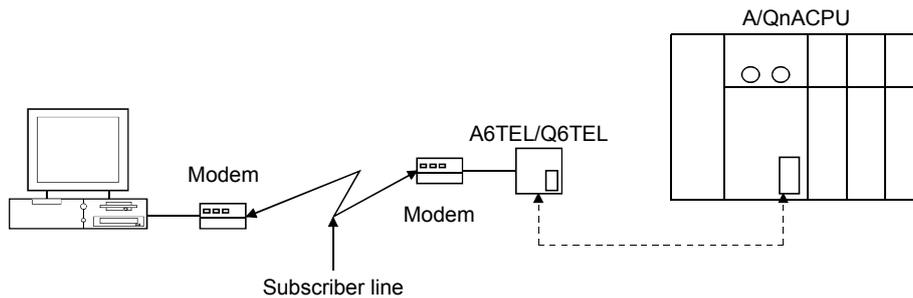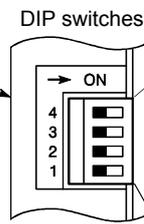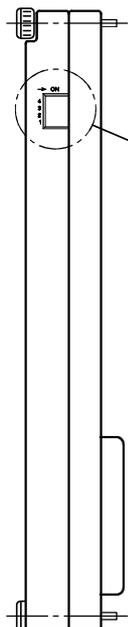
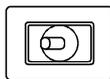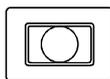| Switch No.	Setting	Description
4	—	Unused (kept in OFF)
3	OFF	Remote access enable mode (when telephone line connection is enabled from peripheral device)
	ON	Remote access disable mode (notice processing may be executed)
2	OFF	Notice processing execution mode
	ON	Proximate connection enable mode
1	OFF	Telephone line connection mode/proximate connection mode
	ON	EEPROM write mode (for initial setting, password, notice data write)

(2)   Q6TEL
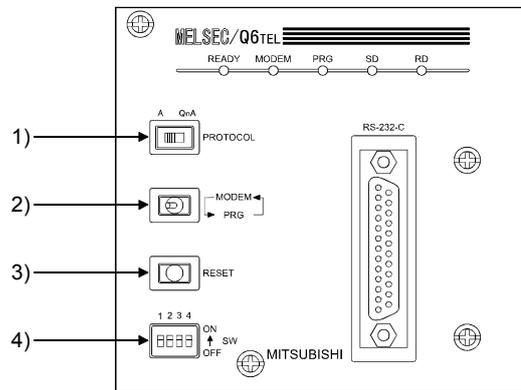
1)   A/QnA select switch
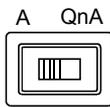
Setting	Description
QnA	When the connected CPU is QnACPU
A	When the connected CPU is ACPU

2)   MODEM/PRG select switch

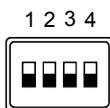| Setting	Description
MODEM/PRG (remote/proximate)	The switch is an alternate switch. The "MODEM" LED is lit to indicate remote access. The "PRG" LED is lit to indicate the proximate connection mode.

3)   RESET switch

Resets the Q6TEL.

4)   DIP switches
     The following table explains the DIP switches for QnACPU access.

Switch No.	Setting	Description
1	OFF	Telephone line connection mode/GPP function (proximate connection mode)
	ON	Q6TEL data (E2PROM write) setting mode (for initial setting, password, notice data write)
2	—	—
3	—	—
4	—	—

Note: When "A" is selected with the A/QnA select switch, the description is the
      same as that of the DIP switches of the A6TEL.

The following table explains the DIP switch for ACPU access.

| Switch No.	Setting	Description
1	OFF	Telephone line connection mode/proximate connection mode
	ON	A6TEL data (E^2PROM write) setting mode (for initial setting, password, notice data write)
2	OFF	Notice processing execution mode (also set DIP switch 1 to OFF)
	ON	Proximate connection mode
3	OFF	Remote access enable mode (when telephone line connection from A7PHP/LM series is enabled)
	ON	Remote access disable mode (notice processing may be executed)
4	—	Unused (keep in OFF)

[Q6TL's DIP switch settings] (for ACPU access)

Switch No.	Remote Access	Notice Processing	E^2PROM Mode	Proximate Connection
1	OFF	OFF	ON	OFF
2	OFF	OFF	ON/OFF	ON
3	OFF	ON/OFF	ON/OFF	ON/OFF
4	OFF			

ON/OFF indicates that the corresponding switch may either be ON or OFF.

(2) For access to FXCPU (FX series only)

Functions such as monitoring, test and program write/read can be performed via remote access over the telephone line by connecting the FX1S/FX1N/FX2N/FX3G/ FX3U/FX1NC/FX2NC/FX3UC programmable controller using a modem.

For the operation procedures, refer to Section 22.2.3.

FXCPU ∗

Modem

Modem

Subscriber line
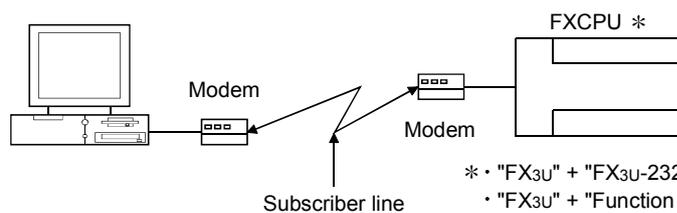
∗・ "FX3U" + "FX3U-232-BD"
・ "FX3U" + "Function expansion board" + "FX3U-232ADP"
・ "FX3UC" + "FX3U-232-BD"
・ "FX3UC" + "Function expansion board" + "FX3U-232ADP"
・ "FX3G" + "FX3G-232-BD"
・ "FX3G" + "FX3G-CNV-ADP" + "FX3G-232ADP"
・ "FX2N" + "FX2N-232-BD"
・ "FX2N" + "FX2N-CNV-BD" + "FX0N-232ADP"
・ "FX2N" + "FX2N-CNV-BD" + "FX2NC-232ADP"
・ "FX2NC" + "FX0N-232ADP"
・ "FX2NC" + "FX2NC-232ADP"
・ "FX1S" + "FX1N-232-BD"
・ "FX1N" + "FX1N-232-BD"
・ "FX1N" + "FX1N-CNV-BD" + "FX0N-232ADP"
・ "FX1N" + "FX1N-CNV-BD" + "FX2NC-232ADP"
・ "FX1NC" + "FX0N-232ADP"
・ "FX1NC" + "FX2NC-232ADP"

In the FX3UC series, only the FX3UC-32MT-LT and FX3UC-32MT-LT-2 are connectable.

(3)   When making access from personal computer to serial communication module
Q/QnA series only)
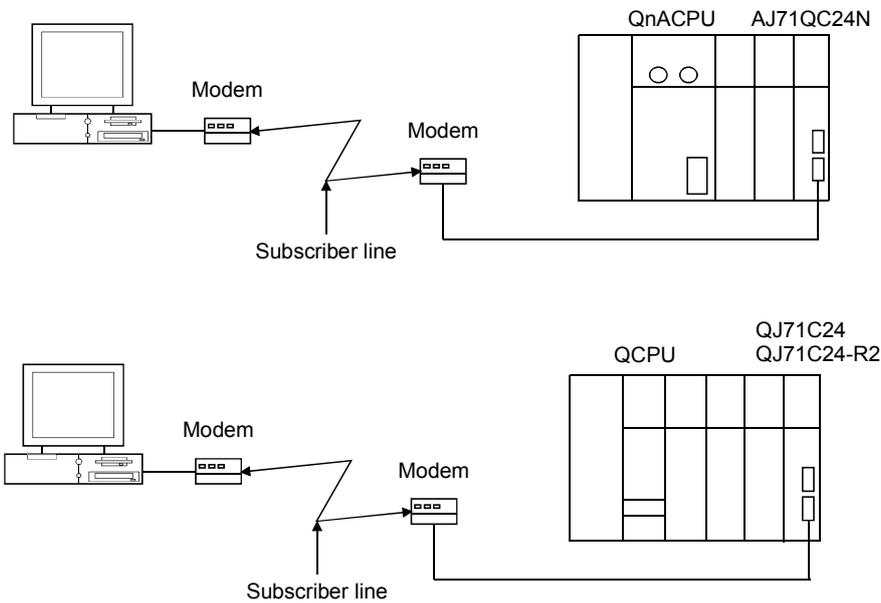
For access from the personal computer to the serial communication module,
choose [Tools] → [Set TEL data/Connect via modem] → [Connect].
Refer to Section 22.4 for the setting of items on the line connection screen.
For the switch settings of the corresponding modules, refer to the following
manuals.

QnA series   : Serial Communication Module User's Manual
                (Details Manual) (Additional modem function version)
Q series   : Q-compatible Serial Communication Module User's Manual
                (Application)

(a)   Switch settings of QJ71C24, QJ71C24-R2, AJ71QC24N

Item			Setting
Switch 1	Transmission setting	Operation setting	Independent
		Data length	8
		Parity bit	No
		Even/odd parity	Match to modem specifications
		Stop bit	1
		Sum check	Yes
		Online change	Enable
		Setting change	Disable
		Communication speed	Match to modem specifications
Switch 2	Communications protocol		5

When using the QC24N, use the above settings as reference.

(b)   Connection of QJ71C24/QJ71C24-R2/AJ71QC24N and modem

A program is needed to make the following buffer memory settings.
For QJ71C24, QJ71C24-R2

Buffer Memory Address	Name and Setting
2EH	Modem connection CH designation 0: None 1: CH1 2: CH2
34H ∗1	Initialization data No. designation 0H: Sending of initialization data specified in sending user registration frame designation area 7D0H to 7D4H: Initialization data No.
36H	GX Developer link designation 0: No 1: Yes

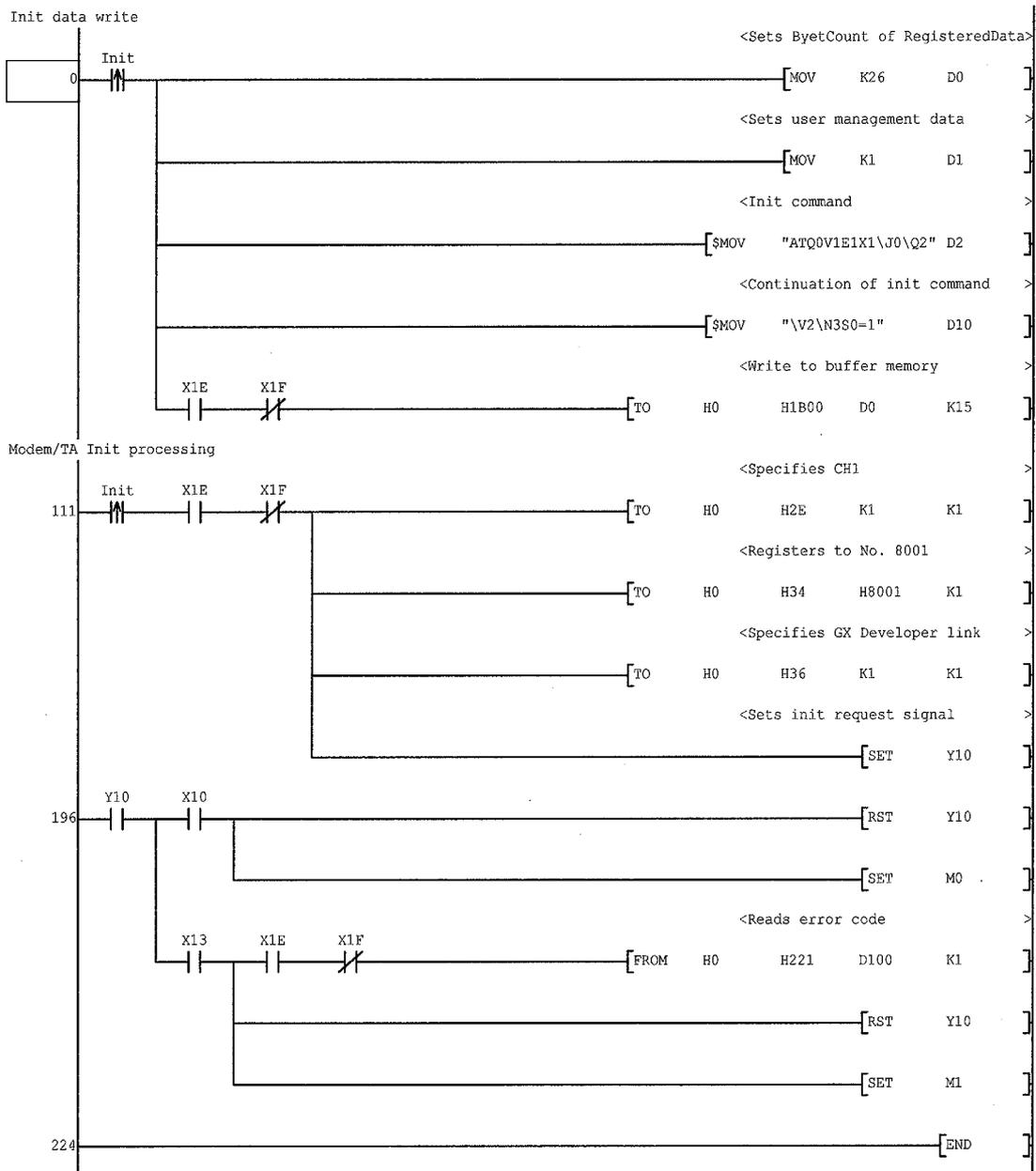∗1: The following initialization data have been registered to the QJ71C24.
If the modem used is included in any of 7D0 (2000) to 7DA (2010) of the
initialization data, specify that registration No.
If the modem used is other than the registered, you can use it after
registering the AT command to the buffer memory address 1B00 of the
serial communication module.

For AJ71QC24N

| Buffer Memory Address	Name and Setting
2EH	Modem connection CH designation 0: None 1: CH1 2: CH2
34H ∗2	Initialization data No. designation 0H: Sending of initialization data specified in sending user registration frame designation area 7D0H to 7D4H: Initialization data No.
36H	Q6TEL link designation 0: No 1: Yes

∗2: The AJ71QC24N has the following registered initialization data.
If the modem to be used is in 7D0 (2000) to 7D4 (2004) of the initialization
data, specify that registration number.
The modem other than the registered ones can be used by registering the
AT command to the buffer memory address 1B00 of the serial
communication module buffer memory.

Sample program (for QJ71C24, QJ71C24-R2, AJ71QC24N)

```
     Init data write
                                                            <Sets ByetCount of RegisteredData>
             Init
      0 ─────┤↑├──┬─────────────────────────────────────[MOV    K26      D0    ]
                  │                                         <Sets user management data       >
                  ├─────────────────────────────────────[MOV    K1       D1    ]
                  │                                         <Init command                    >
                  ├─────────────────────────────────[$MOV   "ATQ0V1E1X1\J0\Q2" D2 ]
                  │                                         <Continuation of init command    >
                  ├─────────────────────────────────[$MOV   "\V2\N3S0=1"    D10  ]
                  │                                         <Write to buffer memory          >
                  │  X1E    X1F
                  └──┤ ├────┤/├──────────────────────[TO  H0    H1B00    D0    K15 ]

     Modem/TA Init processing
                                                            <Specifies CH1                   >
             Init   X1E    X1F
    111 ────┤↑├───┤ ├────┤/├──┬──────────────────────[TO  H0    H2E      K1    K1  ]
                              │                            <Registers to No. 8001           >
                              ├──────────────────────[TO  H0    H34      H8001  K1 ]
                              │                            <Specifies GX Developer link     >
                              ├──────────────────────[TO  H0    H36      K1    K1  ]
                              │                            <Sets init request signal        >
                              └──────────────────────────────[SET    Y10  ]

             Y10    X10
    196 ────┤ ├────┤ ├──┬──────────────────────────────[RST    Y10  ]
                        │
                        ├──────────────────────────────[SET    M0   ]
                        │                                 <Reads error code                >
                        │  X13    X1E    X1F
                        ├──┤ ├────┤ ├────┤/├────────[FROM  H0   H221   D100  K1  ]
                        │
                        ├──────────────────────────────[RST    Y10  ]
                        │
                        └──────────────────────────────[SET    M1   ]

    224 ───────────────────────────────────────────────[END  ]
```

(4) Pager notice (A/QnA series only)
An on-the-spot trouble occurrence can be notified with a message.
For the A6TEL or the A mode of the Q6TEL, you can set up to 10 characters.
For the QnA mode of the Q6TEL, you can set up to 10 characters or notice data of up to 480 points of a word device. (Note that the number of characters displayed on the pager depends on the pager used.)
For the operating procedure, refer to Sections 22.2.1 and 22.2.2.)
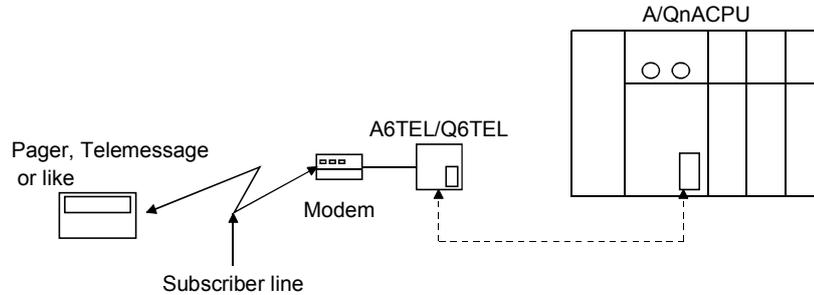
(5) Q6TEL-Q6TEL communication (only QnA mode of Q6TEL)
When the device condition set to the send side Q6TEL holds, the word device data of up to 480 words can be transferred to the device specified in the receive side PLC.
Local devices cannot be used as a transfer or trigger condition.
For the operating procedure, refer to Section 22.2.4.
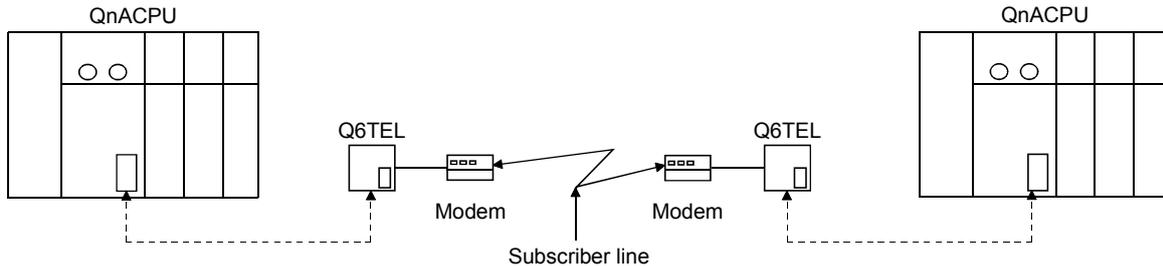
(6) Modem specifications
When using modems, choose the ones which satisfy the following specifications. In addition, you can make communication from a personal computer with a built-in modem or a PC card modem (PCMCIA) for use in connection with a notebook personal computer.
  (a) When using subscriber telephone line/private branch telephone
    • AT command compatible (initialization command)
    • Only the DR terminal can be turned ON (High) independently
    • (Example: You cannot use the modem whose CD terminal turns on at the same time when only the DR terminal is turned on.)
    • Communication standards: ITU-T V.90/V.34/V.32bis/V.32/V.22bis/V.22/
                                       V.21/V.FC
                                       Bell 212A/103

  (b) Manual line connection (for connection via an operator)
    • Specifications as in above (a)
    • Switching can be made between the "ANS mode" and "ORG mode". (AIWA's some modems have the above mode switch.)

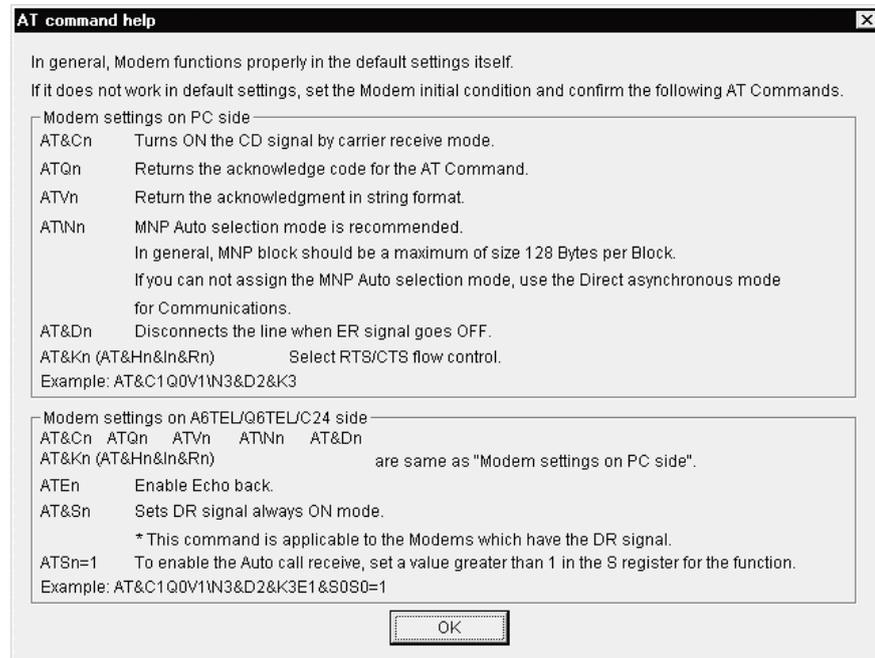   Communication may not be made depending on the line status.

POINT

- When a modem built in personal computer or the PC card (PCMCIA) is used to make communication, COM port setting is required on the connection destination specifying screen.
  Also, the COM port of the modem built in personal computer or the PC card (PCMCIA) is determined internally.
  For the setting method, refer to the personal computer manual.

- The standard AT command cannot be used in some modems.
  If the standard command is selected but the modem cannot connect with the line, the user should designate the AT command.
  For the standard and AT command designation setting, refer to Section 22.4.1.

(7) Connection cable
   For connection of the personal computer and modem, use the RS-232 cable supplied with the modem or the specified cable.
   Since the personal computer may have a different connector, check the specifications of the connector when purchasing the modem.

(8) Modem setting
   Make modem setting.
   The following screen can be browsed using Line connection or AT command help for AT command registration.

AT command help

In general, Modem functions properly in the default settings itself.

If it does not work in default settings, set the Modem initial condition and confirm the following AT Commands.

Modem settings on PC side
AT&Cn	Turns ON the CD signal by carrier receive mode.
ATQn	Returns the acknowledge code for the AT Command.
ATVn	Return the acknowledgment in string format.
AT\Nn	MNP Auto selection mode is recommended.
	In general, MNP block should be a maximum of size 128 Bytes per Block.
	If you can not assign the MNP Auto selection mode, use the Direct asynchronous mode for Communications.
AT&Dn	Disconnects the line when ER signal goes OFF.
AT&Kn (AT&Hn&In&Rn)	Select RTS/CTS flow control.

Example: AT&C1Q0V1\N3&D2&K3

Modem settings on A6TEL/Q6TEL/C24 side
AT&Cn ATQn ATVn AT\Nn AT&Dn
AT&Kn (AT&Hn&In&Rn)   are same as "Modem settings on PC side".
ATEn	Enable Echo back.
AT&Sn	Sets DR signal always ON mode.
	* This command is applicable to the Modems which have the DR signal.
ATSn=1	To enable the Auto call receive, set a value greater than 1 in the S register for the function.

Example: AT&C1Q0V1\N3&D2&K3E1&S0S0=1

OK

POINT

When you used the modem for the other purpose previously, return the modem to the factory-set status using the following command.

AT&F&W

(9) About RS-232 interface
When the TEL data set on GX Developer is transferred from the personal computer to the A6TEL/Q6TEL, the RS-232 interface specifications on the A6TEL/Q6TEL side are as follows.

Pin Number	Signal Abbreviation	Signal Name	Signal Direction	Modem Side
2	SD(TXD)	Send data	⟶	Equivalent to RD
3	RD(RXD)	Receive data	⟵	Equivalent to SD
4	ER(DTR)	Terminal ready notification	⟶	Equivalent to ER
5	SG	Signal ground	───	SG
6	DR(DSR)	Data equipment ready	⟵	Equivalent to DR
7	RS(RTS)	Request to send	⟶	Equivalent to RS
8	CS(CTS)	Clear to send	⟵	Equivalent to CS
9	RI(CI)	Receive indication (Call detection)	⟵	Equivalent to RI(CI)

The following wiring example is for proximate connection.
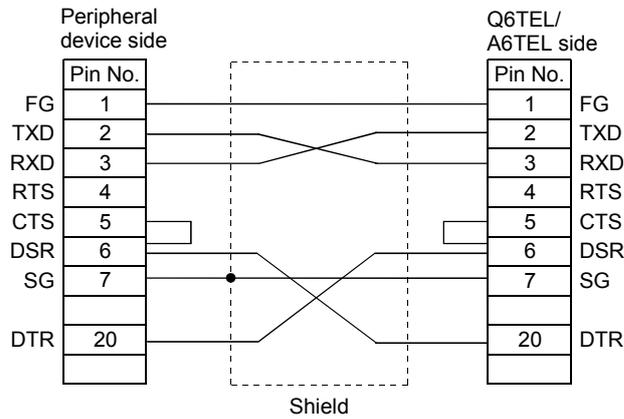
For 9 pins-25 pins
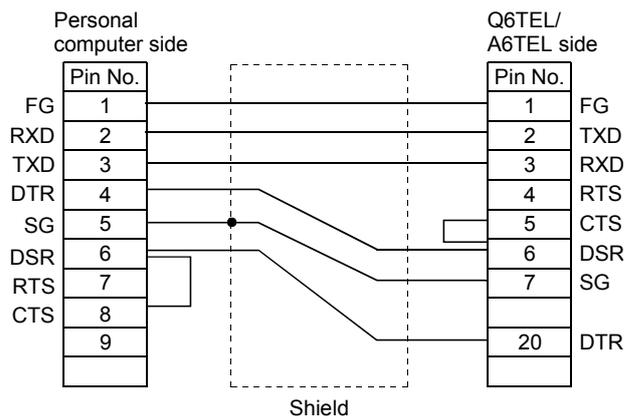
(10) Restrictions on telephone line
- (a) Do not use the call-waiting phone line.
  On the call-waiting phone line, interruption ringers may corrupt the data or disconnect the telephone line.

- (b) Avoid using a party line.
  If you pick up the receiver during telephone line connection, the telephone line may be disconnected.

- (c) An analog two-wire type telephone line can be used.
  Note that a digital line can be connected by using a terminal adopter.

POINT

The telephone line of four wire type may not be connected depending on the modular jack wiring type.

For the four wire type, conduct a connection test in advance to check whether connection can be made or not.

- (d) Instructions for cellular phones
  1) About the modem for radio communication using a cellular phone
     Though different makers call modems differently, this manual call them a cellular phone communication unit as a generic name.
     Choose the model according to the cellular phone used.
     For details, contact the company of the cellular phone you use.

  2) Although the cellular phone model which can automatically get an incoming call has no problems when it connects to the line, the model which cannot automatically get an incoming call cannot connect to the line if the modem is not provided with the ANS/ORG/TEL select switch. As the line connection procedure depends on the phone company or model, consult the maker of the phone you use.

(11) Coexistence with other applications for modem communication
For modem communication, GX Developer and any other application, such as MX Component, cannot make communication simultaneously.

When making modem communication using GX Developer, do not make modem communication using any other application.

If GX Developer and any other application are used to make modem communication simultaneously, a communication error, telephone line disconnection or similar phenomenon will occur.

16.2.5 Setting method via GOT (GOT transparent mode)

16.2.5 (1) Connecting a programmable controller CPU

A	Q/QnA	QS	FX
◯	◯	×	◯

This section explains the settings to be made on GX Developer to connect to a programmable controller CPU with the GOT transparent mode.

∗1: The following shows the connection methods between personal computer and GOT.

		GOT		
		GOT1000 series	GOT-A900 series	GOT-F900 series
Connection method	RS-232C connection	◯	◯	◯
	USB connection	◯		

◯: Connectable

∗2: For connection cables, settings, and precautions for the GOT, refer to the manual for the GOT.
• GOT1000 Series Connection Manual
• GOT-A900 Series User's Manual (Connection System Manual)
• GOT-F900 Series HARDWARE Manual [connection]

```
┌─────────────────────────────────────────────────────────────────┐
│  POINT                                                            │
│                                                                   │
│ (1) Precautions When Connecting GOT to the personal computer via  │
│     USB                                                           │
│     (a) Use GX Developer Version 8.22Y(SW8D5C-GPPW-E) or later.   │
│     (b) When using GX Developer Version 8.21X(SW8D5C-GPPW-E) or   │
│         earlier to handle the project for which USB connection    │
│         settings have been made on "Transfer Setup" screen,       │
│         cancel the settings and then reset the settings.          │
│         For details, refer to Section 2.5.10.                     │
│ (2) Precautions when performing online operation from GX Developer │
│     Do not perform online operation (download of project data,    │
│     etc.) from GT Designer/ GT Designer2 to GOT, during online    │
│     operation from GX Developer to programmable controller via    │
│     GOT transparent mode.                                         │
│ (3) When GOT monitoring is faulty                                 │
│     The transparent mode cannot be used. Either of the following  │
│     is the possible cause.                                        │
│     • The GOT monitor has not started yet after powering-on or    │
│       resetting the programmable controller CPU or GOT.           │
│     • An error occurred in the programmable controller CPU or     │
│       communications between the programmable controller CPU and  │
│       GOT.                                                        │
│      When GOT monitoring is faulty, check the following.          │
│     (a) Whether the programmable controller operates normally     │
│         Refer to the User's Manual of the programmable controller │
│         you use.                                                  │
│     (b) Whether the programmable controller and GOT are connected │
│         normally                                                  │
│         Refer to the Connection Manual of the GOT you use.        │
│         • GOT1000 Series Connection Manual                        │
│         • GOT-A900 Series User's Manual (Connection System Manual)│
│         • GOT-F900 Series HARDWARE Manual [connection]            │
└─────────────────────────────────────────────────────────────────┘
```

[Setting method]

(1) When connecting to QCPU(Q mode)
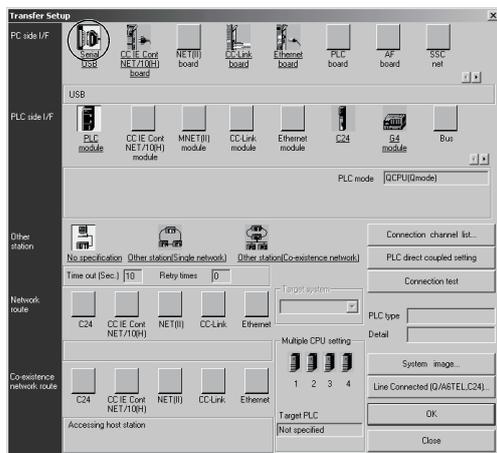
1. Double-click "Serial, USB" in the PC side I/F.
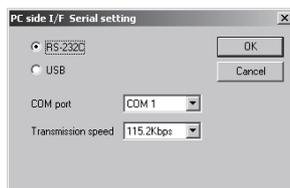
2. When using an RS-232C cable for connection between PC and GOT, select "RS-232C", when using a USB cable, select "USB", and then click OK button.

   If RS-232C is selected, set "COM port" and "Transmission speed".
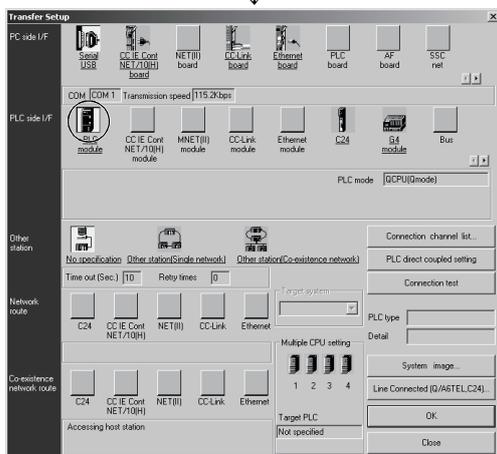
3. Double-click "PLC module" in the PLC side I/F.
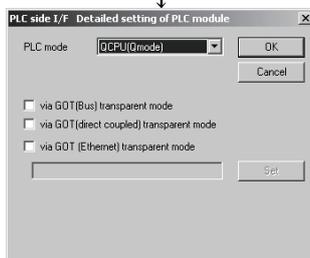
4. When connecting a GOT and a programmable controller, set the following according to the connection method, and then click OK button.

    Bus connection: Check "via GOT (Bus) transparent mode".
    CPU direct connection: Check "via GOT (direct coupled) transparent mode".
    Ethernet connection: Check "via GOT (Ethernet) transparent mode". Click Set button and set the GOT (Ethernet) transparent setting.

Set the following setting items: "Other station", "Network route", and "Co-existence network route" on the "Transfer Setup" screen.

5. Make the settings according to the route to the connection target.
    (Refer to Section 16.1.2)

(2) When connecting to QnACPU, ACPU

(a) When connecting personal computer to GOT by "USB"
(Screens for QnACPU are used in the explanation.)
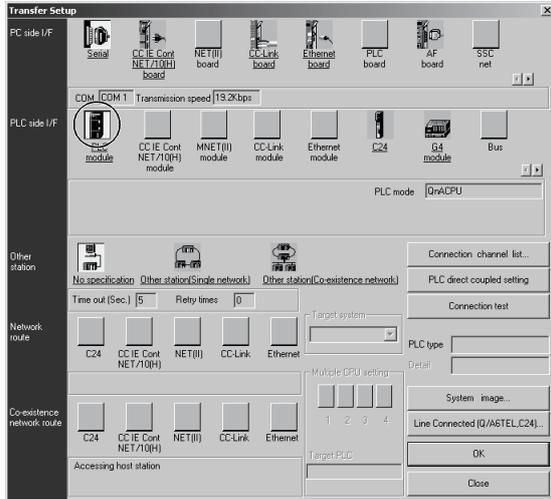
1. Double-click "PLC module" in the PC side I/F.
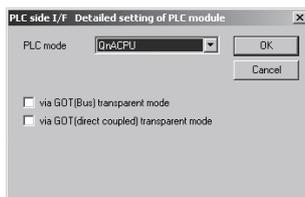
2. When connecting GOT and programmable controller via bus connection, select "Via GOT(Bus) transparent mode", when directly connecting them, select, "Via GOT(direct coupled) transparent mode" by checking the check box, and then click OK button.
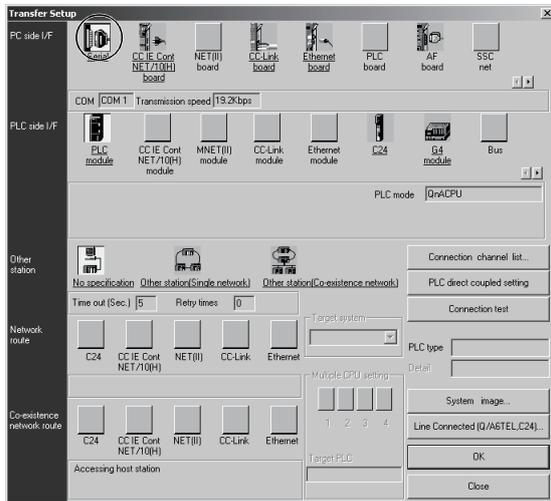
3. Double-click "Serial" in the PC side I/F.

4. Select "USB", and then click OK button.

Set the following setting items: "Other station", "Network route", and "Co-existence network route" on the "Transfer Setup" screen.

5. Make the settings according to the route to the connection target.
(Refer to Section 16.1.2)

(b)   When connecting personal computer to GOT by " RS-232"
(Screens for QnACPU are used in the explanation.)

1.   Double-click "Serial" in the PC side I/F.
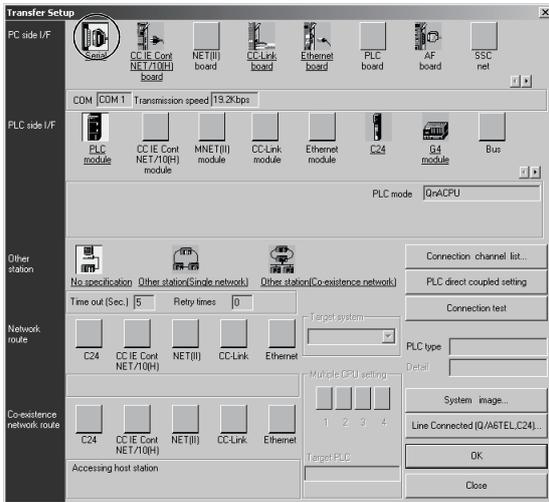
2.   Set "COM port" and "Transmission speed".
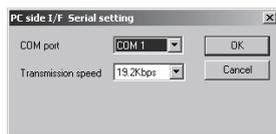
3.   Double-click "PLC module" in the PC side I/F.
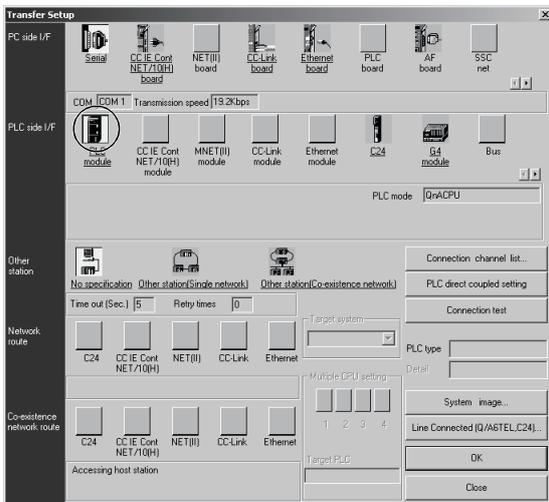
4.   When connecting GOT and programmable controller via bus connection, select "Via GOT(Bus) transparent mode", when directly connecting them, select, "Via GOT(direct coupled) transparent mode" by checking the check box, and then click ⎡OK⎤ button.
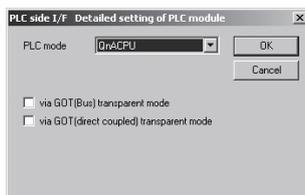
Set the following setting items: "Other station", "Network route", and "Co-existence network route" on the "Transfer Setup" screen.

5.   Make the settings according to the route to the connection target.
(Refer to Section 16.1.2)

(3)   When connecting FXCPU
　　　(a)   When connecting personal computer to GOT by "USB"

1.   Double-click "Serial USB" in "PC side I/F".

↓
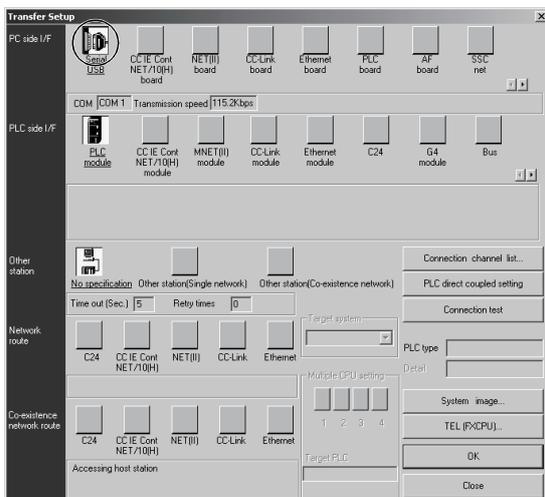
2.   Select "USB (GOT transparent mode)", and then click the [OK] button.
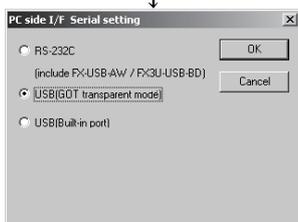
↓

Set the item of "Other station" on the screen designating where connected to.

5.   Set "Other station".
　　　(Refer to Section 16.1.2)

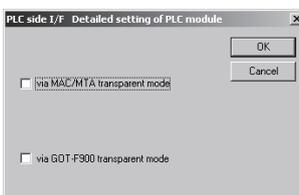(b)   When connecting personal computer to GOT by "RS-232"
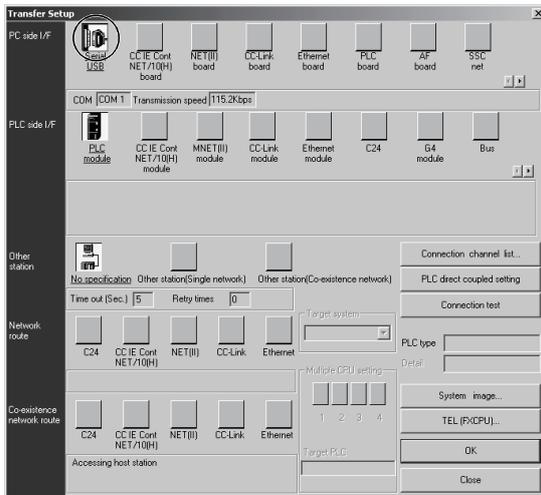
1.   Double-click "Serial, USB" in the PC side I/F.
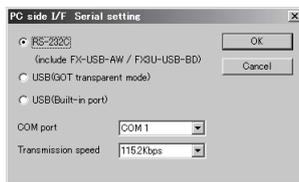
2.   Select "RS-232C (include FX-USB-AW/ FX3U-USB-BD", and then click the $\boxed{\text{OK}}$ button.
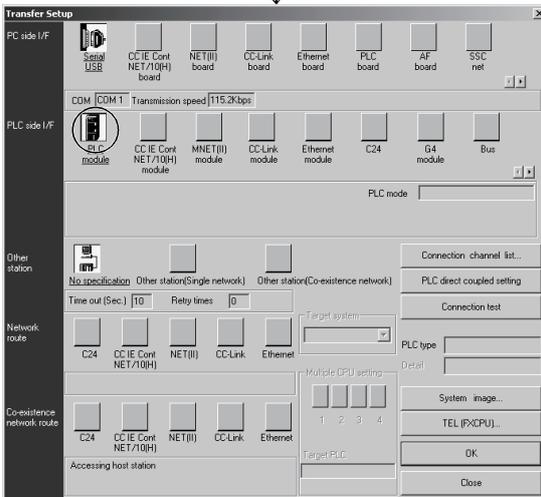
3.   When using GOT F-F900 transparent mode with FX3G, FX3U(C)CPU selected, double-click "PLC module" in the PLC side interface.
(This is not necessary for models other than FX3G, FX3U, FX3UCCPU.)

4.   Check the "via GOT-F900 transparent mode" checkbox, and click the $\boxed{\text{OK}}$ button.
(This is not necessary for models other than FX3G, FX3U, FX3UCCPU.)

Set the item of "Other station" on the screen designating where connected to.

5.   Set "Other station".
(Refer to Section 16.1.2)

16.2.5 (2) Connecting serial communication module/modem interface module

A	Q/QnA	QS	FX
○*	○*	×	×

∗: The ACPU and QnACPU can only access another station by through the Q series serial communication module/modem interface module (refer to Section 16.1.2).

This section explains the settings to be made on GX Developer to connect to the Q series serial communication module/modem interface module with the GOT transparent mode.

∗1: The following shows the connection methods between personal computer and GOT.

		GOT		
		GOT1000 series	GOT-A900 series	GOT-F900 series
Connection method	RS-232C connection	○		
	USB connection	○		

○: Connectable

∗2: For connection cables, settings, and precautions for the GOT, refer to the manual for the GOT.
• GOT1000 Series Connection Manual

POINT

(1) Precautions for connecting to the Q series serial communication module/modem interface module with the GOT transparent mode

   (a) Use GX Developer Version 8.62Q(SW8D5C-GPPW-E) or later.

   (b) When using GX Developer Version 8.58L(SW8D5C-GPPW-E) or earlier to handle the project for which USB connection settings have been made on "Transfer Setup" screen, cancel the settings and then reset the settings.
   For details, refer to Section 2.5.19.

(2) Precautions when performing online operation from GX Developer
   Do not perform online operation (download of project data, etc.) from GT Designer/ GT Designer2 to GOT, during online operation from GX Developer to programmable controller via GOT transparent mode.

(3) When GOT monitoring is faulty
   The transparent mode cannot be used. Either of the following is the possible cause.
   • The GOT monitor has not started yet after powering-on or resetting the programmable controller CPU or GOT.
   • An error occurred in the programmable controller CPU or communications between the programmable controller CPU and GOT.
   When GOT monitoring is faulty, check the following.

   (a) Whether the programmable controller operates normally
   Refer to the User's Manual of the programmable controller you use.

   (b) Whether the programmable controller and GOT are connected normally
   Refer to the Connection Manual of the GOT you use.
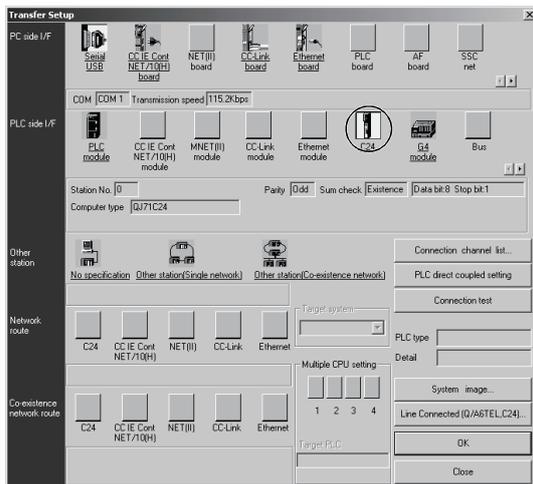   • GOT1000 Series Connection Manual

[Setting method]
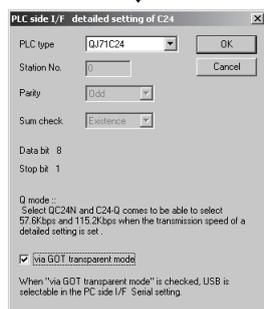
(1) When connecting to QCPU(Q mode)
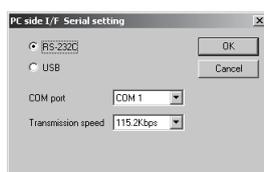

1. Select "Serial, USB" at PC side I/F.
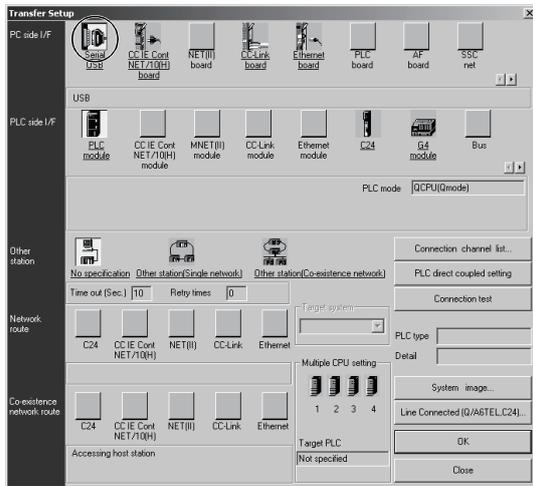
↓

2. Double-click "C24" in the PLC side I/F.

↓

3. Select "QJ71C24" or " QJ71CMO" at PLC type, check "Via GOT transparent mode", and click the OK button.
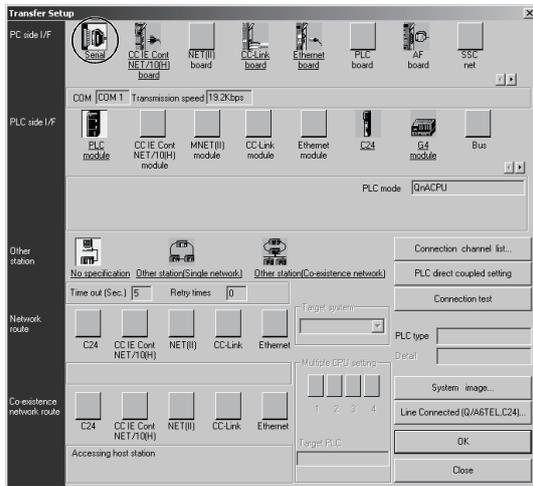
↓

4. Double-click "Serial, USB" in the PC side I/F. When using an RS-232C cable for connection between PC and GOT, select "RS-232C", when using a USB cable, select "USB", and then click OK button. If RS-232C is selected, set "COM port" and "Transmission speed".
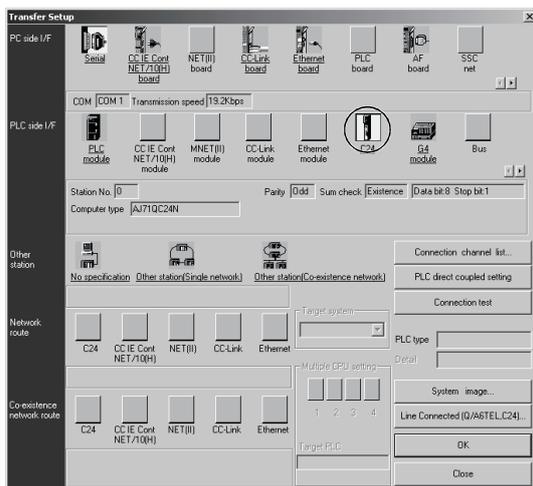
↓

Set the following setting items: "Other station", "Network route", and "Co-existence network route" on the "Transfer Setup" screen.

(2) When connecting to QnACPU, ACPU(Screens for QnACPU are used in the explanation.)
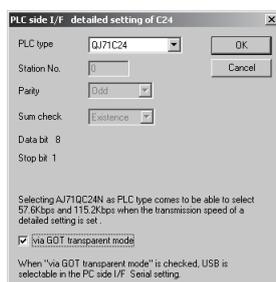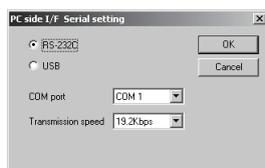

1. Select "Serial, USB" at PC side I/F.

↓

2. Double-click "C24" in the PLC side I/F.

↓

3. Select "QJ71C24" or "QJ71CMO" at PLC type, check "Via GOT transparent mode", and click the OK button.

↓

4. Double-click "Serial, USB" in the PC side I/F.
   When using an RS-232C cable for connection between PC and GOT, select "RS-232C", when using a USB cable, select "USB", and then click OK button.
   If RS-232C is selected, set "COM port" and "Transmission speed".

↓

Set the following setting items: "Other station", "Network route", and "Co-existence network route" on the "Transfer Setup" screen.

16.3 Reading from/Writing to PLC

PLC read and PLC write access the programmable controller and read/write data.
Since the same kind of dialog box is used for PLC read and PLC write operations, a common explanation is given for both here.
Refer to Section 19.2 for the PLC read/write password for the Q series.
About the remote password
When the remote password has been set to the serial communication module (for Q series) or Q series-compatible E71, making access to the programmable controller shows the remote password clearing dialog box. Access to the programmable controller cannot be made unless the remote password is cleared.
Refer to Section 13.3 for the setting of the remote password.
When the permissible number of remote password mismatches or permissible cumulative number of remote password mismatches has been set on SW0D5C-QSCU, the following status will occur if password mismatch operation is performed more than the preset number of times. In that case, refer to the Q-compatible serial communication module user's manual (applications).
Permissible number of remote password mismatches.........................Line is cut off automatically.
Permissible cumulative number of remote password mismatches ......Module's error LED is lit.

16.3.1 Reading/Writing data from/to PLC

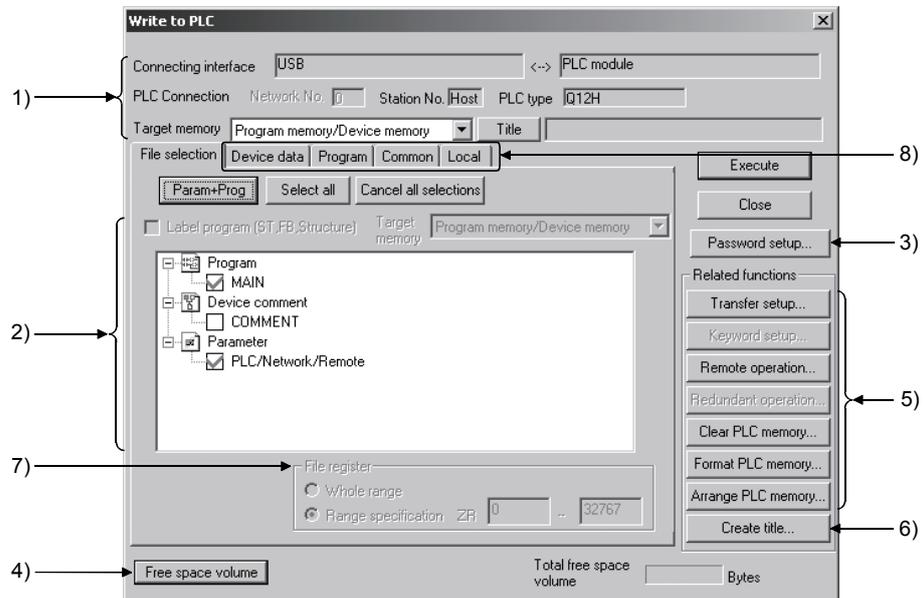| A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
  Selects data and subjects it to a PLC read or PLC write operation.

[Operating Procedure]
  Select [Online] → [Read from PLC] ([Write to PLC]), or click (📥 📤).

[Dialog Box]
  The Write from PLC screen is shown below. The | Password | button does not appear on the Read from PLC screen.

[Description]
Items in parentheses relate to "PLC write."

1) Connecting interface
   Shows the connected interface and access target station.
   For the Q/QnA series, set the target memory.

Series		Selectable Memory
QnA series		Built-in RAM, memory card (RAM), memory card (ROM)
Q series	CPU	Program memory, standard RAM, standard ROM∗1, memory card (RAM), memory card (ROM)
	Remote I/O	Standard ROM

∗1: Writing to the standard ROM is available for the Universal model QCPU only.
    Only "Read from PLC" is available for other Q series modules.

When performing write to the remote I/O station, the write destination is fixed to the standard ROM. For the applications of the memory cards, refer to the following manuals.

QnA series
QnACPU Programming Manual (Fundamentals)

Q series
QnUCPU User's Manual(Function Explanation, Program Fundamentals)
Qn(H)/QnPH/QnPRHCPU User's Manual(Function Explanation, Program Fundamentals)
Clicking the ⌈Title⌋ button displays the title attached to the Q/QnA series memory.

2) PLC data (active data)
   • For "PLC read", the list of data in the applicable memory is displayed.
     For "PLC read", if there is no data for either comment 1/comment 2 or extension comment, nothing is displayed. Note that is not possible to select more than one data item each for file register and device initial value (when using Q/QnA series).
   • For label programming, you cannot perform [PLC read].
     [PLC read] is enabled for only compiled programs.
   • For "PLC write", a data list of the opened project is displayed.
   • Select the parameters and all programs of the project with the ⌈Param + Prog⌋ buttons.
   • Clear all data with the ⌈Cancel all selections⌋ button.
     For the Q series, the intelligent function module parameters are displayed on the screen if their values have been written or set.
   • Device data name (read only)
     Clicking this button sets a data name to be read when multiple device memories are present.
   • ⌈Refresh view⌋ button (read only)
     Clicking this button updates the PLC data in the PLC read window.
     This button is not featured with "PLC write."
     When several personal computers are connected to the programmable controller, click the
     ⌈Refresh view⌋ button to check the latest PLC data before reading the programmable controller file.
   • "Label program (ST, FB, Structure)"
     Set this item when writing a label program to programmable controller.
     The place to which the label program to be written can be changed at the "Target memory".
     Writing label programs to standard ROM is available for the Universal model QCPU.

3) Password
Refer to Section 19.2.

4) $\boxed{\text{Freespace volume}}$ button (Q/QnA series only)
Clicking this button shows the maximum contiguous area (QnA series only) and total free area of the applicable memory.
This button is not effective for the A series.

5) Related function
Clicking the buttons displays functions related to PLC read/PLC write.
Refer to Section 16.1   Specifying the Connection Target
Refer to Section 18.6   Operating the programmable controller Remotely
Refer to Section 18.7   Performing Redundant Operations (CPU system switching, operation mode change, memory copy)
Refer to Section 19.1.1 Registering New Entry Codes/Changing Entry Codes
Refer to Section 20.1   Clearing the PLC Memory
Refer to Section 20.2   Formatting a QCPU (Q mode), QnACPU
Refer to Section 20.3   Sorting the QCPU (Q mode), QnACPU Memory

6) Create title
Creates a label for the applicable memory when using Q/QnA series.
Clicking this button displays the dialog box shown below.

Create target memory title			✕
			OK
Target memory			Cancel
Title			

Set a label of up to 32 characters, then click the lOKl button.

7) File register

For A series:
Block no. can be designated only if extension file register was selected at 2).

File register
○ File register
◉ Extension file register   Block no. [1]

For Q/QnA series:
• You cannot choose Whole range.
• When there are multiple file registers, the value of each file register is read (written) according to the range specified.
• Setting cannot be made when the Q00JCPU is selected.
• When using extended data register and extended link register for the Universal model QCPU, specify the range assigned to the file register. When specifying a range other than above (range used in the extended data register and extended link register), values of the extended data register and extended link register are changed.
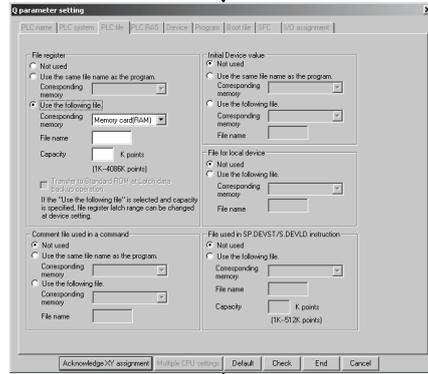
A range of the file register can be checked in the <<Device>> tab on the PLC parameter screen.

File register
○ Whole range
◉ Range specification   ZR [0]   --   [32767]

For FX series:
This setting is not possible with the FX series.

File register registration procedure

Start

Setting of file register in use
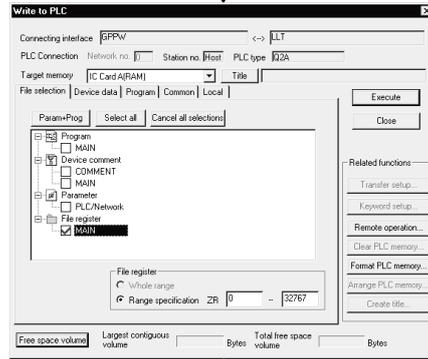
PLC file setting window for PLC parameters

Select "Use the following file".

Select "Unused" or "Use the same file as that of the program".

File register setting

New device memory creation window
New device memory creation
How to create device memory
Right-click "Device memory " in the
project list choose new file
(Refer to Section 4.9)

Write of file register

Online PLC write window
As for the target memory, set the memory
specified in the file setting screen for
personal computer parameters.

Write the file register to the programmable controller.

Write the parameters to the programmable controller.

POINT

When creating and writing a new file register name that is the same as the file
register name written to the programmable controller, delete the existing file register
from the programmable controller.
The following is the procedure from file register deletion to write.
1. Using [Delete PLC data], delete the existing file register.
2. From the [Write to PLC] → <<File selection>> tab, select the file to be written.
3. After making setting in "File register" → "Range specification", perform write to
   the PLC.

8) Range setting for data to be read from/written to PLC

<<Device data>> tab
Set the range within which device data will be read from/written to the PLC.
Refer to Section 16.3.2 for details.

<<Program>> tab
Set the range within which programs will be read from/written to the PLC.
Refer to Section 16.3.3 for details.

<<Common>> tab, <<Local>> tab
Set the range within which comments will be read from/written to the PLC.
Refer to Section 16.3.4 for details.
Comment range setting can also be made by choosing [Edit] → [Setup comment range] on the comment editing screen.

[Operating Procedure]

1. Set the access destination as described in "Specifying the Connection Destination."

2. Display the PLC read (write) dialog box.

3. At 2), check the checkbox of the data name for which PLC read (write) is to be carried out.

4. When the file selection is a program, device comment, or device memory, set the range setting and other settings on the relevant tabbed sheet.

5. Click the Execute button.
    When the programmable controller is in the RUN mode, the After STOP remotely is the PLC writing executed? dialog box appears. Choose Yes.
    At this time, check the peripheral and programmable controller side parameters.
    If the parameter check results in mismatch, read (write) is suspended.
    Also, if data of the same name exists at the read destination (write destination) on the Q/QnA series, the overwrite confirmation dialog box appears.
    When you click Yes all, the confirmation dialog box does not appear and you can perform batch read from (write to) PLC.
    When write to PLC is finished, the PLC state is STOP. Is remote-RUN executed? dialog box appears. Choose Yes.

REMARK

• Choosing Online on the [Tool] - [Options] - "Whole data" tab saves the file selection status set on the PLC read/write screen.
  The file selection status is cancelled if a PLC type change, specified connection setup change, project end or target memory change is made.
  In addition, the comment selection status of the A series is not saved.
• When performing an online change in file units, refer to Section 16.9.2 for details.

Precautions
(1) Precautions when reading project from PLC
    (a) When reading parameter
        The following dialog box appears to disable the parameter from being read,
   when reading the project from ACPU using GX Developer.

        The following two methods are available for parameter modification

        1) When the file created using GPPA is provided
            Read the parameters from the file created using GPPA and then write it
            to the programmable controller according to the following procedures.

            1. Read data from GX Developer menu [Project] → [Import file] → [Import
               from GPPA format file]

            2. Click the OK button if following message appears when reading data.
               This deletes the incorrect parts and GX Developer reads them.
               (The parameters related with programmable controller operation will
               never be changed.)
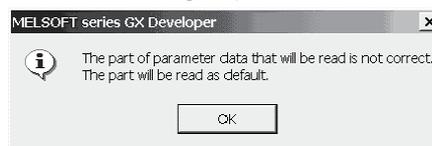
            3. Write the read parameter data into the PLC using GX Developer.
               This enables GX Developer to read the parameters from ACPU.

            4. Save the project within the file.

        2) When the file created using GPPA is not provided
            Read [PARAM. +NET PRAM. (AnU) + Main] from ACPU using GPPA
            and then save it within a file.
            Operate as instructed in 1) using the saved file.

    (b) When reading intelligent function module parameters

        1) When reading data from the PLC, set a project name to the project to
            which data are to be written.

        2) When reading data from the PLC, the intelligent function module
            parameters of the project are overwritten by the intelligent function
            module parameters read from the PLC.

            For not overwriting the intelligent function module parameters of the
            project when reading data from the PLC, save the project with the
            different name in advance.

    (c) When reading program
        Some restrictions are applied when reading label programs. For details,
        refer to Section 5.1.

    (d) When newly reading data from Redundant CPU
        Data cannot be read from the Redundant CPU with the system, such as
        "Control system", "Standby system", "System A" or "System B", specified as
        the target system.
        Create a project when reading data from the Redundant CPU by specifying
        the system.

(2) Precautions for PLC write

    (a) When PLC write is performed from multiple personal computers
        Do not perform write from multiple personal computers to one
        programmable controller simultaneously.
        1. When connected to the network
        2. When multiple projects were started on one personal computer

    (b) When the free space of the programmable controller drive is insufficient
        (Q/QnA series only)
        Performing PLC write displays the following dialog box to delete all files
        being written.
        For example, if the free file space is insufficient for parameter write, the
        parameters in the programmable controller are deleted.

            MELSOFT series GX Developer
            ⓘ This drive capacity specification exceeds.Check drive capacity,then execute again.
                <ES:010a41cf>
                           [OK]

        If the above dialog box has appeared, delete unnecessary data and re-
        execute [Write to PLC].

    (c) When performing online change in file units
        Refer to Section 16.9 for the precautions and restrictions.
        An online change in file units cannot be performed for the Basic model
        QCPU. This function cannot be performed to SFC programs of the Universal
        model QCPU.

    (d) When writing label program to PLC
        For details of precautions and restrictions, refer to Section 5.1.

    (e) Writing to PLC in backup mode (For redundant CPU only)
        When the redundant CPU is operating in the backup mode, writing to PLC is
        executed for both systems (connection system and target system) (in order
        of the control system to the standby system).
        In any of the following statuses, writing to PLC is executed for the connection
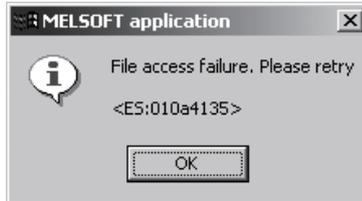   system only.
          • Target system power is off.
          • Target system is reset.
          • Tracking cable is faulty.

    (f) Writing to PLC in separate mode/debug mode (For redundant CPU only)
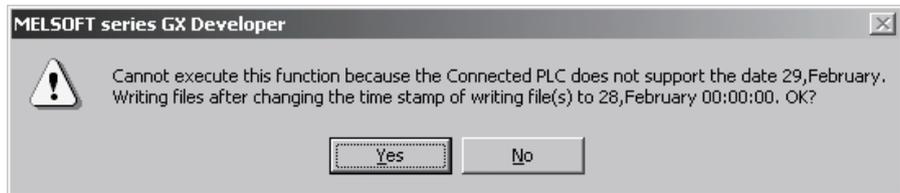   When the redundant CPU is operating in the separate mode or debug mode,
        writing to PLC is executed for only the redundant CPU specified in the
        Target system on the connection setup screen.

(g) When date of personal computer is February 29
When write to PLC, online change or TC value change is made to the Basic model QCPU, the following dialog box may be displayed.

1) When GX Developer Version 8.19V (SW8D5C-GPPW-E) or earlier is used
The following dialog box may be displayed.
Perform operation again after changing the date of the personal computer to other than February 29.

```
 MELSOFT application                    [X]

  (i)   File access failure. Please retry

        <ES:010a4135>

           [     OK     ]
```

2) When GX Developer Version 8.20W (SW8D5C-GPPW-E) or later is used
• The following dialog box may be displayed.
Select "Yes" to write the file with its date changed to February 28, 0 hours, 0 minutes, 0 seconds.

```
 MELSOFT series GX Developer                                          [X]

  /!\  Cannot execute this function because the Connected PLC does not support the date 29,February.
       Writing files after changing the time stamp of writing file(s) to 28,February 00:00:00. OK?

            [   Yes   ]      [   No   ]
```

• When the dialog box in 1) has appeared, change the date of the personal computer to other than February 29, and then perform operation again.

```
┌──────────────────────────────────────────────────────────────────┐
│ ┌─────────┐                                                        │
│ │ POINT   │                                                        │
│ └─────────┘                                                        │
│ Refer to POINT in Section 16.1.4 for details of the connection system/target │
│ system.                                                            │
└──────────────────────────────────────────────────────────────────┘
```

POINT

- If online change is necessary, set this function by selecting [Tools] → [Options], and setting to the online change mode from the write mode or monitor mode.
  Alternatively, select [Convert] → [Convert (Online change)].
  For details on online change, refer to Section 16.9.
  For details on online change settings, refer to Section 15.12.

- With the A series, as long as the program capacity settings match, program reading (writing) is possible, even if there is a mismatch with, for example, the device comment capacity.
  However, if parameter reading (writing) is executed at the same time, no capacity mismatch will occur.

- When writing to the E^2PROM of a memory cassette with built-in RAM/E^2PROM for AnUCPU (A4UMCA-8E, 32E, 128E), set the memory switch to "ROM."

- The number of subprograms that can be written with an A4UCPU differs according to the installed memory cassette.
  The subprograms that can be written are indicated below.

Memory Cassette	A3NMCA-0 to 56	A3AMCA-96	A4UMCA-128	A4UMCA-8E,32E	A4UMCA-128E
Writing possible Subprograms	Sub 1 only	Sub 1,2,3	Sub 1,2,3	Sub 1 only	Sub 1,2,3

- With the Q/QnA series, if a program with peripheral statements/notes appended is written, the statements/notes are not written to the programmable controller.
  Therefore, when reading out a program from the programmable controller, be careful not to save (by overwriting) the program with no statements or notes. Since the CPU/GPP setting is made when the statements/notes are created, refer to Section 10.1.

- When using the Q/QnA series, it is not possible to write a device memory to an IC memory card.
  Similarly, it is not possible to write file registers to the program memory of Q series and the internal RAM of QnA series.

- When using the Q/QnA series, when multiple sequence programs are written to the memory using "PLC write", carry out program setting in the PLC parameters.

- When batch writing data to an FX series model, set the programmable controller to the STOP status.
  If the programmable controller is in the RUN status, batch writing is not possible; in this case use the online change function described above.

- If the program memory of an FX series model is an EPROM cassette, write programs with a ROM writer. If it is an E2PROM cassette, Flash memory cassette, set the protect switch OFF before writing.

- When performing the ER device read/write with FX3U and FX3UC CPU, the read/write is not performed if the memory cassette is not mounted on FX3U and FX3UC CPU unit.
  The ER device read/write are performed with the FX3GCPU from EEPROM in the memory cassette mounted on the FX3G itself, or performed from the built-in EEPROM when a memory cassette is not mounted.

POINT

- When the A171SH project of MOTION (SCPU) is open, performing PLC read/ write to A172SH executes it as A171SH.
  When the A172SH project of MOTION (SCPU) is open, performing PLC read/ write to A171SH executes it as A171SH.
- PLC write cannot be performed if an instruction code error program exists after the END instruction.
  Delete it in the list mode.
- When connecting to Basic model QCPU of function version A, SFC and device initial value will not be displayed in the file selection area.
  Although remote password is displayed, write to programmable controller is disabled.

16.3.2 Setting the device data read/write range

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Sets the type, range, etc., of the devices to be read (written) when device memory has been selected on the <<File selection>> sheet.
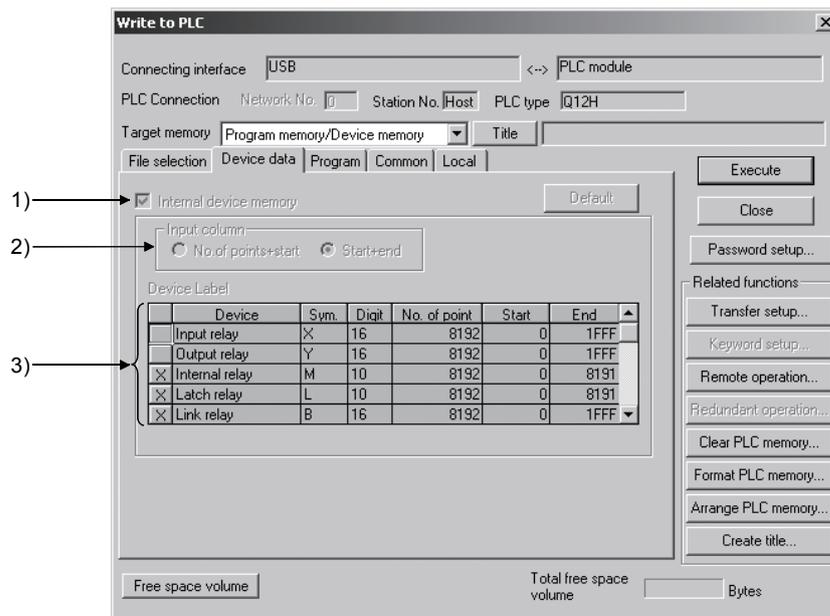The device memory contents are not written to the program memory of the programmable controller. They are written to the device memory area.

[Operating Procedure]

Select [Online] → [Read from PLC] ([write to PLC]) → <<Device data>> tab, or click (🖺 🖺) → then click the <<Device data>> tab

[Dialog Box]

The screen for "PLC read" is shown here; the screen for "PLC write" is of the same type.

[Description]

1) **Internal device memory**
   Reads (writes) the designated built-in device data.
   Check the checkbox to select it.
   If device memory has been selected in the <<File selection>> sheet, an error will be displayed if the Internal device data checkbox is cleared.

2) **Input column (Q/QnA/A series only)**
   Sets the range designation method for the devices to be read (written).
   ⊙ No. of points + start
     Set the number of device points and the first device number.
   ⊙ Start + end
     Set the first device number and the final device number.

3) Device Laval
The default settings are for all device types, and the entire range of each.
The devices that can be read (written) with the A series and Q/QnA series are indicated below.

A series

Readable/writ able devices	M/L/S ∗1, B, F, T ∗2, C ∗2, D, W, A, Z, V
Readable devices	X, Y, special D, special M

Q/QnA series

Readable/writ able devices	M, L, B, F, SB, V, S ∗3, T ∗2, ST ∗2, C ∗2, D, W, SW, FX, FY, FD, Z
Readable devices	X, Y, SM, SD

∗1 : With the A series, a single range setting is made for the three device types M, L, and S.
∗2 : Three types - contact, coil, and present value - are read (written).
∗3 : For the S device of GX Developer Version 7.17T (SW7D5C-GPPW-E) or later, the read (write) default setting status is OFF.

FX series
With the FX series, all the readable/writ able devices are designated.

4) Link memory Start address (Q/QnA series only)
Checking this checkbox with the Q/QnA series causes batch reading of the link memory of the designated data link module or network module.
The range of modules that can be designated is 1 to 4.
Since "PLC write" is not possible with a link memory, only reading can be designated.
The data can be read to J∗\W∗∗ of the device memory.
For details on the device designation method, refer to QCPU Programming Manual (Common Instructions) or QnACPU Programming Manual(Common Instructions)
This setting is not possible with the A series.

5) Buffer memory start address (Q/QnA series only)
Checking this checkbox with the Q/QnA series causes batch reading of the buffer memory of the designated special function module.
To designate the special function module, set the first output number (however, the lowest digit is unnecessary).
The setting range is 0 to 1FF.
Since "PLC write" is not possible with respect to a buffer memory, only reading can be set.
The data can be read to U∗\G∗∗ of the device memory.
For details on the device designation method, refer to QCPU Programming Manual (Common Instructions) or QnACPU Programming Manual(Common Instructions)
This setting is not possible with the A series.

<Setting Example>

Case where the first I/O number is 40 | U | 4 |

6) Default button
Always click this button when performing write to PLC after changing the device range from [PLC parameter] - <Device> tab.

16.3.3 Setting the program read/write range

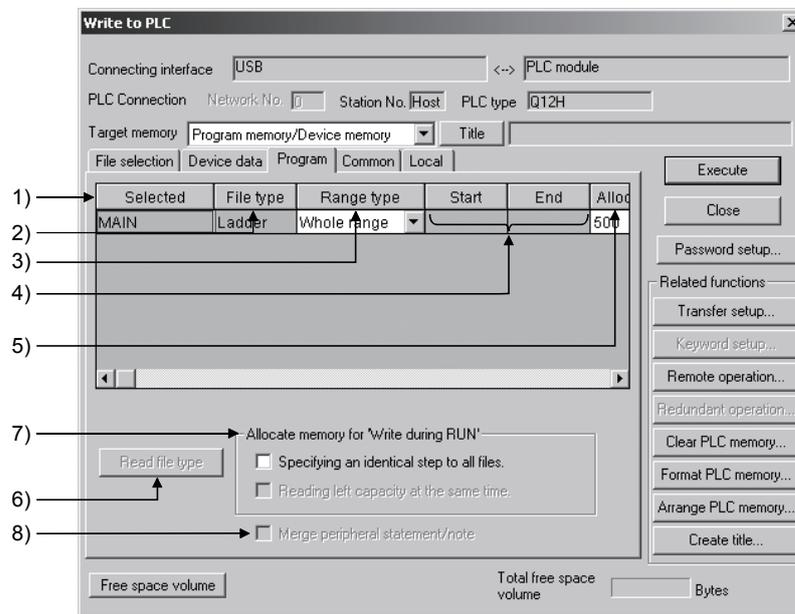| A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Sets the program range for reading/writing.

[Operating Procedure]
Select [Online] → [Read from PLC] ([Write to PLC]) → <<Program>> tab, or click
(🗄 🗄) → then click the <<Program>> tab.

[Dialog Box]
The dialog box for "PLC read" is shown here; the dialog box for "PLC write" is of the
same type.

[Description]

1) Selected
    Displays the data name of the program selected on the "File selection" tab.

2) File type
    Displays the program type.
    File type can be displayed by clicking the ⎕ Read file type ⎕ button.

3) Range type
    Specify "Whole range" or " Step range" for the range of reading or writing each
    program.

4) Start/End
    When "Step range" is selected in the above setting, set the start and head steps
    of the program
    The setting range is up to maximum number of the steps for each
    programmable controller.

5)   Allocate memory for "write during RUN"
Displays the status of reservation step for write during RUN in each program during PLC read.
File type can be displayed by clicking the ⌐Read file type⌐ button
Set reservation step for PLC read or RUN.
The setting range is up to maximum number of the steps for each programmable controller.

6)   ⌐Read file type⌐ button
Read out the remaining number of reservation steps for PLC read, file type read or RUN.
This setting is not available for PLC write.

7)   Allocate memory for "write during RUN"
   • Specify the same number of steps for all files.
     This setting is not available for PLC read.
     If the setting value is entered in the first line within the "Reservation step for write during RUN" display area when writing to PLC, the setting will be updated on the reservation step for write during RUN for the program displayed on program selection area.
     The second or later line is not disabled to set.
   • Read out the remaining number of reservation steps for RUN as well.
     The remaining number of reservation steps for RUN for the file written to the programmable controller are read out as well during PLC read to be updated on the setting value of the number of reservation step for write during RUN.
     This setting is not available for PLC read.

8)   Merge peripheral statement/note
This setting is available for PLC read. Refer to Section 10.2.
This setting is not available for PLC read.

16.3.4 Setting the comment read/write range

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Set the range within which device comments will be read (written).
Make this setting to write comments to the programmable controller in a limited range, e.g. when the programmable controller does not have enough free space.

[Operating Procedure]

- Reading (writing) comments common to all programs
  Select [Online] → [Read from PLC] ([Write to PLC]) → <<Common>> tab, or click
  🔧 (🔧), then click the <<Common>> tab.
- Reading (writing) program-specific comments
  Select [Online] → [Read from PLC] ([Write to PLC]) → <<Local>> tab, or click 🔧
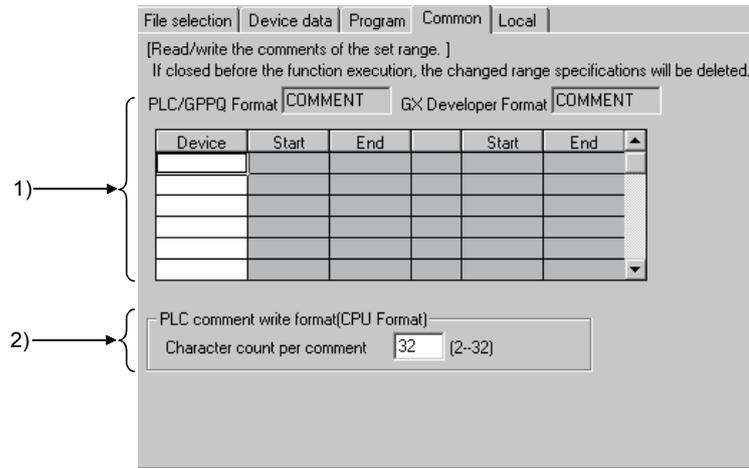- (🔧), then click the <<Local>> tab.

[Dialog Box]

A series PLC read the <<Common>> sheet and Q/QnA series PLC write.
The <<Common>> sheet is shown here; the <<Local>> sheet is of the same type.
(However, the A series <<Local>> sheet has no range setting for extension comments.

- A series PLC read <<Common>> sheet:
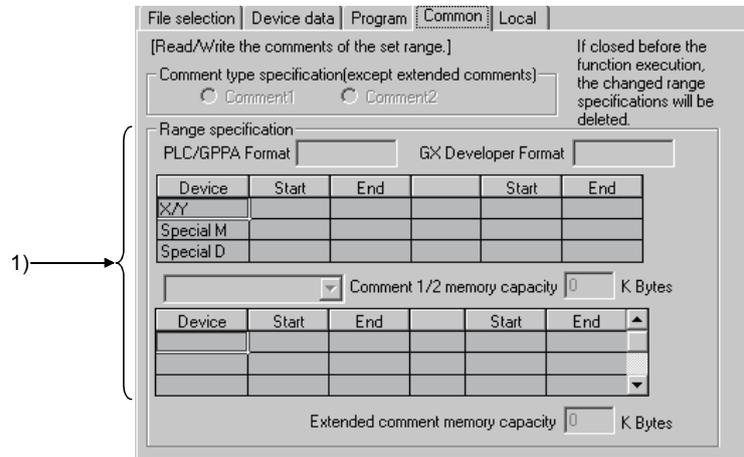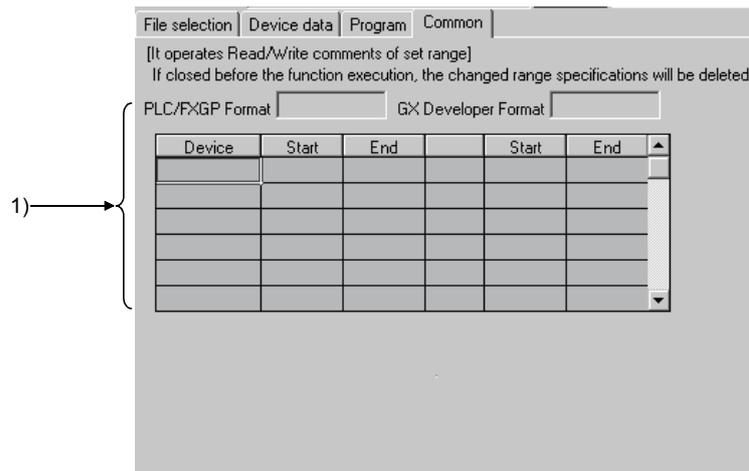
- Q/QnA series PLC write <<Common>> sheet:
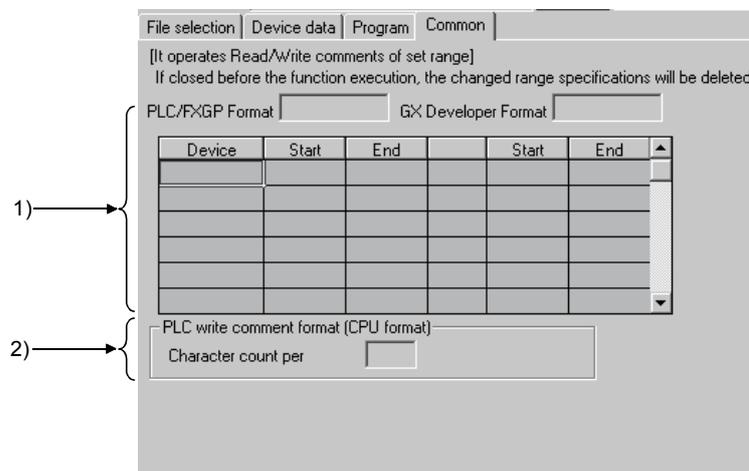

[Dialog Box]
The FX series PLC read <<Common>> sheet and PLC write <<Common>> sheet are shown here. With the FX series, there is no <<Local>> tab.

- FX series PLC read <<Common>> sheet:

- FX series PLC write <<Common>> sheet:

[Description]
1) Device range setting
   Sets the range of device comments to be read (written) when device comment data has been selected by file selection.
   The details of comment range setting when editing device comments are set.
   If the read (write) range is incorrect, it is changed.
   However, when the range is changed, the comment range setting for device comment editing is also automatically changed.
   For details on comment range setting, Refer to Section 9.7.

   When writing with the A series, always carry out range setting. Note, however, that no range designation is required when the entire range is to be read.
   When reading (writing) the entire range with the QnA series, no range designation is required.
   For the Q series, up to 64K points can be written to the programmable controller.
   There are no restrictions on saving onto the HD/FD of the personal computer.
   When reading with the FX series, all that is required is to select the comment data file: range setting is not necessary.

2) PLC write comment form (Q/QnA series only)
   Sets the number of characters of comments written to a Q/QnA series programmable controller.
   In device comment editing, comments of up to 32 characters can be created, but memory capacity can be saved by reducing the number of characters written to the programmable controller.
   The setting range is 2 to 32 characters.
   There is no setting for reading.
   This setting is not possible with the A series.

POINT

- Handling of device comments on GX Developer
  There are two types of device comment: comments common to all programs and program-specific comments. This is not the case with previous packages (GPPA, GPPQ, FXGP(DOS), FXGP(WIN)).
  Therefore, first read Section 9 "SETTING DEVICE COMMENTS" before reading (writing) device comments.

- Comment capacity setting (A series only)
  With the A series, it is not possible to read (write) device comments unless a comment memory capacity setting has been made.
  Make the PLC parameter memory capacity setting by referring to the comment capacity displayed under the range designation.

- Precautions for reading from/writing to PLC
  Reading from/writing to PLC is executed as described below depending on the comment range setting of the project being edited.

		Reading from PLC	Writing to PLC
GX Developer comment range setting	Set	• According to user selection, device comments can be read within the comment range setting of the project being edited or within the comment range setting written to the programmable controller. • The device comments edited on GX Developer before reading from PLC are all deleted.	• The device comments within the comment range setting are written. ＊1 • The comment range setting and device comments in the programmable controller before writing to PLC are all deleted.
	Not set	For QCPU (Q mode)/QnACPU • The all device comments written to the programmable controller can be read. ＊2 • The device comments edited on GX Developer before reading from PLC are all deleted. For ACPU or FXCPU • The comment range setting and all device comments written to the programmable controller can be read. • The device comments edited on GX Developer before read from PLC are all deleted.	For QCPU (Q mode)/QnACPU • The range of the created device comments is detected, and the comment range setting and all comments are written. • The comment range setting and device comments in the programmable controller before writing to PLC are all deleted. For ACPU or FXCPU • Comments are not written.

＊1: Device comments outside the comment range setting are not written to the programmable controller.

＊2: When GX Developer Version 8.19V (SW8D5C-GPPW-E) or earlier is used, the comments are read with the comment range set when they are read from the PLC.

- When writing all created comments to the QCPU (Q mode)/QnACPU, do not make the comment range setting.

16.4 Verifying the Peripheral Side and PLC Side Data

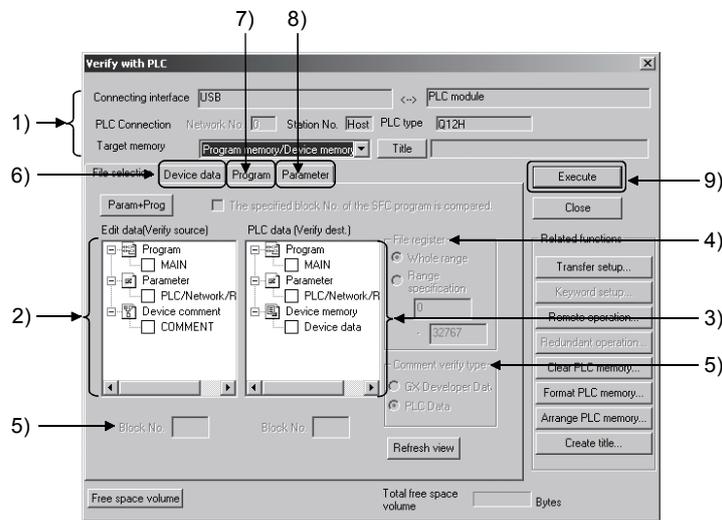| A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Compares and verifies the program, parameters and device comments in the programmable controller and the data on the personal computer side.

[Operating Procedure]
[Online] → [Verify with PLC].

[Dialog Box]

[Description]

1) Connection destination information
Shows the connected interface and accessed station.
For the Q/QnA series, set the corresponding memory.

2) Edited data (verify source)
Lists the programs and parameter data of the project.
Check the data name check box to make selection.

3) PLC data (verify destination)
Lists the programs and parameter data in the programmable controller.
Check the data name check box to make selection.
If extended comments have not been written to the programmable controller, the extended comment item does not appear.

4) File register
Refer to Section 16.3.1 7).

5) Comment verify type
    Select whether the device comments of the edited data (verify source)
    comments or those of the PLC data (verify destination) are used as the basis of
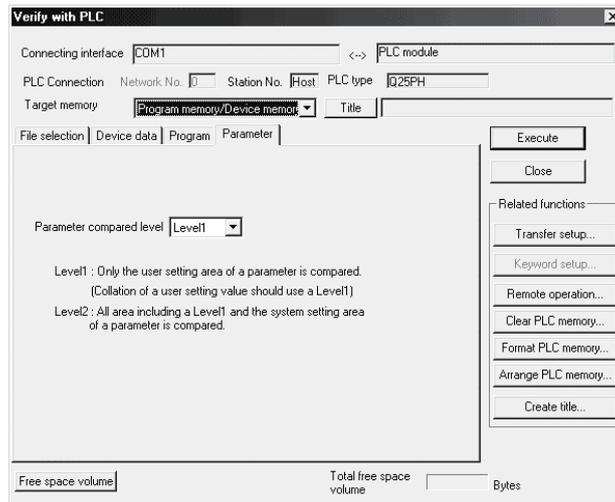   verify.

The verify basis is indicted below.

PLC Data	
ACPU QCPU (A mode), Motion Controller	QCPU (Q mode), QnA
Edited data area>PLC data area ..... Comments outside the PLC data area are not verified.	
Edited data area=PLC data area ..... All devices will be the target of verify.	
Edited data area<PLC data area ..... Comment sections not existing in the edited data are handled as "no comment".	
Verify is executed in the device area set to the comments of the comment type (kana/kanji, extended) selected in the PLC data and written to the programmable controller.	Verify is executed in the device area set to the comment file selected in the PLC data.

Gppw Data	
ACPU QCPU (A mode), Motion Controller	QCPU (Q mode), QnA
Edited data area>PLC data area ..... Comments outside the PLC data area are not verified.	
Edited data area=PLC data area ..... All devices will be the target of verify.	
Edited data area<PLC data area ..... Comment sections not existing in the edited data are handled as "no comment".	
Verify is executed in the device area set in the PLC write range setting of the comments of the comment type (kana/kanji, extended) selected in the PLC data. If PLC write range setting has not been made, verify is executed in the whole edit device area in GX Developer.	Verify is executed in the device area set in the PLC write range setting of the comments selected in the edit data. If PLC write range setting has not been made, verify is executed in the whole edit device area in GX Developer.

POINT

- The following instruction applies to the verify of comments on the QnA series.
  When selecting multiple comment files, verify the identical file names.
- The M, L and S of the ACPU or QCPU (A mode) must be verified when the
  device range setting has been made with reference to the editing data range.
  Otherwise, the verify results of the M, L and S will be illegal.

6) <<Device data>>tab
    Refer to Section16.3.2.

7) <<Program>>tab
    Refer to Section16.3.3.

8) <<Parameter>>tab (Q/QnA series only)
    Select the parameter verify level.
    The default is "Level 1".

When verify is performed on "Level 2"
On "Level 2", the parameter area other than the user setting area is also verified.
The following message appears if any mismatch is detected as a result of
verifying the parameter area other than the user setting area.
Take corrective action according to the message of the verify result.

Message	Corrective Action
The header information of the parameter block is inconsistent.	A mismatch exists in other than the user setting area. ＊1 Write the parameters to the programmable controller again.
This parameter block can't analyze.	The GX Developer version used to create the project differs between the programmable controller and GX Developer. This does not affect the operation of the programmable controller. When matching the verify results of Level 2, install the latest version of GX Developer, then read the parameters from the programmable controller, and write them to the programmable controller again to ensure safety.

＊1: The area other than the user setting area of the programmable controller may
     become illegal due to the influence of noise, etc.
     In that case, a parameter-related error may occur in the programmable controller,
     but no mismatches are detected if verify is performed on "Level 1".

9) The specified block No. of the SFC program is compared
    The block No. specified in 10) is compared.

10) Block No.
    Set the block No. to be compared.

11) Execute button
    Click this button when the setting is finished.

[Setting Procedure]

1.   Set the access destination in Transfer setup.

2.   Show the PLC verify screen.

3.   Check the desired data check boxes at 2) and 3) to make selection.

4.   When verifying programs, set the area at 5).

5.   After the setting is over, click 8).
     After completion, the verify result dialog box appears.

POINT
• When multiple pieces of data have been chosen in file selection, verify is performed between identical data names. Also, if the data names selected do not correspond between the verify source and destination, an error message appears.   When sequence programs are to be verified one by one between the verify source and destination, you can specify different data names.
• If more than 100 discrepancies are found in the verify results, the results of up to 100 discrepancies are displayed and verify is suspended at that point.   Before restarting verify of the area at and after the point of verify suspension, specify the range or correct the verify data.

16.5 Writing to PLC (Flash ROM)

16.5.1 Writing the program memory to ROM

A	Q/QnA	QS	FX
○*1	○*2	○*3	×

*1: Compatible with the QCPU (A mode).
*2: Compatible with the QCPU (Q mode).
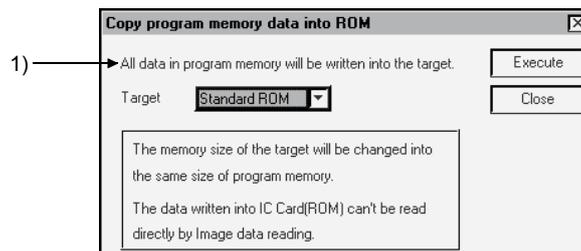*3: Refer to GX Developer Version 8 Operating Manual (Safety Programmable Controller).

[Purpose]
Batch-writes the data of the program memory to the standard ROM or linear flash ROM. (Q series only)
To write to the ATA card, choose [Online] → [Write to PLC].

[Operating Procedure]
Select [Online] → [Write to PLC (Flash ROM)] → [Write the program memory to ROM].

[Dialog Box]

[Description]
1) Target
Choose Standard ROM or IC Card (ROM) (for linear flash ROM).

POINT
• Data of the program memory written to the ROM cannot be read in image data reading.   Read it directly from the programmable controller. • If program memory data is written to the ROM, device memory data cannot be written to the ROM. • For the Universal model QCPU, standard ROM cannot be selected for writing target.

16.5.2 Writing to PLC (Flash ROM)

A	Q/QnA	QS	FX
×	○∗	×	×

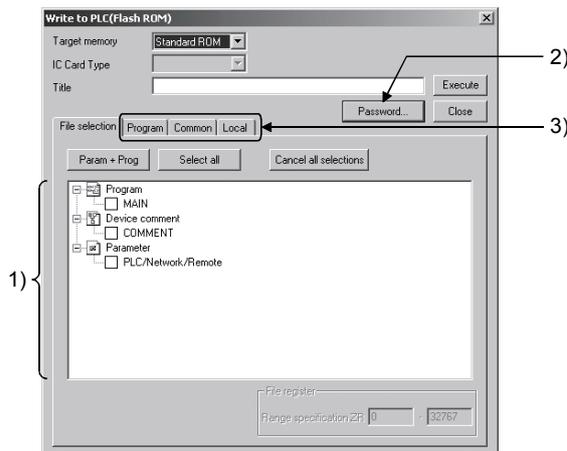∗: Only Basic model QCPU and QnACPU are incompatible.

[Purpose]
Writes data to the standard ROM or flash ROM. (Q series only)

[Operating Procedure]
Select [Online] → [Write to PLC (Flash ROM)] → [Write to PLC (Flash ROM)].

[Dialog Box]

[Description]
1) PLC write setting
   Refer to Section 16.3.1.

2) Password button
   Refer to Section 19.2.

3) Range setting for data to be read from/written to PLC
   <<Program>> tab
      Set the range within which programs will be read from/written to the PLC.
      Refer to Section 16.3.3 for details.
   <<Common>> tab, <<Local>> tab
      Set the range within which device comments will be read from/written to the PLC.
      Refer to Section 16.3.4 for details.
      Comment range setting can also be made by choosing [Edit] → [Setup comment range] on the comment editing screen.

POINT

(1) For Write to PLC (Flash ROM) with the other station specified, set the time check (seconds) to 45 seconds on the Transfer setup screen.
(2) Since transfer/write may take time depending on the performance of the personal computer, use the following menu to write a program to the ROM.
   (a) When writing the program memory data of the PLC to ROM
      Select [Online] → [Write to PLC (Flash ROM)] → [Write the program memory to ROM].
   (b) When writing the project data to ROM (PLC card slot required)
      Select [Tools] → [IC memory card] → [Write IC memory card].
   (c) To write to the ATA card, choose [Online] → [Write to PLC].
      As the corresponding memory, choose Memory card (ROM).
(3) For the Universal model QCPU, standard ROM cannot be selected for target memory.

16.6 Deleting Data from the Programmable Controller

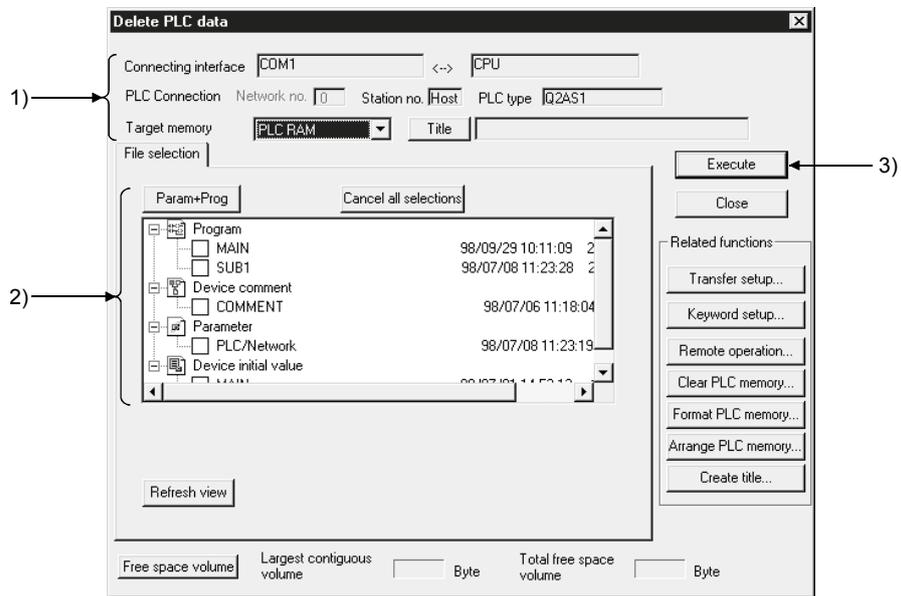| A	Q/QnA	QS	FX
×	○	○	×

[Purpose]
Deletes data such as programs and parameters in the programmable controller when using the Q/QnA series.

[Operating Procedure]
Select [Online] → [Delete PLC data].

[Dialog Box]

[Description]

1) Connection destination information
Displays the connected interface/applicable station for access.
Set the applicable memory.

2) PLC data
Displays the list of data in the applicable memory.
Check the checkbox for the data name to be deleted to select it.
Select the project parameters and all programs by clicking the ⎹Param + Prog⎸ buttons.
Cancel all data by clicking the ⎹Cancel all selections⎸ button.

3) ⎹Execute⎸ button
Click this button after setting the necessary settings.

[Operating Procedure]
1.   Set the access destination as described in "Transfer setup."

2.   Display the PLC file delete dialog box.

3.   Check the checkbox for the data name to be deleted in 2) to select it.

4.   After making the necessary settings, click 3).

POINT
• PLC file deletion is possible for the Q/QnA series only. When using the A series, select [Online] → [clear PLC memory] to all-clear the data in the memory cassette, then write only the necessary data again. For details on PLC memory clear, refer to Section 20.1.1.
• For the Universal model QCPU only, standard ROM can be selected for target memory.

16.7 Changing PLC Data Attributes

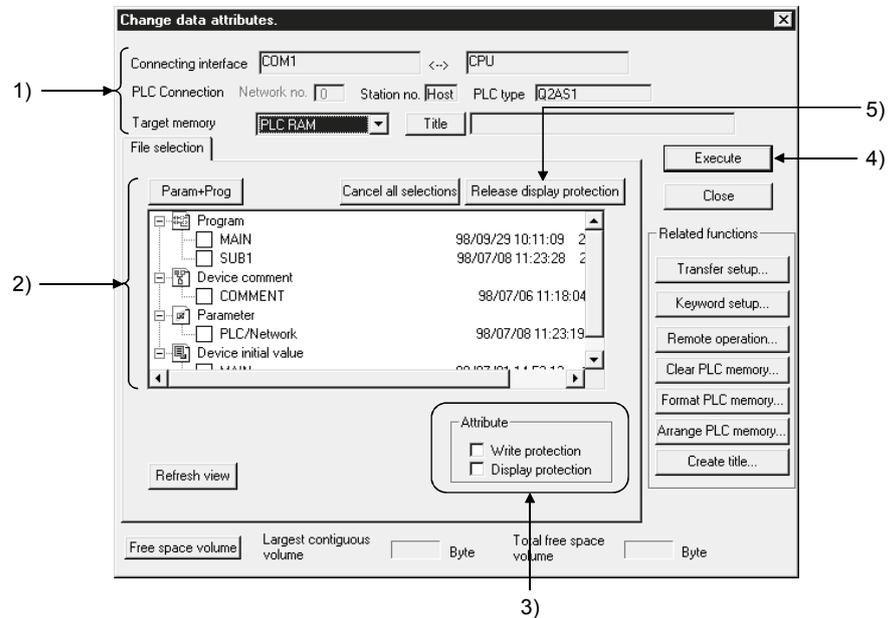| A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with the QnACPU.

[Purpose]
Changes the attributes to "writing protection" and "display protection" in order to protect programs, parameter data and other data in QnA series CPU from unwanted access. (QnA series only)

[Operating Procedure]
Select [Online] → [Change PLC data attributes].

[Dialog Box]

[Description]

1) Connection destination information
   Displays the connected interface/applicable station for access.
   Set the applicable memory.

2) PLC data
   Displays the list of data in the applicable memory.
   Check the checkbox for the data name whose attributes are to be changed to select it.
   Select the project parameters and all programs by clicking the | Param + Prog | buttons.
   Cancel all data by clicking the | Cancel all selections | button.

3) Attribute
Sets the data attributes.
If both the Display protection and Write protection checkboxes are selected by checking them, data is neither written nor displayed.
- When write protection is selected:
  Data cannot be written or deleted by access from a personal computer.
- When display protection is selected:
  The existence of the data is not indicated in the display on accessing from a personal computer.

4) Execute button
Click this button after setting the necessary settings.

5) Release display protection button
Releases data for which the display protection or write protection status is set from the protection status.
Clicking the Release display protection button displays, the dialog box shown below.
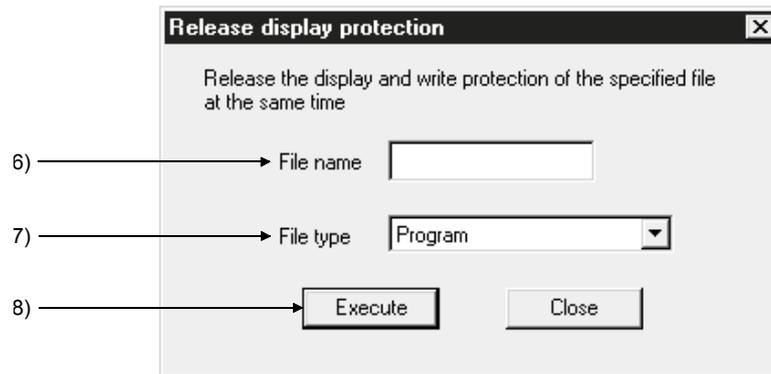
6) File name
Set the file name for which the display protection or write protection status is to be canceled.
If the file name for which the parameter has been changed and the set file name do not match, the "protection" status cannot be released.

7) File type
Set the file type for which the protection status is to be cancelled.

8) Execute button
After setting the file name and file type, click the Execute button.
If the set file name or file type does not agree with that at the PLC side, the protection status cannot be canceled.

[Operating Procedure]

- Changing to the "write protection"/"display protection" status

    1.   Set the access destination in the "Transfer Setup."

    2.   Display the "Change data attributes." dialog box.

    3.   Check the checkbox for the data name to be deleted at 2) to select it.

    4.   Set the type of attribute at 3).

    5.   Click 4).

- Canceling the write protection or display protection status

    1.   Set the access destination in the "Transfer Setup."

    2.   Display the "Change data attributes." dialog box.

    3.   Click 5) to display the Release display protection dialog box.

    4.   Set 6) and 7).

    5.   After setting the necessary settings, click 8).

POINT

- Be sure not to forget a data name whose display has been disabled.
  If the correct data name cannot be set, it will not be possible to designate the data for access, making reading and writing impossible.
  To delete or change display protection data when you have forgotten the name, initialize the memory by selecting [Online] → [format PLC memory], then write the necessary data again.
  Refer to Section 20.2 for details on PLC memory formatting.

- It is possible to change the same attribute of several data at the same time, but protection statuses have to be canceled one by one.

- If neither selection has been made in attribute designation, the write protection status of the selected data is canceled.

- Even when "Display protection" has been set to the execution program, the label program is displayed.

- "Change PLC data attributes" cannot be performed during monitoring of a programmable controller.
  To perform, place all open ladder editing screens in write or read mode, and close all monitor screens.

16.8 Reading/Writing PLC User Data

16.8.1 Reading PLC user data

A	Q/QnA	QS	FX
×	○*	×	×

*: Only Basic model QCPU is incompatible.

[Purpose]
Reads CSV format and other files written on the IC memory card/standard ROM to the personal computer.
Refer to the following manual for the way to use the user data with the sequence program.
• QCPU Programming Manual(Common Instructions)
• QnACPU Programming Manual(Common Instructions)

[Operating Procedure]
Select [Online] → [PLC user data] → [Read PLC user data].

[Dialog Box]
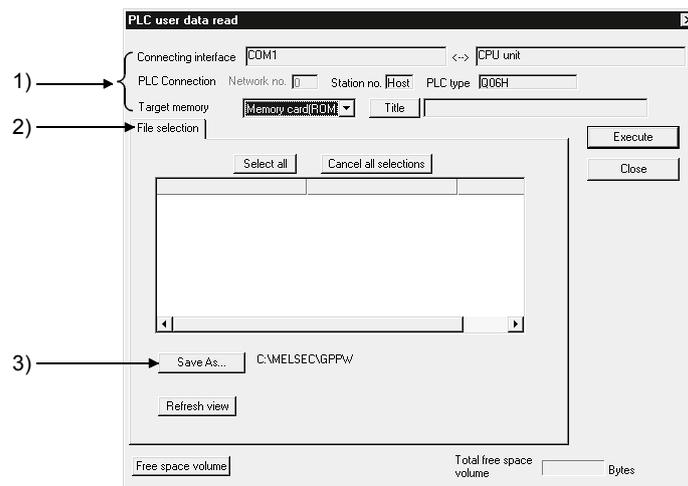
[Description]

1) Read target setting
Set the read destination of data.
For the Universal model QCPU only, standard ROM can be selected for target memory.

2) Read data setting
Refer to Section 16.3.

3) Save As button
Set the save target of the read data.

REMARK

Use [Online] → [PLC user data] → [Delete PLC user data] to delete data.

16.8.2 Writing PLC user data

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Only Basic model QCPU is incompatible.

[Purpose]
Writes data created in the CSV format and others to the ATA card/standard ROM.
(Q series only)

[Operating Procedure]
Select [Online] → [PLC user data] → [Write PLC user data].

[Dialog Box]
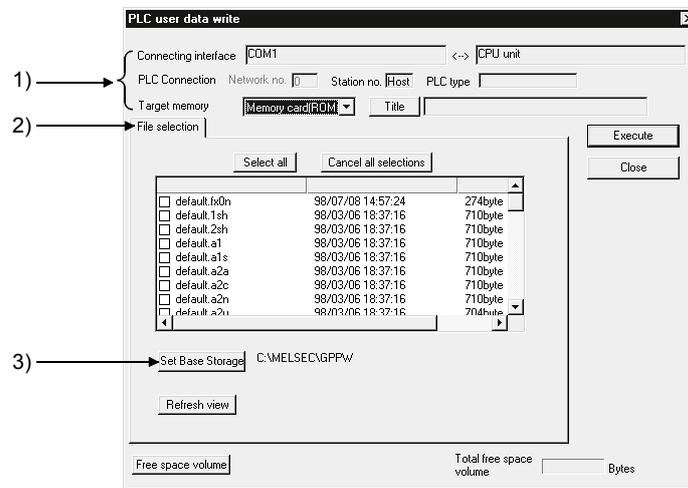
[Description]

1)   Write target setting
Set the write destination of data.
For the Universal model QCPU only, standard ROM can be selected for target
memory.

2)   Written data setting
Refer to Section 16.3.

3)   Set Base Storage button
Sets the storage source of the writing data.

POINT

- Use Format PLC memory to format the IC memory card.
- The attributes (read only, hidden file) of a project file are invalid if they are set on
  Windows® ' Explorer or the like.

16.9 Executing Online Change

This section explains the operation that changes programs and data (online change) while programmable controller is in RUN status.

There are two types of online change, online change in units of ladder block and in units of file.
Read the following, Section 16.9.3 and Section 16.9.4 carefully before executing online change.

◇ DANGER	• For data change, program change, and status control made to the programmable controller which is running from a Personal computer, configure the interlock circuit externally so that the system safety is ensured. The action to be taken for the system at the occurrence of communication errors caused by such as loose cable connection must be determined for online operation of programmable controller from Personal computers.

⚠ CAUTION	• Be sure to read the manual careful and exercise an appropriate amount of caution connecting to programmable controller and performing online operations (programmable controller program change during RUN, forced input/output operation, RUN-STOP or other operation condition changes, remote control operation) while the personal computer is operating. Regarding the programmable controller program change during RUN (Write during RUN), the program may be corrupted or have other problems depending on operation conditions. Exercise the appropriate amount of caution with regard to the Caution points in section 16.9.

16.9.1 When performing online change in ladder block units

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Modify a program during RUN of the programmable controller.

[Operating Procedure]
Perform PLC verify in advance and make sure that the programs match.
If the parts to be written to the programmable controller do not match, online change cannot be executed.

1. Modify or correct the program.

2. Choose [Convert] - [Convert (Online change)] (Shift + F4) to execute an online change. *

∗: By making the following setting, choosing [Convert] (F4) enables an online change. This is convenient for a program change by online change at any time.

<Setting>
Choose [Tools] - [Options] - <Common> tab screen, and select "Make online change to PLC after conversion" in the online change setting. (Refer to Section 15.12 for the online change setting.)

[Explanation]
An online change can be executed in the write mode or monitor (write) mode.
An online change cannot be made when the programmable controller is in the STEP-RUN status.
The following dialog box appears when an online change is executed.
Read the displayed message carefully and execute an online change.


```
MELSOFT series GX Developer                                    ☒

  ⚠    Caution!
        PLC control has changed.
        Make sure everything is safe then execute again.
        The write destination is the program in the program memory.

        Don't write to the same program from a plurality of place
        at the same time.
        Ensure the PLC program and the program to be converted match.
        It will not operate properly when there is some Rise instruction / Fall instruction /
        SCJ instruction in the program.

        OK?

        Write destination program: MAIN

                    Yes              No
```

Click the Yes button to write the modified program to the programmable controller.

POINT

- Perform PLC verify when making an online change to the programmable controller for the first time or when an error has occurred during online change processing.

- If NOP instructions exist after the ladder block and the online change range is exceeded, choose "Don't shift the program forward" and start online change. Refer to Section 15.12 for shift forward setting.
  Note that when step 0 (LD X1) of the following program is to be changed to LD X3, online change cannot be made if "Shift the program forward" has been selected.

<div style="display:flex;">

Ladder mode

```
        X1
 0  ─┤ ├─────────────────( M0 )

        X2
601  ─┤ ├─────────────────( M10 )
```
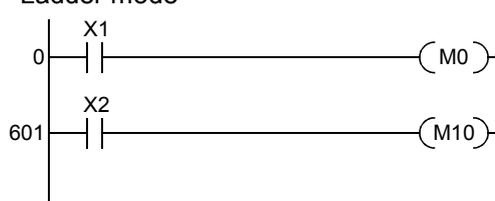
List mode
```
  0 LD X1
  1 OUT MO
  2 NOP
  3 NOP
    to
600 NOP
601 LD X2
602 OUT M10
```

</div>

Shift the program forward
    Online change cannot be made as steps 0 to 600 will be the target of online change.
Don't shift the program forward
    Online change can be made as steps 0 to 1 will be the target of online change.

- The following dialog box appears if the T/C coils of the same number exist in the program within the programmable controller. (This does not apply to the extended T/C.)

```
┌──────────────────────────────────────────────────────────┐
│ MELSOFT series GX Developer                           [X] │
├──────────────────────────────────────────────────────────┤
│  ⚠   The same T/C coil exists in program (MAIN) and/or program (MAIN-SFC). │
│      The values are set to be the same as in the first found T/C coil from the top of program. │
│                                                            │
│                     ┌──────────┐                          │
│                     │    OK    │                          │
│                     └──────────┘                          │
└──────────────────────────────────────────────────────────┘
```
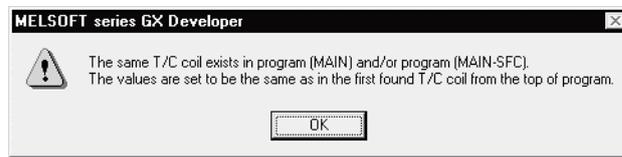
If the T/C coil set values of the same number exist in the edited program, the last T/C coil set value in the edited program is used to perform online program change.

Note: If a program (MAIN-SFC) has not been created, it is displayed as a message.

- For precautions and restrictions of label programs, refer to Section 5.1.

- When the date of the personal computer is February 29, online change may not be made to the Basic model QCPU.
  Refer to Section 16.3.1 for the action to be taken when online change cannot be executed.

POINT

- Write range when a ladder block is newly inserted (other than FX3U, FX3UC)
  When a new ladder block is inserted without the existing program being modified, the added program and next ladder block are written together to the programmable controller. (If the next ladder block does not exist, the added program and preceding ladder block are written together.)
  Therefore, write during RUN may not be performed at only one time depending on the number of steps of the added program and preceding or next program. In this case, reduce the number of steps to be written at one time, and perform write during RUN at several times.

  <Example>

- Write range when a remote ladder block is edited
  When editing separated ladder blocks, writes program in the space between the edited blocks as well so that the whole range of the program is written to programmable controller.

  <Example>

- For the Universal model QCPU, whether to transfer the contents of program cash memory to program memory can be set by selecting "Transfer to program memory after writing data is end." on the Options screen after online change, For the option settings, refer to Section 15.12.

- The Universal model QCPU cannot execute the following functions during the transfer of program memory after online change.
  - Online change (ladder, ST language, Function Block)
  - TC setting value change (Currently open program + PLC program)
  - Write to PLC (When the target memory is a program memory)
  - Program memory batch transfer
  - Transfer setup
  - Change PLC type
  - Check parameter
  - Clear all parameters
  - Marge data

- When the executional conditioned device test is set for the Universal model QCPU, registered data of the executional conditioned device test that are within the write range are disabled.

16.9.2 When performing online change in file units

A	Q/QnA	QS	FX
×	○*	○	×

∗: Compatible with QCPU (Q Mode) (except Basic model QCPU).

[Purpose]
Batch-write programs or data in file units during RUN of the programmable controller.

[Operating Procedure]
Choose [Online] - [Write to PLC].

[Explanation]
An online change of programs, device comments, etc. can be executed.
Data that can be changed online depends on the write destination memory. Refer to the following manual for details.
- QnUCPU User's Manual(Function Explanation, Program Fundamentals)
- Qn(H)/QnPH/QnPRHCPU User's Manual(Function Explanation, Program Fundamentals)

The following dialog box appears when an online change is executed in file units. Read and understand the precautions in the message and execute an online change.
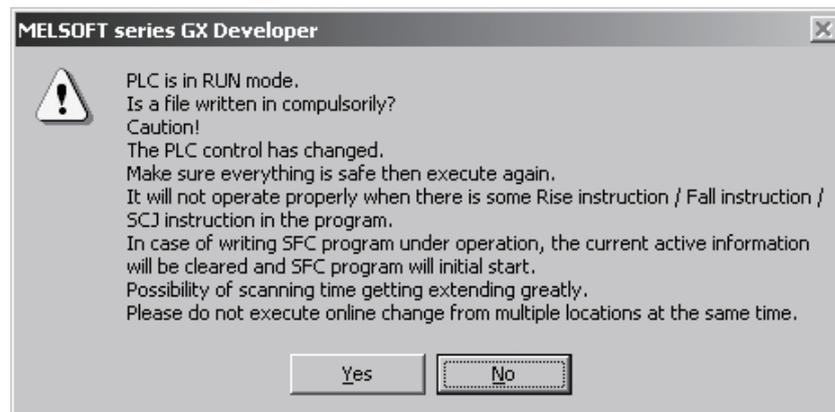
Click the Yes button to write the data specified on the Write to PLC screen to the programmable controller.

POINT

- If the programmable controller capacity becomes insufficient, stop the programmable controller, then delete unnecessary programs written to the programmable controller, and write the corresponding program to the PLC.
- When an online change is executed in file units, an SFC program makes an initial start after execution.
- When the date of the personal computer is February 29, online change may not be made to the Basic model QCPU.
  Refer to Section 16.3.1 for the action to be taken when online change cannot be executed.
- When the executional conditioned device test is set for the Universal model QCPU, registered data of the executional conditioned device test that are within the write range are disabled.

16.9.3 Precautions for writing rise, fall and SCJ instruction during RUN

A	Q/QnA	QS	FX
○	○	○	○

The following shows the precautions for writing rise, fall and SCJ instruction during RUN.

(1)   Q (Q Mode) CPU, QnACPU, ACPU

(a)   Fall instruction
Even when the execution condition of the instruction in the online changed ladder is not satisfied (ON → OFF), the fall instruction may be executed. For details of the types and the functions of the fall instruction, refer to programming manual for each CPU.

Fall instruction (Example) .... PLF, LDF, ANDF, ORF, MEF, FCALLP, EFCALLP

Contact ON/OFF status (Conduction status at online change)	Fall instruction
OFF → OFF	Executed *1, *2
OFF → ON	Not executed
ON → OFF	Executed *1, *2
ON → ON	Not executed

*1: Measures for preventing the instruction from executing at online change, refer to POINTS on the next page.

*2: When an online change is made to the E^2PROM, the pulse instructions existing in the modified ladder block and subsequent steps are all executed. (A series only)
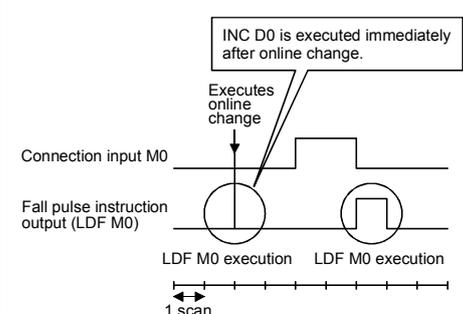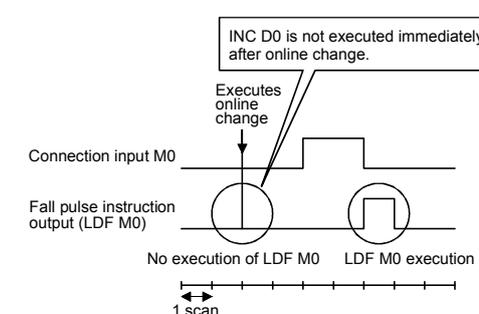
(b)   Rise instruction
Even when the execution condition of the instruction in the online changed ladder is satisfied (OFF → ON), the rise instruction is not executed.
The rise instruction is executed when the execution condition turns from OFF to ON again.

Contact ON/OFF status (Conduction status at online change)	Rise instruction
OFF → OFF	Not executed
OFF → ON	Not executed
ON → OFF	Not executed
ON → ON	Not executed

(c)   SCJ instruction
When the execution condition of the SCJ instruction is ON at completion of write, execution jumps to the specified pointer without waiting for one scan.

> POINT
>
> <Measures for preventing the fall instruction execution at online change>
>
>   The fall instruction may be executed even when its execution condition in the online changed ladder is not satisfied (ON → OFF). This can be avoided by using either of the following.
>
> (1) Replaces the fall instruction by EGF instruction
>   (Q (Q mode) CPU/QnACPU only)
>   As EGF instruction makes the calculation result pulsed, it enables to avoid executing the fall instruction.
>   For details, refer to the following manual.
>   • QCPU Programming Manual (Common Instructions)
>   • QnACPU Programming Manual (Common Instructions)
>
> (2) Using setting options
>   (Q (Q mode) CPU other than Basic Model QCPU only)
>
>   By setting [Tool] → [Options] → "Instruction setting for online change" on GX Developer, you can avoid the fall instruction execution.
>   However, even when the execution condition of the instruction in the online changed ladder is satisfied (ON→OFF), the fall instruction is not executed. It is executed when the execution condition turns ON→OFF again.
>   For details of setting option, refer to Section 15.13.
>
>   <Example>   The following shows the performance difference caused by changing setting option when the following ladder program is written during RUN.
>
>   <Program example>
>
>   M0
>   ┤ ↓ ├────────────────────────────[INC D0]┤
>
> | INC D0 is executed immediately after online change. | INC D0 is not executed immediately after online change. |
> |---|---|
> | Executes online change | Executes online change |
> | Connection input M0 | Connection input M0 |
> | Fall pulse instruction output (LDF M0) | Fall pulse instruction output (LDF M0) |
> | LDF M0 execution   LDF M0 execution | No execution of LDF M0   LDF M0 execution |
> | 1 scan | 1 scan |
> | [Setting option] "Instruction setting for online change" No check | [Setting option] "Instruction setting for online change" Check |
>
> "Instruction setting for online change" function is available for GX Developer Version 8.27D (SW8D5C-GPPW) or later. For QCPU versions compatible with the function, refer to QnUCPU User's Manual(Function Explanation, Program Fundamentals) or Qn(H)/QnPH/QnPRHCPU User's Manual(Function Explanation, Program Fundamentals)

(2) FXCPU
  (a) Fall instruction
      When the online change of the ladder including the fall instruction (LDF
      instruction/ANDF instruction/ORF instruction) is completed, the written fall
      instruction is not executed if its target device is ON or OFF.
      The fall instruction (PLF instruction) is not executed, either, if its operation
      condition device is ON or OFF.
      To execute the fall instruction, turn the target device or operation condition
      device from ON to OFF again.

When online change is performed to the ladder block that includes fall detection instruction (LDF instruction/ANDF instruction/ORF instruction)	
The target device is ON.	The target device is OFF.
The contacts of LDF, ANDF, and ORF instruction included in the ladder block keep OFF status.	

When online change is performed to the ladder block that includes PLF instruction	
The operation condition is ON.	The operation condition is OFF.
When PLF instruction is included in a ladder block, the target device for the instruction does not operate. [*3]	

      ∗3: Operates when the operation condition changes from ON to OFF
          before and after online change.

  (b) Rise instruction
      When the online change of the ladder including the rise instruction is
      completed, the written rise instruction is executed if its target device or
      operation condition device is ON.

      Target rise instruction .... LDP, ANDP, ORP, pulse execution type
                                              application instruction (e.g. MOVP)

When online change is performed to the ladder block that includes rise detection instruction (LDP instruction/ANDP instruction/ORP instruction)	
The target device is ON.	The target device is OFF.
The contacts of LDP, ANDP, and ORP instruction included in the ladder block turn ON for 1 scan.	The contacts of LDP, ANDP, and ORP instruction included in the ladder block keep OFF status.

When online change is performed to the ladder block that includes pulse execution type application instruction (e.g. MOVP)	
The operation condition is ON.	The operation condition is OFF.
The relevant pulse execution type application instruction included in the ladder block operates for 1 scan.	The relevant pulse execution type application instruction included in the ladder block does not operate.

When online change is performed to the ladder block that includes PLS instruction	
The operation condition is ON.	The operation condition is OFF.
When PLF instruction is included in a ladder block, the target device for the instruction does not operate. [*4]	

      ∗4: Operates when the operation condition changes from ON to OFF
          before and after online change.

(c) Convert operation result to falling pulse instruction
When writing a ladder including convert operation result to falling pulse
instruction (MEF instruction) in RUN, the instruction is not executed
whether its execution condition is established or not.
To execute the convert operation result to falling pulse instruction, turn on
the operation result to the instruction once and then turn it off.

When online change is performed to the ladder block including MEF instruction	
The execution condition is established.	The execution condition is not established.
The execution result turns out to be OFF.	

(d) Convert the operation result to raising pulse
If the operation result to convert the operation result to raising pulse
instruction is on after writing a ladder including convert operation results to
falling pulse instruction (MEP instruction) in RUN, the instruction execution
result turns out to be ON.

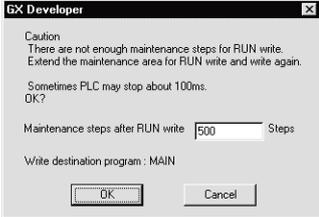| When online change is performed to the ladder block including MEP instruction	
The operation result to MEP instruction is ON.	The operation result to MEP instruction is OFF.
The execution result turns out to be ON.	The execution result turns out to be OFF.

16.9.4 Precautions for each PLC series

The following describes the online change precautions for each PLC series.

(1)   For A series

Item	Description
EEP-ROM of other than AnUCPU	• Online change cannot be made to EEP-ROM of other than AnUCPU.
Online change to other stations	• Online change can be made to other stations via the MELSECNET (II, /10). However, note that the sequence program will be corrupted if online change is made from multiple personal computers to a single programmable controller.
A2CCPU, A2CJCPU	• To make online change, select [Tools] → [Options] → ⟨Common⟩ sheet and set the edit object (shift forward setting) to "1 ladder block (Don't shift the program forward)" on the ⟨Common⟩ sheet. Otherwise, an error will occur, bringing the programmable controller down. For shift forward setting, refer to Section 15.12.
Deletion of corresponding device from program	• If a deletion during execution of the OUT instruction or changing a device No. has removed the corresponding device from the program, the output status is held. Force the unnecessary coil outputs for control to be switched off by selecting [Online] → [Debug] → [Device test]. For the device test, refer to Section 18.1 "Carrying Out a Device Test".
Online change via computer link	• Online change is unavailable via computer link.
Number of steps enabled for online change	• Data can be written if the number of program steps after editing (addition/deletion) is within 250 steps.
Verification mismatch after Online change	• Since instructions after the END instruction are not transferred with Online change, verification mismatch may occur. If the mismatched steps are after the END instruction, delete the instructions in the steps or write them using Write to PLC.

(2)   For Q/QnA series

Item		Description
Online change to other stations		• Online change can be made to other stations via the MELSECNET (II, /10, /H) or Ethernet.
During boot operation		
	When online change is executed to built-in RAM (QnA series)	• When online change is executed to the built-in RAM during boot operation, write the new program to the IC memory card after STOP.
	During online change to redundant CPU	• When online change is executed during boot operation in the backup mode, it is executed to the program memory and transfer source drive of both systems (connection system, target system). • When online change is executed during boot operation in the separate/debug mode, it is executed to the program memory and transfer source drive of connection system. • As the transfer source drive, the memory card RAM, memory card ROM or standard ROM is available. • When using a memory card ROM (Flash card) or standard ROM, all files in the transfer source drive are deleted and changed to files in the program memory. Set the Boot file of PLC parameter to transfer all files in the transfer source drive to program memory.
	Writing a program to program memory online (Universal model QCPU)	• When a program has been written to the program memory online during a boot, write the written program to the memory of transfer source.
Deletion of corresponding device from program		• If a deletion during execution of the OUT instruction or changing a device No. has removed the corresponding device from the program, the output status is held. Force the unnecessary coil outputs for control to be switched off by selecting [Online] → [Debug] → [Device test]. For the device test, refer to Section 18.1 "Carrying Out a Device Test".
Number of steps enabled for online change		Q/QnA series Number of program steps after editing (addition/deletion): Within 512 steps However, if the existing program is not modified but a program is added to it by pasting and line insertion, the maximum number of steps cannot be written by a single online change. In this case, reduce the number of steps written at one time and make online change several times. Also be careful when the following corrections have been made. If a correction is made to step 2 in a program and an addition made to step 540, online change cannot be made since steps 2 to 540 will be the object of a single online change. In this case, perform online change every time a correction is made.
Online change during slow execution type program run		While the slow execution type program is run, online change is started on all completion of the slow execution type program. During online change, the slow execution type program run is suspended. However, online change cannot be made if "PRG TIME OVER(5010)" keeps occurring during slow execution type program run. In this case, after setting the programmable controller to STOP, increase the settings of the constant scan and slow execution type program run time in the PLC parameters, and perform write to PLC again.

Item		Description
Steps secured for online change		
	QnA series	• Online change cannot be made beyond the number of steps set as those secured for online change on the ⟨Program/SFC program⟩ sheet after selecting [Online] → [Write to PLC] → ⟨Sequence/SFC program⟩ sheet. The number of secured steps for online change is reduced for each online change. If the currently set number of secured steps is exceeded by online change, convert the program offline and select [Online] → [Write to PLC]. • If the number of steps is greatly increased by online change, preset a large number of steps secured for online change during program write.
	Q series	• If the currently set number of secured steps is exceeded by online change, the following dialog box appears. Set new secured steps. • If the number of secured steps is set to 0 in the following dialog box, only the sequence program which has exceeded the secured step range is written. • If online change is made to the sequence program whose password has been set, the password deletion dialog box appears. Start online change after deleting the password. If the password cannot be deleted, online change cannot be made. • The secured steps newly set in the following dialog box do not appear on the ⟨program⟩ sheet of Write to PLC. Reservation step for write during RUN will be automatically secured when connected to Basic model QCPU of function version A. Therefore, the above dialog box will not appear.
	Redundant CPU	When the steps secured for online change is to be secured again for online change in the backup mode, the steps are secured on the basis of the smaller remaining program memory capacity of either the control system or standby system. Example) When the remaining capacity of the control system is 100 steps and that of the standby system is 50 steps The steps re-secured for online change are a maximum of 50 steps.
When system is configured with redundant CPU		
	Backup mode	• On-line change is executed to both systems (connection system, target system). However, if the target system is faulty (disabled for communication with the target system), online change is not executed to both systems. • Online change cannot be performed in units of files to the program file which does not exist in the programmable controller CPU. Change the operation mode of the programmable controller CPU to Separate mode before Online change in units of files or switch the programmable controller CPU to STOP before Write to PLC.
	Separate mode/debug mode	Online change is executed to only the programmable controller specified in the Target system field on the connection setup screen.

GX Developer

Caution
There are not enough maintenance steps for RUN write.
Extend the maintenance area for RUN write and write again.

Sometimes PLC may stop about 100ms.
OK?

Maintenance steps after RUN write 500 Steps

Write destination program : MAIN

[OK] [Cancel]

(3) For FX series

Item			Description
CPU which can make online change			
	Model name		FX2C/FX2 series (version No. V2.1 or later), FX0N series (version No. V1.10 or later)
			FX1S/FX1N/FX2N/FX3U/FX1NC/FX2NC/FX3UC series
	Memory type	FX3U/FX3UC series	Built-in RAM or option FLASH cassette (Protect switch OFF)
		FX3G series	Built-in EEPROM or optional EEPROM memory cassette (protect switch off)
		FX2N series	Built-in RAM, optional RAM cassette or optional EEPROM cassette (protect switch OFF)
		FX2NC series	Built-in RAM or optional memory card (protect switch OFF)
		FX1NC series	Built-in EEPROM
		FX1S/FX1N series	Built-in EEPROM or optional memory cassette (protect switch off)
		FX2/FX2C series	Built-in RAM or optional RAM cassette
		FX0N series	Built-in EEPROM
Use of FX0N, FX2, FX2C, FX1S, FX1N, FX2N, FX1NC, FX2NC			• Corrected ladders do not have additions, deletions and changes to labels P, I.
			• Change cannot be made if any ladder before or after corrections includes the output (OUT) instruction of high-speed counter C235 to 255 or the application instruction FNC90 to 98 (MNET, ANRD, ANWR, RMST, RMWR, BLK, MCDE).
			• There should be no new 1ms retentive timers inserted.
			• If the number of program steps is decreased due to delete of contact, coil or application instruction, write NOP by the number of the decreased steps.
			• Do not perform the online change (write during RUN) during communication (during the instruction driving) with the application instruction FNC180 (EXTR) of FX2N and FX2NC. When performing the online change during communication, the communication may be stopped. When the communication is stopped, change the programmable controller from STOP to RUN.
Use of FX3G, FX3U, FX3UC			• Corrected ladders do not have additions, deletions and changes to labels P, I.
			• Change cannot be made if any ladder before or after corrections includes the output (OUT) instruction of high-speed counter C235 to 255 or the application instruction FNC149 (SORT2), FNC152 (TBL) and FNC278, 279 (RBFM, WBFM).
			• There should be no new 1ms retentive timers inserted.
			• If the number of program steps is decreased due to delete of contact, coil or application instruction, the step numbers in the program after the one changed online decrease by the number of the decreased steps.
			• Do not perform the online change (write during RUN) during the pulse output (during the instruction driving) with the positioning instruction of FNC150 (DSZR), FNC151 (DVIT) or FNC 156 to 159 (ZRN, PLSV, DRVI, DRVA). When the ladder during the pulse output is performed the online change, the pulse output is stopped. FNC157 (PLSV) [without acceleration/deceleration operation] is instantly stopped. FNC150 (DSZR), FNC151 (DVIT), FNC157 (PLSV) [with acceleration/deceleration operation], FNC158 (DRVI) or FNC159 (DRVA) is decelerated to stop. When the instruction is stopped by the online change, turn off the instruction driving once and then, turn it on.
			• Do not perform the online change (write during RUN) during communication (during the instruction driving) in the inverter communication instruction of FNC270 to 274 (IVCK, IVDR, IVRD, IVWR, IVBWR). When performing the online change during the inverter communication, the communication may be stopped. When the communication is stopped, change the programmable controller from STOP to RUN.
Use of FX2 (V3.07 or later), FX2C *1			• A substitute instruction for a new instruction cannot be inserted into a program or rewritten.
			• If a substitute instruction has already been programmed, the function of this substitute instruction is lost by executing online change at that part.
			• FNC10 to 12 (CMP, ZCP, MOV) and FNC20 to 25 (ADD, SUB, MUL, DIV, INC, DEC) instructions are increased in operation speed when neither a word device with digit designation nor index qualification is used. However, when online change or insertion is made, the high-speed processing function of this part is lost.
			• The OFF execution time of the application instructions of the FX2 (V3.07 or later) and FX2C is shortened. However, when online change or insertion is executed, the shortening function of this part is lost, and the value becomes approximately 60% of that of the FX2 (V2.30 or earlier) series.

*1: Each function is restored by switching the programmable controller from STOP to RUN after online change has been made.

Item	Description
Use of FX2 (V2.1 to V2.30)	• When additional application instructions and device numbers are written with the FX2 (V3.07 or later) programmable controller, these instructions are written directly to the program memory of the programmable controller. At this time, the programmable controller continues running, handling them as no operations. However, as soon as the operation mode of the programmable controller is switched from STOP to RUN, a program check is performed and the "PROG-E LED" flickers. In this case, change the incompatible application instructions and device numbers, then batch-transfer a correct program.
	• If a device number not supported by the FX2 (V2.1 to V2.30) is specified as the operand of an application instruction, this instruction is written directly to the program memory of the programmable controller. At this time, an operation error occurs because the device number for this instruction is outside the range, but the programmable controller continues running, handling it as a no operation. However, as soon as the operation mode of the programmable controller is switched from STOP to RUN, a program check is performed and the "PROG-E LED" flickers. In this case, batch-transfer a program with a correct operand set for the application instruction.
Use of FX0N (V1.10 or later)	• When a device number that is not compatible with the FX0N is written, the "It cannot write during RUN because order or device that cannot write in changed program during RUN is included" message appears and changes to the program are suspended.
	• Since the FX0N has no pulse execution type application instructions, writing this type of instruction displays the "Write bad" message and suspends changes to the program.
Use of FX0N/FX2/FX2C/FX2N/FX2NC/FX3UC (V2.00 or earlier)	• A ladder change can be made within a single ladder block at one time, and the number of program steps after editing (addition/deletion) should be within 127 steps (including an NOP immediately after a ladder block, but excluding the last ladder). For the program change of 128 steps or more, transfer all.
Use of FX3G/FX3U/FX3UC (V2.00 or later)	• The ladder change can edit multiple ladder blocks at a time and perform the online change (write during RUN). However, make the number of steps from the start of editing ladder block to the last within 256 steps. (No change ladder is included.) For the program change of 257 steps or more, transfer all.

16.9.5 Action to be taken when normal online change is not executed

| A	Q/QnA	QS	FX
◯	◯	◯	◯

[Explanation]
The following message may be displayed during online change (RUN write processing) because of timeout of the check time. In this case, observe the message instructions.

(1)   "Verify with PLC and confirm the matching of the program."
When this message is displayed, the program on the GX Developer side may not be converted while the program on the programmable controller side has converted.
In this case, convert the program on the GX Developer side and then check the consistency with the programmable controller side.
When inconsistency is found, load the program into the programmable controller by executing PLC downloading to make both programs consistent.
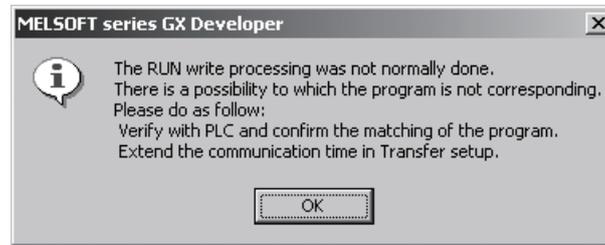

(2)   "Extend the communication time in Transfer setup."
This message may be displayed when the check time is set too short.
Select [Online] – [Transfer setup] to extend the time.
Note that in the online change, the time check is executed for 90 seconds even if the time check time is set to less than 90 seconds in the connection target specification. Set the time longer than 90 seconds for the check time.
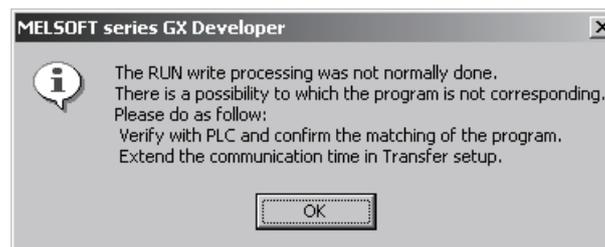
16.10 Batch Transfer to Program Memory

A	Q/QnA	QS	FX
×	○*	×	×

∗: Only for the Universal model QCPU.

[Purpose]
Batch-transfer the contents of program cash memory to program memory.

[Operating Procedure]
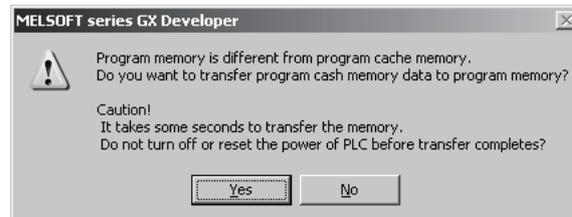Select [Online] → [Program memory batch transfer].

[Description]
The contents of the program cash memory and program memory are checked for matching data when the Program memory batch transfer menu is selected.
If they are matched, the following dialog box is displayed and the data are not transferred.

If they are not matched, the following dialog box is displayed.
Clicking the $\boxed{\text{Yes}}$ button batch-transfers the contents of program cash memory to program memory.

POINT

- The following functions cannot be executed during the program memory batch transfer.
  Execute them after program memory batch transfer.
  - Online change (ladder, ST language, Function Block)
  - TC setting value change (Currently open program + PLC program)
  - Write to PLC (When the target memory is a program memory)
  - Program memory batch transfer
  - Transfer setup
  - Change PLC type
  - Check parameter
  - Clear all parameters
  - Marge data

16.11 Backing Up Latch Data

16.11.1 Backing up latch data to standard ROM

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Only for the Universal model QCPU

[Purpose]
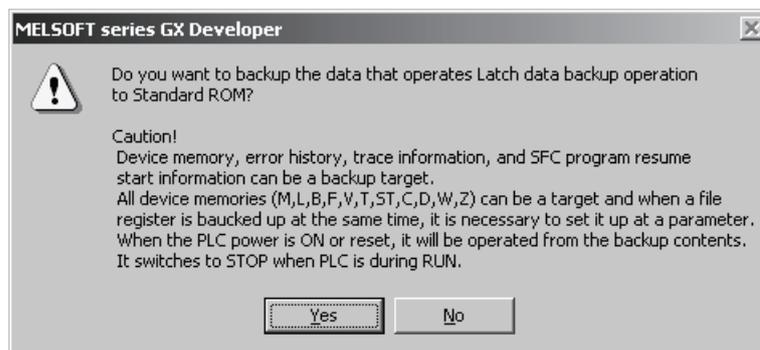Batch-saves data such as the contents of device memory and error history to the standard ROM.

[Operating Procedure]
Select [Online] → [Latch data backup operation] → [Backup].

[Description]
The following dialog box is displayed when the "Backup" menu is selected.

Clicking the Yes button batch-saves data such as the contents of device memory and error history to the standard ROM.

16.11.2 Deleting backup data

A	Q/QnA	QS	FX
×	○*	×	×

＊: Only for the Universal model QCPU

[Purpose]
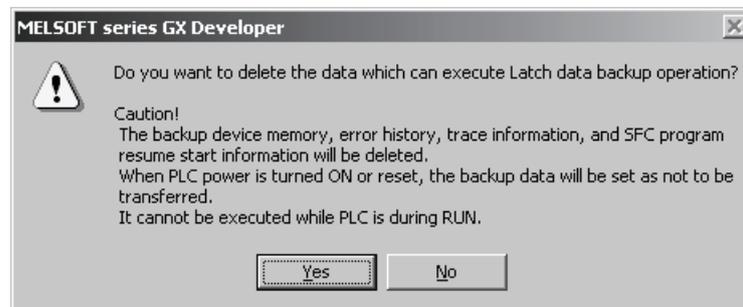Deletes data backed up in the standard ROM by the Latch data backup operation.

[Operating Procedure]
Select [Online] → [Latch data backup operation] → [Delete backup data].

[Description]
The following dialog box is displayed when the "Delete backup data" menu is selected.

Clicking the Yes button deletes data backed up in the standard ROM by the Latch data backup operation.

16.12 Concept of the Routing Parameters

A	Q/QnA	QS	FX
○	○	×	×

The routing function is used by the station of the programmable controller in a multi-level system to make transient transmission to the station of another network No.
To perform the routing function, the "Routing parameters" must be set to associate the network No.s and stations acting as bridges.
For communication via the MELSECNET II, the routing function cannot be used.

(1) The routing parameters must be set to the request source and relay station of the programmable controller.

   (a) The request source must be set to make access to the request target.

   (b) The relay station must be set to make access from the request source to the request target and to make access from the request target to the request source.

   (c) The request target needs no setting.

For example, to make transient transmission from 1Ns3 to 3Ns4 in the following diagram, the routing parameters must be set to the programmable controller 1Ns3 which makes transient transmission, to the programmable controllers 1Ns4 and 2Mp1 which serve as bridges, and to the programmable controllers 2Ns4 and 3Ns5.
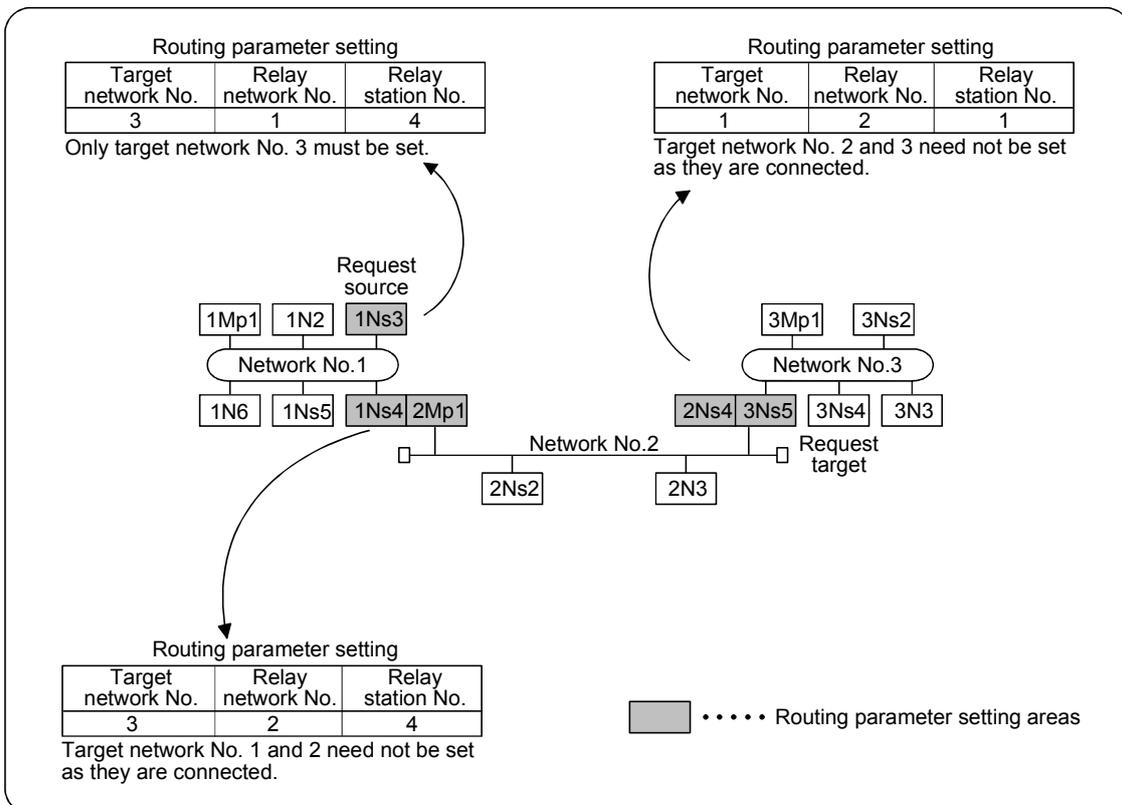

(2) Up to 16 "Target network No.s" can be set to the programmable controller. 64 different network No.s allow the own station to be a request source or other stations to be accessed via the own station.

(3) Routing parameter setting areas and data
For transient transmission, the routing parameter setting areas depend on the system.

(a) Two-level system
The routing parameters need not be set because transient transmission is made to within the same network.
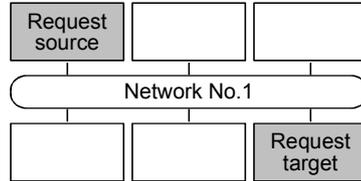
(b) Multi-level 1 (two networks)
Set the routing parameters only to the station of the request source.
To the request source, set the data to access the request target (network No. 2).
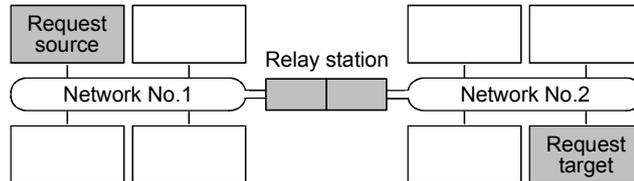
(c) Multi-level 2 (three networks)
Set the routing parameters to the request source and relay stations.
To the request source, set the data to access the request target (network No. 3).
To the relay station 1), set the data to access the request target (network No. 3).
To the relay station 2), set the data to access the request source (network No. 1).
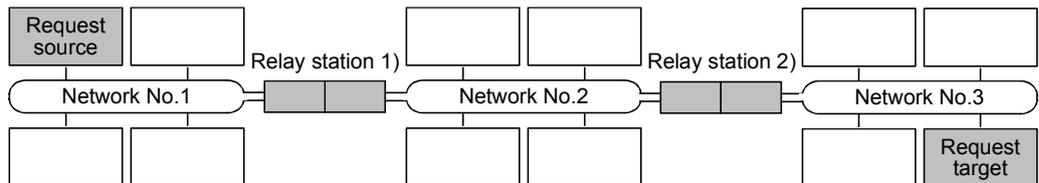
(d) Multi-level 3 (four or more networks)
Set the routing parameters to the request source and relay stations.
To the request source, set the data to access the request target (network No. 4).
To the relay station 1) (the nearest relay station to the request source), set the data to access the request target (network No. 4).
To the relay station 2) (the nearest relay station to the request target), set the data to access the request source (network No. 1).
To the relay station 3) (relay station other than 1) and 2)), set the data to access the request target (network No. 4) and request source (network No. 1).
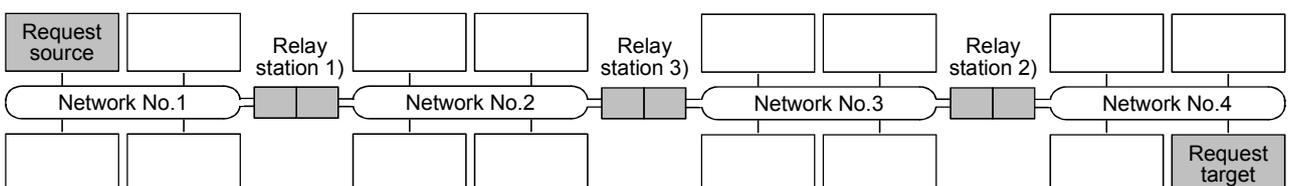
16.13 Changing CPU modules

16.13.1 Creating backup data

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Only for the Universal model QCPU (except Q00UJ/Q00U/Q01UCPU)

[Purpose]
Creates backup data that are used for the CPU module change in the memory card.

[Operating Procedure]
Select [Online] → [PLC module change] → [Create backup data].

[Dialog Box]
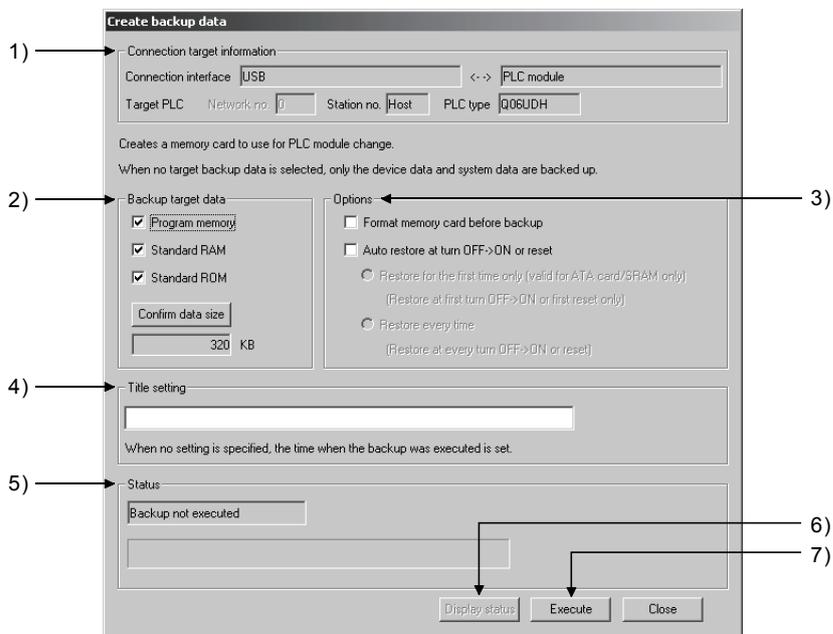
[Description]
1) Connection target information
Displays the information of the connection destination.

2) Backup target data
Select data for creating backup.

3) Options
- Format memory card before backup
Format the memory card before executing the backup.
- Auto restore at turn OFF -> ON or reset
Select whether to restore data at the first time only or each time.

4) Title
Set a title of the backup data.

5) Status
Displays the execution status of the backup.

6) | Display status | button
     Displays the updated execution status of the backup.

7) | Execute | button
     Creates backup data.

POINT

Created backup data can be deleted with the Delete PLC data function.

16.13.2 Restoring data

A	Q/QnA	QS	FX
×	○*	×	×

∗: Only for the Universal model QCPU (except Q00UJ/Q00U/Q01UCPU)

[Purpose]
Restores backup data for CPU module change.

[Operating Procedure]
Select [Online] → [PLC module change] → [Restore]

[Dialog Box]

[Description]
1) Connection target information
   Displays the information of the connection destination.

2) Status
   Displays the execution status of the restore.

3) Display status button
   Displays the updated execution status of the restore.

4) Execute button
   Restores data.

MEMO

17. MONITORING
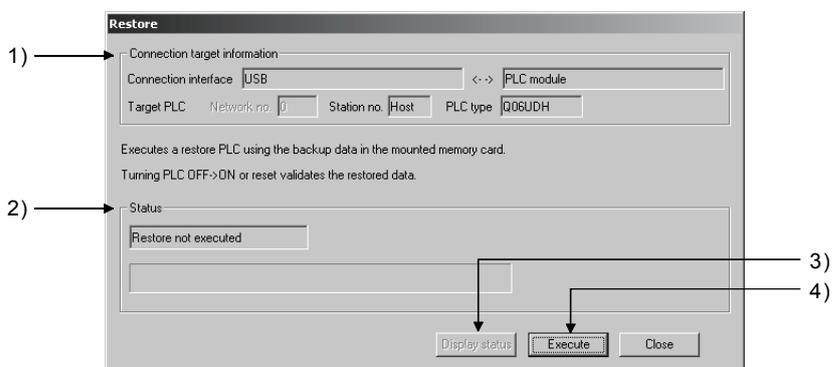
This section describes the monitoring of the operation processing of the programmable controller through an online connection between the personal computer and programmable controller.

(1) Monitor mode
In the monitor mode, the monitor status dialog box shown below is displayed whether during monitoring or when monitoring it is stopped.

Monitor status				
0.800ms	RUN		Local device monitor not executed	▼

1)   2)   3)   4)

Monitor status		
10ms	RUN	

1)   2)   3)

For Redundant CPU

Monitor status					
Control system	System A	11.100ms	RUN		Local device monitor not executed ▼

5)   6)   1)   2)   3)   4)

For Universal model QCPU

Monitor status					
0.600ms	RUN			ON	Local device monitor not executed ▼

1)   2)   3) 7) 8)   4)
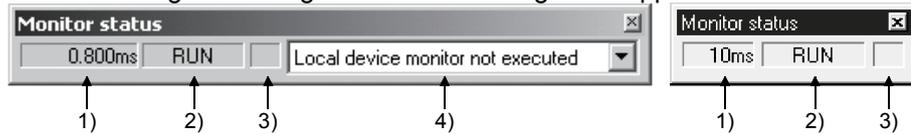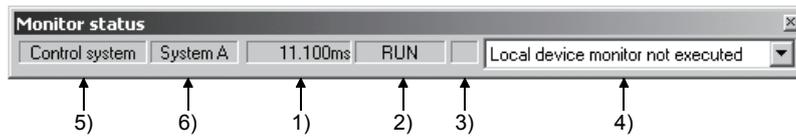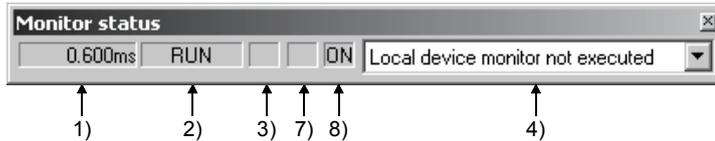
1) Scan time
Indicates the maximum scan time of the monitored programmable controller.
For the Q series, it is in 0.1ms units.
For the QnA series, it is in 1ms units.
For the A series, it is in 10 ms units.
For the FX series, it is in 1ms units.

2) Programmable controller status
Indicates the operating state of the programmable controller, as determined by the programmable controller key switch or by remote operation from a personal computer.

3) Monitor execution status
Flashes while monitoring is in progress.

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4) Local device monitor target selection
Set the program name whose local devices you want to monitor.
Setting is enabled for only the High Performance model QCPU, Process CPU, Redundant CPU and QnACPU.

Local devices of SUB are monitored

Choosing AUTO (program name) automatically monitors the program on the active screen.

5) Control system/standby system status
Indicates that the monitored programmable controller is the control system or standby system.

6) System A/System B status
Indicates that the monitored programmable controller is System A or System B.

7) Forced input/output registration/cancellation status
Indicates that the forced input/output registration is being performed.

8) Executional conditioned device test status
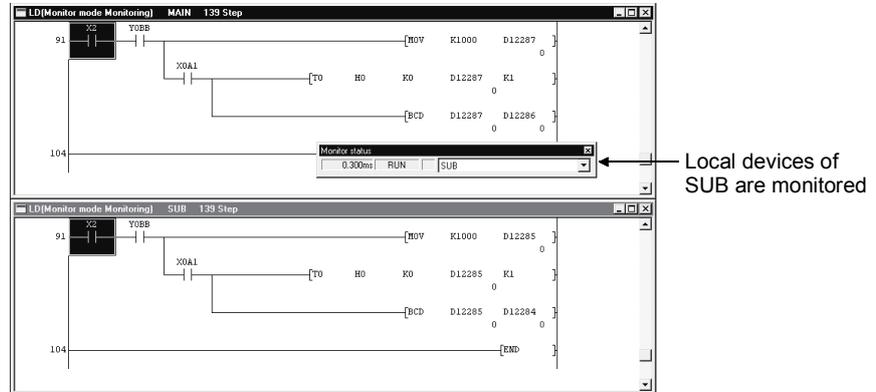Indicates that the executional conditioned device test is being performed. Flashes when device tests are performed from multiple locations and status registered with the programmable controller differs. Restarting the monitor reads registration status of the programmable controller. This returns to on status when they become identical.

(2) ON/OFF status
The ladder ON/OFF status is determined as follows.

OFF ─┤├─   ─┤/├─   ─( )─   ─[ ]─ *

ON ─■■─   ─■/■─   ─◀▶─   ─■■─ *
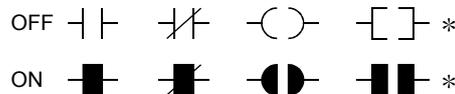
* : Only comparison instructions which are equivalent to contacts, and SET, RST, PLS, PLF, SFT, SFTP, MC, FF, DELTA, DELTAP instructions, which are equivalent to coils, are supported.
(FF, DELTA, and DELTAP are Q/QnA series instructions.)

In list mode
In the list mode, the ON and OFF states are displayed as follows.
• For bit device
The device name and monitor status are displayed under the row where the list instruction is displayed.
OFF: [X0=OFF], ON: [X0=ON]
• For word device
The present value is displayed.
Refer to Section 17.1 for the list monitor screen.

17

```
┌─────────────────────────────────────────────────────────────────────┐
│ ┌────────┐                                                           │
│ │ POINT  │                                                           │
│ └────────┘                                                           │
│   • The display of ON/OFF statuses and present values is maintained  │
│     while monitoring is stopped.                                     │
│                                                                      │
│   • The indication for the monitoring of RST instructions is the     │
│     ON/OFF status of the device being reset.                         │
│                                                                      │
│     When the device to be reset is OFF                               │
│                                                                      │
│     When the device to be reset is ON                                │
│                                                                      │
│   • Note that the following functions will not be monitored properly │
│     if they are monitored from two or more personal computers        │
│     simultaneously.                                                  │
│     Program monitor list, Interrupt program monitor list, Monitor    │
│     condition setup, Monitor stop condition setup, Scan time         │
│     measurement                                                      │
│                                                                      │
│   • For points to note about monitoring display when the FX series   │
│     is selected refer to Appendix 11.                                │
│                                                                      │
│   • For the AnACPU or AnUCPU, the status at execution of the END      │
│     instruction is monitored. For the AnACPU or AnUCPU, however,     │
│     note that the status at any point during scan execution may be   │
│     monitored.                                                       │
│     Though the monitor result may differ, the program run is not     │
│     different.                                                       │
│                                                                      │
│   • When a program including local devices to be monitored was       │
│     changed, displaying the device values at the END instruction     │
│     execution in monitor display format once is required.            │
│                                                                      │
│   • The positions of the steps specified as the executing condition  │
│     by the executional conditioned device test are displayed on the  │
│     monitor screen. For details, refer to Section 18.2.1.            │
└─────────────────────────────────────────────────────────────────────┘
```

17.1 Starting/Stopping/Resuming Monitoring

| A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Monitors the continuity, energized state, and ON/OFF states of contacts and coils while displaying the ladder.

Also stops monitoring and resumes monitoring after it has been stopped.

[Operating Procedure]

- For monitoring
  Select [Online] → [Monitor] → [Monitor mode], or click 🖳 (F3).

- To stop monitoring
  Select [Online] → [Monitor] → [Stop Monitor], or click 🖳 (Alt + F3).

- To resume monitoring
  Select [Online] → [Monitor] → [Start Monitor], or click 🖳 (F3).

[Window]
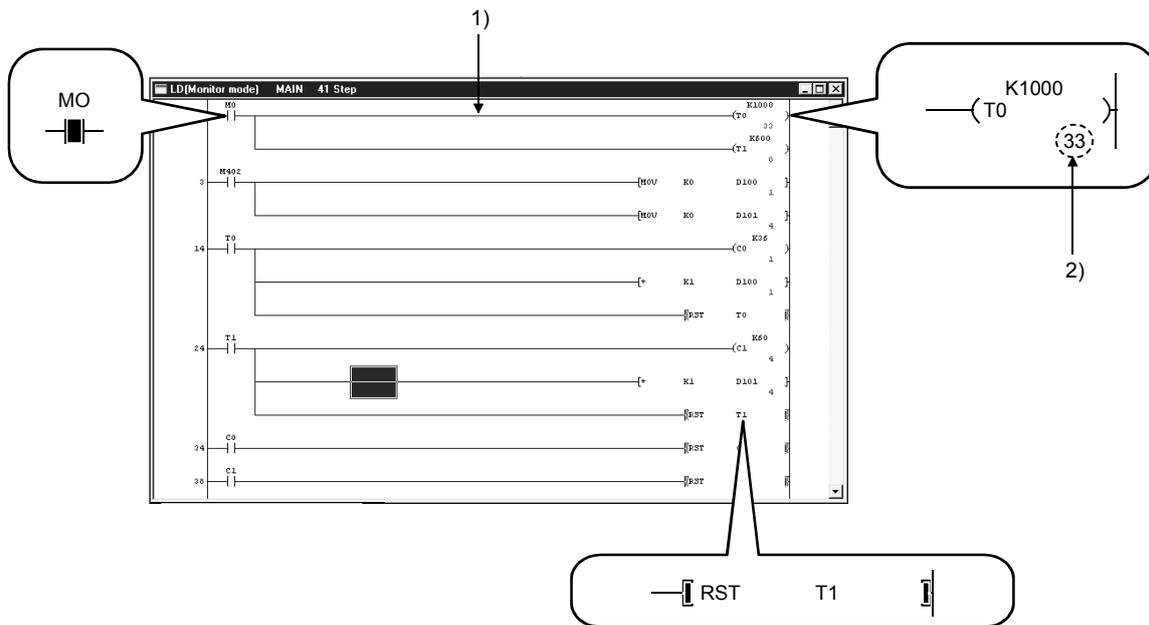
List monitor screen example

```
┌─────────────────────────────────────────────────────────────────┐
│ ▣ List(Monitor mode Monitoring)    MAIN    615 Step      _ □ ✕    │
│     80  OUT      Y0BB                                         ▲   │
│          <Y0BB       =  ON           >                            │
│     81  LD       X2                                           ▒   │
│          <X2         =  ON           >                            │
│     82  AND      Y0BB                                             │
│          <Y0BB       =  ON           >                            │
│     83  MOV      K1000     D12287                                 │
│          <D12287     =     1000      >                            │
│     85  AND      X0A1                                             │
│          <X0A1       =  OFF          >                            │
│     86  T0       D12286    K0      D12287   K1                    │
│          <D12286     =       0       >                            │
│          <D12287     =    1000       >                            │
│     91  BCD      D12287    D12285                                 │
│          <D12287     =    1000       >                        ▼   │
│ ◄│                                                      ►│        │
└─────────────────────────────────────────────────────────────────┘
```

[Description]
1) Ladder monitoring
   During monitoring, the ON/OFF states of contacts and coils and the present values of devices are displayed, and they change in accordance with the operating state of the programmable controller.
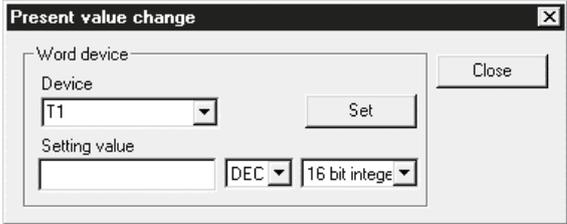   When monitoring is stopped the display is maintained, and is updated when monitoring is resumed.

2) Present value
Displays the present values of word devices.
The present values can be switched between decimal and hexadecimal.
For details on this switching of present values, refer to Section 17.4.
When monitoring a double word containing ten or more characters, it is
displayed by making the characters smaller.
Present values can be displayed in double words or as real numbers in
accordance with the data type used with an instruction.

POINT

- In the monitor mode, check whether the status is "monitoring in progress" or
"monitoring stopped" either in the monitor status dialog box display or from the
Tool button display shown below.

   Monitoring in progress 🖳🖳 Monitoring stopped 🖳🖳

- Contacts in the ladder monitor window can be forcibly switched ON/OFF by using
[Shift] key + double click ([Enter]).

- When a word device being monitored is [Shift] key + double-clicked ([Enter]), the
present value change dialog box shown below is displayed.

   Present value change   ☒

   ┌ Word device ──────────────┐
   │ Device   [Close] │
   │ [T1   ▼]   [Set]   │
   │ Setting value   │
   │ [   ] [DEC ▼] [16 bit intege ▼] │
   └──────────────────────────────┘

   Enter the value to be changed, then click the [Set] button.

- The present values of double word instructions (DMOV, DFRO, etc.) are
displayed as double words.
Check the values of double words in device batch monitoring or registered
device monitoring.
For details on device batch monitoring, refer to Section 17.5.
For details on registered device monitoring, refer to Section 17.6.

- Ladder monitoring, device entry monitoring and ladder entry monitoring allow
devices with digits, e.g. MOV D0 K4Y20, to be monitored.

- The FD device is monitored as a word value.

- During the ladder monitoring or device batch-monitoring, connection setup and
change of PLC type cannot be performed.

17.2 Starting/Stopping Monitoring on All Windows

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

Starts monitoring in all open windows: ladder monitor, device batch monitor, registered device monitor, and buffer memory batch monitor.
Also stops monitoring in all the windows where monitoring is in progress.

[Operating Procedure]

- To monitor in all windows:
  Select [Online] → [Monitor] → [Start monitor (All windows)].

- To stop monitoring in all windows:
  Select [Online] → [Monitor] → [Stop Monitor (All windows)].

[Window]
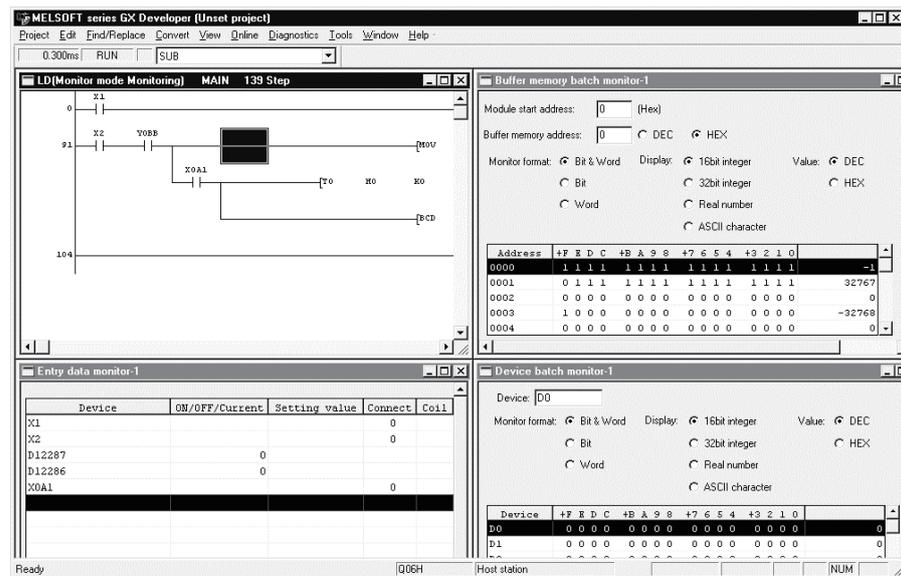
POINT

When monitoring multiple windows, if the windows are overlapped they are difficult to view.
By selecting [Window] → [Tile horizontally] ([Tile vertically]), the windows are not overlapped and are easier to view.

17.3 Editing Programs During Ladder Monitoring

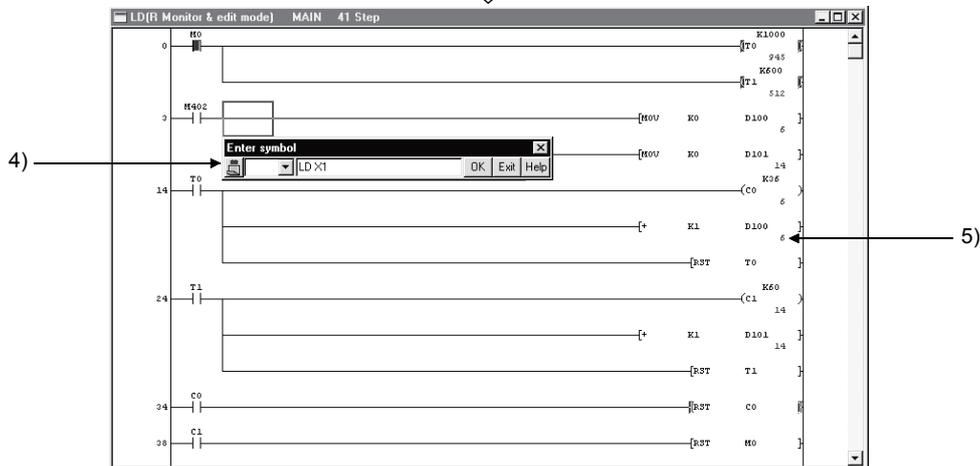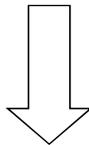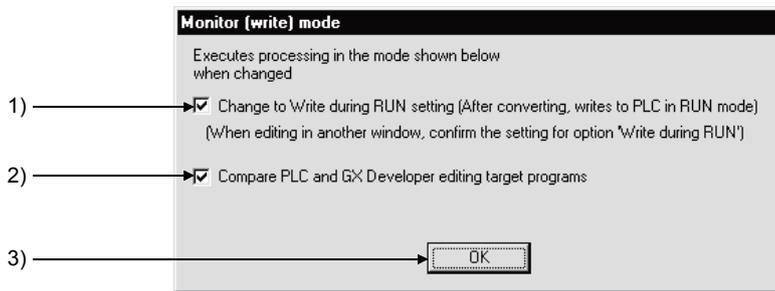| A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Allows programs to be edited while ladder monitoring is in progress by setting the ladder window to the monitor writing mode.

[Operating Procedure]
Select [Online] → [Monitor] → [Monitor (Write mode)], or click 🖉 (Shift + F3).

[Dialog Box]

[Description]

1) Change to Write during RUN setting (while PLC is running)".
When the checkbox is checked, on changing to the monitor write mode the online change setting is also changed simultaneously.
Refer to Section 15.12 for details on online change setting.

2) Compare PLC and GX Developer editing target programs
When the checkbox is checked, on changing to the monitor write mode the program in the connected programmable controller is verified against that at GX Developer.
By verifying the program in advance, it is possible to avoid program mismatches during online change.

3) OK button
Clicking this button sets the ladder window in the monitor write mode.

4) Ladder input window
Opened to create, and change, ladder programs.

Refer to Section 6 "CREATING CIRCUITS"

5) Ladder (monitor write) window
Allows ladder monitoring while displaying ON/OFF statuses and present values.

[Operating Procedure]

1. Use the "operating procedure" above while the ladder window is displayed to display the dialog box.

2. Click (1)/(2) as required.

3. Click (3).

4. The ladder window enters the monitor write mode.

5. Create/change the ladder program.

6. Convert the ladder.
If the online change setting is "Write during RUN (while PLC is running)" at this time, online change is executed on pressing "convert" (F4).
Online change can also be executed by pressing [Convert (Online change (Shift + F4).

Refer to Section 16.9 "Executing Online Program Change (Write During RUN)"

POINT

- If, simultaneously with switching to the monitor write mode, the online change setting is made "Write during RUN (while PLC is running)", the online change (write during RUN) setting will remain in effect thereafter, even if the write mode is changed.

- When using the FX series, program editing during ladder monitoring is only possible when a programmable controller that supports online change is in the online change enabled status (refer to Section 16.9.).

17.4 Switching Present Values Between Decimal and Hexadecimal

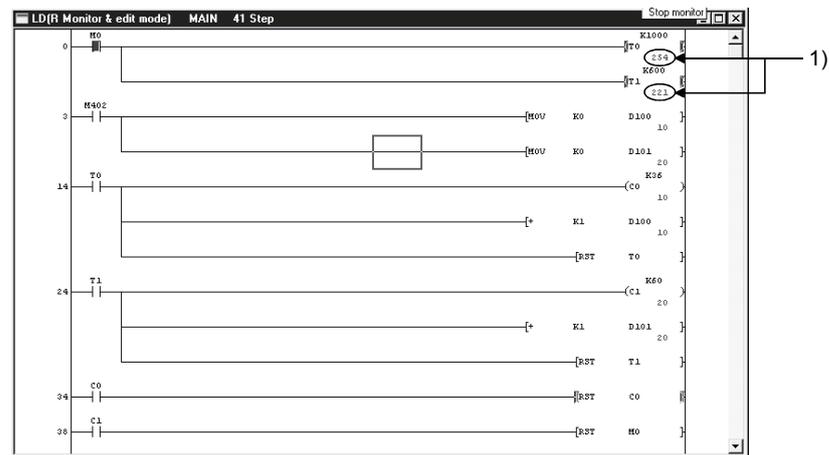| A	Q/QnA	QS	FX
◯	◯	◯	◯

[Purpose]

Displays the device present values in the ladder monitor window in decimal or in hexadecimal format.

[Operating Procedure]

- For display in decimal:
  Select [Online] → [Monitor] → [Change current value monitor (Decimal)].

- For display in hexadecimal:
  Select [Online] → [Monitor] → [Change current value monitor (Hexadecimal)].

[Window]

[Description]

1) Device present value
    Sets display in decimal or hexadecimal notation.

POINT
Convert numbers stored in binary coded decimal (BCD) to hexadecimal.

17.5 Monitoring batch of Devices/Buffer Memories

17.5.1 Monitoring batch of devices/buffer memories

A	Q/QnA	QS	FX
○	○*	○	○

∗: Compatible with the QCPU (Q mode) and MELSECNET/H remote station.

[Purpose]
In device batch monitoring, one designated type of device is monitored.
In buffer memory batch monitoring, a special function module is designated and its buffer memory is monitored.
When using FXCPU, note that the only programmable controllers that support buffer memory monitoring are the FX2N, FX3G, FX3U, FX2NC, and FX3UC series. However, when the GX Simulator is connected, buffer memory monitoring can also be done on FX2, FX2C and FX0N series.
To monitor the buffer memory or link memory, select [Tool] → [Options], and select "Monitor buffer memory/link memory" in the <<Program common>> tab sheet.

[Operating Procedure]
- For device batch monitoring:
  Select [Online] → [Monitor] → [Device batch], or click 🔍 .
- For buffer memory batch monitoring:
  Select [Online] → [Monitor] → [Buffer memory batch].

[Dialog Box]
The dialog box for device batch monitoring is shown here; the dialog box for buffer memory batch monitoring is of the same type.
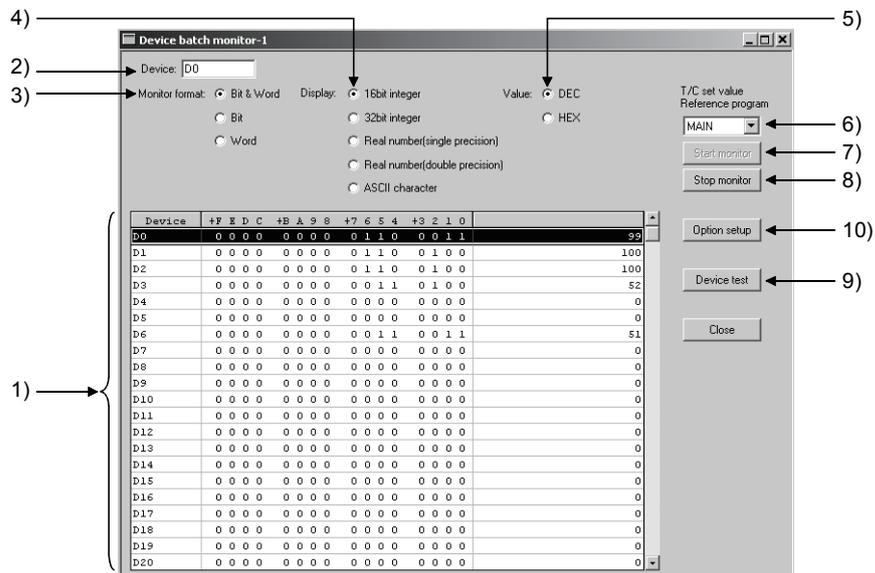
[Description]
Items in parentheses relate to buffer memory batch monitoring.

1) Device batch monitor (buffer memory batch monitor)
   The designated device (buffer memory) is displayed in accordance with the monitor format, display, value, and option settings.
   The range not currently displayed can also be monitored by using the scroll bar.
   However, when T or C devices are designated for device batch monitoring, the timer/counter multi-point format is used.

2) Device (buffer memory) designation

- For device batch monitoring:
  Designate the device type and actual device number.
  Device designation by qualification (index, digit designation, and word device bit designation) is not possible.

- For buffer memory batch monitoring:
  The following is displayed for buffer memory batch monitoring.

Unit start
address:

Buffer memory address: ☐ HEX ▼

Designate the first I/O number (lowest digit not required) of the special function module used for monitoring, and the buffer memory address (decimal/hexadecimal).
If using the FX series, enter the block number (0 to 7) of the special expansion device for the module's first address.
However, FX0N-3A, FX2N-2AD, and FX2N-2DA do not come into the scope of monitoring of the buffer memory.
For the buffer memory address, enter the BFM No. (0 to 32766).

3) Monitor format
Sets the monitoring format.
When T or C is designated for device batch monitoring, the format is automatically set as timer/counter multi-point format.
Bit & Word ……………..Devices (buffer memories) are monitored as both bits and words.
Bit multi-point ………….Devices (buffer memories) are monitored as bits.
Word multi-point ……... Devices (buffer memories) are monitored as words.

4) Display
Sets the word device (buffer memory) display when monitoring in the Bit & Word or Word multi-point format.
16bit integer ………………….….. Displayed as 16-bit integers.
32bit integer ……………………….. Displayed as 32-bit integers.
Real number (single precision) ..… Displayed as real numbers (single precision).
Real number (double precision) ….Displayed as real numbers (double precision).
ASCII …………………………..….. Displayed as ASCII characters

5) Value
Sets the format of numbers to be displayed when monitoring in the 16bit integer or 32bit integer format.
Decimal ………………. Displayed in decimal notation.
Hexadecimal …………..Displayed in hexadecimal notation.

6) T/C set value Reference
Designates the program whose set values are to be displayed when batch monitoring T or C devices.

7) Start monitor button
Clicking this button after setting the device (buffer memory address) starts monitoring.

8) Stop monitor button
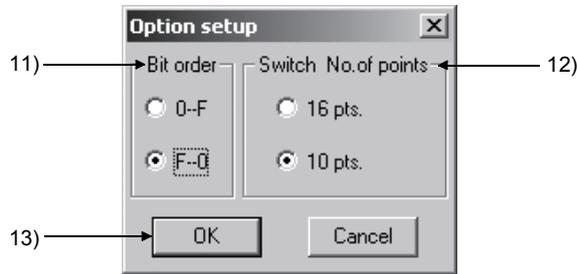Stops device (buffer memory) batch monitoring.

9) Device test button
Clicking this button displays the device test dialog box.

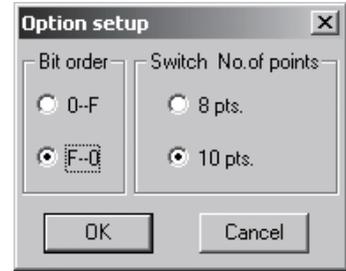Refer to Section 18.1 "Carrying Out a Device Test"

10) |Option setup| button
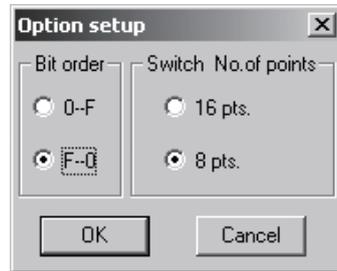Clicking this button displays the option setting dialog box shown below.

Bit & word/multi-bit point/multi-word point format

Multi-word point format
(for word device monitor)

11) ———→

12)

13) ———→

Option setup

Bit order
- ○ 0--F
- ⊙ F--0

Switch No.of points
- ○ 16 pts.
- ⊙ 10 pts.

OK   Cancel

Option setup

Bit order
- ○ 0--F
- ⊙ F--0

Switch No.of points
- ○ 8 pts.
- ⊙ 10 pts.

OK   Cancel

Bit & word format
(for FX series X, Y monitor)

Option setup

Bit order
- ○ 0--F
- ⊙ F--0

Switch No.of points
- ○ 16 pts.
- ⊙ 8 pts.

OK   Cancel

11) Bit order
Sets the order in which the bit devices are arranged when "Bit & Word" is selected as the monitoring format.
⊙ 0-F
Display in ascending order from the right
Suited to the monitoring of bit devices.

⊙ F-0
Display in ascending order from the left
Suited to the monitoring of the bits of word devices (buffer memories).

12) Switch no. of point
Set the number of bit device points displayed in the Bit & Word format for device/word batch monitoring.

In Bit & Word/Bit multi-point/Word multi-point format
⊙ 16 pts.
Set when monitoring hexadecimal devices such as X and Y.
⊙ 10 pts.
Set when monitoring decimal devices such as M and L.
⊙ 8 pts.
Set when monitoring the octal X, Y devices of the FX series.

In Word multi-point format
⊙ 8 pts.
Set when monitoring hexadecimal devices such as B and W.
⊙ 10 pts.
Set when monitoring decimal devices such as M and D.

13) |OK| button
Click this button after setting the option settings.

[Monitor format]
Indicates the monitoring format for device batch monitoring and buffer memory batch monitoring.

Bit & Word format

Device	+F E D C	+B A 9 8	+7 6 5 4	+3 2 1 0	
D40	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
D41	0 0 0 0	0 0 0 0	0 0 1 0	0 1 0 1	37
D42	0 0 0 0	0 0 0 0	1 0 0 1	0 0 0 0	144
D43	0 0 0 0	0 0 0 0	0 1 0 0	1 0 0 0	72
D44	0 0 0 0	0 0 0 0	0 0 0 1	0 1 1 0	22
D45	0 0 0 0	0 0 0 0	0 1 1 0	1 1 1 0	110
D46	0 0 0 0	0 0 0 0	0 0 0 1	1 0 0 0	24

  A   B   C

Bit multi-point format

Device	+1 FEDC BA98 7654 3210	+0 FEDC BA98 7654 3210	
D40	0000 0000 0010 0101	0000 0000 0000 0000	
D42	0000 0000 0100 1000	0000 0000 1001 0000	
D44	0000 0000 0110 1110	0000 0000 0001 0110	
D46	0000 0000 0001 0101	0000 0000 0001 1000	
D48	0000 0000 0000 0000	0000 0000 0101 1010	
D50	0000 0000 0000 1010	0000 0000 0000 0101	
D52	0000 0000 0000 0000	0000 0000 0000 0000	

  A   B

Word multi-point format

Device	+0	+1	+2	+3	+4	+5	+6	+7	
D40	0	37	144	72	22	110	24	21	
D48	90	0	5	10	0	0	0	0	
D56	0	0	0	0	2400	0	0	0	
D64	0	0	0	0	0	0	10	0	
D72	100	50	0	0	0	0	0	0	
D80	0	31580	20724	32340	2886	-4784	0	0	
D88	0	0	0	0	0	0	0	0	

  A   C

Timer/counter multi-point format (for device batch monitoring)

Device	Contact	Coil	Setting	Current	
T0	1	1	25	25	
T1	0	1	25	3	
T2	0	0	------------	0	
T3	0	0	------------	0	
T4	0	0	------------	0	
T5	0	0	------------	0	
T6	0	0	0		

  A   D   E   F   G

A ..... Indicates the device (buffer memory address)
In the case of bit multi-point format and word multi-point format, this indicates the first number of each line.

B ..... Indicates the bit ON/OFF status. (1: ON   0: OFF)

C ..... Displays word device data as 16-bit integral values, 32-bit integral values, real numbers (single precision), real numbers (double precision), or ASCII characters.

D ..... Indicates the ON/OFF status of T or C contacts. (1: ON   0: OFF)

E ..... Indicates the ON/OFF status of T or C coils. (1: ON   0: OFF)

F ..... Indicates the set values of T or C coils.

G ..... Indicates the present values of T or C coils.

POINT

- Shift key+ doubling clicking (Enter) at the monitored part displays the device test dialog box, enabling devices to be forcibly turned ON or OFF, and their present values to be changed.

  Refer to Section 18.1 "Carrying Out a Device Test"

- If device batch monitoring or buffer memory batch monitoring is started up several times, the time lapse until monitoring starts, and the monitoring interval, may become longer.

- The monitoring result is shown "FFFFH" if you specified the device which cannot be monitored during ladder monitoring (e.g. J ☐ \ ☐).

- The maximum number of points displayed for file register batch monitoring is the maximum number of points of the corresponding programmable controller.
  The monitor value in the range exceeding the maximum number of points of the programmable controller is indefinite (-1).
  If monitoring is executed on the range exceeding the maximum number of points, one of the following occurs:

  - The monitor value in the range exceeding the maximum number of points is displayed as indefinite (-1).
  - The following error message appears and monitoring stops.

MELSOFT アプリケーション	✕
ⓘ The specified device No. exceeds the permissible range. Specify a device No. that is within the range set in the parameter. 〈ES:010a4031〉	
OK	

17.5.2 Monitoring batch of multi-CPU buffer memories

A	Q/QnA	QS	FX
×	○	×	×

[Purpose]
Monitors the buffer memory of the own or other programmable controller module.

[Operating Procedure]
Select [Online] → [Monitor] → [Buffer memory batch].

[Dialog Box]

1) ——▶ Module start address: 3E00   (Hex)
2) ——▶ Buffer memory address: 0   ○ DEC   ● HEX

Monitor format: ● Bit & Word   Display: ● 16bit integer   Value: ● DEC   Start monitor
                 ○ Bit   ○ 32bit integer   ○ HEX   Stop monitor
                 ○ Word   ○ Real number(single precision)
                                           ○ Real number(double precision)   Option setup
                                           ○ ASCII character

Address	+ F E D C + B A 9 8 + 7 6 5 4 + 3 2 1 0	
0000	0000 0000 0000 0000	0
0001	0000 0000 0000 0000	0
0002	0000 0000 0000 0000	0
0003	0000 0000 0000 0000	0
0004	0000 0000 0000 0000	0
0005	0000 0000 0000 0000	0
0006	0000 0000 0000 0000	0
0007	0000 0000 0000 0000	0
0008	0000 0000 0000 0000	0
0009	0000 0000 0000 0000	0
000A	0000 0000 0000 0000	0
000B	0000 0000 0000 0000	0
000C	0000 0000 0000 0000	0
000D	0000 0000 0000 0000	0
000E	0000 0000 0000 0000	0
000F	0000 0000 0000 0000	0

Device test

Close

[Description]

1) Module start address
   Specify the buffer memory of the programmable controller to be monitored.
   Specifying method: No 1 module ... 3E00, No. 2 module ... 3E10,
   No. 3 module ... 3E20, No. 4 module ... 3E30

2) Buffer memory address
   Set the buffer memory address.

The following table indicates accessibility to the multi-CPU shared memory (buffer memory) of the multiple CPUs.

Item	Accessibility
Monitor mode	×
Device batch	×
Entry data monitor	×
Buffer memory monitor	○
Monitor condition setup	×
Monitor stop condition setup	×
Partial execution	×
Device test	×

Devices (e.g. U3E0Z0\G0) indexing the multi-CPU shared memory cannot be monitored.

17.6 Monitoring after Registering Devices

A	Q/QnA	QS	FX
◯	◯∗	◯	◯

∗: Compatible with the QCPU (Q mode) and MELSECNET/H remote station.

[Purpose]
Simultaneously monitors devices at some distance from each other within the ladder, or multiple types of device, in the same display.

[Operating Procedure]
Select [Online] → [Monitor] → [Device registration], or click 🔍 .

[Dialog Box]
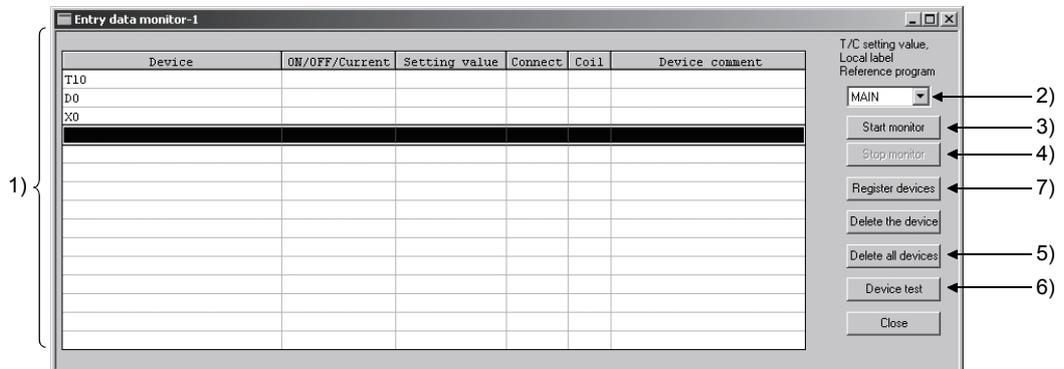
[Description]

1) Registered device monitor
    - Displays up to 64 registered device points in accordance with the device type. Doubling clicking (Enter) on a vacant field opens the device registration dialog box.
    - T and C devices are displayed in the counter/timer format.
    - 32-bit integral values are displayed with "D" appended after the device as follows: D100 (D).
      For real numbers (single precision), real numbers (double precision), and ASCII characters, (E), (ED) and (S) are appended, respectively.
      For the QCPU/QnA, FD devices to be registered cannot be specified in the real number format.
    - For a remote I/O project, the comment field is displayed blank.
    - For label programming, device entry monitoring-enabled conditions are indicated:
      (a) Set global or local variables.
      (b) Compile the label program.

2) T/C setting value, Local label Reference program
    Sets the program whose set values are to be displayed when T or C values are registered and monitored.

3) Start monitor button
    Click this button after completing device registration to start monitoring.

4) Stop monitor button
    Click this button to stop monitoring.

5) Delete all device button
    Clicking this button cancels the registration of a device.

6) Device test button
    Clicking this button displays the device test dialog box.

7) Register devices button
    Clicking this button displays the device registration dialog box.
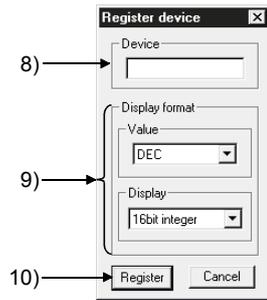
8) Device
    Sets the device to be registered.

9) Display format
    Set when word devices are monitored.
    Numeric values can be set in decimal or hexadecimal format.
    The available display settings are: 16-bit integral value, 32-bit integral value,
    Real number (single precision), Real number (double precision), and ASCII
    characters.

10) Register button
    Click this button after setting the necessary settings.

[Monitor format]

A ..... Indicates the registered device.

B ..... Indicates the ON/OFF status or present value of the registered device.
        (1: ON   0: OFF).

C ..... When T or C devices are registered, the set value is indicated.

D ..... When T or C devices are registered, the ON/OFF statuses of contacts and
        coils are indicated (1: ON   0: OFF)

[Operating Procedure]

1. Click 7) to display the device registration dialog box.

2. Set 8) and 9) in the device registration dialog box.

3. Click 10): the devices are displayed at 1).

4. By following steps 2 and 3, register all the devices to be monitored.

5. On completion of device registration, close the device registration dialog box.

6. Click 3).

POINT

- When the ladder window is set to the read or monitor mode, devices can be registered by dropping and dragging with the [Ctrl] key pressed after the area to be registered has been selected.
  It is also possible to batch drag and drop a range selected by [Shift] key + clicking from the ladder cursor position.
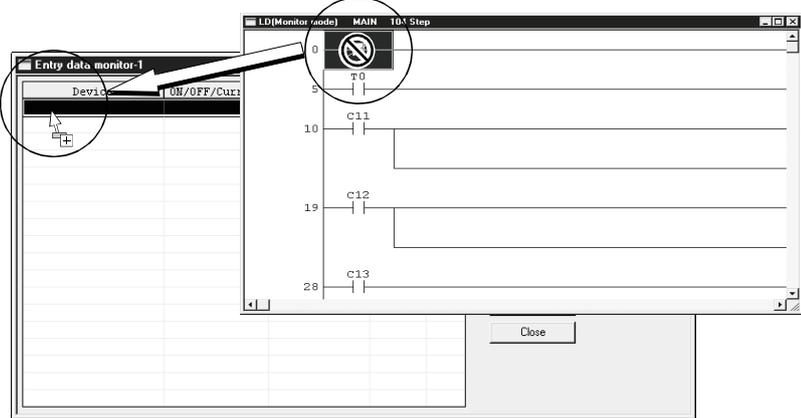
- When registered device monitoring, device batch monitoring, or buffer memory batch monitoring is started up several times, the time lapse until monitoring starts, and the monitoring interval, may become longer.

- [Shift] key + double clicking ([Enter] key) on a device name in the registration monitoring area displays the device test dialog box.

  Refer to Section 18.1"Carrying Out a Device Test"

- With the QnA series, apart from actual device numbers, it is also possible to register words with bit designations, bit designated within a word, index qualifications, and buffer memories.
  An example of device registration is given below.

Device to be Registered	Example
Monitoring M0 to M15 by digit designation	K4M0
D100F that monitors b15 of D100 using bit designation	D100.F
Monitoring Xn by index qualification with Z1	X0Z1
Monitoring a special function module buffer memory with first I/O number 40 and address K30(H2E)	U4\G30

  Refer to the QnACPU Programming Manual(Common Instructions).

- Setting a 32-bit integer/real number to the FD device will result in an error.

17.7 Setting Monitor Conditions/Stop Conditions

A	Q/QnA	QS	FX
×	○*	×	×

∗: Only Basic model QCPU is incompatible.

[Purpose]
Sets the conditions under which monitoring is started and stopped on the ladder monitor window.
This setting is not possible with the A series.

[Operating Procedure]
- For setting monitor conditions:
  Select [Online] → [Monitor] → [Monitor condition setup].
- For setting monitor stop conditions:
  Select [Online] → [Monitor] → [Monitor stop condition setup].

[Dialog Box]

Monitor condition dialog box
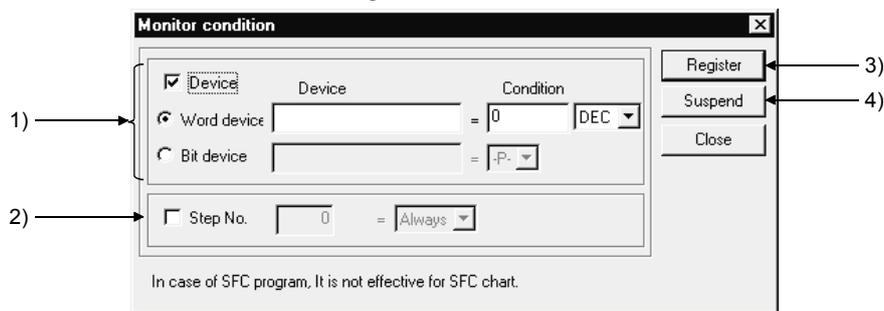
Monitor stop condition dialog box
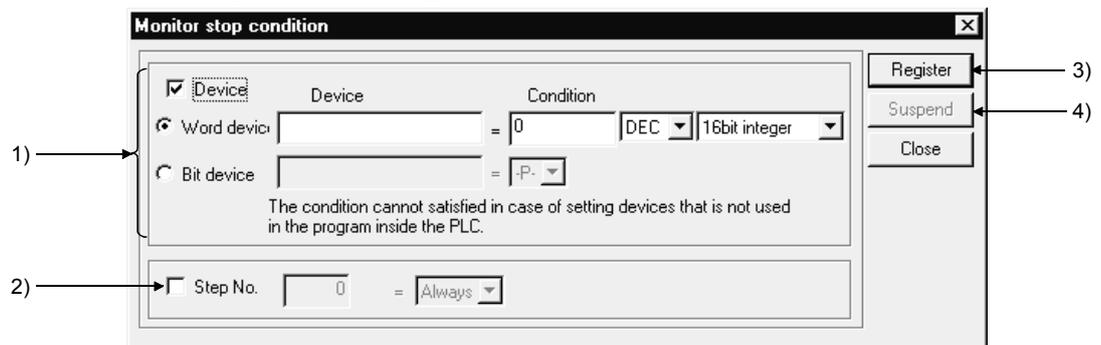
[Description]
1) Device
   Sets a device condition as the monitor condition (monitor stop condition).
   The device that is to act as the condition can be a word device or bit device.
   ⊙ Word device
      Set the word device and numeric value (decimal or hexadecimal integral value) that is to be the condition.
      For a stop condition, set a 16-bit integral value, 32-bit integral value, or real number.
   ⊙ Bit device
      Set a bit device and condition (-P-: at leading edge -F-: at trailing edge)

2) Step no.
   Sets, as the condition, the execution status of a designated step number in the program.
   Select the execution status from among the following:
   -P-………….. Transition from OFF to ON
   -F-………….. Transition from ON to OFF
   ON…………..During ON status
   OFF…………During OFF status
   Always……… At all times during execution (if the relevant step is jumped the condition is not satisfied)

3) Register button
   Clicking this button registers the set condition.

4) Suspend button
   Clicking this button cancels the registered condition.

POINT

- If both device and Step no. conditions are set at the same time, the monitor condition (monitor stop condition) is met when both are satisfied.

- If the device condition has been designated (including when both device and Step no. conditions are set at the same time), monitoring may not stop at the point when the condition is met first after condition designation.

- When the QnACPU, High Performance model QCPU, Process CPU or Redundant CPU is used, the monitor condition/monitor stop condition setting is enabled only under the following conditions:
  1. Own station connection
  2. MELSECNET/10 or MELSECNET/H other station access
  This function cannot be set when the other station is specified via Ethernet, CC-Link or the like.

17.8 Program List Monitor

A	Q/QnA	QS	FX
×	○	○	×

[Purpose]
Displays the processing time of the program currently being executed.

[Operating Procedure]
Select [Online] → [Monitor] → [Program monitor list].

[Dialog Box]
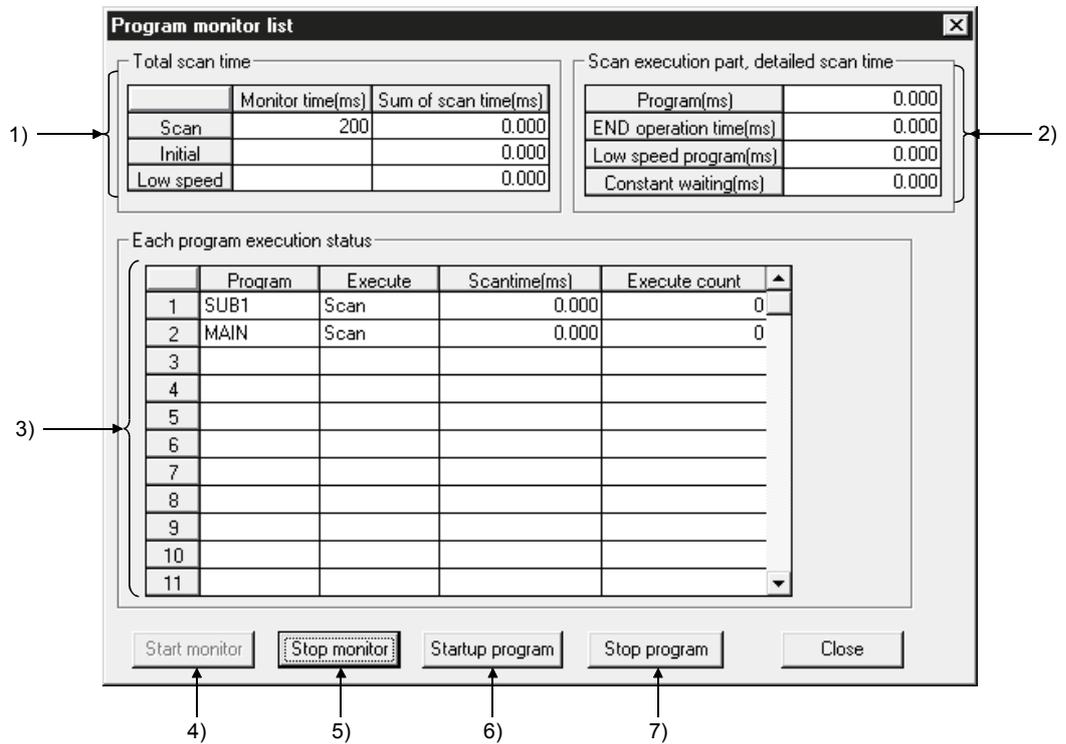
[Description]

1) Total scan time
    Indicates the time set for the WDT setting in the PLC RAS settings of the PLC
    parameters.
    • Monitor time
      Indicates the monitor time for each of the scan programs, initial programs
      and low-speed programs.
      The CPU displays a WDT error if the scan time exceeds the monitor time.
      However, the constant scan execution program is not displayed.
      Use scan time measurement to display the scan time of the constant scan
      execution program.
    • Sum of scan time
      Indicates the total time for each item in "Scan execution part detailed scan
      time".

2) Scan execution part, detailed scan time
    Indicates the processing execution time for each item.
    "Constant" indicates the constant scan waiting time when the setting is for
    constant scan.
    However, if a low-speed program execution time is also set, this becomes 0.000
    ms.

3) Each program execution status
Indicates the execution status of the program set in program setting in the PLC parameters.
- Program
Indicates program names in the order set in the parameters.
- Execute
Indicates the program type set in the parameters.
- Scan time
Indicates the actual scan time (present value). In the program stop (standby) status, the scan time is indicated as 0.000 ms.
- Execute count
Indicates the number of times a program has been executed, taking the count when counting starts to be "0".
(When the maximum count of 65536 is reached, the count returns to 0.) The count is retained during the program stop status.

4) Start Monitor button
Clicking this button starts a stopped program.

5) Stop Monitor button
Stops monitoring.

6) Startup program button
Clicking this button displays the dialog box shown below.

[Dialog Box]
Program startup dialog box
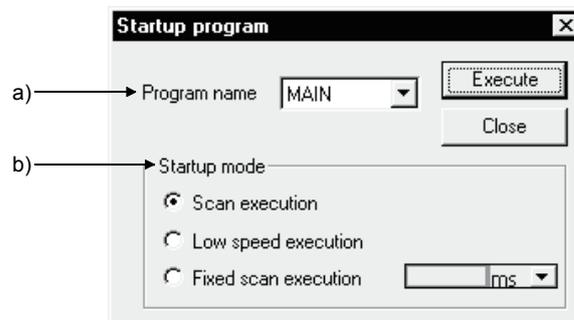
a) Program name
Only programs that have been set in PLC parameter program selection can be selected.
It is not possible to type any required program name.

b) Startup mode
"Scan", "Low speed" or "Fixed scan" can be selected for a standby program.
The value set in [PLC parameter] - <Program> is displayed as the default of fixed scan execution. ms or s can be selected as the unit.

7) |Stop program| button
    Clicking the Stop program button displays the following dialog box.

[Dialog Box]
 Stop program screen
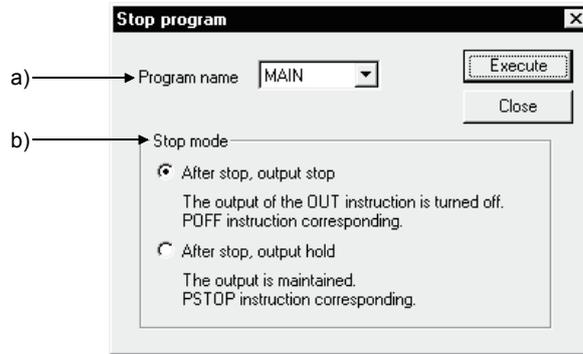
a) Program name
    You can choose only the program that was set on the <Program> tab in the
    PLC parameter dialog box.
    You cannot enter a program name as desired.

b) Stop mode
    • Execution of "After stop, output stop" for the scan execution type turns OFF
      (non-execution processing) the output at the next scan. The standby status is
      established at and after the scan that follows. (Same operation as that of the
      POFF instruction.)
    • Execution of "After stop, output stop" for the low speed execution type
      suspends the execution of the low speed execution type and turns OFF the
      output at the next scan. The standby status is established at and after the
      scan that follows. (Same operation as that of the POFF instruction.)
    • Execution of "After stop, output stop" for the standby program executes 1-
      scan OFF as scan execution and then make a stop.
      Hence, the "execution count" is also incremented by 1.
    • If an error occurs in the RET/IRET instruction during execution of 1-scan
      OFF in the standby program, the "execution count" is also incremented by 1.
      At this time, the execution type changes to "Scan".

┌───┐
│ POINT   │
├───┤
│ • If "After stop, output stop" is executed, the output may not turn OFF depending │
│   on the instruction.   │
│   For details, refer to the POFF instruction item of the following manual. │
│   QCPU Programming Manual(Common Instructions)   │
│   QnACPU Programming Manual(Common Instructions)   │
│   │
│ • The Universal model QCPU does not support the low-speed program.   │
│   The |Startup program| and |Stop program| buttons are also masked.   │
└───┘

17.9 Monitoring the Interrupt Program List

A	Q/QnA	QS	FX
×	○	×	×

[Purpose]

Indicates the number of times interrupt programs have been executed.

[Operating Procedure]

Select [Online] → [Monitor] → [Interrupt program monitor list].

[Dialog Box]
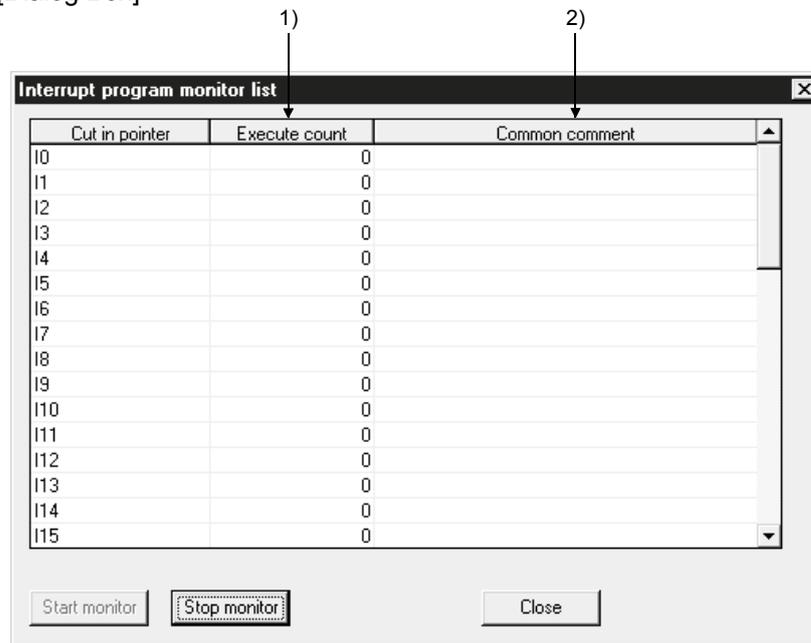
[Description]

1) Execute count
    Indicates the number of times a program has been executed, counting from "0" at the time when the programmable controller CPU is set to RUN.
    (When the maximum count of 65536 is reached, the count returns to 0.)
    The count is cleared to zero when the operating state of the PLC is set to RUN.

2) Common comment
    Indicates comments created as device comments.
    Only common comments can be indicated.

17.10 Measuring Scan Time

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Only Basic model QCPU is incompatible.

[Purpose]

Indicates the processing time for any required section of program.

[Operating Procedure]

Select [Online] → [Monitor] → [Scan time measurement].

[Dialog Box]

1) → Scan time measurement [MAIN]

Measurement limit
Start step   [0]
End step   [4]
Start
Stop

2) → Scan time
1st time [   ] ms
Present   [   ] ms
Most   [   ] ms
Least   [   ] ms
Close
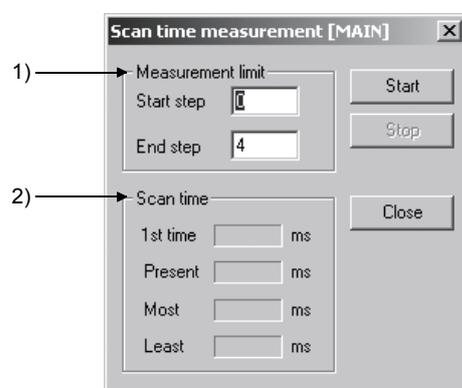
[Description]

1)   Measurement limit
     Set so that the start step is smaller than the end step.

2)   Scan time
     It is not possible to measure times that straddle different program files.
     If the measured time is within 0.100 ms, it is indicated as 0.000 ms.
     The time can be measured from 0.001 ms for the Universal model QCPU.

POINT

Selection range

1. Move the cursor to a position outside the left bus line and Shift key+ click to
   set the range.
   During dragging the selected range turns blue. (END instructions cannot be
   selected.)
2. On selecting [Online] → [Monitor] → [Scan time measurement], the start step
   and end step are set in the part of the program defined by the selected range.

17.11 Executing Sampling Trace

A	Q/QnA	QS	FX
○	○∗1	×	○∗2

∗1: Basic model QCPU and Universal model QCPU (Q00UJCPU) are incompatible.
∗2: Compatible with the FX2(C), FX2N(C), and FX3U(C) only.

[Purpose]
Set the conditions and data required to execute sampling trace.

[Operating Procedure]
Use either of the following methods to make the settings required for sampling trace:
1   When wizard is used. (Refer to Section 17.11.1).
2   When wizard is not use. (Refer to Section 17.11.2).

[Dialog Box]

17.11.2(1)
Set the storage destination of trace data.

17.11.2(2)
Set the method to execute trace.

17.11.2(8)
Select and execute a trace settings file operation.

17.11.2(9)
Select and execute a trace settings PLC operation.

POINT

- When using AnNCPU, set the memory capacity in the PLC parameters.
- The setting data and trace result data is in GX Developer format and there is therefore no compatibility with GPPA or GPPQ data.
- When using extension file registers with AnACPU or AnUCPU or QCPU (A mode), there may be blocks that cannot be used, depending on the memory cassette. Block numbers other than No. 0 to 24, 29 to 40, and 45 to 48 of A3AMCA-96, A4AMCA-128, and A4AMCA-128E cannot be used.
- When setting Q series standard RAM to the trace data storage target, use GX Developer Version 8.23Z (SW8D5C-GPPW-E) or later. For usable programmable controller versions, refer to the User's Manual for each module.
- When performing the "Trace settings PLC operation", perform the PLC read/write after selecting the target memory with the "Individual setting/execution".
- Sampling trace cannot be performed when it has been registered to another GX Developer.
- GX Developer can forcibly abort the running sampling trace registered to another GX Developer. The sampling trace will be in unregistered status if aborted. Confirm that the sampling trace is registered before execution.

17.11.1 Wizard setting/execution

(1) Trace setting

[Operating Procedure]
Choose [Online] → [Trace] → [Sampling trace] → ⊙ Wizard setting/execution →
Trace setting .

[Dialog Box]

Start

1) Trace data storage setting screen
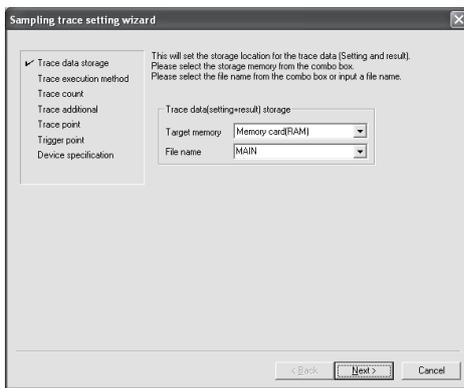
This screen is for QCPU (Q mode) and QnACPU only.
Select a memory card from the combo box.
Specify the file to be stored by selecting from the combo box
or inputting the name.
For details, refer to Section 17.11.2 (1).

↓

2) Trace execution method setting screen
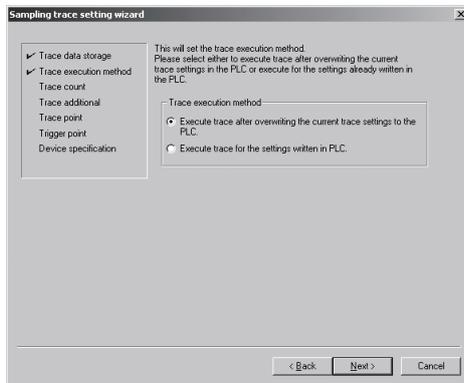
Select whether trace will be executed on the conditions set
using GX Developer or the settings for programmable
controller.

↓

3) Trace count setting screen
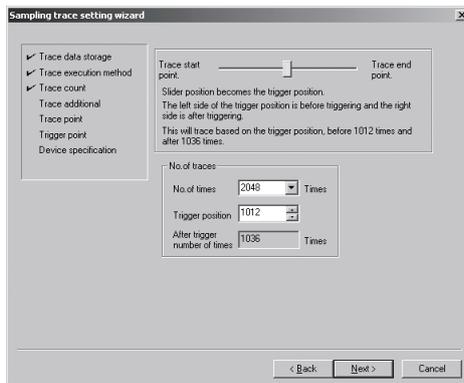
Set the number of times for trace execution.
For details, refer to Section 17.11.2 (3).

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4) Trace additional information setting screen
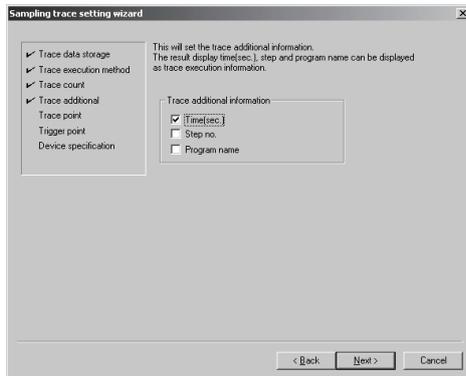
This screen is for QCPU (Q mode) and QnACPU only. "Time", "Step no." and/or "Program name" can be selected as additional trace execution information that will be displayed at the time of results display.

↓

5) Trace point setting screen
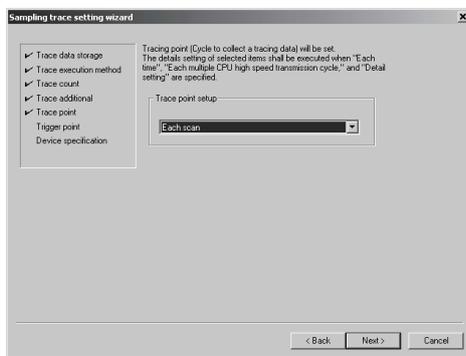
Set the trace execution timing, i.e., the timing to collect trace data.
The setting made in this step will define the wizard screen to be displayed by clicking [Next] button as follows:

• Each scan
    For AnNCPU
        13) Device setting screen
    For AnACPU/AnUCPU/QCPU (A mode)
        11) Device points setting screen
    For other CPU
        9) Trigger point setting screen
• Each Multiple CPU high speed transmission cycle[1]
        7) Trace point cycle setting screen
• Interval
        6) Trace interval setting screen
• Detail
        8) Trace point details setting screen

6) Trace interval setting screen
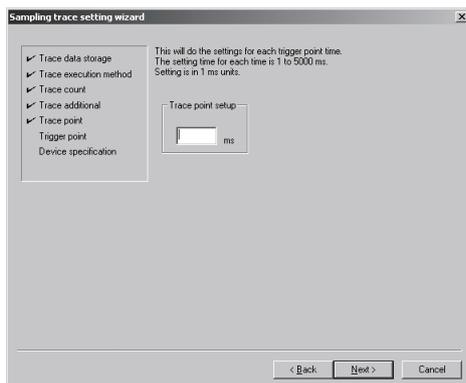
Set the time interval for trace execution.
The applicable setting range and unit vary with the CPU type used.
For details, refer to Section 17.11.2 (3).

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＊1: Universal model QCPU only (excluding the Q00U/Q01U/Q02UCPU)

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7) Trace point cycle setting screen

This screen is for the Universal model QCPU (excluding the Q00U/Q01U/Q02UCPU) only.
Set Each Multiple CPU high speed transmission cycle for trace point.
Set trace point by Multiple CPU high speed transmission cycle (0.88ms) × 1 to 50.
For details, refer to Section 17.11.2 (3).

8) Trace point details setting screen
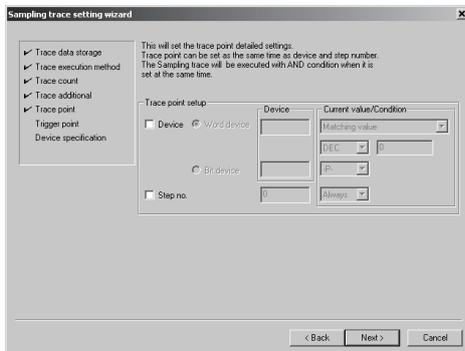
This screen is for QCPU (Q mode) and QnACPU only.
"Device" and "Step no." can be set to be used for trace point.
If they are both set, the sampling trace will be executed based on AND condition.
For details, refer to Section 17.11.2 (3).

9) Trigger point setting screen

This screen is for QCPU (Q mode), QnACPU and FXCPU only.
Set the trigger (condition) that will work as the start point (0 point) for trace execution.
For details, refer to Section 17.11.2 (3).

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10) Trigger point details setting screen
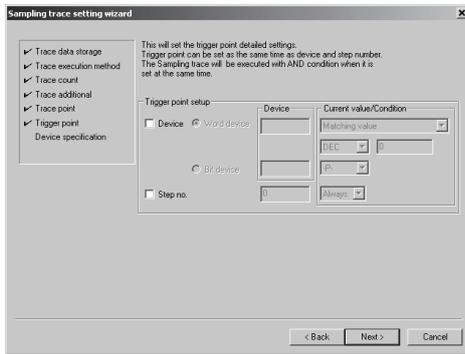
This screen is for QCPU (Q mode), QnACPU and FXCPU only.
Set the details of the trigger (condition) that will work as the start point (0 point) for trace execution.
Active input areas vary with the selected trigger conditions.
For details, refer to Section 17.11.2 (3).

↓

11) Auto start setting screen
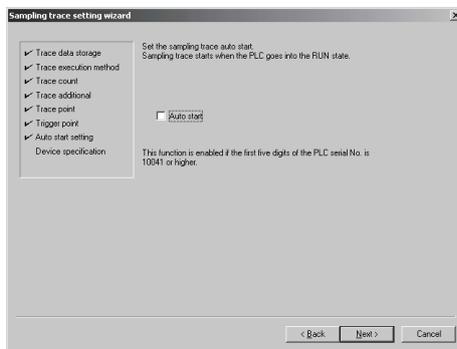
This screen is for Universal model QCPU only.
Set to auto start the sampling trace when the state of CPU turns to RUN state.

↓

12) Device points setting screen
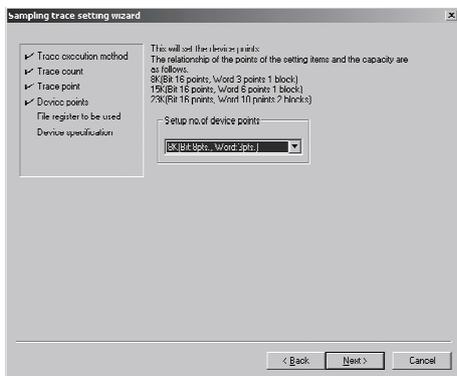
This screen is for AnACPU, AnUCPU and QCPU (A mode) only.
Set the number of device points.
For details, refer to Section 17.11.2 (4).

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13) File register to be used setting screen
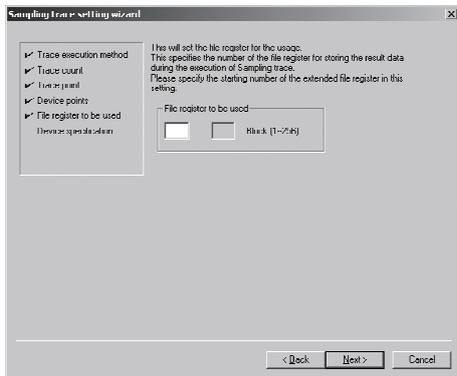
This screen is for AnACPU, AnUCPU and QCPU (A mode) only.
Specify the file register No. to be used for storing the results data of sampling trace execution.
For details, refer to Section 17.11.2 (4).

↓

14) Device setting screen
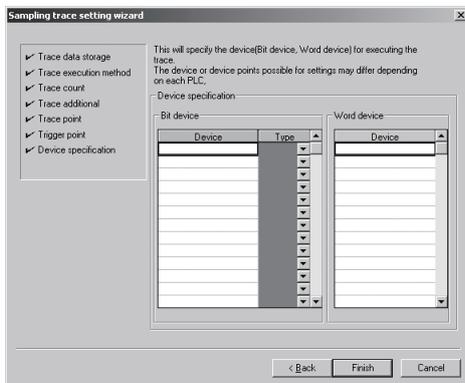
Set the device (bit device, word device) to be used for trace execution.
The applicable device or number of device points varies with the programmable controller used.
For details, refer to Section 17.11.2 (4).

End

(2)   Trace execution

[Purpose]
 Specify a trace operation method to be executed.
 The trace processing status is displayed in "Trace status" area that is situated on
 the right side of the screen below.

[Operating Procedure]

 Choose [Online] → [Trace] → [Sampling trace] → ⊙ Wizard setting/execution →
 Trace setting .

[Dialog Box]
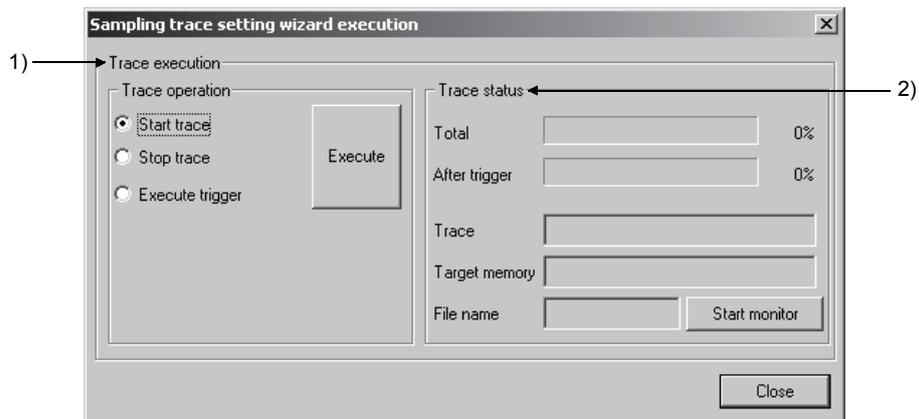
[Setting Items]
 1)   Trace operation
    Check the operation item to be executed, and then click Execute button.
    Start trace: Starts the trace operation.
    Stop trace: Interrupts the trace operation during trace execution.
    Execute trigger: Executes the trigger.

 2)   Trace status
    Total: Shows the processing status after trace start.
    After trigger: Shows the processing status during trigger execution.
    Trace: Shows the current trace execution status.
    Target memory: Displays the memory in which the currently registered file is
                     stored (QCPU (Q mode) only).
    File name: Displays the file name currently registered (QCPU (Q mode)
                     only).
    Start monitor button: Shows the trace processing status. Suspend monitor is
                     displayed on the button during trace execution; If clicked,
                     monitor will be interrupted.

(3)   Trace result

[Purpose]
  When trace results are normally read from the PLC, the trace results will be
  displayed on the screen.

[Operating Procedure]
  Choose [Online] → [Trace] → [Sampling trace] → ⊙ Wizard setting/execution →
  Trace result.

  For details, refer to Section 17.11.2 (6).

(4)   CSV file creation

[Purpose]
  Saves the trace results as CSV file.

[Operating Procedure]
  Choose [Online] → [Trace] → [Sampling trace] → ⊙ Wizard setting/execution →
  Trace result → Create CSV file.

  For details, refer to Section 17.11.2 (7).

17.11.2 Individual setting/execution

(1) Trace data storage setting

[Purpose]
Set the storage destination for trace data (setting + result).

[Operating Procedure]
Choose [Online] → [Trace] → [Sampling trace] → ⊙ Individual setting/execution.

[Dialog Box]
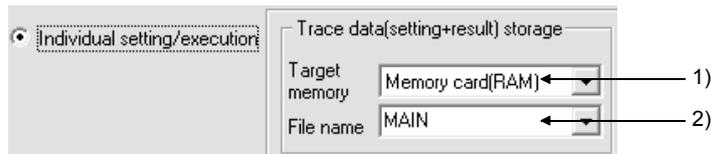
[Setting Items]
1) Target memory
Specify the memory that will store the trace data.

2) File name
Specify the file to be stored by selecting from the combo box or inputting the name.

POINT

- For A/FX series, "Target memory" and "File name" settings are not available.
- For Q/QnA series, the trace data can be stored in the following memories.

PLC series	Target memory
Q series	Memory card (RAM)
	Standard RAM
QnA series	IC memory card A(RAM)
	IC memory card A(ROM)
	IC memory card B(RAM)
	IC memory card B(ROM)

- When changing the local device if the files for local device and trace data are edited in the standard RAM of Q series, operate below.
  1) Read the trace data (setting + result) file from the standard RAM of programmable controller with the Read from PLC button of "Trace setting PLC operation".
  2) Change the local device setting and write to programmable controller.
  3) Write the trace data (setting + result) file read in 1) to programmable controller with the
     Write to PLC button of "Trace setting PLC operation".
When not operating the above procedure, the files for trace data may be deleted.

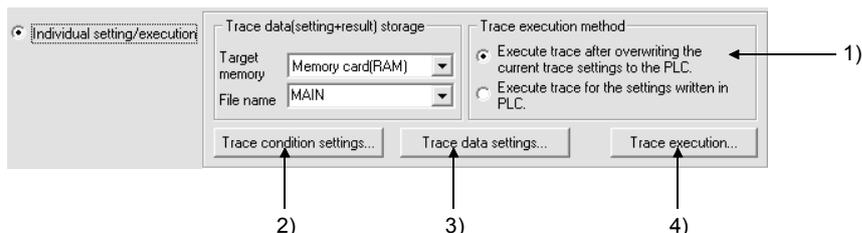(2)   Trace execution method setting

[Purpose]
Set the trace execution method.

[Operating Procedure]
Choose [Online] → [Trace] → [Sampling trace] → ⊙ Individual setting/execution.

[Dialog Box]

[Setting Items]
1)   Trace execution method
   • Execute trace after overwriting the current trace settings to the PLC.
     Executes trace based on the conditions set using GX Developer.
   • Execute trace for the settings written in PLC.
     Executes trace based on the settings for programmable controller.

2)   Trace condition setting button
     After clicking this button, continue the operation by reference to Section 17.11.2
     (3).

3)   Trace data setting button
     After clicking this button, continue the operation by reference to Section 17.11.2
     (4).

4)   Trace execution button
     After clicking this button, continue the operation by reference to Section 17.11.2
     (5).

(3)   Trace condition settings

[Purpose]
Set the following items: No. of traces, Trace additional information, Trace point,
Trigger point.

[Operating Procedure]
Choose [Online] → [Trace] → [Sampling trace] → ⊙ Individual setting/execution →
Trace condition setting .

[Dialog Box]
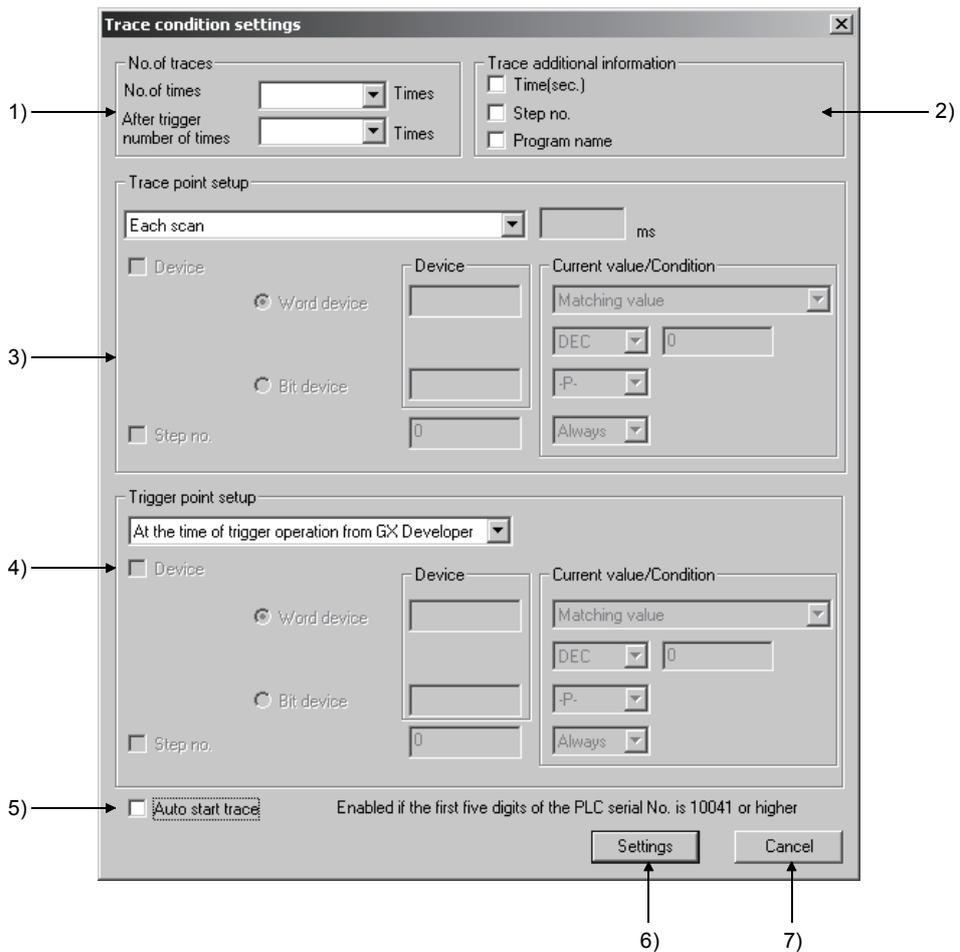
[Setting Items]
  1) No. of traces

    For QCPU (A mode/Q mode), QnACPU:
        Set the number of times for trace by selecting from combo box or
        inputting the value. (Applicable range: 1 to 8192)
    For ACPU: Select a value from the combo box. (Applicable range: 1 to 1024)
    For FXCPU: Fixed to "512" (masked).

  2) Trace additional information (Specific for QnA series)
      "Step no." and "Program name" will be displayed as additional trace execution
      information at the time of results display.

3) Trace point setting
   Select "Each scan", "Interval", "Each Multiple CPU high speed transmission cycle"*1 or "Detail".
   When "Interval" is selected, the applicable setting range and unit vary with the CPU type used.

CPU type	Range	Unit
QCPU	1 to 5000ms	1ms
QnACPU	5 to 10000ms	5ms
ACPU	10 to 2000ms	10ms
FXCPU	10 to 2000ms	10ms

When "Multiple CPU high speed transmission cycle" is selected, a trace point can be set by cycle (0.88ms) × 1 to 50.

When "Detail" is selected, "Device" and "Step no." can be set to be used for trace point.
In this case, the sampling trace will be executed based on AND condition.

Condition setting of word device
   For the Universal model QCPU, a word device can be selected from "Matching value" or "Changing value".
   For other CPUs, it is fixed at "Matching value ".

*1: Universal model QCPU only (excluding the Q00U/Q01U/Q02UCPU).

POINT

When setting the trace point setting as [per time] or [per multiple CPU high speed transmission cycle], pay attention to the sampling interval and sampling processing time for one sampling since the sampling trace is performed as interrupt processing.
If the sampling processing time for one sampling is long, WDT error may occur.
When the trace point setting is set to [per multiple CPU high speed transmission cycle], the trace data can be collected only when the following conditions are all met, since the trace data is collected at the timing of executing the interrupt program of I45.
- Multiple CPU high speed main base unit (Q3□DB) is used.
- The multiple CPU system where two or more CPU modules are used and multiple CPU high speed transmission function is set.
- Interrupt pointer of I45 exists in a program.
- EI status with the interrupt mask of I45 is cancelled.

---

4)   Trigger point setting
Set the trigger (condition) that will work as the start point (0 point) for trace execution.
The combo box contents vary with type of the programmable controller used as shown below:

QCPU (Q mode) : At the time of TRACE order/At the time of trigger operation from GX Developer/Detail

QnACPU   : At the time of STRA order/At the time of trigger operation from GX Developer/Detail

FX CPU   : At the time of trigger operation from GX Developer/Detail

Active input areas vary with the selected trigger conditions.

Condition setting of word device
    For the Universal model QCPU, a word device can be selected from "Matching value" or "Writing device".＊2
    For other CPUs, it is fixed at "Matching value".

＊2: In "Writing device" setting, even when the same value as last one is entered, it is set as a trigger point.

When using FX series, note that the sampling trace function-relevant descriptions used on the FXGP(DOS)/FXGP(WIN) are different with those used on GX Developer as shown below:

FXGP (DOS), FXGP (WIN)   GX Developer
   Without trigger   →   At the time of trigger operation from GX Developer
   With trigger   →   Detail

POINT

• Precautions when executing sampling trace multiple times
  If sampling trace is executed 1000 times when "Trace count" has been set to "2000", the trace results including those previously executed 1000 times will be kept.

---

5)   Auto start trace
Set to auto start the sampling trace when the state of CPU turns to RUN state.
This setting is available for the Universal model QCPU only, and it is not displayed for other CPUs.

6)   Settings button
Performs the processing for data check
Updates the trace conditions on the sampling trace main screen when the data check is completed without any problems.

7)   Cancel button
Discards the settings and closes the dialog box.
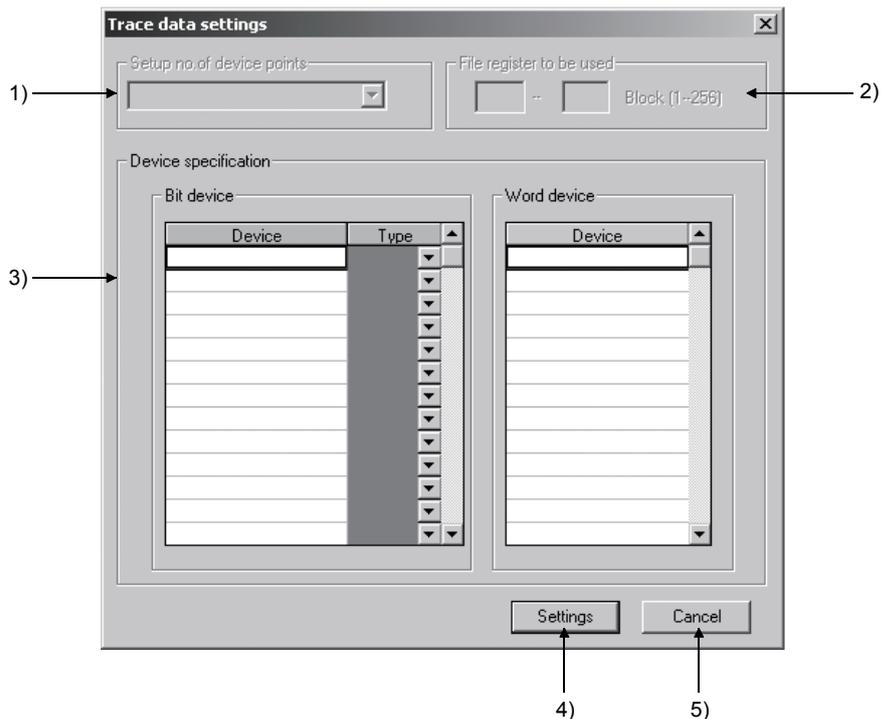
(4)   Trace data settings

[Purpose]
  Set the devices (bit device, word device) used for sampling trace.

[Operating Procedure]
  Choose [Online] → [Trace] → [Sampling trace] → ⊙ Individual setting/execution →
  Trace data setting.

[Dialog Box]

[Setting Items]

  1)   Setup no. of device points
       This setting is available for AnACPU, AnUCPU and QCPU(A mode) only.
       The following shows the relation between the device points and capacity:
       8K (Bit: 8 points, Word: 3 points, 1 block)
       15K (Bit: 16 points, Word: 6 points, 1 block)
       23K (Bit: 16 points, Word: 10 points, 2 blocks)

  2)   File register to be used
       This setting is available for AnACPU, AnUCPU and QCPU(A mode) only.
       Specify the No. of file registers to be used for storing the results data at the time
       of sampling trace execution.
       In this setting, specify the start No. of the extension file registers.
       Applicable value range: 1 to 256.

3) Device specification
   Set the devices (bit device, word device) to be used for trace settings.
   The applicable device or number of device points varies with the programmable controller used.

	Bit Device	Word Device	Details
AnNCPU	8 points	3 points	X,Y,M,L,S,B,F,T,C,D,W,R,A,Z,V
AnACPU AnUCPU QCPU(A mode)	Depending on the setting in "Setup no. of device points": 8K: 8 points 15K: 16 points 23K: 16 points	Depending on the setting in "Setup no. of device points": 8K: 3 points 15K: 6 points 23K: 10 points	
QnACPU (The required memory capacity: 60k bytes or less)	50 points Up to 16 characters (bit device) can be input.	50 points Up to 17 characters (bit device) can be input.	X,Y,M,L,SM,FX,FY,V,DX,DY,T,C,ST, D,SD,FD,B,SB,W,SW,R, Z,ZR,Constants, U□\G,J□\X,J□\Y,J□\B,J□\SB, J□\W,J□\SW,BL□\S
QCPU(Q mode)	50 points Up to 16 characters (bit device) can be input.	50 points Up to 17 characters (bit device) can be input.	Extension specification, indexing, bit specification of word device, digit specification for bit device. Indirect specification is not available.
FXCPU∗1	10 points	3 points	Contact: X, Y, M, S, T, C Coil: T, C (Y, M∗2) Current value: T, C, D, V, Z

∗1: Sampling trace is supported by following series: FX2, FX2C, FX2N, FX3U, FX2NC, FX3UC

∗2: Y and M can be registered as a coil. However, ON/OFF operation of the coil cannot be reflected on the sampling results, depending on the programmable controller operation.
   Therefore, it is recommendable to register Y and M as "Contact".

POINT
• In the case of M, L, S of A series CPU For A/QCPU (A mode), the M, L and S devices are automatically modified and displayed in the device setting area at the time of device name input. Even when parameter settings are changed after the devices have been registered, the device names are automatically modified and re-displayed on the screen according to the changed parameter settings. • "Type" field This setting is not available when no device is input, or devices other than T and C are input.

4) Settings button
   Updates the trace data on the sampling trace main.

5) Cancel button
   Discards the settings and closes the dialog box.

POINT

- If sampling trace cannot be executed, conduct the following checks:
    <Common check point>
    - Programmable controller type check. (Trace cannot be executed when a communication is made with different type of programmable controller.)
    - Trace execution status check. (The instruction for trace execution is not usable during trace execution.)
    <Check point for overwriting conditions on the programmable controller>
    - Device check. (Verify the consistency with the parameter settings.)
    - Trace condition settings check. (Check if the trace condition settings are complete, or the settings are consistent.)
    - Capacity check. (Check if the capacity of the trace results to be stored is within the setting capacity.)
    - Parameter check. (Check if the PLC parameters are consistent with the parameter settings on GX Developer. If they are inconsistent, sampling trace cannot be executed.)
    - Memory selection check. (Check if the memory selected for data storage is usable.)
    - File name setting check. (Check if the file name is set.)
    - Extension file register block check. (Check if the block of extension file register is usable. This is relevant only when AnACPU, AnUCPU or QCPU (A mode) is used.)
- When the PLC type is changed, the sampling trace data (settings + results) written into the file will be deleted. (Even if the project has not been saved, the data are deleted and cannot be restored.)
    Example: A2N → A3A Deleted
    　　　　　A2A → A3A Not deleted
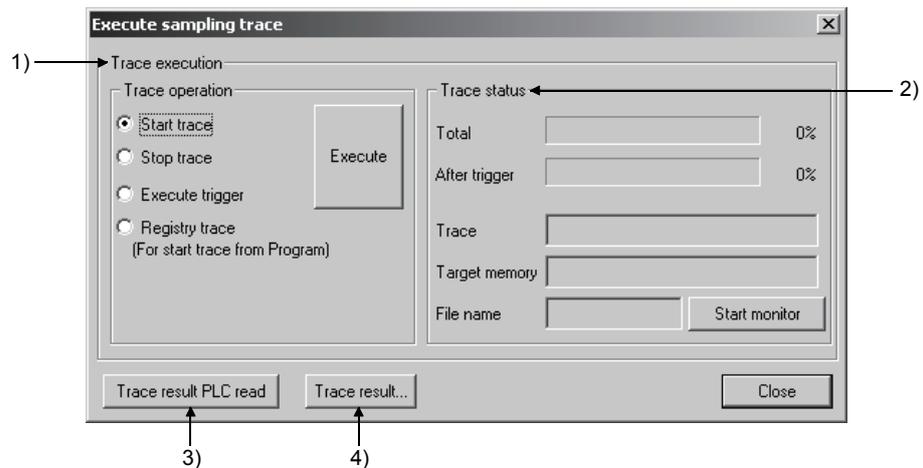
(5) Trace execution

[Purpose]
Specify the trace operation method to be executed.
The trace processing status is displayed in "Trace status" area that is situated on the right side of the screen below.

[Operating Procedure]

Choose [Online] → [Trace] → [Sampling trace] → ⊙ Individual setting/execution → Trace execution .

[Dialog Box]

[Setting Items]
1)   Trace operation
Click Execute button to start monitoring of the trace processing status.
Start trace: Starts the trace operation.
Stop trace: Interrupts the trace operation during trace execution.
Execute trigger: Executes the trigger.
Registry trace: The trace operation can be triggered from the sequence program. (For QnA/Q series)
For A series, the trace operation is executed by setting a trigger using the STRAR or STRA instruction.
For details on the instructions, refer to the ACPU Programming Manual (Common Instructions).

2)   Trace status
Total: Shows the processing status after trace start.
                   After trigger: Shows the processing status during trigger execution.
Trace: Shows the current trace execution status.
Target memory: Displays the memory in which the currently registered file is stored (QCPU (Q mode) only).
File name: Displays the file name currently registered (QCPU (Q mode) only).
Start monitor button: Shows the trace processing status. Suspend monitor is displayed on the button during trace execution; If clicked, monitor will be interrupted.

3)   Trace result PLC read button
Click this button to read the sampling trace execution results from the programmable controller.

4)   Trace results… button
After clicking this button, continue the operation by reference to Section 17.11.2 (7).
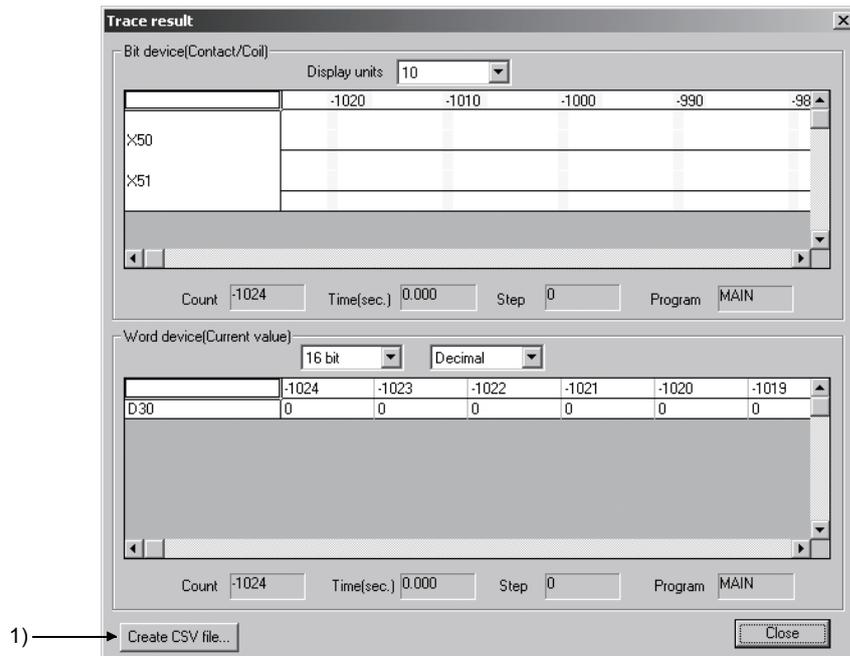
(6)   Trace result

[Purpose]
Display results of the sampling trace executed based on the settings.

[Operating Procedure]
Choose [Online] → [Trace] → [Sampling trace] → ⊙ Individual setting/execution → Trace execution → Trace result PLC read → Trace result….

[Dialog Box]

[Setting Items]

1)   Create CSV file… button
After clicking this button, continue the operation by reference to Section 17.11.2 (7).

(7)   CSV file creation

[Purpose]
Make the settings in order that the sampling trace results will be saved as CSV file.

[Operating Procedure]
Choose [Online] → [Trace] → [Sampling trace] → ⊙ Individual setting/execution →
Trace execution → Trace result PLC read → Trace result… → Create CSV file… .

[Dialog Box]
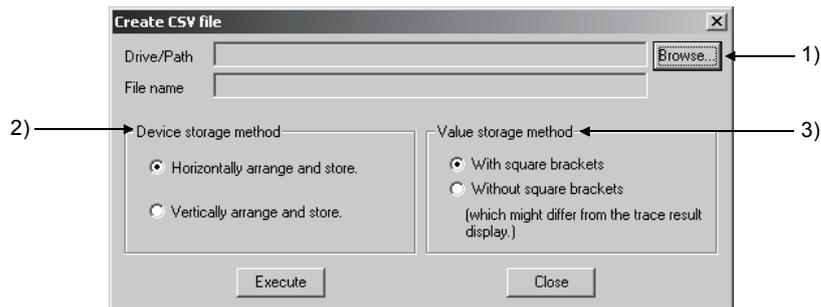
[Setting Items]

1)   Browse… button
Click this button to display the following dialog box. On the dialog box, specify
the place that stores the CSV file, and the file name.
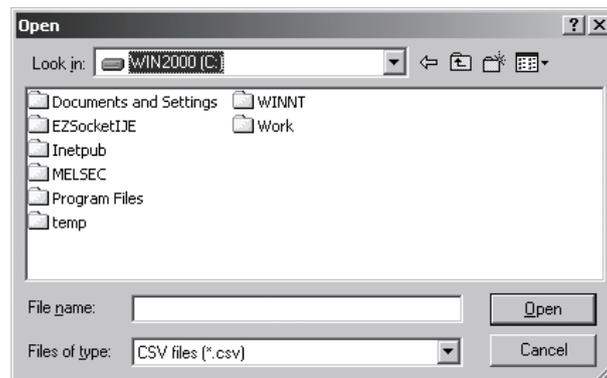
2)   Device storage method
Horizontally arrange and store: Trace results of bit devices and word devices
are horizontally arranged and stored.
Vertically arrange and store: Trace results of bit devices and word devices
are vertically arranged and stored.

3)   Value storage method
With square brackets: Outputs the values in CSV files with square brackets.
Without bracketing: Outputs the values in CSV files without square brackets.

POINT

- When "Without bracketing" is selected for Value storage method, the display on the Excel of the output CSV file may differ from the trace result.
  To have the same display as the trace result, select "With square brackets.

  <Examples of displays on Excel when they are different from the trace results>

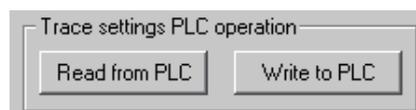 | Description | Trace result | Display on Excel |
  |---|---|---|
  | Zeros after decimal point are abbreviated. | 0.500 | 0.5 |
  | E included in hexadecimal is regarded as the exponential representation. | 11E23 | 1.10E+24 |
  | The displayed number of digits of floating point differs. | -2.1433819179E+37 | -2.14E+37 |
  | Numeric value is displayed in exponential. | 2147483647 | 2.15E+09 |

(8)   Trace settings file operation

[Purpose]
Execute the file operation of trace settings.

[Operating Procedure]
Choose [Online] → [Trace] → [Sampling trace].

[Dialog Box]

```
┌─ Trace settings file operation ──────────────────────┐
│   ┌──────────┐   ┌──────────┐   ┌───────────┐       │
│   │ Read file... │   │ Write file... │   │ Delete file... │       │
│   └──────────┘   └──────────┘   └───────────┘       │
└───────────────────────────────────────────────────────┘
```
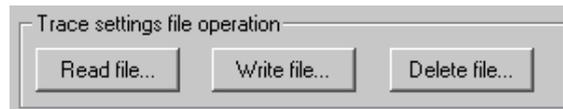
[Setting Items]

1)   Read file... button
     Reads sampling trace conditions and trace results.

2)   Write file... button
     Writes sampling trace conditions and trace results.

3)   Delete file... button
     Deletes sampling trace conditions and trace results.

(9)   Trace settings PLC operation

[Purpose]
Execute the PLC operation of trace settings.

[Operating Procedure]
Choose [Online] → [Trace] → [Sampling trace].

[Dialog Box]

```
┌─ Trace settings PLC operation ──────────────────┐
│   ┌──────────────┐   ┌──────────────┐          │
│   │ Read from PLC │   │ Write to PLC │          │
│   └──────────────┘   └──────────────┘          │
└───────────────────────────────────────────────────┘
```

[Setting Items]

1)   Read from PLC... button
     Reads sampling trace conditions and trace results from the programmable
     controller.

2)   Write to PLC... button
     Writes sampling trace conditions and trace results to the programmable
     controller.

17.12 Monitoring the Registered Ladders
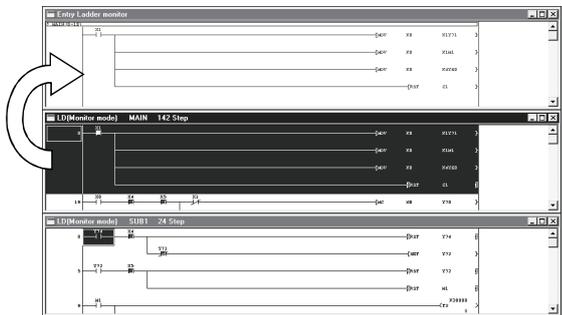
A	Q/QnA	QS	FX
○	○	○	○

[Purpose]

You can batch-monitor related multiple ladder blocks.

[Operating Procedure]

[Online] → [Monitor] → [Entry ladder monitor].

[Dialog Box]

Ladder registration monitor screen
*The ladder block registered to the ladder registration screen is shown in blue.

[Description]

- You can register ladders by copy and paste or drag and drop.
- Registration may be made only from the ladder screen.
  (Registration from the list screen or listing of the registered ladders cannot be made.)
- The registerable ladder size is up to 6K steps for any series.
- Functions that can be performed on the ladder registration screen
  1. Ladder deletion on ladder block basis
  2. Device search, instruction search, character string search
  3. Comment/statement/note display
  4. Device test
  5. Screen magnification/reduction
  6. Drag and drop to device registration monitor

17.13 Deleting All Registered Ladders

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
 You can batch-delete the ladder blocks registered.

[Operating Procedure]
 [Online] → [Monitor] → [Delete all entry ladder].

18. DEBUGGING PROGRAMS

After a program has been written to the programmable controller, you can check it by carrying out a device test, partial execution, and step run. However, note that when using the FX series, the partial execution, step run and skip run functions are only valid when the GX Simulator is connected.
Also note that if skip run is set before partial execution and step run, the program range designated for skip run will not be processed.
The following shows the operation status during partial execution and step run operation, and an example of the execution range when skip run is set.
For the Q series, you can use the GX Simulator to perform partial execution, step execution or skip execution. (When it is connected to the programmable controller, partial execution, step execution and skip execution cannot be performed.)

<Partial execution>
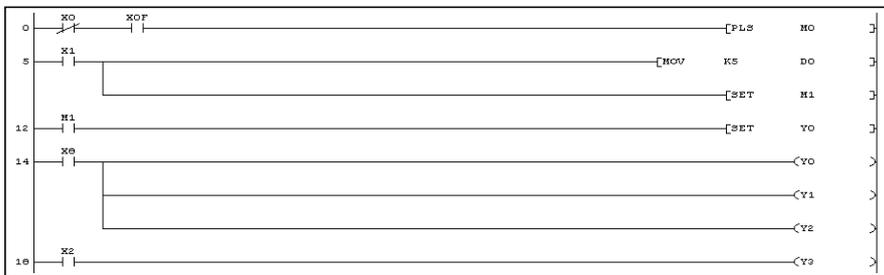
Runs the program from the designated step or pointer to the set stop condition.

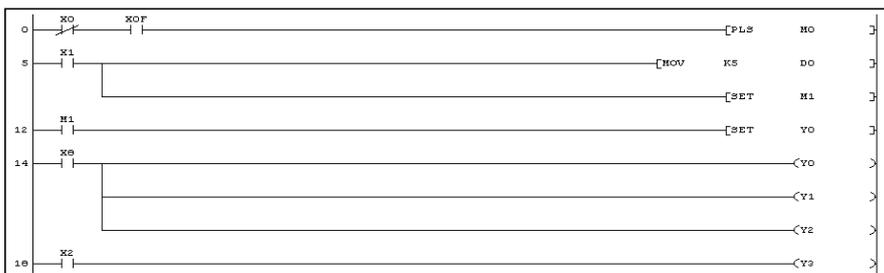Refer to Section 18.4 "Performing Partial Execution".

<Step run>

Executes the designated program range one instruction at a time.

Refer to Section 18.5 "Executing Step Run".

When skip run is set with the Q/QnA series or FX series, partial execution or step run is executed without processing the program range designated for this function.

<Skip run>

Executes partial execution or step run while skipping (not processing) the part of the program between the designated steps.

Refer to Section 18.6 "Setting the Scan Range".

18.1 Conducting a Device Test
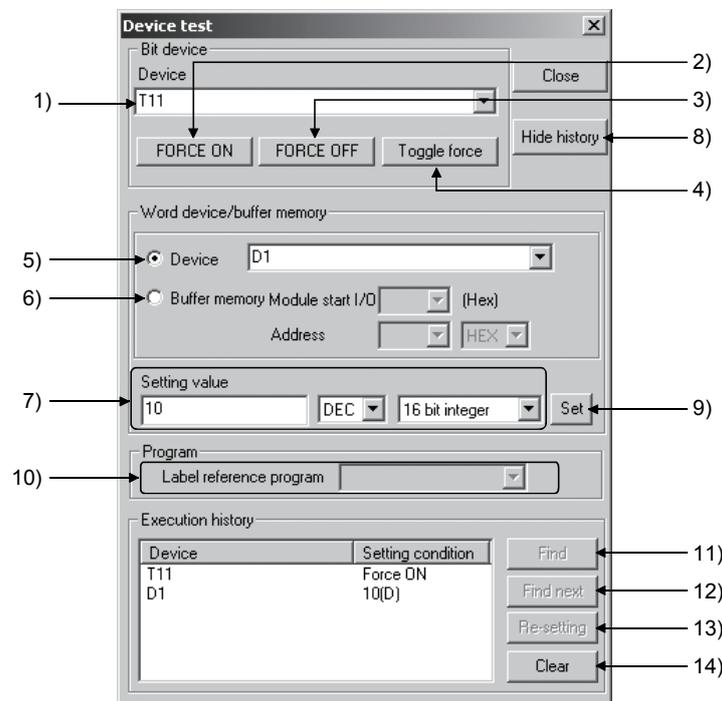
A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Forcibly turns ON/OFF the bit devices of the programmable controller, and changes the present values of word devices.

[Operating Procedure]
Select [Online] → [Debug] → [Device test], or click 🔲 (Alt + 1).

[Dialog Box]

[Description]

1) Bit device
   Designates the bit device to be forcibly turned ON or OFF.

2) FORCE ON button
   Forcibly turns the designated bit device ON.

3) FORCE OFF button
   Forcibly turns the designated bit device OFF.

4) Toggle force button
   Forcibly inverts the ON/OFF statuses of designated bit devices.

5) Device
   Designates the word device whose present value is to be changed.

6) Buffer memory
   Designates the first I/O number (lowest digit unnecessary) and buffer memory address (decimal/hexadecimal) of the monitoring special function module.

7) Setting value
Sets the value to be changed.
Before setting the value, designate decimal or hexadecimal, and 16-bit integral value, 32-bit integral value, real number (single precision), or real number (double precision).

8) Hide history (Display history)
Select whether the execution result of device test is to be displayed or hidden.
When the screen display area of the personal computer is 800×600 pixels, it is recommended to choose Hide since a large dialog box appears if the execution result is displayed.

9) Set button
Click this button after making the necessary settings.
The word device present value change operation is executed.

10) Program
Select the label program name on which a device test will be performed.

11) Find button
When the device is specified in the history field, the corresponding ladder program appears.

12) Find next button
Continuously searches for the device found by clicking the Find button.
When there are two or more sequence programs, these programs are searched for the device.

13) Re-setting button
Clicking the Re-setting button after specifying the device in the history field sets data in the Bit device setting field for the bit device, or in the Word device setting field for the word device/buffer memory.
The device can be re-set by double-clicking after specifying the device in the history field.

14) Clear button
Deletes all devices displayed in the history field.

POINT

- Executing a device may change the control of the programmable controller. Check safety carefully before executing the test.

- When a coil whose output condition input signal is OFF is forcibly turned ON while the programmable controller is in the RUN state, the execution of the program is given priority and the coil output comes ON only momentarily.

- Since the device designated for a device test is temporarily stored in memory, it can be selected the second and subsequent times with ▼ button while the project continues.
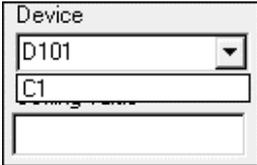
- With the Q/QnA series, a device test can be carried out by bit designation of word devices, or by digit designation of bit devices.
  In addition, a link module memory can be designated as follows "J✶\B✶✶" "J✶\W✶✶", and the buffer memory of a special function module can be designated as follows: "U✶\G✶✶".

  Refer to QCPU Programming Manual(Common Instructions)
  QnACPU Programming Manual(Common Instructions)

- Shift key + doubling-clicking (Enter) a contact in the ladder monitor window forcibly switches it between ON and OFF.

- Shift key + double-clicking (Enter) a word device that is being monitored displays the present value change dialog box shown below.
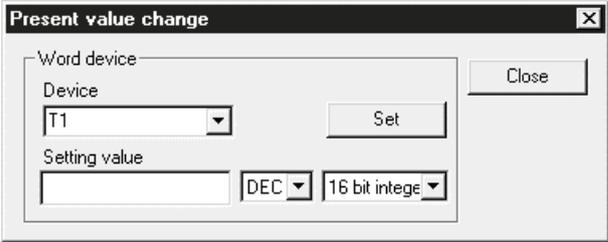
  After entering the value to be changed, click the lSetl button.

- When making a device test during label programming, compile the label program.

- When multiple CPU setting is set in PLC parameter, the Universal model QCPU can perform device test to multiple CPU high speed transmission area (U3En\G10000 or later).

18.2 Executional Conditioned Device Test

18.2.1 Registering executional conditioned device test

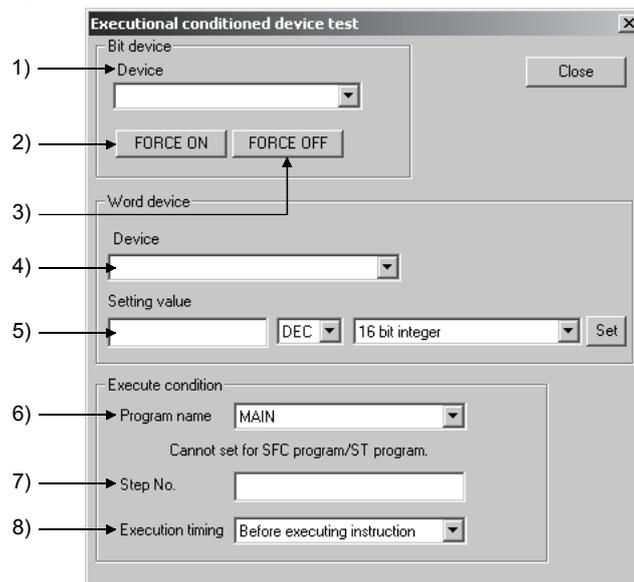| A	Q/QnA	QS	FX
×	○∗	×	×

∗: Compatible with the Universal model QCPU only.

[Purpose]
Register the executional conditioned device test.

[Operating Procedure]
[Online] → [Debug] → [Register executional conditioned device test] or (Ctrl +
Enter)

[Dialog Box]

[Description]
1) Bit device
Specify the bit device to be forced ON or OFF.
Displays the device at the cursor position.

2) FORCE ON button
Forcibly turns the specified device ON.

3) FORCE OFF button
Forcibly turns the specified device OFF.

4) Device
Specify the word device.
Displays the device at the cursor position.

5) Setting value
   Set the value to be changed.
   Before setting the value, specify decimal or hexadecimal, and 16-bit integral value, 32-bit integral value, real number (single precision) or real number (double precision).

6) Program name
   Specify the program name for the timing of executing the force ON/OFF and present value change.

7) Step No.
   Specify the step number in the program specified above for the timing of executing the force ON/OFF and present value change.
   Steps from 0 to END can be set.

8) Execution timing
   Select before or after execution of instruction at the step number specified above for the timing of executing the force ON/OFF and present value change.

POINT

- Up to 32 devices can be registered to the executional conditioned device test.

- The registered data of the executional conditioned device test set to the rewrite position are disabled when one of the following functions that rewrite the program is executed.
  - Conversion (Online change)
  - Write to PLC

- The step positions specified as executing conditions in the executional conditioned device test are indicated as shown below.
  - Ladder program
    The instruction at the specified position is surrounded by lines with the specified color.

  - Instruction list
    The back of the specified step number is displayed with the specified color.

18.2.2 Checking/disabling executional conditioned device test

A	Q/QnA	QS	FX
×	○∗	×	×

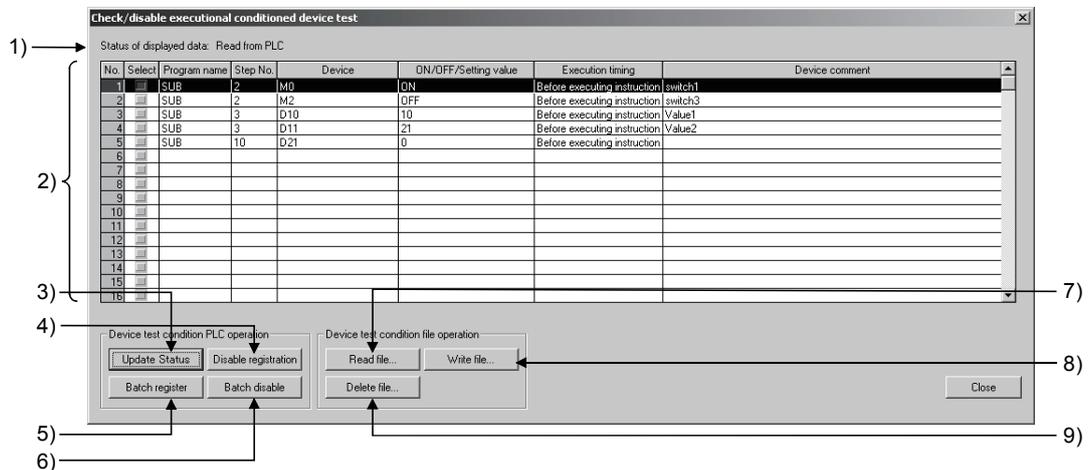∗: Compatible with the Universal model QCPU only.

[Purpose]
Check the data registered to the executional conditioned device test.
Functions such as writing data to files, reading data from files, and disabling
registered data can be also performed.

[Operating Procedure]
[Online] → [Debug] → [Check/disable executional conditioned device test]

[Dialog Box]

[Description]
1) Status of displayed data
   Displays the status of displayed data: Read file or Read from PLC

2) List
   Displays data registered to the executional conditioned device test.
   • No.
   Up to 32 devices can be displayed.
   • Select
   Select the target to be disabled by the Disable registration button.
   • Program name
   Displays programs of the executing condition.
   • Step No.
   Displays step numbers of the executing condition.
   • Device
   Displays devices of the executing condition.

- ON/OFF/Setting value
  Displays setting values of the device test.
- Execution timing
  Displays execution timings of the executing condition.
- Device comment
  Displays device comments.

3) Update Status button
   Reads the registered data from a programmable controller CPU.

4) Disable registration button
   Disables the registration of the selected row.

5) Batch register button
   Batch registers the data entered in the list.

6) Batch disable button
   Batch deletes the data registered in the programmable controller CPU.

7) Read file button
   Reads the file of the saved list.

8) Write file button
   Saves the data entered in the list to a file.

9) Delete file button
   Deletes the file of the saved list.

POINT

- The registration contents at the step position specified at Execute condition in the Executional conditioned device test screen can be checked/canceled on the monitor screen of the ladder/list.
  Right-clicking at the highlighted position displays a shortcut menu. Select [Check executional conditioned device test registration] or [Disable executional conditioned device registration] on the menu. This operation checks/cancels the registration information registered at the cursor position.

  - [Check executional conditioned device test registration]

  - [Disable executional conditioned device registration]

18.2.3 Disabling executional conditioned device test by batch

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Compatible with the Universal model QCPU only.

[Purpose]
Batch disables the data registered to the executional conditioned device test.

[Operating Procedure]
[Online] → [Debug] → [Batch disable executional conditioned device test]

18.3 Registering/Canceling the Forced I/O

18.3.1 Registering to programmable controller

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Only Basic model QCPU and QnACPU are incompatible.

[Purpose]
If the program is running, a device X/Y can be forced to turn ON/OFF without influence of the input (X) from the external device and the output (Y) from the program.
For the version of the programmable controller that supports which this function, refer to QnUCPU User's Manual(Function Explanation, Program Fundamentals) or Qn(H)/QnPH/QnPRHCPU User's Manual(Function Explanation, Program Fundamentals)

[Operating Procedure]
Select [Online] → [Debug] → [Forced input output registration/cancellation].

[Dialog Box]
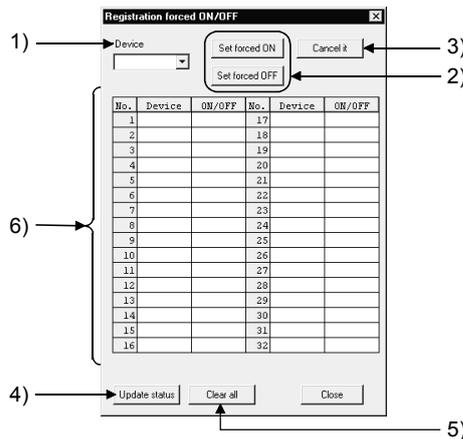
[Description]
1) Device
Enter the device to be forced to turn ON/OFF or to be canceled.

2) Set forced ON , Set forced OFF button
Register the set device to turn ON/OFF.

3) Cancel it button
Cancels the device X/Y registered to the programmable controller.

4) Update status button
Reads the updated registration status.

5) Clear all button
Cancels all forced I/Os registered to the programmable controller.

6) Registration status display area
Shows the forced I/O registration status of device X and device Y in the order they are registered to the PLC CPU.
When this function is performed for one programmable controller by two or more persons via the other station, the forced I/O registration status is read from the accessed programmable controller to confirm it.
The following functions are available for the "Device" and "ON/OFF" columns.
- By double clicking the displayed device, the device is set in the "Device" field at 1).
- The registered device can be canceled by pressing the Delete key.
- By double clicking the ON/OFF display, the ON/OFF status is inverted.

> **POINT**
>
> Note that since exclusive control is not exercised on the programmable controller side, forced device I/O registration may cause the registration to be changed from multiple GX Developer programs or from the equipment which can register/cancel forced I/O.

18.3.2 Registering/Canceling to remote I/O station

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Compatible with the MELSECNET/H remote.

[Purpose]

Disables the refresh of the device Y between the MELSECNET/H remote master and remote I/O stations or the device X in the input module on the remote station to enable a device test.

[Operating Procedure]

Select [Online] → [Debug] → [Forced input output registration/cancellation].

[Dialog Box]
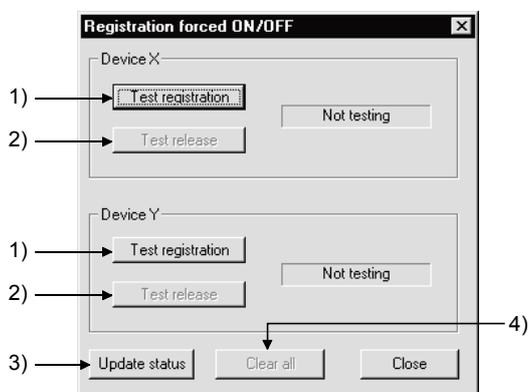
[Description]

1) | Test registration | button

Disables the refresh of X/Y for the remote I/O station.

2) | Test release | button

Cancels refresh disable.

3) | Update status | button

Reads the latest registration status.

4) | Clear all | button

Cancels all forced I/Os registered to the programmable controller.

18.4 Performing Partial Execution

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]
Executes a program from the designated step or pointer to the point where the set condition is established.
When Q/FX series is selected, only GX Simulator is applicable.

[Operating Procedure]
1. Select [Online] → [Debug] → [Debug] (Choose the STEP-RUN mode).
2. Select [Online] → [Debug] → [Partial execution], or click 🔀 (Alt + 3).

[Dialog Box]
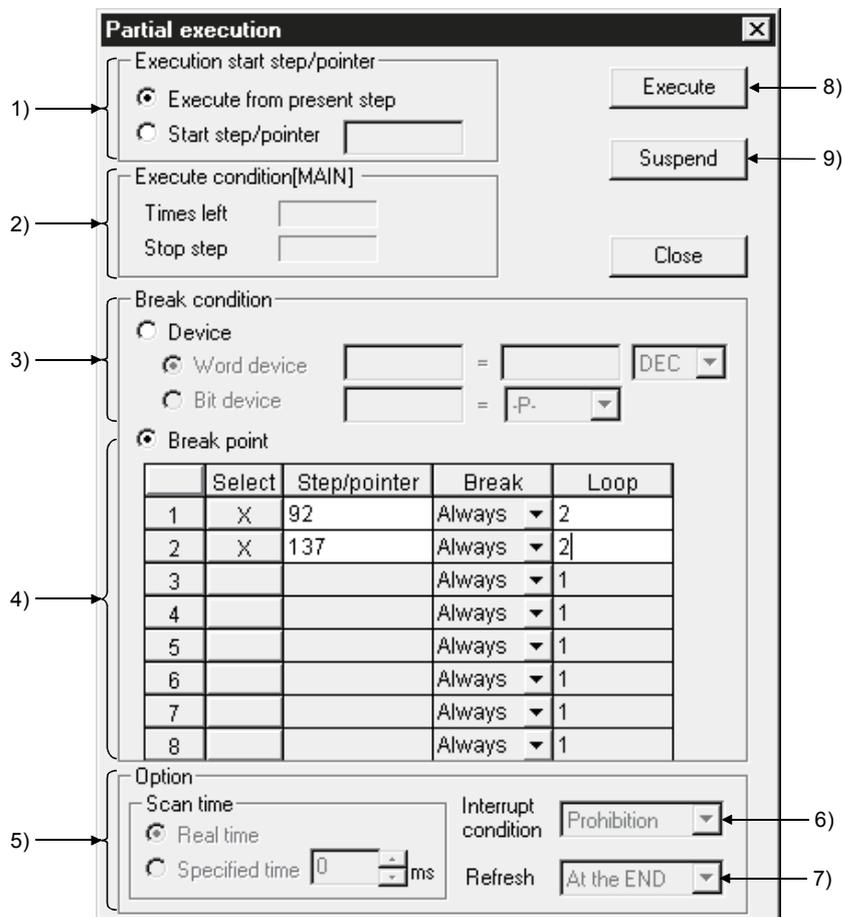
[Description]
1) Execution start step/pointer
   ⊙ Execution from present step
      The program is executed from the step at which execution is presently stopped.
   ⊙ Start step/pointer
      The program is executed from the designated step or pointer.
      For step designation :   ∗∗
      For pointer designation :   P∗∗
                                      I∗∗

      ∗∗ = Number of designated step or pointer

2) Execution condition
Indicates the execution status of the program.

3) Break condition
Sets the device condition that stops partial execution.
⊙ Word device
The condition is satisfied when the set device has the same value as the set value.
Set the device and numeric value (decimal or hexadecimal).

⊙ Bit device
The condition is satisfied when the set device is in the set condition.
Set the device status (-P-: leading edge, -F-: trailing edge).

4) Break point
Sets the break condition and loop count for a partial execution range.
With the A series and FX series, the condition can only be "Always".

	Select	Step/pointer	Break		Loop
1	X	92	-P-	▼	2
2	X	137	ON	▼	2
3			Always	▼	1
4			Always	▼	1
5			Always	▼	1
6			Always	▼	1
7			Always	▼	1
8			Always	▼	1
	A	B	C		D

A: Selection
Setting causes it to be executed as the break point.

B: Step/pointer
Set the step/pointer number that defines the range for partial execution.

C: Break
Set a status of the designated step/pointer as the break condition after the number of scans set by the loop count.
Always : On reaching the number of loops indicated by the designated count, execution stops.
ON : Execution stops when the designated step/pointer is ON.
OFF : Execution stops when the designated step/pointer is OFF.
↑ : Execution stops when the status of the designated step/pointer changes from OFF to ON.
↓ : Execution stops when the status of the designated step/pointer changes from ON to OFF.

D: Loop
Sets the number of scans until the break.
The setting range is 1 to 32767.

5) Scan time (Q/QnA series only)
    Sets the processing time for a program that is executing partial execution.
    This setting is not possible with the A series and FX series.
    ⊙ Real time
        The program is executed at intervals corresponding to normal RUN operation.

    ⊙ Specified time
        The program is executed at the designated interval.
        The setting range is 10 ms to 2000 ms in 10 ms units.

6) Interrupt condition (Q/QnA series only)
    Sets whether or not the interrupt program is executed when an interrupt cause
    occurs during partial execution.
    This setting is not possible with the A series and FX series.
    By programming………..…..…   Depends on the execution results of EI and DI
                                   instructions.
    Prohibition………………………   The execution of the interrupt program is
                                   disabled.

7) Refresh (Q/QnA series only)
    Sets the refresh timing for I/O devices (X/Y).
    This setting is not possible for the A series and FX series.
    One by one………………………   Direct I/O refresh
    At the END………………………   Batch refresh at END processing

8) Execute button
    Click this button after setting the necessary settings.
    Partial execution is executed.

9) Suspend button
    Aborts partial execution.

[Operating Procedure]
 1.   Display the ladder monitor window.

 2.   Set the programmable controller to the STEP-RUN operating state by remote
      operation or with the key switch.

 3.   Set 1) through 7).

 4.   Click 8) to execute.

 5.   Operation stops when the break condition is established.

 6.   To quit, click the Close button.
      A dialog box is displayed and the programmable controller returns to the RUN
      state.

POINT

- When executing partial execution with a range encompassing several programs, if there is a break in a program that is not displayed, execution stops at the position of the same step number in the program that is displayed.

- When the programmable controller is switched from RUN to STEP-RUN, the final output status under RUN is held.

- When a break point is designated as a step, if the designated step is part way through an instruction, execution stops at the first step of the instruction.

- If a step designated as a stopped step is passed without execution in a conditional jump or interrupt program, the scan count cannot be counted as "1."
  For example, if the break point is set at step 1000, the scan count is set as 1, and there is an instruction for a conditional jump to step 1200 at step 800, execution cannot stop at step 1000.

- With the A series and FX series, it is not possible to set a device break condition and a step/pointer break point at the same time.

- With the Q/QnA series, it is possible to set a device break condition and a step/pointer break point at the same time.
  If they are set at the same time, partial execution stops when both conditions are satisfied.

- When more than one program is being executed with the Q/QnA series, partial execution starts from the program being monitored and is executed in the order in which programs are set in the PLC parameters.

- With the QnA series the following types of setting are possible for a break condition: word device bit designation.

- Programs created with ST cannot be executed.

18.5 Executing Step Run

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]
Executes the designated range of the programmable controller program one instruction at a time.
When using the Q/FX series, step run is valid only when the GX Simulator is connected.

[Operating Procedure]
1. Select [Online] → [Debug] → [Debug] (Choose the STEP-RUN mode).
2. Select [Online] → [Debug] → [Step execution], or click ‡↕ (Alt + 4).

[Dialog Box]
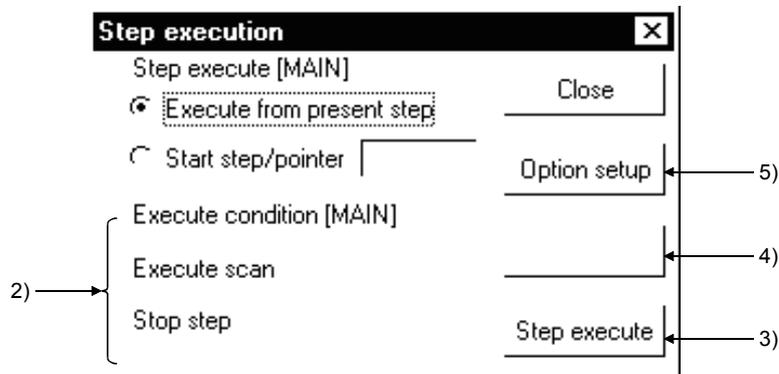
[Description]

1) Step execute
⊙ Execute from present step
Execute the program from the step where it is currently stopped.
⊙ Start step/pointer
Execute the program from the designated step or pointer.
For step designation :   **
For pointer designation :   P**
                            I**
** = Number of designated step or pointer

2) Execute condition
Indicates the execution status of the program.

3) Step execute button
Clicking this button starts execution of a number of steps corresponding to the repetition count set in the option dialog box.
On completion of repetition count execution, clicking this button once causes execution of one instruction.

4) Suspend button
Aborts execution of step run.

5)   Option setup button
Displays the step run option setting dialog box shown below.
Set the repetition count, repetition interval, and break point.

Step execution option setup

	Select	Step/Pointer
1		
2		
3		
4		
5		
6		
7		
8		

6) — □ Repetition count [1] Times

7) — □ Repetition interval [1]

□ Break point

8) —

9) — Set   Cancel
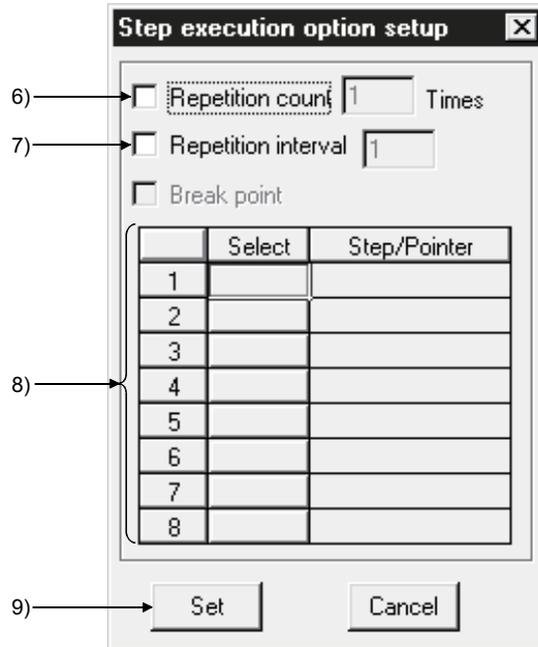
6)   Repetition count
On checking the check box to select it, step run is executed for the number of instructions corresponding to the set count only.
After execution of this number of steps, each time the Step execute button is clicked program execution proceeds by one instruction.
The setting range is 1 to 32767.

7)   Repetition interval
On checking the check box to select it, step run is executed at intervals of the set value. The unit for the interval is equivalent to the interval in which one interruption is issued from the personal computer to the programmable controller. If step run is executed with only the repetition interval set in the option settings, execution proceeds with no limit on the repetition count.
The setting range is 1 to 32767.

8)   Break point
Sets the step or pointer at which step run operation stops.
This setting is not possible for the A series or FX series.
Note also that if step run is executed with only the break point set and no repetition count setting, it will be executed from the start step to the break point.
After the break, program execution will proceed by one instruction each time the Step execute button is clicked.
For step designation :   ∗∗
For pointer designation :   P∗∗
                                I∗∗
∗∗ = Number of designated step or pointer

9)   Set button
Click this button after making the necessary settings; the display returns to the step run dialog box.

[Operating Procedure]

1. Display the ladder monitor window.

2. Set the programmable controller to the STEP-RUN operating state by remote operation or with the key switch.

3. In the step run dialog box, set 1), and - as necessary - 6) to 8).

4. Click 3) to execute.

5. To quit, click the │ Close │ button.
   A dialog box is displayed and the operating state of the programmable controller can be set to RUN in remote operation.

│ POINT │

- When executing step run with a range encompassing several programs, if there is a break in a program that is not displayed, execution stops at the position of the same step number in the program that is displayed.

- The following dialog box will appear if step run is performed when the programmable controller is in other than the STEP-RUN mode.

  ┌───┐
  │ MELSOFT series GX Developer   ✕ │
  ├───┤
  │ ⚠   Will the PLC status be changed to STEP-RUN?   │
  │   Debug can be operated at the time of STEP-RUN changing. │
  │   │
  │   ┌─────────┐   ┌─────────┐   │
  │   │ Yes   │   │   No   │   │
  │   └─────────┘   └─────────┘   │
  └───┘

  When the programmable controller is in the RUN mode, it cannot be switched to STEP-RUN.

- The timer present values during step run are as follows.

10 ms timer	Incremented by one each scan
100 ms timer, 100 ms retentive timer	Incremented by one every ten scans

- The special relay timing clocks during step run are as follows.

  A series

M9030 (0.1 second clock)	Goes ON/OFF every 5 scans
M9031 (0.2 second clock)	Goes ON/OFF every 10 scans
M9032 (1 second clock)	Goes ON/OFF every 50 scans
M9033 (2 second clock)	Goes ON/OFF every 100 scans
M9034 (1 minute clock)	Goes ON/OFF every 3000 scans

  Q/QnA series

SM410 (0.1 second clock)	Goes ON/OFF every 5 scans
SM411 (0.2 second clock)	Goes ON/OFF every 10 scans
SM412 (1 second clock)	Goes ON/OFF every 50 scans
SM413 (2 second clock)	Goes ON/OFF every 100 scans
SM414 (n second clock)	Goes ON/OFF every n x 50 scans

- Programs created with ST cannot be executed.

18.6 Setting the Scan Range

A	Q/QnA	QS	FX
×	○	×	○

[Purpose]

Sets the range to be skipped (not processed) when executing partial execution or step run.

When using the Q/FX series, this setting is only effective when the GX Simulator is connected.

[Operating Procedure]

1. Select [Online] → [Debug] → [Debug] (Choose the STEP-RUN mode).
2. Select [Online] → [Debug] → [Skip execution], or click 🔽 (Alt + 2).

[Dialog Box]
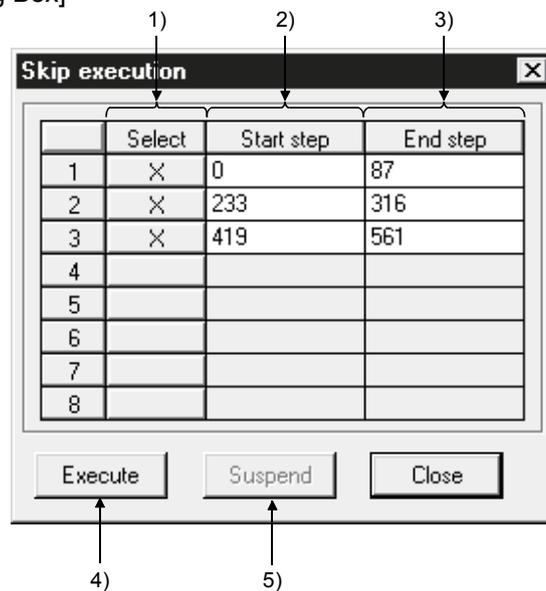
[Description]

1) Select

On setting, the designated range is skipped.
The skip range is in instruction units.

2) Start step

Designates the beginning of the skip range.
Set the first step number of the first instruction.
Pre-selecting the area in the ladder and choosing the step execution menu sets the step number at the first step.

3) End step
Designates the end of the skip range.
Set the first step number of the final instruction.
Pre-selecting the area in the ladder and choosing the step execution menu sets the step number at the last step.

4) Execute button
Registers the skip range.
If the programmable controller is in an operating state other than STEP-RUN at this time, a dialog box allowing the state to be changed to STEP-RUN is displayed.
To continue with partial execution or step run, set the state to STEP-RUN.
However, if the programmable controller is in a state other than RUN it is not possible to change to STEP-RUN.

5) Suspend button
Cancels registration of the skip range.

[Operating Procedure]

1. Display the ladder monitor window.

2. Set 1), 2), and 3) in the skip execution dialog box.

3. Click 4).
A dialog box is displayed: to continue with partial execution or step run, set to STEP-RUN.

4. Close the skip execution window.

5. Execute partial execution or step run.

POINT

- To cancel the STEP-RUN state, either turn the key switch momentarily to RESET, or change the state by remote operation.

    Refer to Section 18.6 "Operating the programmable controller Remotely".

- Programs created with ST cannot be executed.

18.7 Operating the Programmable Controller Remotely

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Switches the execution status of the programmable controller from the personal computer.
However, with the A series and the Q/QnA series, remote operation is possible only when the programmable controller is in the RUN state.
When using the FX series, remember that only the FX1S, FX1N, FX2N, FX3G, FX3U, FX2NC, and FX3UC support remote operation. Remote operation is possible when the CPU is in either the RUN or STOP state.

[Operating Procedure]
Select [Online] → [Remote operation] (Alt + 6).
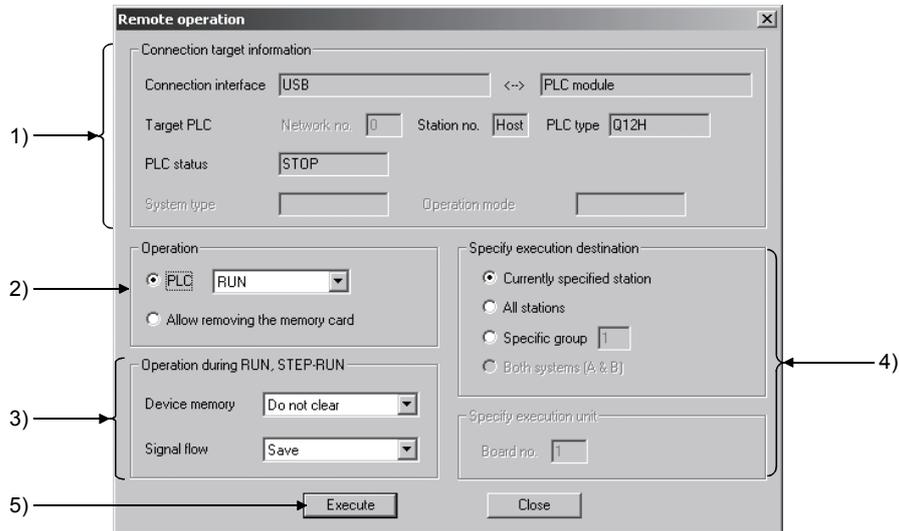
[Dialog Box]

[Description]

1) Connection target information
    Indicates information on the connection destination designation.
    Only when the redundant CPU is used, the operation system (backup mode/separate mode/debug mode) and system type (control system/standby system) of the redundant CPU specified in the target system on the connection setup screen are displayed.
    For details on the Transfer Setup, refer to Section 16.1.

2) Operation
    Make selection to change the programmable controller status.

Series name	RUN	STOP	PAUSE	Latch clear	STEP-RUN	Reset
Q series	○	○	○	○	─	○
QnA series	○	○	○	○	○	○
A series	○	○	○	─	○	─
FX series	○	○	─	─	─	─

○: Selectable
─: Unsupported

Do not select "Allow removing the memory card" for the Basic model QCPU.

Remote reset operation for the Redundant CPU is either executed or not executed depending on the control system and standby system statuses. The following table indicates the Redundant CPU statuses after execution of remote reset.

Current Redundant CPU statuses		Remote reset execution results	
Control system status	Standby system status	Control system	Standby system
RUN/PAUSE	RUN/PAUSE	$\times$	$\times$
	STOP [*1]/stop error		$\bigcirc$
STOP [*1]/stop error	RUN [*2]/PAUSE	$\bigcirc$	$\times$
	STOP [*1]/stop error		$\bigcirc$

$\bigcirc$: Remote reset enabled
$\times$: Remote reset disabled

[*1]: Remote reset cannot be executed if remote operation has been performed for the Redundant CPU from other GX Developer.

[*2]: Be careful as system switching occurs and the system operates.

3) Operation during RUN, STEP-RUN
Sets the operation with respect to the device memory and signal flow in the RUN and STEP-RUN states.
This setting is not possible with the FX series.

4) Specify execution destination
Sets the applicable station for remote operation.
Note that "Both systems (A&B)" can be selected for the redundant CPU only.

Currently specified station ……. Executed only at the station with the connection destination designation.

All stations ………..………. Executed at all stations of the network designated as the presently designated station. 1 to 4 modules can be set for execution module designation.

Specific group ………………… Executed in a specific group of the network designated as the presently designated station. Set 1 to 4 modules for execution module designation and set the group number.

Both systems (A&B) ………… Remote operation is executed for both systems (control system, standby system) in the path specified in the connection destination specification.

This setting is not possible with the FX series.

5) Execute button
Click this button after setting the necessary settings.

POINT

When performing remote reset through Ethernet, use the UDP protocol.
When performing remote reset using the TCP protocol, reconnection is required.
For the UDP protocol, refer to Chapter 16 and the Q Corresponding Ethernet Interface Module User's Manual (Basic).

> **POINT**
>
> - Remote operation is valid when the programmable controller is in the RUN state. However, since the remote operation setting is memorized when the key switch is set to STOP, on setting the key switch to RUN, the state set in remote operation applies.
>   For example, if remote operation is set to STOP while the key switch is at STOP, the programmable controller will remain in the STOP state even if the key switch is set to RUN.
>   Similarly, if STEP-RUN is set in remote operation while the key switch is set to STOP, when the key switch is set to RUN the programmable controller enters the STEP-RUN state.
>   In this kind of case, the RUN state has to be established by remote operation.
>   If there is any disagreement in the key switch, remote operation, and remote RUN/PAUSE contact operations at the programmable controller, the following order of priority applies.
>
> | Operations to the programmable controller | Order of Priority |
> |---|---|
> | STOP | 1 |
> | PAUSE | 2 |
> | STEP-RUN | 3 |
> | RUN | 4 |
>
> - The programmable controller operation is determined by the combination of the key switch position and remote operation as follows.
>
>   A series
>
> | Key switch \ Remote operation | RUN | PAUSE | STOP |
> |---|---|---|---|
> | RUN | RUN | PAUSE | STOP |
> | STEP-RUN | STEP-RUN | PAUSE | STOP |
> | PAUSE | PAUSE | PAUSE | STOP |
> | STOP | STOP | STOP | STOP |
>
>   Q/QnA series
>
> | Key switch \ Remote operation | RUN | STEP-RUN *3 | PAUSE | STOP | RESET *1 | Latch clear |
> |---|---|---|---|---|---|---|
> | RUN | RUN | STEP-RUN | PAUSE | STOP | Operation not possible *2 | Operation not possible *2 |
> | STOP | STOP | STOP | STOP | STOP | RESET | Latch clear |
>
>   *1: Remote reset must be enabled by PLC system setting in the PLC parameters.
>   *2: Operation possible when set to STOP by remote operation.
>   *3: STEP-RUN cannot be performed for the Q series.
>
> - M8035 (forced RUN mode), M8036 (forced RUN) and M8037 (forced STOP) are controlled by remote operation of FX1S, FX1N, FX1NC, FX2N, FX3U, FX2NC and FX3UC series programmable controller.
>   Remote operation is not relevant to the RUN or STOP switch status on programmable controller side.
>
> - When removing the memory card, switch on SM605. If you remove the memory card with removal not yet authorized, the programmable controller will result in an error.

18.8 Performing Redundant Operations (CPU system switching, operation mode change, memory copy)

A	Q/QnA	QS	FX
×	○*	×	×

*: Compatible with the redundant CPU.

[Purpose]
  Switch the redundant CPU status from GX Developer.

[Operating Procedure]
  Select [Online] → [Redundant operation].

[Dialog Box]
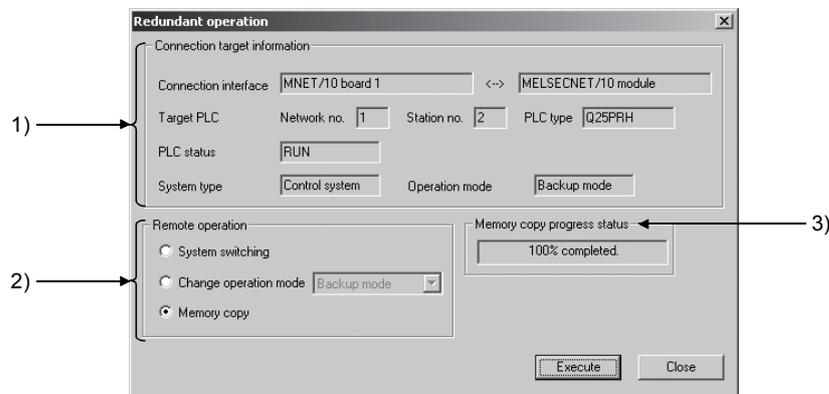
[Description]

1) Connection destination information
   Indicates information on the specified connection destination.
   Refer to Section 16.1 for the connection destination specification.

2) Remote Operation
   ⊙ System switching
     Changes the redundant CPU of the control system from the "control
     system" to the "standby system".
   ⊙ Change operational mode
     Changes the operation mode for the current connection destination.
     The operation mode can be changed from the "Backup mode" to the
     "Separate mode" or from the "Separate mode" to the "Backup mode".
   ⊙ Memory copy
     Copies the standard RAM, standard ROM or program memory data from
     the control system to the standby system.
     During memory copy, the following online menu functions cannot be
     executed for the control system.
     1. PLC memory format
     2. Write to PLC (Flash ROM) → Write the program memory to ROM
     3. Write to PLC (Flash ROM) → Write to PLC (Flash ROM)

3) Memory copy progress
   Shows progress during execution of memory copy.
   When memory copy is unsuccessful, "Memory copy failure" is displayed.

POINT
This function cannot be executed in the debug mode.

19. REGISTERING KEYWORD/PASSWORDS

Entry code registration (for A/QnA/FX series) or password registration (for Q series) protects data in the programmable controller.

19.1 Registering Keyword

19.1.1 Registering new keyword/changing keyword

A	Q/QnA	QS	FX
○	○＊	×	○

＊: Compatible with the QnACPU.

[Purpose]
For the A/QnA/FX series, registers a new keyword to the programmable controller or changes the entry code.

[Operating Procedure]
Select [Online] → [Keyword setup] → [Register keyword].

[Dialog Box]

For A/QnA series

For FX series
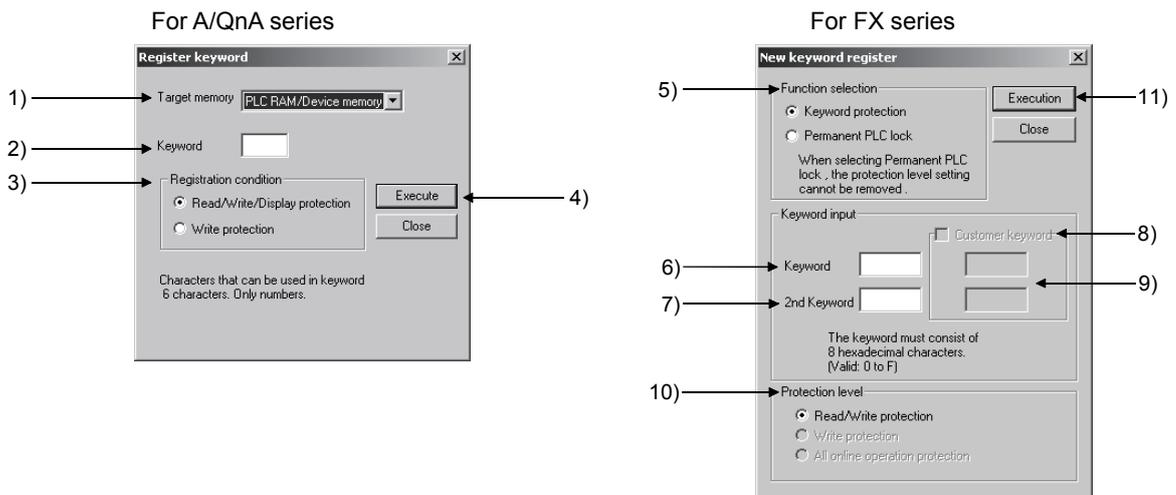
[Description]

1)   Target memory
Sets the memory whose keyword is to be registered or changed.
For the A series, this is a memory cassette.

2)   Keyword
A series   : Set the keyword (6 numeric characters and A through F).
QnA series : Set the keyword (6 numeric characters).

3) Registration
Select the functions restricted by the keyword.

⊙ Read/Write/Display protection
Writing, reading, verification, deletion, and list display are restricted by the keyword.
⊙ Write protection (QnA series only)
Writing is restricted by the keyword.

4) Execute button
When the Execute button is clicked, the following dialog box is displayed.
Input the keyword set in the New keyword register dialog box.

• When new keyword was set

5) Function selection (FX3GCPU only)
Select whether the restrictions can be released or not.
• Keyword protection
Set a keyword and place restrictions.
The restrictions can be released.
• Permanent PLC lock
Setting a keyword is unnecessary.
The restrictions cannot be released.

6) Keyword input
Set a keyword (eight characters including numbers and alphabets from A to F).
The keyword can be set when selecting "Keyword protection" at 5) for the FX3GCPU or using except the FX3GCPU.

7) 2nd Keyword (FX3GCPU/FX3UCPU/FX3UCCPU only)
Set a second keyword (eight characters including numbers and alphabets from A to F).
The second keyword can be set after inputting a keyword at 6).

8), 9) Customer keyword (FX3GCPU only)
Check 8) and set a customer keyword (eight characters including numbers and alphabets from A to F) at 9). The customer keyword can be set after inputting a second keyword at 7).

19

10) Protection level (FX3UCPU/FX3UCCPU/FX3GCPU only)
   Select a keyword or the functions restricted by "Permanent PLC lock".
   Only "Read/Write protection" is available for restrictions of the programmable
   controller CPUs other than the FX3UCPU, FX3UCCPU, and FX3GCPU.
   ⊙ Read/Write protection
      Writing, reading, and verification are restricted.
   ⊙ Write protection
      Writing is restricted.
   ⊙ All online operation protection
      Writing, reading, verification, and device monitor are restricted.

11) Execute button
   When the Execute button is clicked, the following dialog box is displayed.
   • When new keyword was set
     Input the keyword set in the New keyword register dialog box.
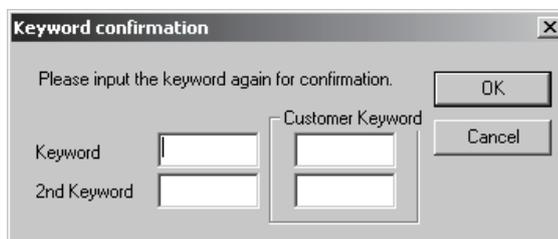
When selecting "Permanent PLC lock" at 5) for the FX3GCPU, check whether to
protect data in the Permanent PLC lock dialog box.
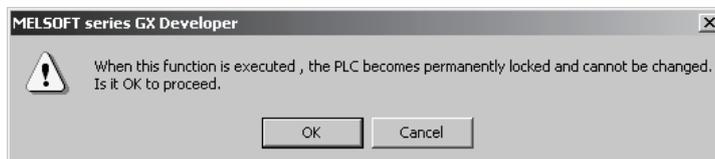
[Operating Procedure]

A/QnA series
   1. Set 2) in the Register new keyword dialog box.
       With the QnA series, set 1) and 3) also.

   2. Click 4).
       For an keyword change, the present keyword is now displayed in the dialog box.

   3. Set 12) and click 14).

FX series
1. Set 5) in the New keyword register screen. (FX3GCPU only)
2.
   (1) Procedure when selecting "Keyword protection" at 5) for the FX3GCPU or
      using except the FX3GCPU
      • Set 6).
      • For the FX3UCPU/FX3UCCPU/FX3GCPU only, to register a second
        keyword after setting 6), set 7) and 10). (When not setting a second
        keyword, setting 7) and 10) are unnecessary.)
      • For the FX3GCPU only, to register a customer keyword after setting 7)
        and 10), check 8) and set 9). (When not setting a customer keyword,
        setting 8) and 9) are unnecessary.)
   (2) Procedure when selecting "Permanent PLC lock" at 5) for the FX3GCPU
      • Set 10). (Setting 6), 7), 8), and 9) are unnecessary.)
3. Click 11).
      • Procedure when selecting "Keyword protection" at 5) for the FX3GCPU
        or using except the FX3GCPU
        When changing a keyword, the Input current keyword. dialog box
        appears. Set 12) and click 14). (If a second keyword has been
        registered, also set 13).
      • Procedure when selecting "Permanent PLC lock" at 5)
        for the FX3GCPU
        The Permanent PLC lock dialog box appears.
        Click the OK button to execute the protection.

[When executing read from/write to the programmable controller where the keyword
was registered]
 When read/write is executed from/to the programmable controller where the
 keyword was registered, the following screen is displayed.

 A/QnA series

FX series

12) Keyword
    Set the keyword that was registered to the programmable controller.

13) 2nd keyword (FX3G/FX3U/FX3UCCPU only)
    Set the keyword only when the 2nd keyword is registered.

14) Execute button
    Click this button when the setting is finished.

POINT

- If forgetting the keyword (A series and FX series) or releasing the setting of "Permanent PLC lock" (FX3GCPU only), clear all data in the memory cassette by "Clear PLC memory".
  With the QnA series, format the PLC memory.
  However, note that regardless of whether you are using the A series, QnA series or the FX series, all the data apart from the keyword is also deleted, and therefore all the data must be rewritten.

- On executing the registration condition function before releasing an keyword, the current entry code dialog box is automatically displayed.
  Enter the keyword and release it.

- Since the keyword is written directly into the programmable controller on registration, there is no need to write parameters or other data to the programmable controller.
  Note that the keyword becomes functional immediately after registration.

- With the A series and FX series, parameters for which an keyword is registered can be written to the ROM.

- Password protection level designation for the FX series
  For devices capable of online operations with respect to the programmable controller, models such as the FX-10P and FX-20P permit the setting of three levels of protection for these operations. In cases where monitoring, setting changes, etc. are required to be done by an online device, set an entry code that takes this into consideration.

  - All operations prohibited (personal computer operation disabled)
    :A□□□□□□□ or ■□□□□□□□□
    ↑————Alphanumeric letter other than "A", "B", and "C"

  - Read/Incorrect wire protection
    (restricted to monitoring and changing the present value)
    :B□□□□□□□

  - Protection against erroneous writing
    (restricted to reading, monitoring and changing the present value)
    :C□□□□□□□

  In the part of the keyword, designate 7 alphanumeric digits selected from among A to F and 0 to 9.
  When the 2nd keyword is set, the operation with FX-10P and FX-20P cannot be performed.

- Cautions of 2nd keyword setting
  The 2nd keyword can be set in only FX3G/FX3U/FX3UC (Ver.2.00 or later).
  When setting the 2nd keyword in FX3UC (Ver.2.00 or earlier), the following error message is displayed, and then the keyword cannot be set.

- When the 2nd keyword has been registered, only peripheral devices compatible with the 2nd keyword can operate the change, cancel and disable. The peripheral devices that are not compatible with the 2nd keyword cannot operate the PLC memory clear.

> POINT
>
> - Setting a keyword to the FX series
>   If setting a keyword while 2nd Keyword is unregistered, connecting the personal computer to another programmable controller, and then operating it, the programmable controller can be the same registration status.
>   To change keyword status, save and close the project before connection change, reopen the project, and then set a keyword.

19.1.2 Deleting a keyword

A	Q/QnA	QS	FX
○	○*	×	○

*: Compatible with the QnACPU.

[Purpose]
For the A/QnA/FX series, cancels (deletes) the keyword registered to the programmable controller.

[Operating Procedure]
Select [Online] → [Keyword setup] → [Delete keyword].

[Dialog Box]
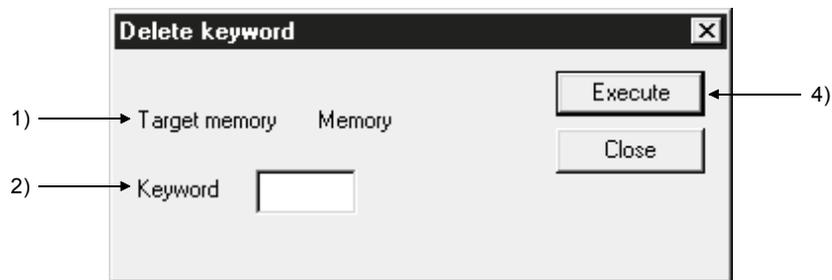
A/QnA series
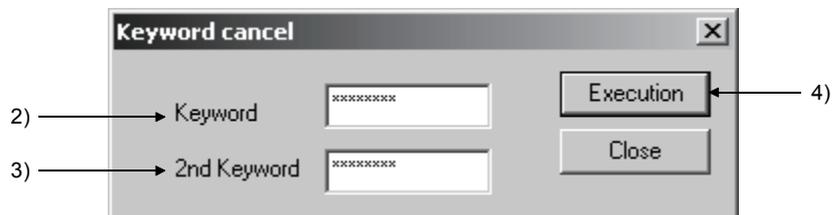
FX series

[Description]

1) Target memory (A/QnA series only)
Sets the applicable memory for the keyword cancellation.
For the A series, this is a memory cassette.

2) Keyword
Sets the currently registered keyword.

3) 2nd keyword (FX3G/FX3U/FX3UCCPU only)
Sets the 2nd keyword presently registered.

4) |Execute| button
Click this button after setting the necessary settings.

19.1.3 Disabling a keyword

A	Q/QnA	QS	FX
○	○*	×	○

*: Compatible with the QnACPU.

[Purpose]

For the A/QnA/FX series, releases the lock imposed by a keyword in order to allow access to the programmable controller for which the keyword is registered.
After a keyword has been released, there is free access to the PLC until the project is quit.
If the 2nd keyword is registered in FX3U/FX3UC (Ver.2.00 or later), the keyword protect is executed in the status of the keyword disable and then, it returns to the locked status.

[Operating Procedure]

Select [Online] → [Keyword setup] → [Disable keyword].

[Dialog Box]
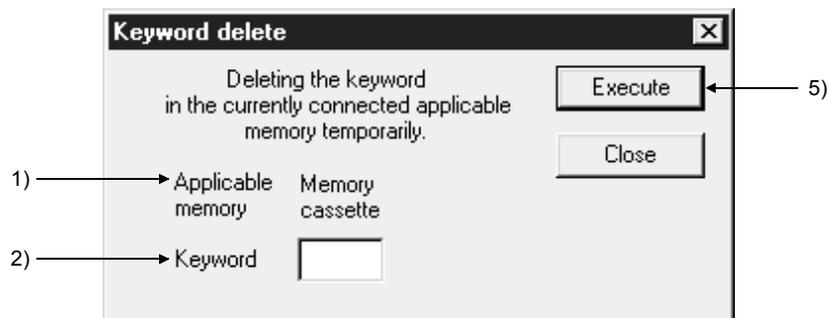
A/QnA series
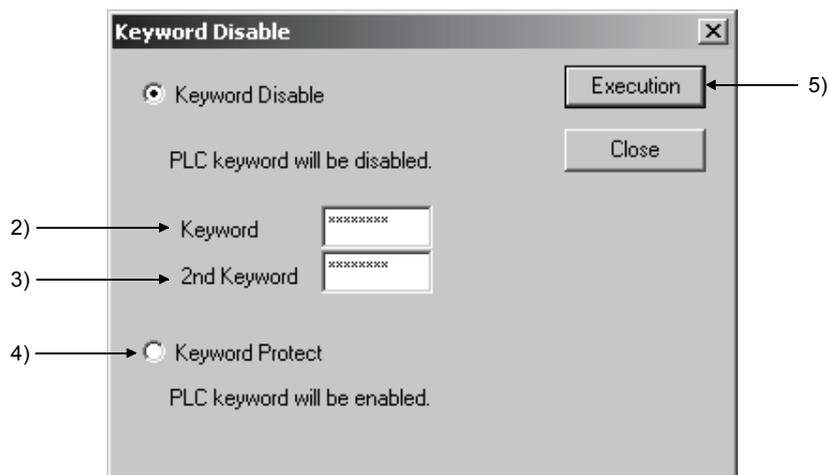
FX series

[Description]
1) Target memory (A/QnA series only)
Indicates the currently connected memory.
For the A series this is a memory cassette.

2) Keyword
Sets the keyword registered for the programmable controller.
For the FX series (FX3GCPU only), the first eight characters of the customer keyword also can be set.

3) 2nd keyword (FX3G/FX3U/FX3UCCPU only)
Sets the 2nd keyword that has been registered in programmable controller.
For the FX series (FX3GCPU only), the last eight characters of the customer keyword also can be set.

4) Keyword protect (FX3G/FX3U/FX3UCCPU only)
Sets the keyword protect when returning disable status of keyword lock to the locked status.

5) Execute button
Click this button after setting the necessary settings.

19.2 Registering Passwords

A	Q/QnA	QS	FX
×	○*	×	×

*: Compatible with the QCPU (Q mode).

For the Q series, you can set a password to each of the programs, comments and device initial value in a project.
The passwords are set to the programmable controller and the project currently open on GX Developer.

Statuses of Passwords and Registration Conditions for Operations Performed

Operation	Statuses of Password and Registration Condition
Read from/Write to PLC	
Read from PLC	If passwords exist in the read source PLC, the password settings are also read.
Write to PLC (to read source PLC)	Password settings are written to the write destination PLC.
Write to PLC (to other than read source PLC)	Password settings are written to the write destination PLC.
Write to PLC (read from IC card and write to PLC)	Password settings are written to the write destination PLC.
Edit project	
Open project	If passwords exist in the read source, the password settings are also read.
Save	If passwords exist in the save source, the password settings are also saved.
Save as	If passwords exist in the save source, the password settings are also saved.
Delete project	Passwords are deleted together with the project.
Copy project	If passwords exist in the copy source, the password settings are also copied.
Copy data	If passwords exist in the copy source, the password settings are also copied.
Save and write after data name change	If passwords exist in the old data name, the password settings are also saved.
Edit ladder (paste ladder to other GX Developer)	Password settings are not added.
Merge data	Password settings are not added.
Automatic save	If passwords exist in the save source, the password settings are also saved.
Change PLC type	
Save and write after PLC type change QCPU → QCPU	If passwords exist in the old PLC type, the password settings are also saved.
Save and write after PLC type change QCPU → other than QCPU	Password settings are not added.
Read/write IC card	
Read IC card	If passwords exist in the read source IC card, the password settings are also read.
Write IC card (to read source IC card)	Password settings are written to the write destination IC card.
Write IC card (to other than read source IC card)	Password settings are written to the write destination IC card.
Write IC card (read from PLC and write to IC card)	Password settings are written to the write destination IC card.

19.2.1 Registering new passwords/changing passwords

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Compatible with the QCPU (Q mode).

[Purpose]
Registering passwords protects the data in the programmable controller
(corresponding memory). (Q series only)

[Operating Procedure]
Select [Online] → [Password setup] → [Register password].

[Dialog Box]
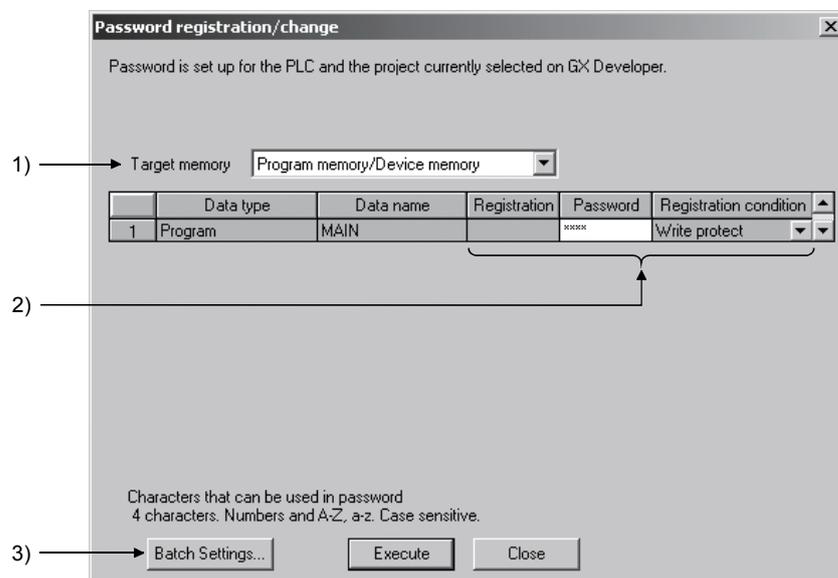
[Description]
1) Target memory
Set the memory whose password is to be registered or changed.

2) Registration, Password, Registration condition
⊙ Registration condition
× appears if a password has already been registered.
If you have selected [Register password] in Password setup, the data written
to the programmable controller appears.
If you have chosen [Write to PLC], [Write IC memory card] or [Write image
data], the data opening on the personal computer appears.
⊙ Password
Register four ASCII alphanumeric characters.
(Upper- and lower-case characters are differentiated.)
⊙ Registration condition
• Write protect
Write operation is restricted by the password.
• Read/Write protect
Write/read operation is restricted by the password.
• Clear
Password is cleared.

3) | Batch settings | button
Batch-sets the same password and registration condition to each data.
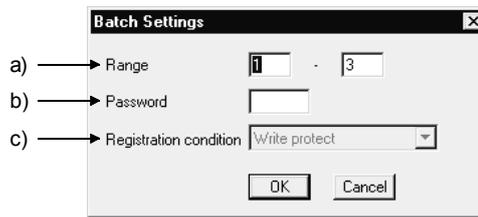
a) Range
Set the range where the same password will be batch-set.
b) Password
Register four alphanumeric characters in ASCII code.
(Upper- and lower-case characters are differentiated.)
c) Registration condition
  • Write protect
    Write operation is restricted by the password.
  • Read/Write protect
    Write/read operation is restricted by the password.
  • Clear
    Password is cleared.

4) | Execute | button
When the | Execute | button is clicked, the following dialog box is displayed.
Enter the password that was set in the Register/change password dialog box.
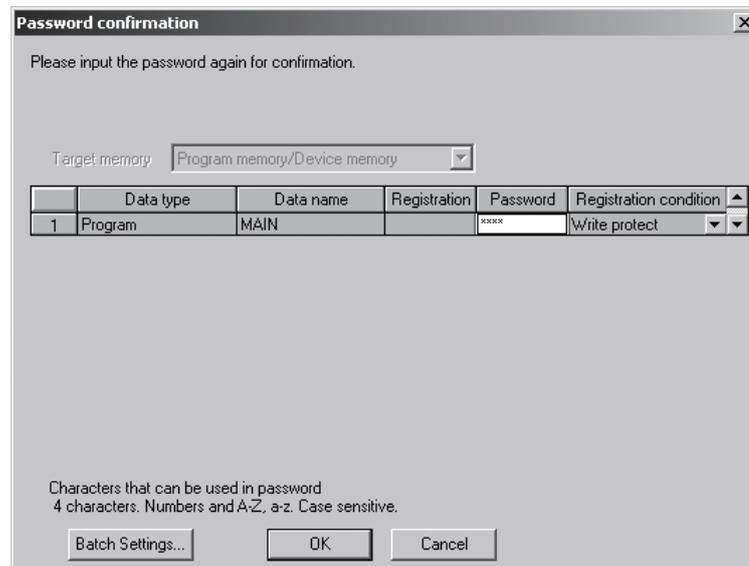
[When executing read from/write to the programmable controller where the keyword was registered]
  When read/write is executed from/to the programmable controller where the keyword was registered, the following screen is displayed.
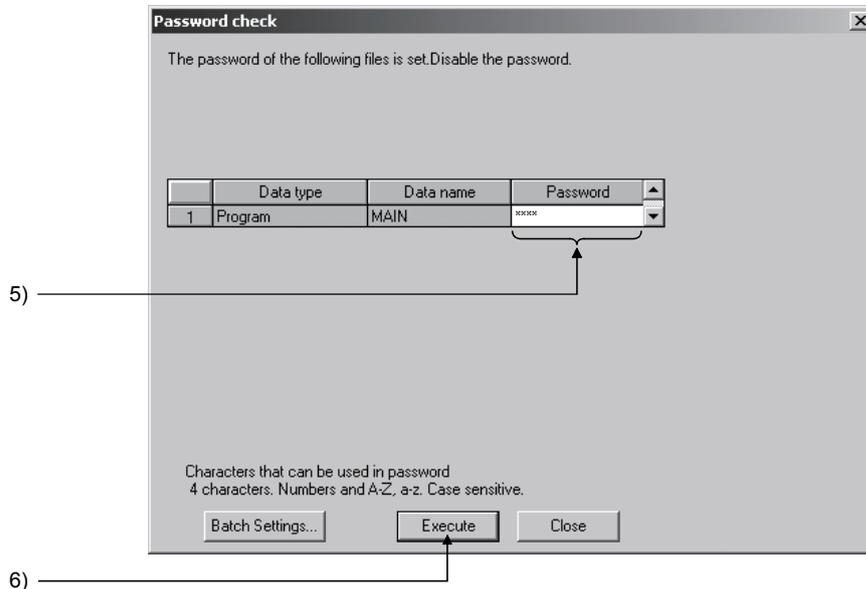
5) Password
   Set the password that was registered to the programmable controller.

6) |Execute| button
   Click this button when the setting is finished.

POINT

- When changing the password
  After setting a new password in the Register/Change password dialog box, set the old password in the Check password dialog box.

- If you forgot the password
  Format the PLC memory.
  However, this also clears all data including the passwords, all data should be written once more.

- When erasing the passwords in the project data
  Choose "Clear" as the registration condition in the password setting for Write IC memory card or Write to PLC, and save the project.

- "Checking password" appears during communications with the programmable controller, but it is also displayed when no password has been set.
  Checking password: Passwords and setting conditions of all files are checked.

- When the password has been registered to both systems of the redundant CPU
  Writing to PLC displays the respective password check dialog box screens for the control system and standby system.

- For the Universal model QCPU only, standard ROM can be selected for password target memory.

19.2.2 Deleting the passwords

A	Q/QnA	QS	FX
×	○✳	×	×

✳: Compatible with the QCPU (Q mode).

[Purpose]
Deletes the passwords which have been set in the files within the programmable controller. (Q series only)

[Operating Procedure]
Select [Online] → [Password setup] → [Delete password].

[Dialog Box]
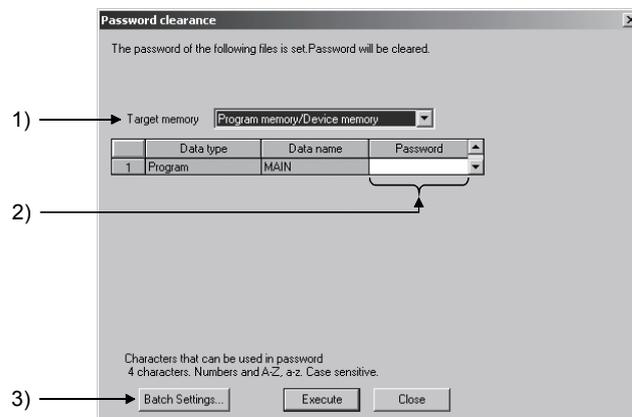
[Description]
1) Target memory
    Set the memory whose passwords will be deleted.

2) Password
    Set the passwords currently registered.

3) Batch settings
    Batch-deletes the passwords and registration conditions.
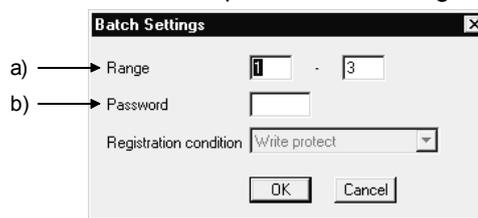
    a) Range
        Set the range where the passwords and registration conditions will be batch-deleted.

    b) Password
        Set the password currently registered.
        Take care to differentiate between the upper- and lower-case characters.

POINT

If the same data name exists in the project, the password of the project data will also be deleted.

19.2.3 Disabling the passwords

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Compatible with the QCPU (Q mode).

[Purpose]
Disables the passwords which have been set in the files within the programmable controller.
Disabling does not delete the passwords which have been set to the data in the programmable controller. It enables access to the programmable controller. (Q series only)

[Operating Procedure]
Select [Online] → [Password setup] → [Disable password].

[Dialog Box]

1) → Target memory
2) → Password
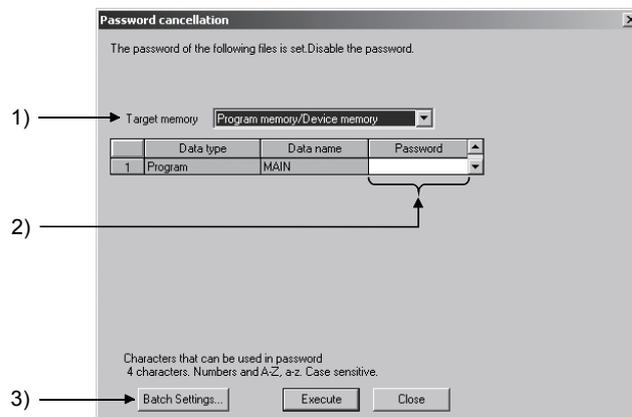
[Description]

1) Target memory
    Set the memory whose passwords will be disabled.

2) Password
    Set the passwords currently registered.

3) Batch settings
    Batch-disables the passwords and registration conditions.
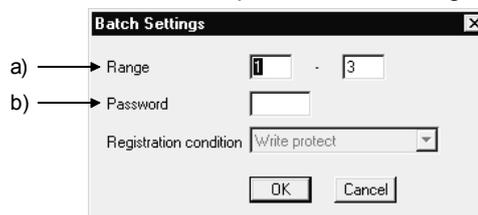
a) Range
    Set the range where the passwords and registration conditions will be batch-disabled.

b) Password
    Set the password currently registered.
    Take care to differentiate between the upper- and lower-case characters.

POINT

Note that the password disable setting is not made valid unless the project where the passwords have been set is closed.

MEMO

20. PLC MEMORY

This chapter describes PLC memory all-clear, formatting, memory area sorting, and time setting for the internal clock of the programmable controller.

20.1 Clearing the PLC Memory

20.1.1 Clearing all ACPU memory

A	Q/QnA	QS	FX
○	×	×	×

[Purpose]
All-clears the device memory and memory cassette of A series programmable controllers.

[Operating Procedure]
Select [Online] → [Memory Clear PLC memory].

[Dialog Box]
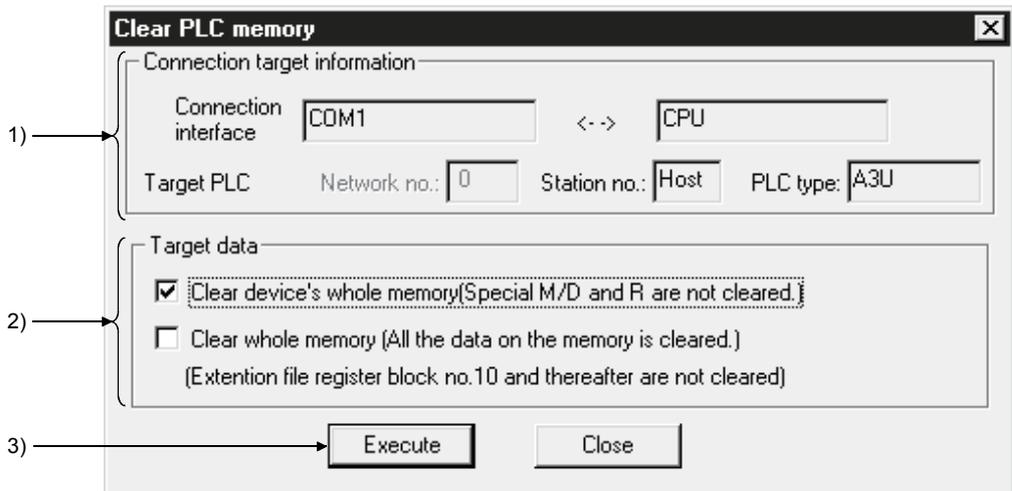
[Description]

1) Connection target information
   Indicates information on the connection destination designation.

2) Target data
   Clear device's whole memory (Special M/D and R are not cleared.)
   Checking this check box to select it clears all the data in the device memory in the programmable controller.
   However, special relays, special registers, and file registers are excepted.

   Clear whole memory (All the data on the memory is cleared.)
   Checking this check box to select it clears all the data in the memory cassette of the programmable controller with the exception of block No. 10 onward of the extension file registers.

20

3) |Execute| button
Click this button after setting the necessary settings.

POINT
• Device memory all clear can only be executed when the programmable controller is in the STOP state.
• When the data in a memory cassette is all-cleared, the range cleared is 144K bytes. Data beyond the 144K byte range (from extension file register block 10 onward) is not cleared.
• After all-clearing the data in a memory cassette, all of the data values in the memory cassette are "1". When file registers (R) are set and read after all clear, the result is HFFFF (K-1).

20

20.1.2 Clearing all QCPU, QnACPU device memory

A	Q/QnA	QS	FX
×	○	○	×

[Purpose]
 All-clears the device memory of a Q/QnA series programmable controller.
 The flash ROM cannot be all-cleared.

[Operating Procedure]
 Select [Online] → [Clear PLC memory].
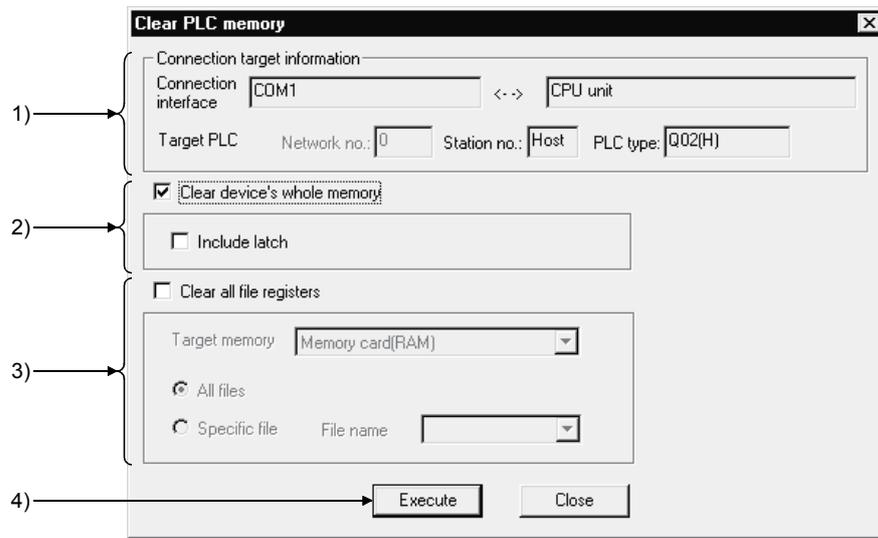
[Dialog Box]

[Description]

 1) Connection target information
    Indicates information on the connection destination designation.

 2) Clear device's whole memory
    When this check box is checked to select it, the device memory is all-cleared.
    You can set whether or not the devices designated in latch range designation
    are cleared.

 3) Clear all file registers
    Sets all file register data to "0".
    The area and file names are not cleared.
    To designate a file, designate the applicable memory and the file name.

 4) Execute button
    Click this button after setting the necessary settings.

POINT
• If the latched range is included in the device memory all clear operation, the latch clear key invalid area is also cleared.
• All clear is not possible when the programmable controller is in the RUN state.

20.1.3 Clearing all FXCPU memory

A	Q/QnA	QS	FX
×	×	×	○

[Purpose]
  All-clears the memory in an FX series programmable controller.

[Operating Procedure]
  Select [Online] → [Clear PLC memory].

[Dialog Box]
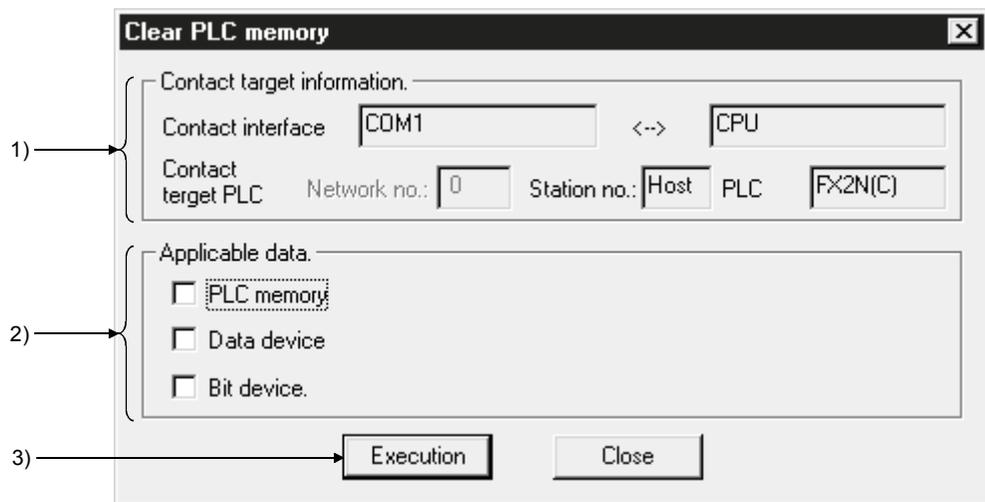
[Description]
  1) Connect target information
      Indicates information about the connection destination designation.

  2) Applicable data
      PLC memory
        When this check box is checked to select it, all of the data in the
        programmable controller is cleared.
        (Programs, comments, parameters, file registers, device memory, Extension
        file registers)
      Data device
        When this check box is checked to select it, the registers in the
        programmable controller are cleared to "0".
        (Data registers, file registers, RAM file registers, special registers, Extension
        registers, Extension file registers)
      Bit device
        When this check box is checked to select it, all of the bit devices in the
        programmable controller are turned OFF.
        (X, Y, M, S, T, C)
        The present values of T and C devices are also set to 0.

  3) | Execution | button
      Click this button after setting the necessary settings.

POINT	

Execution conditions

- PLC memory

  Memory: Internal memory, RAM/EEPROM (protect switch: OFF/Flash memory (protect switch: OFF)) cassette.
  All clear cannot be executed with an EEPROM (protect switch: ON/Flash memory (protect switch: ON)) or EPROM cassette.

- Data device

  Memory: Same as the execution conditions for "PLC memory".

- Bit device

  Memory: Can be executed with all memories

Operate the programmable controller in the STOP state. The memory cannot be cleared in the RUN state.

20.2 Formatting the QCPU (Qmode), QnACPU Memory

A	Q/QnA	QS	FX
×	○	○	×

[Purpose]
Format the program memory/standard ROM of the QCPU (Q mode) or the built-in RAM/IC memory card of the QnACPU.
SRAM card and ATA card can be formatted.
The flash ROM cannot be formatted.

[Operating Procedure]
Select [Online] → [Format PLC Memory].

[Dialog Box]
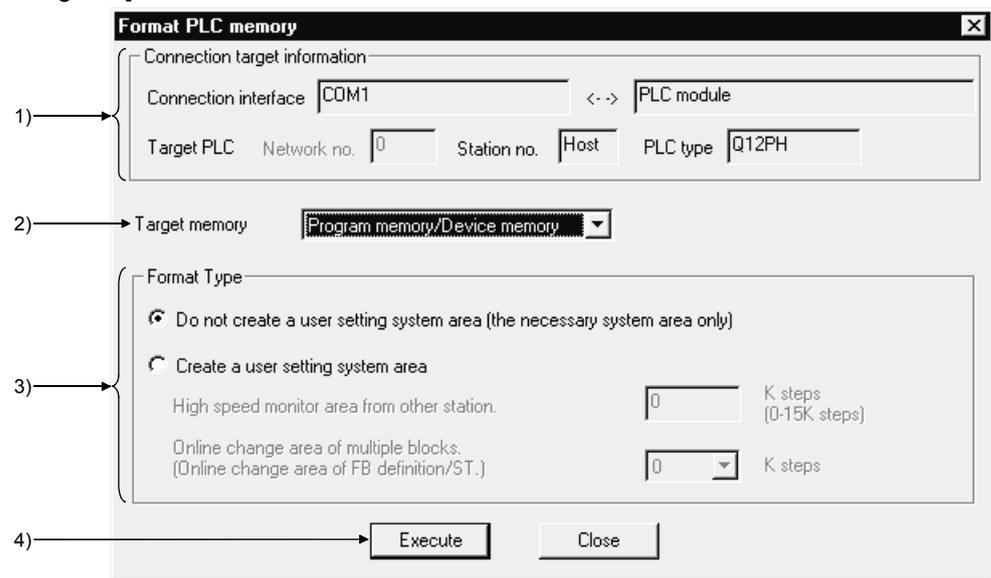
[Description]
1) Connection target information
   Indicates information on the connection destination designation.

2) Target memory
   Sets the object of PLC memory formatting.
   For the Universal model QCPU only, standard ROM can be selected for target memory.
   The device memory does not perform clearing the value with this function.
   When clearing the value of the device memory, execute with the [PLC memory clear].

3) Format Type
   ⊙ Do not create a user setting system area (the necessary system area only)
      Only the system area that is essential for the applicable memory is created.
   ⊙ Create a user setting system area (an area which speeds up monitoring from other stations)
      A mandatory system area and a system area for high-speed monitoring from other stations (user-set) are created.
      The setting range is different with the CPU as show below.
      • Basic model, Universal model QCPU(Q00UJ, Q00U, Q01UCPU):
        0 to 3K steps
      • High Performance model a CPU, Universal model QCPU (excluding Q00UJ, Q00U, Q01UCPU), Process CPU, Redundant CPU:
        0 to 15K steps

Area for enabling write to multiple blocks during RUN*1 (QCPU (Q mode only))

	Description	Reserved capacity of system area for write to multiple blocks during RUN					
		Basic model QCPU function version B			High Performance model QCPU Process CPU, Redundant CPU		
		OK step	1.25k steps	2.5k steps	0k step	2k steps	4k steps
No. of blocks	No. of function blocks can be written to simultaneously	Write to multiple blocks is disabled during RUN	Max. 32	Max. 64	Write to multiple blocks is disabled during RUN	Max. 32	Max. 64
No. of steps	Total sum of no. of steps to be added/changed in each block		Max. 512	Max. 1024		Max. 512	Max. 1024
No. of pointers	Total sum of no. of pointes (P, I) stored in current ladder and change ladder		No restrictions			Max. 50	Max. 100

*1: The Universal model QCPU does not require the above settings since 4K steps are automatically reserved in the memory other than the program memory.

4) ⌈Execute⌉ button
   Click this button after setting the necessary settings.

POINT

- There are two types of system area: "mandatory" and "user-set".
  The mandatory system area is automatically created during formatting, but the user-set system area is created according to the user's required settings.

- When the user-set system area is created, the data storage area for sequence programs and other data is reduced.
  Check the data capacity before setting the range for the user-set system area.

  QnACPU internal RAM

  | System files, temporary files, etc. | Mandatory system area (fixed at 4K steps) |
  | Monitor No. 1 for other stations ⋮ Monitor No. 15 for other stations | User-set system area (selectable: 0 to 15K steps) |

  System area

  User data storage area parameters, sequence programs, device comments, etc.

- Files in the system area cannot be displayed as a data list.

- Create the user-set system area in the internal RAM.
  If it is set in an IC memory card, the speed of other station monitoring will not change.

- Make sure to use the following method to format the ATA card.:
  Choose [Online] → [Format PLC memory] on GX Developer.
  (If a method other than above, e.g., Windows® format function is used to format the ATA card, the card will not work when inserted to programmable controller.)

20.3 Sorting the QCPU (Qmode), QnACPU Memory

A	Q/QnA	QS	FX
×	○	○	×

[Purpose]
Sorts the data in the program memory/standard RAM of the QCPU (Q mode) or
internal RAM of QnACPU to secure contiguous free memory.
The flash ROM cannot be sorted.

[Operating Procedure]
Select [Online] → [Arrange PLC memory].

[Dialog Box]
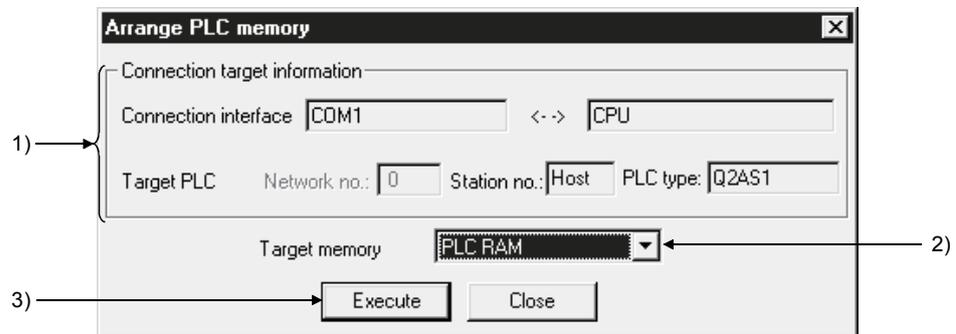
```
Arrange PLC memory                                              ×
┌ Connection target information ─────────────────────────────┐
│                                                            │
│  Connection interface │COM1        │    <·-·>  │CPU     │  │
│                                                            │
│  Target PLC   Network no.:│0│   Station no.:│Host│  PLC type:│Q2AS1│ │
└────────────────────────────────────────────────────────────┘
              Target memory     │PLC RAM            │▼│

                    │ Execute │    │ Close │
```

1) →
2) →
3) →

[Description]

1) Connection target information
   Indicates information on the connection destination designation.

2) Target memory
   Sets the PLC memory that is to be sorted.

3) | Execute | button
   Click this button after setting the necessary settings.

┌───┐
│ POINT   │
├───┤
│ An example of the execution of PLC memory sorting is given below.   │
│   │
│   ┌──────────┐   ┌──────────┐   ┌──────────┐   │
│   │Program A │   │Program A │   │Program A │   │
│   │   8K   │   │   8K   │   │   8K   │   │
│   ├──────────┤   ├──────────┤   ├──────────┤   │
│   │Program B │   │Free area │   │Program C │   │
│   │   6K   │ Program B│   6K   │ PLC   │   6K   │   │
│   28K ├──────────┤ deleted ├──────────┤ memory   ├──────────┤   │
│   │Program C │   │Program C │ sort   │   │   │
│   │   6K   │   │   6K   │   │Free area │   │
│   ├──────────┤   ├──────────┤   │ 14K   │   │
│   │Free area │   │Free area │   │   │   │
│   │   8K   │   │   8K   │   │   │   │
│   └──────────┘   └──────────┘   └──────────┘   │
│   · Total free capacity 8K   · Total free capacity 14K · Total free capacity 14K │
│   · Max. contiguous free   · Max. contiguous free   · Max. contiguous free   │
│   area   8K   area   8K   capacity   14K   │
│   │
│ Note that PLC memory sorting is not possible in the following cases. │
│   1. When the drive memory is faulty.   │
│   2. When one file is not stored in a single contiguous area.   │
└───┘

20.4 Setting for the Programmable Controller's Clock

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Sets the time for the internal clock of the programmable controller.

[Operating Procedure]
Select [Online] → [Set time].

[Dialog Box]
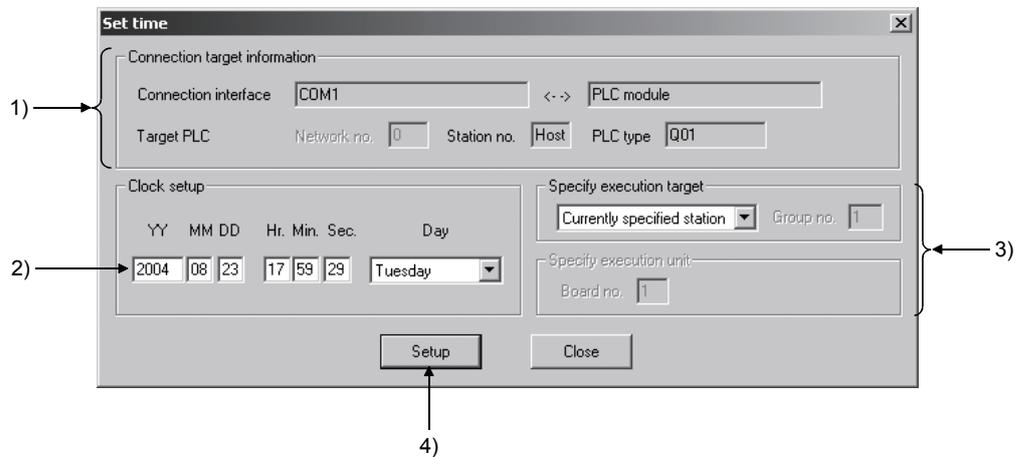
[Description]

1) Connection target information
Indicates information on the connection destination designation.

2) Clock setup
Sets the date, time, and day of the week.
For the Q series, enter the year in four digits. (Example: 2000)
You cannot set the year 2038 or later.

3) Specify execution target
Sets the location where the clock setting is to be made.

Currently specified station ......Executed only at the station with the connection destination designation.

Specify all station....................Executed at all stations of the network designated as the presently designated station.
1 to 4 modules can be set for execution module designation.

Specify group..........................Executed in a specific group of the network designated as the presently designated station.
Set 1 to 4 modules for execution module designation and set the group number.

This setting is not possible with the FX series.

4) Setup button
Click this button after setting the necessary settings.
With the A series, clock setting can only be executed when the programmable
controller is in the STOP state.
With the Q/QnA series and FX series, it can be executed even when the
programmable controller is in the RUN state.

POINT

- Clock setting is not possible for A0J2HCPU, A2CCPU and A2CJCPU since
  they do not have a clock function.

- With the A series, when the applicable station is in the RUN state, first set it to
  the STOP state using remote operation or other means, then carry out clock
  setting.

- With the A series, clock setting is possible regardless of the ON/OFF setting
  of the special relay for clock setting "M9028".
  However, after execution, "M9208" goes OFF.

- With the Q/QnA series, clock setting is possible regardless of the ON/OFF
  status of the device for clock setting "SM1028".
  Note that the ON/OFF status of "SM1028" does not change after execution.

- The applicable PLCs in the FX series are as follows.
  FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX3UC series (internal clock)
  FX, FX2, FX2C, FX2NC series (only when RTC cassette is set)

- With the FX series, clock setting is possible regardless of the ON/OFF status
  of the special relay for clock setting.

- Note that in clock setting, an error equivalent to the transmission time is
  generated.

MEMO

21. DIAGNOSTICS

21

Diagnosis displays the error statuses, fault history, etc. of the programmable controller, and carries out checks which depend on the network, including system status checks.

21.1 Diagnosing the Programmable Controller

A	Q/QnA	QS	FX
○	○	○*	○

*: Refer to GX Developer Version 8 Operating Manual (Safety Programmable Controller).

Checks the programmable controller for abnormal conditions and errors.

21.1.1 Diagnosing an ACPU

A	Q/QnA	QS	FX
○	×	×	×

[Purpose]
Displays the status and error codes of an A series CPU.
Present ERROR indicates the error normally monitored, and Error log indicates the history status when the PLC Diagnostics window has opened.

[Operating Procedure]
Select [Diagnostics] → [MELSECNET(II)/10/H diagnostics].

[Dialog Box]
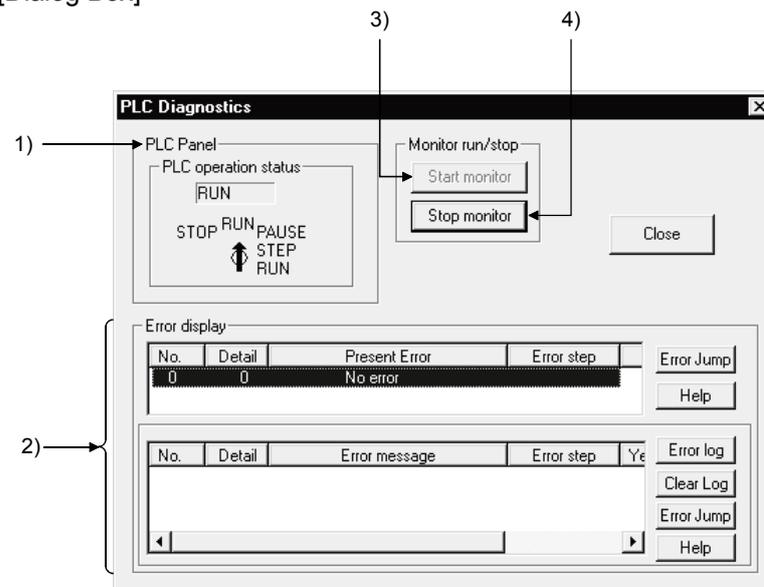
[Description]

1) CPU Panel
   Indicates the status of the programmable controller designated as the connection destination.

2) Error display explanation

The upper error display field shows the current error.

The lower error display field shows the error history.

No. indicates the error code and Detail indicates the detailed error code.

With the $\boxed{\text{PLC error}}$ button, you can confirm the error detail.

For the QCPU-A, AnUCPU and AnACPU, clicking the $\boxed{\text{Error log}}$ button displays up to 16 latest errors.

For the QCPU-A, AnUCPU and AnACPU, clicking the $\boxed{\text{Clear log}}$ button clears the error history.

Choosing the error item and clicking the $\boxed{\text{Error Jump}}$ button causes a jump to the corresponding sequence program. A jump takes place for any of the following errors that occurred from the ACPU.

10 INSTRUCT CODE ERR

13 CAN'T EXECUTE(P)

15 CAN'T EXECUTE(I)

46 SP. UNIT ERROR

50 OPERATION ERROR

A jump does not occur for SFC and SUB program errors.

The occurrence of a sequence program error causes a jump to MAIN.

3) $\boxed{\text{Start monitor}}$ button

Clicking this button initiates communication with the programmable controller and updates the display.

4) $\boxed{\text{Stop monitor}}$ button

Clicking this button stops communication with the programmable controller and holds the display.

POINT
Display and clearance of the error history is possible only with QCPU-A, AnACPU and AnUCPU.

21.1.2 Diagnosing a QnACPU

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with the QnACPU.

[Purpose]
Checks the status and errors of a QnA programmable controller.

[Operating Procedure]
Select [Diagnostics] → [Diagnostics PLC].

[Diagnosis]
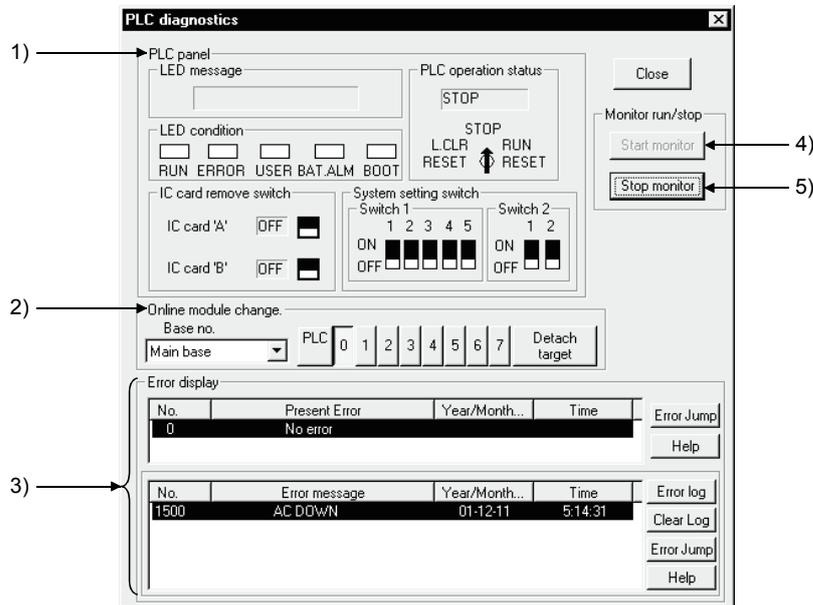
[Description]

1) CPU panel
Indicates the status of the programmable controller designated as the connection destination.
When the Q2AS(H)/Q2AS(H)S1CPU is diagnosed, the positions of Switches 1 and 2 are displayed on GX Developer as indicated below.

Switch 1 of programmable controller	—	Switch 1 of GX Developer
1 is set to ON	→	5 is displayed ON
2 is set to ON	→	4 is displayed ON
3 is set to ON	→	3 is displayed ON
4 is set to ON	→	2 is displayed ON
5 is set to ON	→	1 is displayed ON

Switch 2 of programmable controller	—	Switch 2 of GX Developer
1 is set to ON	→	2 is displayed ON
2 is set to ON	→	1 is displayed ON

2) Online module change
Set the base and slot number for the module to be mounted or removed in the RUN status, then click the Detach target button.
Masked for the QCPU(Qmode).

3) Error display
Clicking the |Error log| button displays up to 16 of the most recent errors.
Clicking the |Clear log| button clears the error history in the programmable controller.
Clicking the |Error jump| button causes a jump to the sequence program step number at which the currently selected error occurred.

4) |Start monitor| button
Clicking this button initiates communication with the programmable controller and updates the panel display.

5) |Stop monitor| button
Clicking this button initiates communication with the programmable controller and updates the display.

[Operating Procedure]
The procedure for mounting/removing a module in the RUN status is as follows.

1. Set the applicable base and slot at 2) and click the |Detach target| button: the RUN module mount/remove dialog box is displayed.

2. Mount or remove the module at the designated slot of the designated base.

3. After completing mounting/removal of the module, click the |End substitution| button in the RUN module mount/remove dialog box.

POINT

By double-clicking the current error in the error display list box, the Common error information dialog box opens and displays the contents of SD5 to 15 (common information for errors), and SD16 to 26 (information on an individual error) of the programmable controller.

No.	Error message	Year/Month...	Time
2110	SP.UNIT ERROR	98- 9-28	18:13:27

←——Double-click the list item

⇩

Error details   ☒

┌─ Common error information ─   ┌─ Individual error information ─

Unit no.   0   File name   MAIN   .QPG

I/O No   0   SFC block   Nothing

                                    SFC step   Nothing

                                    SFC switching Nothing

                                    Block no.   0

                                    Step   0

                                    Sequence step 30

[Close]

21.1.3 Diagnosing the QCPU (Qmode)

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with the QCPU (Q mode).

[Purpose]
  Checks the programmable controller for abnormal conditions and errors.
  In a multiple CPU system, CPU No. 1 to CPU No. 4 can be diagnosed.

[Operating Procedure]
  Select [Diagnostics] → [PLC diagnostics].

[Diagnosis]
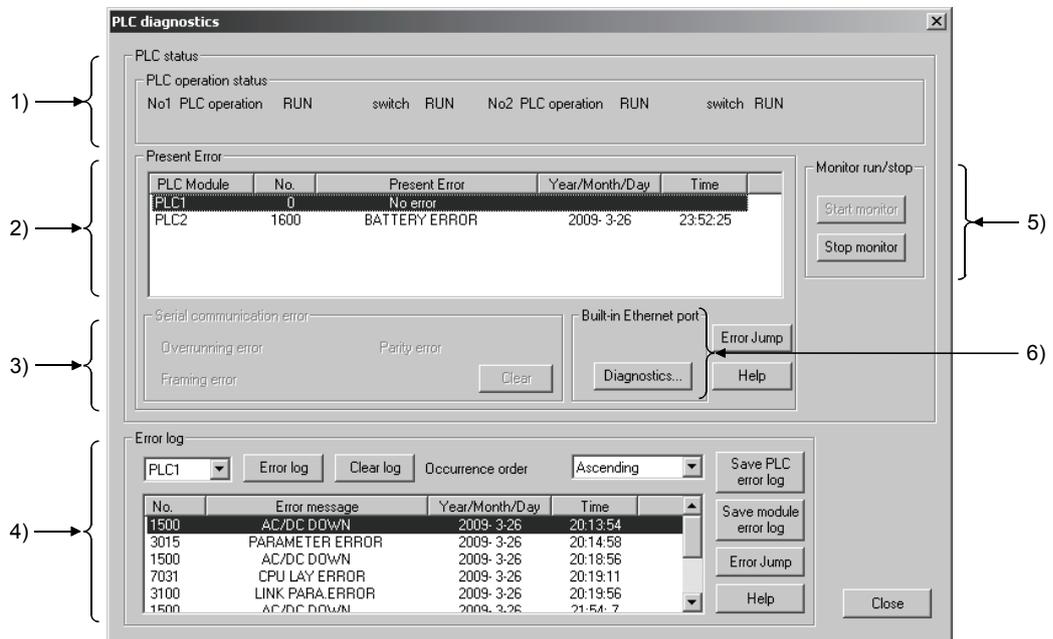
[Description]

1) PLC operation status
   None appears when a slot is empty in a multi-CPU system configuration.
   When the system is configured using the redundant CPU, the following
   information appear: the connector (System A/System B) of the tracking cable
   connected to the redundant CPU to be diagnosed, system type (control system
   /standby system) and whether the manual switching is Enable or Disable.

2) Present Error
   Clicking the │ Error Jump │ button jumps to the sequence program step number in
   the currently selected error.
   Clicking the │ Help │ button shows the explanation screen corresponding to the
   error number selected in the Present Error display field.
   If two or more HELPs of the same error number exist, the search result screen
   starts.
   Choose the topic you want to display, and double-click (the │ View │ button).

3) Serial communication error (Basic model QCPU and Universal model QCPU
(Q00UJ/Q00U/Q01U/Q02UCPU) only)
To be monitored when the serial communication function has been set.
Clicking the ⬚Clear⬚ button displays the following dialog box.

Click the ⬚Yes⬚ button to clear the error.

4) Error log
To display an error log, select the corresponding CPU module in the combo box
for CPU No. specification.
Clicking the ⬚Error log⬚ button shows the latest error history.
Clicking the ⬚Clear log⬚ button clears the currently displayed error list.
The display of the logs can be switched between ascending order or
descending order by selecting Occurrence order.
Clicking the ⬚Save PLC error log⬚ button saves the error log displayed on the list
box as CSV format.
Clicking the ⬚Error Jump⬚ button jumps to the sequence program step number in
the currently selected error.
Clicking the ⬚Help⬚ button shows the explanation screen corresponding to the
error number selected in the Present Error display field.
If two or more HELPs of the same error number exist, the search result screen
starts.
Choose the topic you want to display, and double-click (the ⬚View⬚ button).
∗: Clicking the ⬚Save module error log⬚ button saves data for manufacturer
analysis to a file in BIN format. Use this button upon request of us.
The Universal model QCPU having the serial number (first five digits) of
"11042" or later supports this function.
For the versions of intelligent function modules supporting this function, refer
to the user's manual for the module used.

5) Monitor run/stop
Clicking the ⬚Start monitor⬚ button starts communications with the
programmable controller and updates the panel indication.
Clicking the ⬚Stop monitor⬚ button starts communications with the
programmable controller and stops the indication.

6) Built-in Ethernet port
This function is available only for the QnUDE(H)CPU and CPUs that can be
configured for multiple CPU system.
Clicking the ⬚Diagnostics⬚ button displays the Ethernet diagnosis screen.

POINT

Double-clicking the current error in the error display area shows the definitions of SD5 to 15 (error common information) and SD16 to 26 (error individual information) of the programmable controller in the error detail dialog box.

No.	Error message	Year/Month...	Time
2110	SP.UNIT ERROR	98- 9-28	18:13:27

Double-click the list item

Error details

Common error information

Unit no.   0

I/O No   0

Individual error information

File name   MAIN   .QPG

SFC block   Nothing

SFC step   Nothing

SFC switching   Nothing

Block no.   0

Step   0

Sequence step   30

Close

21.1.4 Diagnosing an FXCPU

A	Q/QnA	QS	FX
×	×	×	○

[Purpose]
  Displays the status and error codes of an FX series programmable controller.

[Operating Procedure]
  Select [Diagnostics] → [Diagnostics PLC].

[Dialog Box]
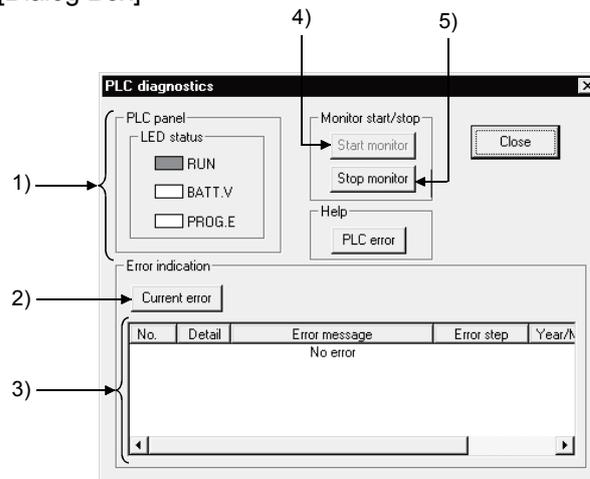
[Description]
  1) PLC Panel
      Indicates the status of the connected programmable controller.
      RUN :   Lit in green when the programmable controller is in the RUN status.
      BATT.V :   Lit in red when the voltage of the battery for memory back up has
                 dropped.
      PROG.E :   Lit in red when an error has occurred (when one of the following is
                 ON: M8061, M8064, M8065, M8066).

  2) Current error button
      Clicking this button displays errors that have occurred at the programmable
      controller.
      The date and time values are not those when the error occurred but when the
      Current error button was clicked.

  3) Error indication
      Displays current errors at the programmable controller.
      The error details are displayed as the error code and error message.

  4) Start monitor button
      Clicking this button initiates communication with the programmable controller
      and updates the display.

  5) Stop monitor button
      Clicking this button initiates communication with the programmable controller
      and holds the display.

21.2 Diagnosing a Network

A	Q/QnA	QS	FX
◯	◯	◯	×

[Purpose]
Checks the status of MELSECNET (II) or MELSECNET/10, MELSECNET/H from the host station, which is designated the connection destination.

[Operating Procedure]
Select [Diagnostics] → [MELSECNET diagnostics].

[Dialog Box]
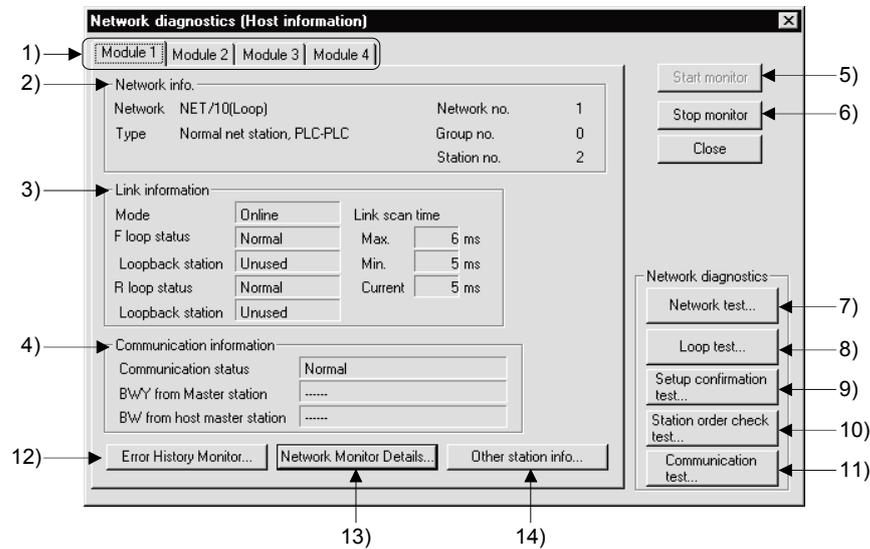
[Description]

1) Link module selection tabs
   Switch among MELSECNET diagnostics result displays for the first to fourth link modules.
   With AnNCPU and AnACPU, there are only module 1 and module 2.

2) Network info.
   • Indicates the network information of the host station set in connection destination designation.
   • With MELSECNET (II), the network No. and group No. are not displayed.
   • This item is updated when system switching occurs in the Redundant CPU.
     Note that the following functions are not updated.
       • Error History Monitor   • Line monitor details
       • Other station information   • Network test
       • Loop test   • Setup confirmation test
       • Station order check test   • Communication test

3) Link information
   Indicates the network status.

4) Communication information
   Indicates the communication status of the applicable network.
   For MELSECNET/10, MELSECNET/H only the communication status is indicated.

5) | Start monitor | button
   Clicking this button starts MELSECNET diagnostics.
   During monitoring, the indication is updated.

6) | Stop monitor | button
   Clicking this button stops MELSECNET diagnostics.
   During a monitoring stop, the indication is held.

7) | Network test | button
   Refer to Section 21.2.1.

8) | Loop test | button
   Refer to Section 21.2.2.

9) | Setup confirmation test | button
   Refer to Section 21.2.3

10) | Station order check test | button
    Refer to Section 21.2.4

11) | Communication test | button
    Refer to Section 21.2.5

12) | Error History Monitor | button
    Refer to Section 21.2.6.

13) | Network Monitor Details | button
    Refer to Section 21.2.7.

14) | Other station info | button
    Refer to Section 21.2.8.

| POINT |

- Indicates the number of link modules that can be mounted for each network type.
  MELSECNET (II)   2
  MELSECNET/10, MELSECNET/H   4

- The object of MELSECNET diagnostics is the network of the connected host station.
  To change the network that is the object of diagnosis, change the applicable station in the connection destination designation.

- About host station information and other station information:
  When the routing is through E71, an AnUCPU executes monitoring equivalent to that of an AnACPU, which means that MELSECNET (II) information can be monitored but MELSECNET/10, MELSECNET/H modules cannot be monitored.

21.2.1 Testing a network

A	Q/QnA	QS	FX
○	○	×	×

[Purpose]
Starts/stops link operation for the MELSECNET/10, MELSECNET/H host station/designated station/ all stations.

[Operating Procedure]
Select [Diagnostics] → [MELSECNET diagnostics] → then click the ⎢Network test⎢ button.

[Dialog Box]
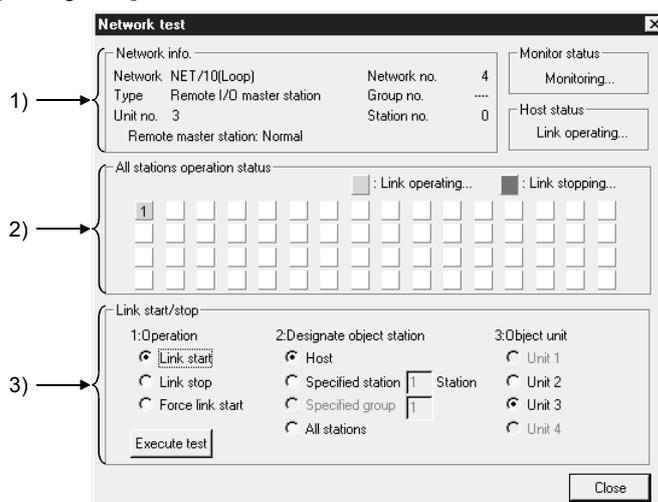
[Description]
1) Network info.
    Indicates the network information of the station designated in the connection destination designation.

2) All stations operation status
    Indicates the link status of the modules for which the test is executed.

3) Link start/stop
    The order of priority for link start/stop is as follows:
    Link start < Link stop < Forced link start

    <Start>
    • Stations that have been stopped from the host station can be started.
    • Stations that have been stopped from an other station cannot be started.
    <Stop>
    • Stations can be stopped from the host station or other stations.
    <Forced start>
    • Stations can be started regardless of whether they were stopped from the host station or an other station.
      However, forced starting in station units is not possible when all stations are stopped.
    • Forced start is not possible when there is an other station designation for the connection destination.
    • Whether or not execution is possible at a personal computer can be checked by monitoring SB and SW; whether execution has been started/stopped at the host station can be checked by monitoring SW0000 to SW0004 and SB0000 to SB0003.
    • When the connection destination is routed through C24, UC24, or QC24, execution is possible.
    • Execution is not possible when using a MELSECNET (II)/MELSECNET/10 board.
    • Execution is not possible with routing through E71/QE71.

21.2.2 Conducting a loop test

A	Q/QnA	QS	FX
○	○	○✳	×

✳: Only compatible with the QSCPU whose first
5 digits of serial number is "10032" or higher.

[Purpose]
Checks the status of the MELSECNET/10, MELSECNET/H loop.

[Operating Procedure]
Select [Diagnostics] → [MELSECNET diagnostics] → Loop test button.

[Dialog Box]
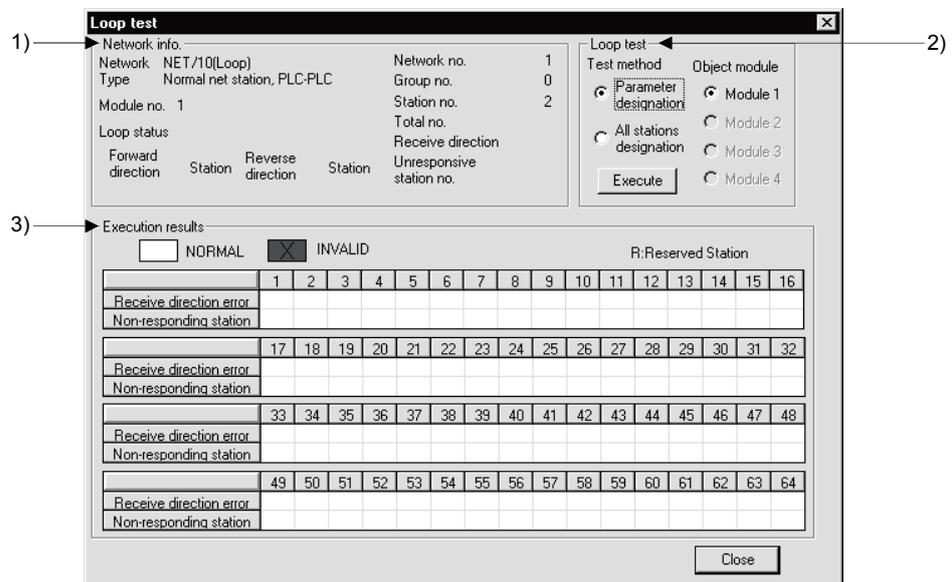
[Description]

1) Network Information
Shows a station's network information set in Connection destination specification.

2) Loop Test
Set the test enact method and target module, and click the Execute button to start a loop test.
A loop test made with connection of remote stations may be conducted only on the connected remote I/O network.
A change in target module will result in an error.
• Test enact method
  ⊙ Parameter settings
    Tests the parameter-set stations (except the reserved stations).
    When there are no parameter settings, all stations will be tested.
  ⊙ Set all nods
    Tests all stations.
• Object unit
  Choose the module on which a loop test will be conducted.
  The default is the module selected in line monitor (own station).

3) Execution Result
Shows the number of stations and results (normal/abnormal, reserved stations: R).

21.2.3 Conducting a setting confirmation test

A	Q/QnA	QS	FX
○	○	○*	×

∗: Only compatible with the QSCPU whose first
5 digits of serial number is "10032" or higher.

[Purpose]
Checks the status of the following settings made for each station: station number,
network number, group number.

[Operating Procedure]
Select [Diagnostics] → [MELSECNET diagnostics] → then click the
Setup confirmation test button.

[Dialog Box]
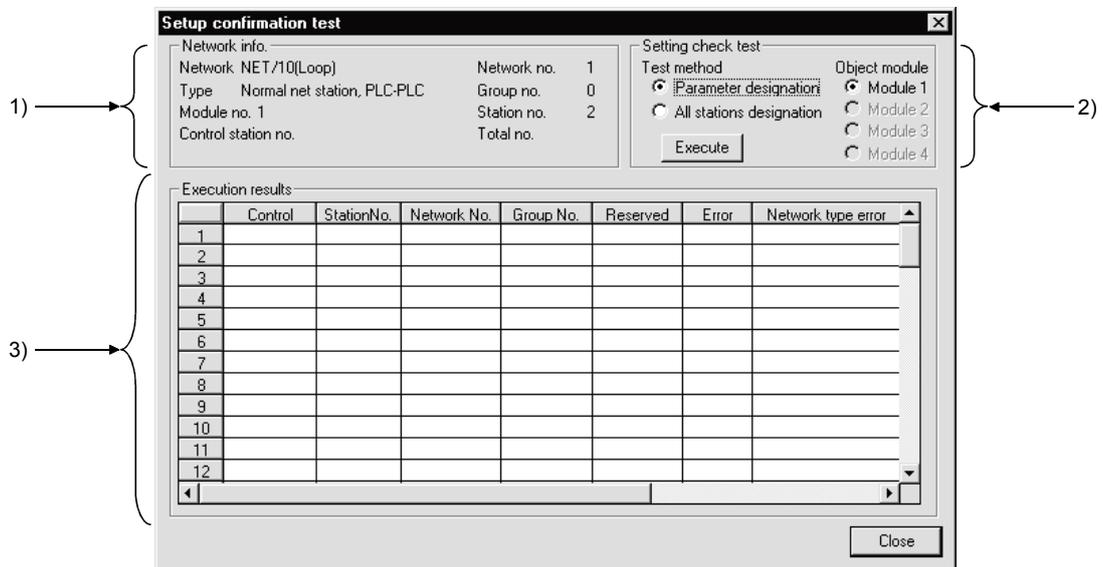
[Description]
1) Network info.
Indicates the network information of a station designated at the connection
destination.

2) Setting check test
• Test method
⊙ Parameter designation
All the stations set in the parameters, with the exception of reserve
stations, are subject to the setting confirmation test.
If no network settings have been set (default), all stations are subject to the
test.
⊙ All stations designation
All stations are subject to the setting confirmation test.
There is no number of stations designation.
• Object unit
The module selected for the line monitor (own station) is set as the default.
If there is no MELSECNET/10, MELSECNET/H module, an error occurs.

3) Execution results

<Station No.>
Indicates station numbers up to that subject to the setting confirmation test.
Up to 64 stations are indicated.

<Control>
If control stations have been set at two or more locations, " ＊ " is displayed.

<Station No.>
If stations have been set at two or more locations, " ＊ " is displayed.

<Network No. >
If the same station number has been set at two or more locations, " ＊ " is displayed.
Stations whose network number differs from the network number of the host station are indicated in red.

<Group No.>
Indicates the group number of the station where the setting confirmation test is carried out.
In the case of a remote I/O net, the indication for stations with errors is blank.

<Reserve stations>
" ＊ " is displayed for stations set as reserve stations in the parameters.
(Where "Parameter designation" has been set as the test execution designation.)

<Error>
If a station is reserved in the parameter settings, or a module in all station designation is faulty, " ＊ " is displayed.

<Network type error>   QnA series only
" ＊ " is displayed for stations whose parameter setting and actual connection type do not agree.

<Multiplex remote master station duplication>   QnA series only
" ＊ " is displayed for stations where there is more than one submaster station of the same network.

<Parallel remote submaster station duplication>   QnA series only
" ＊ " is displayed for stations where there is more than one submaster station of the same network.

POINT
• The test cannot be executed at more than one station at the same time.
• Note that cyclic transmission is stopped while the test is being executed.

21.2.4 Conducting a station order confirmation test

A	Q/QnA	QS	FX
○	○	○✻	×

✻: Only compatible with the QSCPU whose first 5 digits of serial number is "10032" or higher.

[Purpose]
Confirms the station order in the forward/reverse loops of a MELSECNET/10, MELSECNET/H system.

[Operating Procedure]
Select [Diagnostics] → [MELSECNET diagnostics] → click the Station order check test button.

[Dialog Box]
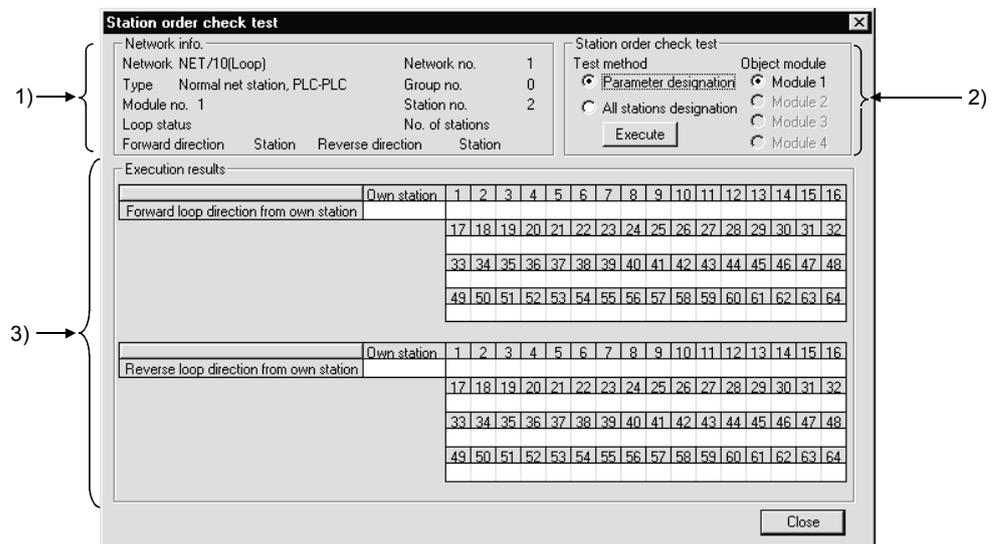
[Description]
1) Network info.
   Indicates the network information of a station designated at the connection destination.
   For the loop status, the forward/reverse loop / forward loop / reverse loop / loopback status is indicated.
   The total number of stations indicated is that determined by including the reserve stations in the test.

2) Station order check test
   • Test method
     ⊙ Parameter designation
       Stations set in the parameters, with the exception of reserve stations, are subject to the test.
       If the network parameters have not been set (default), all stations are subject to the test.
     ⊙ All stations designation
       All stations are subject to the test.
       There is no number of stations designation.
     ⊙ Object unit
       The module selected for the line monitor (own station) is set as the default.
       If there is no MELSECNET/10, MELSECNET/H module, an error occurs.

3) Execution results
   The order of stations in the forward loop direction and reverse loop direction, starting from the host station, is indicated.
   For loopback, only the order in the forward loop direction from the host station is indicated.
   The station numbers of reserve stations are not indicated.

POINT
• The test cannot be executed at more than one station at the same time.
• Note that cyclic transmission is stopped while the test is being executed.

21.2.5 Conducting a transmission test

A	Q/QnA	QS	FX
○	○	×	×

[Purpose]
  Conducts a transmission test between networks on the MELSECNET/10(H).

[Operating Procedure]
  Select [Diagnostics] → [MELSECNET diagnostics] → Transmission test button.

[Dialog Box]
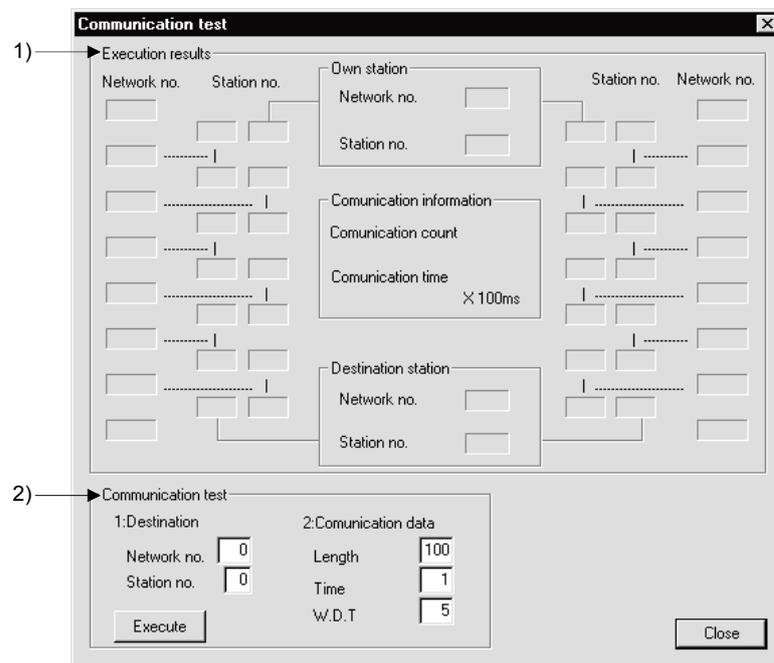
[Description]

  1) Execution Result
     Shows the transmission test results between the networks.

  2) Communication Test
     Set Destination Setting, Transmission Data Setting and Target Module, and
     click the Execute button to start a transmission test.
     A change in target module will result in an error.
     • Destination Setting
       Set the network No. (1 to 255 for A series, 1 to 239 for Q/QnA series) and
       station number (1 to 64).
     • Transmission Data Setting
       Set Data length (1 to 900 bytes), Number of Transmission (1 to 100 times)
       and Transmission Inspection Time (1 to 100 seconds).

21.2.6 Monitoring the error history

A	Q/QnA	QS	FX
○	○	○	×

[Purpose]
  Shows the error history of the MELSECNET/10(H).

[Operating Procedure]
  Select [Diagnostics] → [MELSECNET diagnostics] → Error History Monitor button.

[Dialog Box]
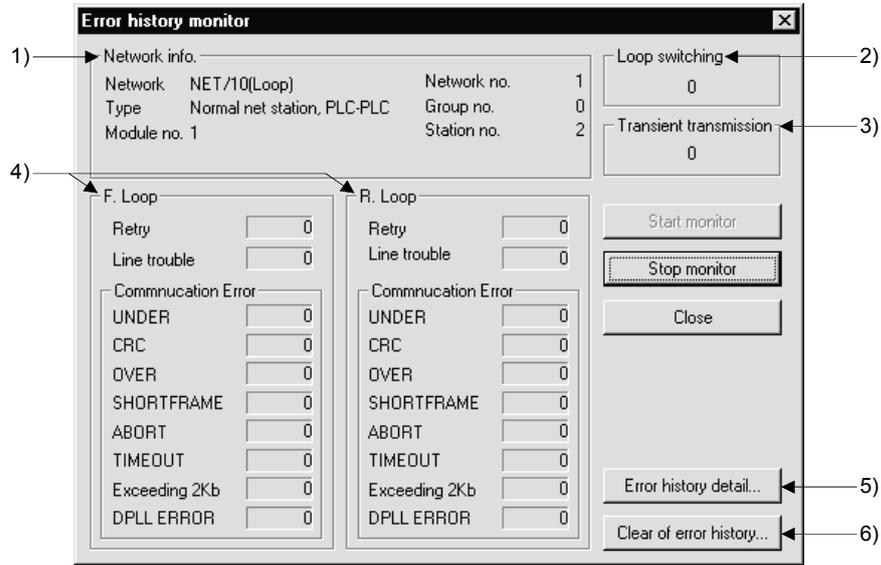
[Description]

  1) Network Information
     Shows each information of the network.

  2) Loop switching
     Shows the number of loop conversions.

  3) Transient transmission
     Shows the number of transient transmission errors.

  4) F Loop/R Loop
     Shows each item for monitoring execution.

5)   Error History Details   button
     Shows the details of Number of Loop Conversions and Peer to Peer
     Transmission Error.
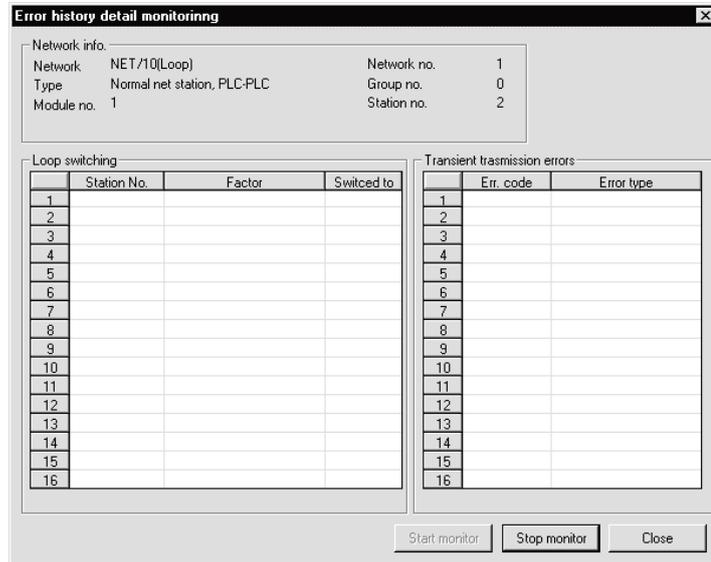
6)   Clear of Error History   button
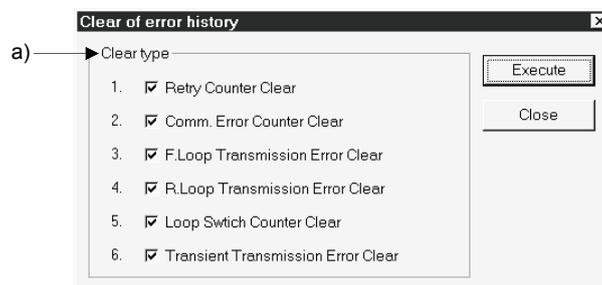
a) Clear type
   Choose any item to be cleared.

21.2.7 Network monitor details

A	Q/QnA	QS	FX
◯	◯	◯	×

[Purpose]
Shows the network line status of the MELSECNET/10(H).

[Operating Procedure]
Select [Diagnostics] → [MELSECNET diagnostics] → Network Monitor Details button.

[Dialog Box]
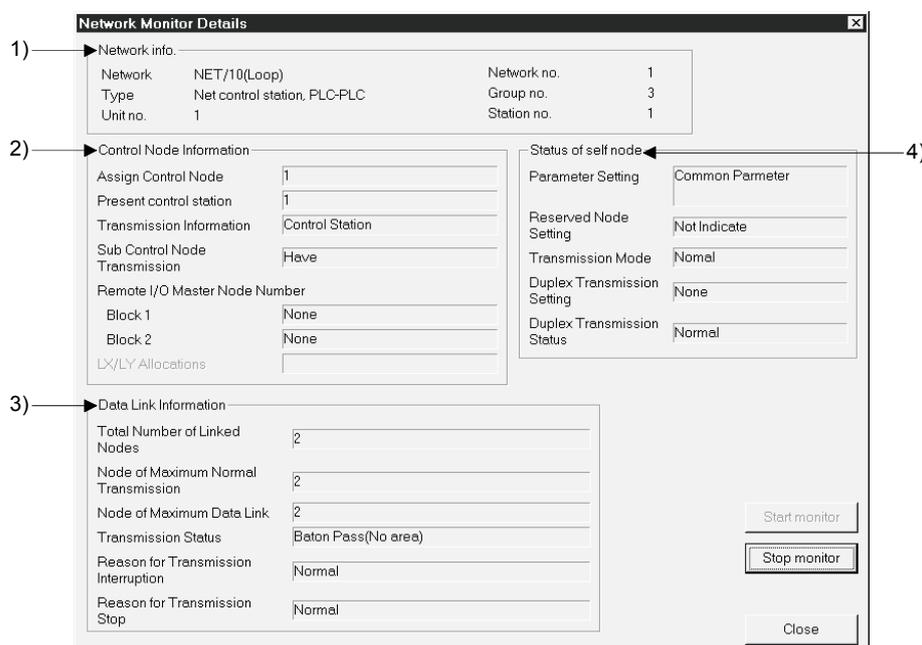
[Description]

1) Network Information
   Shows each information of the network.

2) Control Node Information
   Shows each information of the control station.
   Remote I/O master station appears only for the inter-PLC network.
   LX/LY assignment appears only for the remote I/O network.

3) Data Link Information
   Shows each information of data link.

4) Status of self node
   Shows each status of the own station.
   Parameter setting appears only for the inter-PLC network.

21.2.8 Monitoring other station information

A	Q/QnA	QS	FX
○	○	○	×

[Purpose]
Monitors other stations connected to MELSECNET(II), MELSECNET/10, MELSECNET/H.

[Operating Procedure]
Select [Diagnostics] → [MELSECNET diagnostics] → then click the
Other station information button.

[Dialog Box]
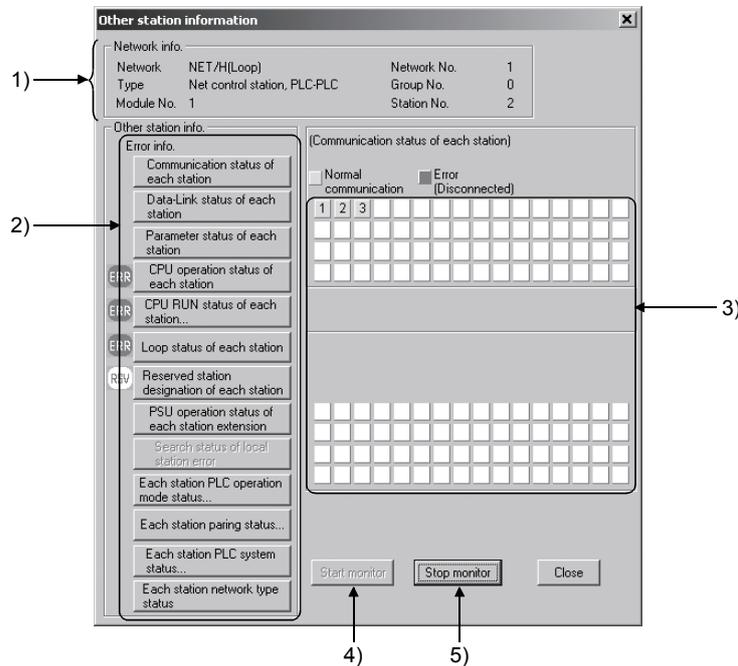
[Description]
1) Network info.
   Indicates the network information of the other station designated at the connection destination.

2) Error info.
   • "ERR" appears on the error information display field if a faulty station or STOP station is detected.
   • "RSV" appears on the error information display field if the reserved station exists.
   • "PWR" appears on the error information display field if the module with an external power is being powered.
   Choose the corresponding item buttons to display their details in 3).

3) Detailed error information display field
   When a station information item is selected, indicates the station status relevant to that item.

4) Start monitor button
   Starts monitoring if it is stopped.
   Not effective if monitoring is in progress.

5)   Stop monitor button
     Stops monitoring when it is in progress.
     Not effective if monitoring is already stopped.

- The following other station information items cannot be selected with the A series.

		MELSECNET/10						MELSECNET(II)	
		PLC-to-PLC network				Remote I/O network		—	
		Control Station		Normal Station		Master Station		Master	Local
		Loop	Bus	Loop	Bus	Loop	Bus	—	—
1	Communication status for each station	○	○	○	○	○	○	○	×
2	Data link status for each station	○	○	○	○	○	○	×	×
3	Parameter status for each station	○	○	×	×	○	○	○	×
4	CPU operating state for each station	○	○	○	○	×	×	×	×
5	CPU RUN state for each station	○	○	○	○	×	×	○	○
6	Loop status for each station	○	×	○	×	○	×	○	×
7	Reserve station designation for each station	○	○	○	○	○	○	×	×
8	PSU operation status of each station extension	×	×	×	×	×	×	×	×
9	Search status of local station error	×	×	×	×	×	×	○	×
10	Each station PLC operation mode status	×	×	×	×	×	×	×	×
11	Each station pairing status	×	×	×	×	×	×	×	×
12	Each station PLC system status	×	×	×	×	×	×	×	×
13	Each station network type status	×	×	×	×	×	×	×	×

○: Can be selected   ×: Cannot be selected (mask display)

- The following other station information items cannot be selected with the Q/QnA series.

		MELSECNET/10, MELSECNET/H						MELSECNET(II)	
		PLC-to-PLC network				Remote I/O network		—	
		Control Station		Normal Station		Master Station		Master	Local
		Loop	Bus	Loop	Bus	Loop	Bus	—	—
1	Communication status for each station	○	○	○	○	○	○	○	×
2	Data link status for each station	○	○	○	○	○	○	×	×
3	Parameter status for each station	○	○	×	×	○	○	○	×
4	CPU operating state for each station	○	○	○	○	×	×	×	×
5	CPU RUN state for each station	○	○	○	○	×	×	○	○
6	Loop status for each station	○	×	○	×	○	×	○	×
7	Reserve station designation for each station	○	○	○	○	○	○	×	×
8	PSU operation status of each station extension	○	×	○	×	○	×	×	×
9	Search status of local station error	×	×	×	×	×	×	○	×
10	Each station PLC operation mode status *1	○	○	○	○	×	×	×	×
11	Each station pairing status *1	○	○	○	○	×	×	×	×
12	Each station PLC system status *1	○	○	○	○	×	×	×	×
13	Each station network type status *1	○	○	○	○	○	○	×	×

○: Can be selected ×: Cannot be selected (mask display)

*1: Compatible with MELSECNET/H network module

POINT

- To execute "Each station CPU operation status" of the MELSECNET/H remote I/O network, GX Developer Version 8.18U (SW8D5C-GPPW-E) or later and the MELSECNET/H remote I/O module of function version D are necessary.
  If "Each station CPU operation status" is executed when the MELSECNET/H remote I/O module does not satisfy the above condition, "Normal" is always displayed as the operating status of the programmable controller.

21.3 Diagnosing CC-Link IE Controller Network

A	Q/QnA	QS	FX
×	○	○∗	×

∗: Only compatible with the QSCPU whose first 5 digits of serial number is "10032" or higher.

[Purpose]
Check the status of the CC-Link IE controller network from the own station set on the Transfer setup screen.

[Operating Procedure]
Select [Diagnostics] → [CC IE Control diagnostics…].

[Dialog Box]

POINT
- Stop monitoring in all windows.
- When two or more CC-Link IE controller network modules are mounted to the connected station, the following (Select diagnostics destination dialog box) appears before diagnosing the network.
  Select the network to be diagnosed.

[Description]

1) $\boxed{\text{Change Module}}$ button
Clicking this button displays the Select diagnostics destination dialog box.
The module in the network to be diagnosed can be changed.

2) Select station enter/display field
To change the selected station, enter a station number to be changed and click
the $\boxed{\text{Change select station}}$ button.
The status of the selected station is displayed on 13) Select station network
device status display.

3) $\boxed{\text{Change select station}}$ button
Clicking this button sets the station whose number was specified at 2) Select
station enter/display field as the selected station.

4) $\boxed{\text{Start monitor}}$ button
Clicking this button starts automatic update on the CC IE Control diagnostics
screen.

5) $\boxed{\text{Stop monitor}}$ button
Clicking this button stops automatic update on the CC IE Control diagnostics
screen.

6) Network info display field
Displays the network information on own station set on the Transfer setup
screen.
The status of each station is indicated by an icon.
The description is as follows.*1

Icon		Station status
Module	Board	
		Normally operating station
		Faulty station (Cyclic transmission is stopped.)
		Faulty station (Although cyclic transmission is in operation, an error has occurred in the module or cable.)
		Station in shared group that does not include the own station (Cyclic data are not received.)
	—	Disconnected station (black)
	—	Reserved station (gray)
		Selected station (station icon edged with green)
		Focusing (station icon edged with dotted line)

*1: "Undef." is displayed above the icon, when "Specify station No. by program"
is selected for Station No. specify setting in the network parameter, but a
station number is not set in the program.

Clicking an icon sets the station as the selected station.
Double-clicking an icon displays the System Monitor screen corresponding to
the station.
Focus can be moved using the left and right arrow keys and the selected station
can be fixed with the space key.

7)   Prev / Next buttons
Switches screens when the total number of stations is 61 or more.

8)   Communication test button
Clicking this button displays the Communication test screen.
The communication path from the connected station to the specified destination station can be checked.

9)   Link start/stop button
Clicking this button displays the Link start/stop screen.
Data link to the specified station can be started/stopped.

10)   Logging button
Clicking this button displays the Logging screen.
Communication path switch information and transient transmission error in the connected station can be monitored.
The monitored information can be saved to a file.

11)   System monitor button
Clicking this button displays the System Monitor screen.
The system status of the selected station can be checked.

12)   Remote operation button
Clicking this button displays the Remote operation screen.
Remote operations to the programmable controller of the selected station can be performed.

13) Select station network device status display
The status of the CC-Link IE controller network module mounted to the selected station or connection cable for the station is displayed.
When an error occurs, "Error occurs." shown below is displayed.
An animated icon and a button for showing the error detail are displayed at the error location.
Clicking the button displays the detail and cause of the error and troubleshooting.

POINT

- When [Other station] is set on the Transfer Setup screen, CC IE Control diagnostics cannot be executed.
- For details of CC IE Control diagnostics, refer to the CC-Link IE Controller Network Reference Manual.

21.4 Running CC-Link, CC-Link/LT Diagnostics

CC-Link, CC-Link/LT diagnostics monitor the network information of each station and diagnose and test the network status.

CC-Link diagnostics can be run via the programmable controller when the CC-Link module is the master station/standby master station/local station.

> POINT
>
> - QCPU (Q mode) diagnoses QJ61BT11 only in the CC-Link system.
> - QCPU (Q mode) diagnoses QJ61CL12 only in the CC-Link/LT system.
> - Use the AJ61BT11/A1SJ61BT11 module with the QCPU-A.
> - Do not perform the following functions simultaneously from sequence programs or peripherals. If they are performed simultaneously, each function may not be performed properly.
>   - Data link start/stop
>   - Setting/cancelling of temporary error invalid station
>   - Line test
> - When refresh parameters have been created in a sequence program for the A series, Data link start and Monitoring Other station, Network test are disabled.

21.4.1 Monitoring the line (own station)

A	Q/QnA	QS	FX
○	○＊	○	×

＊: Compatible with the MELSECNET/H remote station.

[Purpose]
Monitors the own station line of CC-Link connected to the programmable controller.

[Operating Procedure]
Select [Diagnostics] → [CC-Link / CC-Link LT diagnostics].

[Dialog Box]
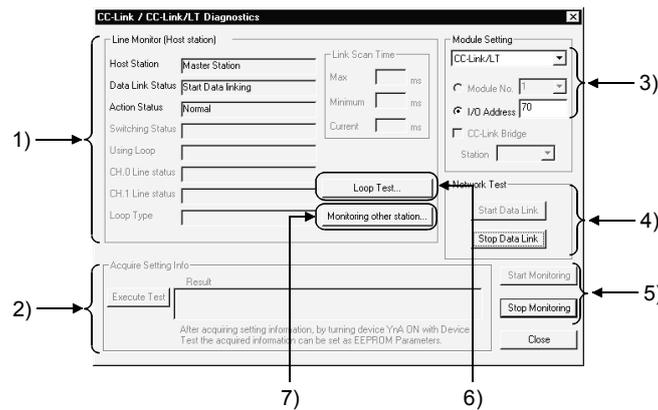
[Description]
1) Line Monitor (Host station)
   Displays the status of the host station. (Contents of link special relays and link special registers)

2) Acquire the setting information (A/QnA series only)
   Executing this item sets the CC-Link system status set to the work area of the CC-Link module.

3) Module setting
   Select the CC-Link or CC-Link/LT to be monitored. (QCPU (Q mode) only)

   Module No.
   The setting is valid for CC-Link.
   As the first to fourth modules, specify the modules set in [*].

   I/O address No.
   Specify the I/O address of the master module to be monitored.

POINT

About module number setting

When the A/QnA series module of function version A is used or the CC-Link/LT is specified, the number of modules cannot be set, and therefore, make setting with the I/O address.

CC-Link Bridge
This setting is required to diagnose CC-Link bridge module.
CC-Link bridge module cannot be diagnosed if "CC-Link/LT" is selected. To diagnose CC-Link bridge module, select "CC-Link".
Monitoring CC-Link bridge module cannot be started while monitoring CC-Link.
Always start monitoring CC-Link bridge module after stopping monitoring CC-Link.

4) Network test (Test cannot be conducted when MELSECNET/H remote station is installed)
A data link start/stop is made for the CC-Link modules (all stations specified) set in Unit setting.

IMPORTANT

In the following system configuration, making a "data link stop" for the master station disables communications from GX Developer.
To make a data link start or resume communications from GX Developer, the programmable controller of the station whose data link was stopped must be reset.

Master station 0

Local station 1

CC-Link

Reset this programmable controller CPU.

GX Developer

---
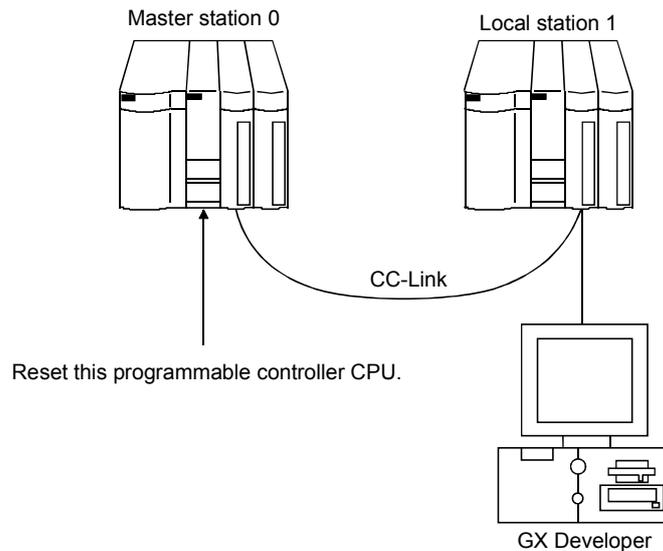
5) | Monitor start | / | stop | button
Used to start/stop the own station monitoring.

6) | Loop test | button
Refer to Section 21.4.2.

7) | Monitoring other station | button
Refer to Section 21.4.3.

POINT

Do not perform the line test simultaneously from sequence programs or peripherals.
If performed simultaneously, the line test may not be performed properly.

21.4.2 Conducting a line test

A	Q/QnA	QS	FX
○	○＊	○	×

＊: Compatible with the MELSECNET/H remote station.

[Purpose]
Tests all stations or the specified station.
Valid only when the master station has been specified in Transfer setup.

[Operating Procedure]
Select [Diagnostics] → [CC-Link / CC-Link LT diagnostics] → Loop test button.

[Dialog Box]
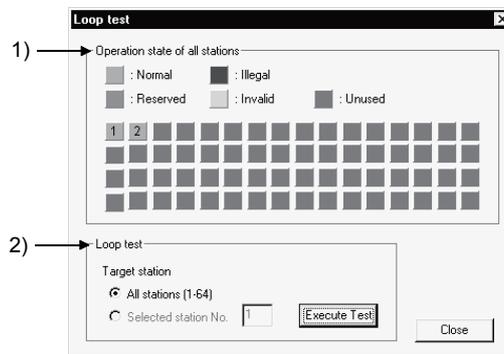
[Description]
1) All station monitor
   Monitors the operating statuses of all stations connected to the specified master module.
   Normal: Light blue, Illegal: Red, Reserved: Green, Invalid: Yellow, Unused: Gray

2) Loop test
   A line test is made by specifying the own station or another station (station number).
   All station: Test will be run on all 64 stations.
   Selected station: Test will be conducted on the specified stations.
   Specify the first one of the occupied stations.
   <Example>
   • When there are 4 and 2occupied stations connected

   | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | ....
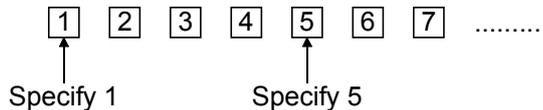
   Specify 1   Specify 5

   Specifying 2,3,4 or 6 will result in a faulty station.

POINT

Do not perform the line test simultaneously from sequence programs or peripherals.
If performed simultaneously, the line test may not be performed properly.

21.4.3 Monitoring the lines (other stations)

A	Q/QnA	QS	FX
○	○＊	○	×

＊: Compatible with the MELSECNET/H remote station.

[Purpose]
Monitors the other station lines of CC-Link connected to the programmable controller.
Can be executed only during Linking Data.

[Operating Procedure]
Select [Diagnostics] → [CC-Link / CC-Link LT diagnostics] →
Monitoring other station button.

[Dialog Box]
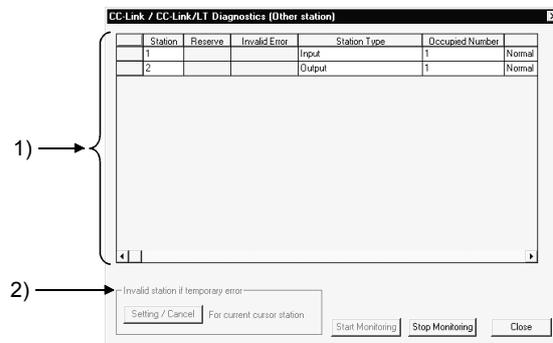
[Description]

1) Other station information
   Displays the other station information.
   If the host is a local station, other station monitor monitors the CC-Link mounting status and therefore the stations set as reserved stations are not displayed.
   If the CC-Link/LT has been selected, the reserve setting, error invalid setting, transient error, company name and temporary error invalid station setting are masked.

2) Invalid station if temporary error (Setting cannot be conducted when MELSECNET/H remote station is installed)
   A module is changed without the corresponding remote station being error-detected while it is online.

   The temporary error invalidation setting must be made by specifying the first station number.
   Therefore, when there is no parameter setting, the status and transient error information is shown on the assumption that one station occupies 32 points, and you must make this setting by specifying the station number for which you want to make the invalidation setting.
   (The invalidation setting is ignored if it is made for the station which is not in the first position of actual assignment.)

3) Maker code
- The maker name or maker code of the equipment connected by CC-Link is displayed.
- The maker code appears if the maker name is not entered in the maker code list.
- The remote I/O is displayed blank since it does not have a maker name and a maker code.
- The maker code list (PARTNER.DAT) is saved in the installation destination of GX Developer and can be edited using a text editor or like available on the market.
  Note that some maker codes may not be published for reasons of the partner makers.
  When editing the file on the user side, follow the specifications of the following file format.

| | Maker Code | Company Name |
		English version
Max. number of characters	5 characters	255 characters
Usable characters＊1	0 to 9	• Alphanumeric • Symbol
Remarks	Maker code not in 5 digits is ignored.	The display varies with the screen width. Up to about 75 characters in small font are displayed, but not more than that.

＊1: Any company name including , should be enclosed by "".
Example: "##### Co., Ltd."

The following is an example of displaying PARTNER.DAT using a text editor.

```
partner.dat - Notepad
File  Edit  Search  Help
00000,MITSUBISHI ELECTRIC CORPORATION
00001,MITSUBISHI ELECTRIC CORPORATION
00002,MITSUBISHI ELECTRIC CORPORATION
00003,MITSUBISHI ELECTRIC CORPORATION
```
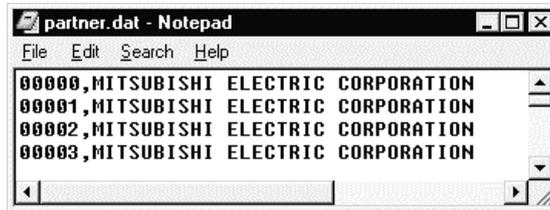
The following message appears if the maker code list does not exist in the installation destination of GX Developer or has been damaged.

```
MELSOFT series GX Developer
  The partner maker file was not able to read.
  There is a possibility damaging the file.Please install again.
        OK
```

POINT
Do not perform the temporary error invalid station setting simultaneously from sequence programs or peripherals. If performed simultaneously, the temporary error invalid station setting may not be performed properly.

21.5 Making Ethernet Diagnostics

You can check various settings of the Ethernet module.
For details, refer to the sections which explain the error codes and buffer memory in the corresponding items of the following manuals.
- Q-Compatible Ethernet Interface Module User's Manual (Fundamentals)
- QnA-Compatible Ethernet Interface Module User's Manual (Details)
- AJ71E71-S3, A1SJ71E71-B2-S3, A1SJ71E71-B5-S3 Ethernet Interface Module User's Manual (Details)

21.5.1 Ethernet diagnostics

A	Q/QnA	QS	FX
○	○＊1	○＊2	×

＊1: Compatible with the MELSECNET/H remote station.
＊2: Only compatible with the QSCPU whose first 5 digits of serial number is "10032" or higher.

[Purpose]
You can check the parameter status, error log, status of each connection, status of each protocol, LED status, received e-mail information and send e-mail information.

[Operating Procedure]
Select [Diagnostics] → [Ethernet diagnostics].

[Dialog Box]
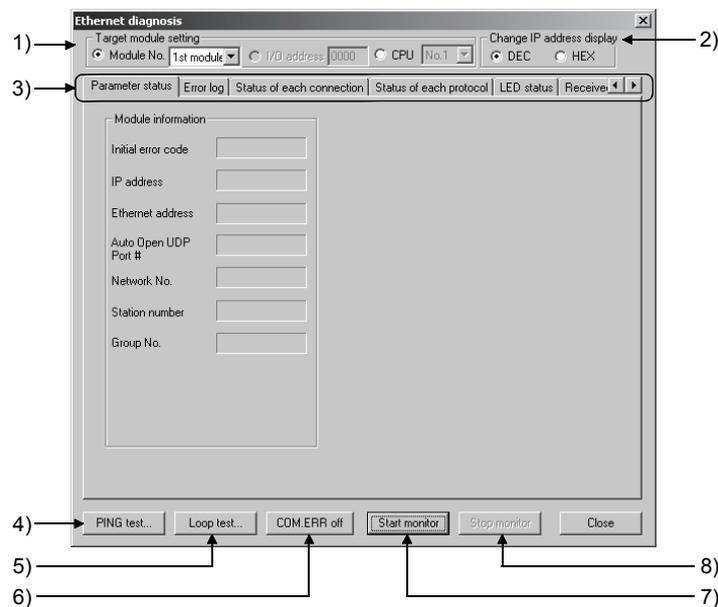
[Description]
1) Target module setting
    Specify the Ethernet module or CPU to be monitored.
    The setting range is 1 to 4 modules.
    When the A/QnA series module of function version A is used, the number of
    modules cannot be set. Set the I/O address.
    The setting range of CPU is from CPU No.1 to 4.

2) Change IP address display
    Change the IP address indication between decimal and hexadecimal.

3) Selection of information monitor
    Various information on the Ethernet module can be monitored.

4) PING test button
    Used to perform a PING test on the equipment on other end.
    Refer to Section 21.5.11.

5) Loop test button
    Used to perform a loopback test on the network.
    Refer to Section 21.5.12.

6) COM. ERR off button
    Click this button to extinguish the [COM ERR] LED.

7) Start monitor button
    Click this button to start Ethernet diagnostics.
    The display is updated during monitoring.

8) Stop monitor button
    Click this button to stop Ethernet diagnostics.
    The display is held during monitoring stop.

21.5.2 Parameter status

A	Q/QnA	QS	FX
○	○＊1	○＊2	×

＊1: Compatible with the MELSECNET/H remote station.
＊2: Only compatible with the QSCPU whose first 5 digits of serial number is "10032" or higher.

[Purpose]
  Monitors the parameter status of the Ethernet module.

[Operating Procedure]
  Select [Diagnostics] → [Ethernet diagnostics] → <<Parameter status>> tab.

[Dialog Box]

  For Q series
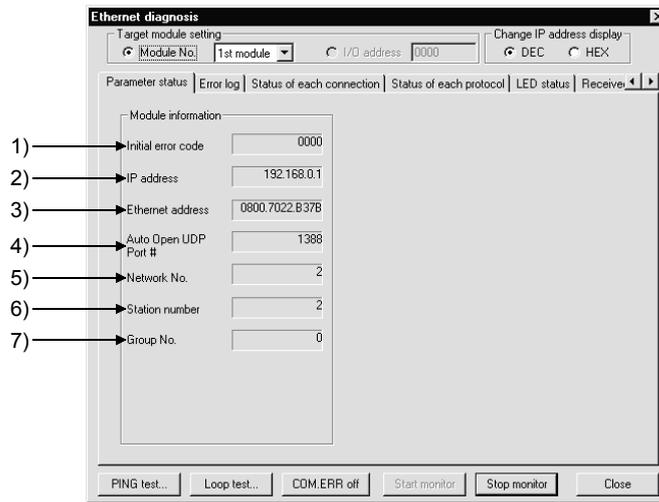
  For QnA series
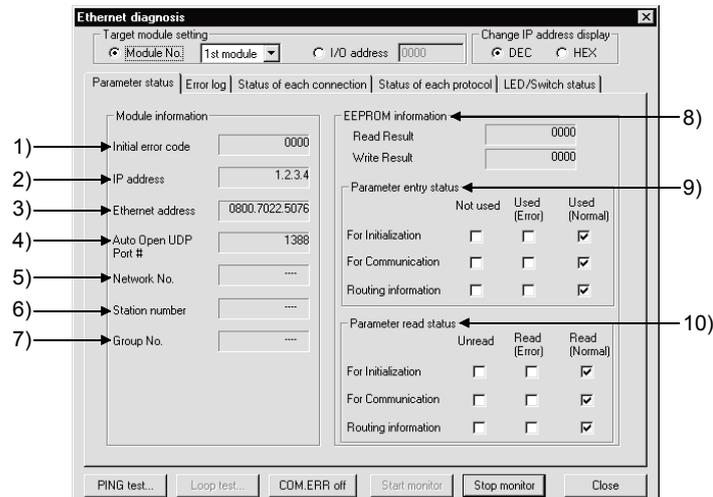
For A series
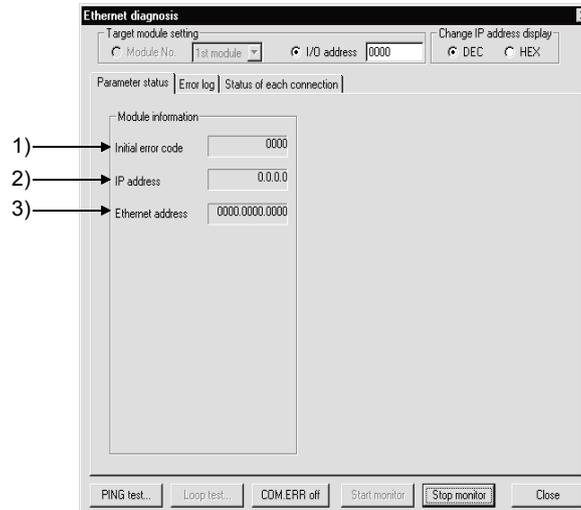
For Built-in Ethernet port QCPU
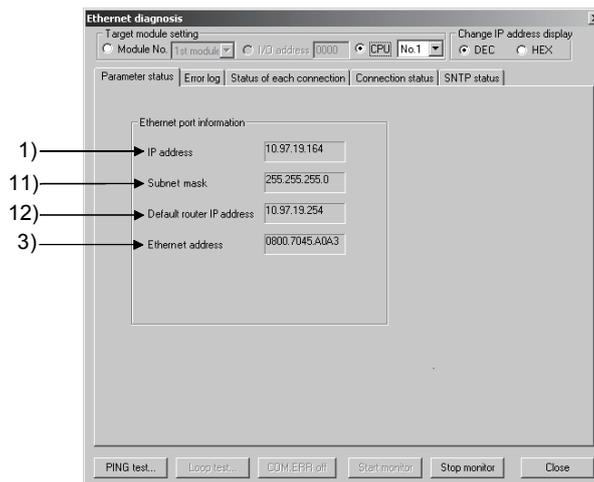
[Description]
  1) Initial error code
      Displays the initial error code.

  2) IP address
      Displays the own station IP address.

  3) Ethernet address
      Displays the own station Ethernet address.

  4) Auto Open UDP Port #
      Displays the automatic OPEN UDP port number.

  5) Network No.
      Displays the target module-specified network number.

  6) Station number
      Displays the target module-specified station number.

7) Group No.
Displays the target module-specified group number.

8) EEPROM information
0000 appears when normal.
The error code appears when abnormal.
Refer to the manual of the corresponding model and take corrective action.

9) Parameter entry status
Displays the preset parameter status.

10) Parameter read status
Displays the preset parameter status.

11) Subnet
Displays the subnet mask.

12) Default router IP
Displays the default router IP address.

21.5.3 Error log

A	Q/QnA	QS	FX
◯	◯＊1	◯＊2	×

＊1: Compatible with the MELSECNET/H remote station.
＊2: Only compatible with the QSCPU whose first 5 digits of serial number is "10032" or higher.

[Purpose]
Monitors the error log area.

[Operating Procedure]
Select [Diagnostics] → [Ethernet diagnostics] → <<Error log>> tab.

[Dialog Box]

For Q/QnA series
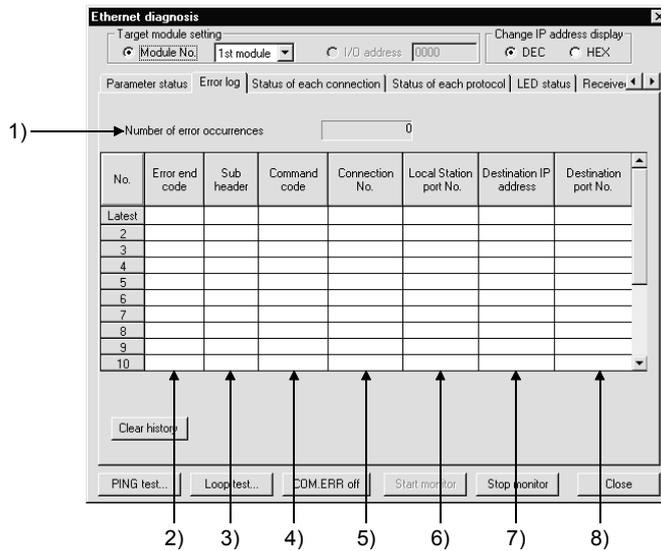
For A series
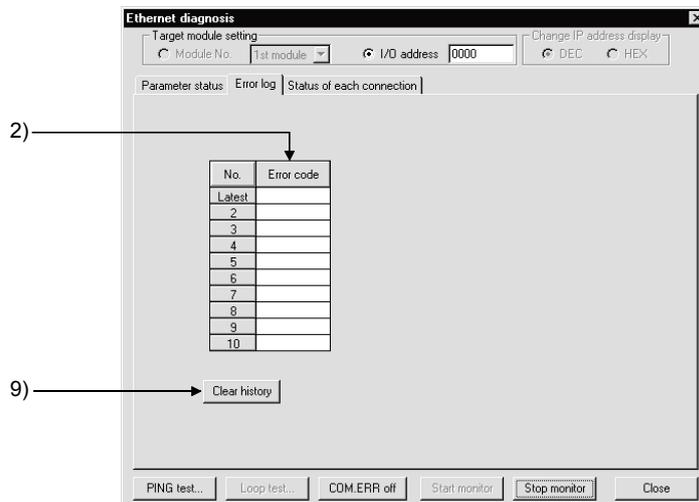
For Built-in Ethernet port QCPU
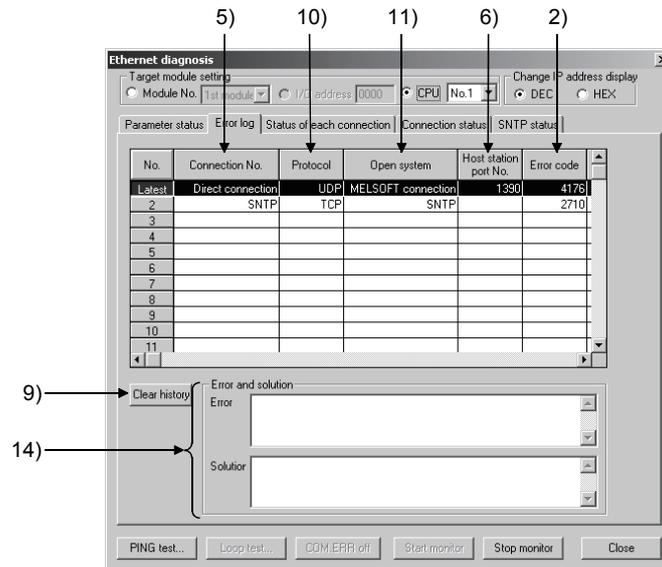
[Description]

1) Number of error occurrences
   Displays the number of error occurrences.

2) Error end code
   Displays the error/termination code.
   Displays only the error code for the A series and Built-in Ethernet port QCPU.

3) Sub header
   Displays the sub header.

4) Command Code
   Displays the command code.

5) Connection No.
   Displays the connection number.

6) Local Station port No.
   Displays the own station port number.

7) Destination IP address
   Displays the IP address on the other end of communication.

8) Destination Port No.
   Displays the port number on the other end of communication.

9) Clear history button
   Clears the error history.

10) Protocol
    Displays the protocol.

11) Open system
    Displays the open system.

12) Year/Month/Day
    Displays the year/month/day of the error occurrence.

13) Time
    Displays the time of error occurrence.

14) Error and solution
    Displays the error description and its solution.

21.5.4 Status of each connection

A	Q/QnA	QS	FX
○	○＊1	○＊2	×

＊1: Compatible with the MELSECNET/H remote station.
＊2: Only compatible with the QSCPU whose first 5 digits of serial number is "10032" or higher.

[Purpose]
  Monitors the status of each connection.
  Up to numbers 16 are displayed for the Q series.
  Up to numbers 8 are displayed for the QnA/A series.

[Operating Procedure]
  Select [Diagnostics] → [Ethernet diagnostics] → <<Status of each connection>> tab.

[Dialog Box]
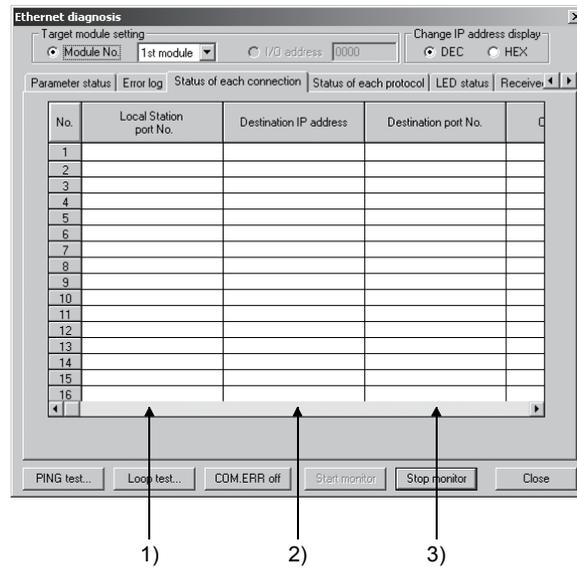
For Built-in Ethernet port QCPU
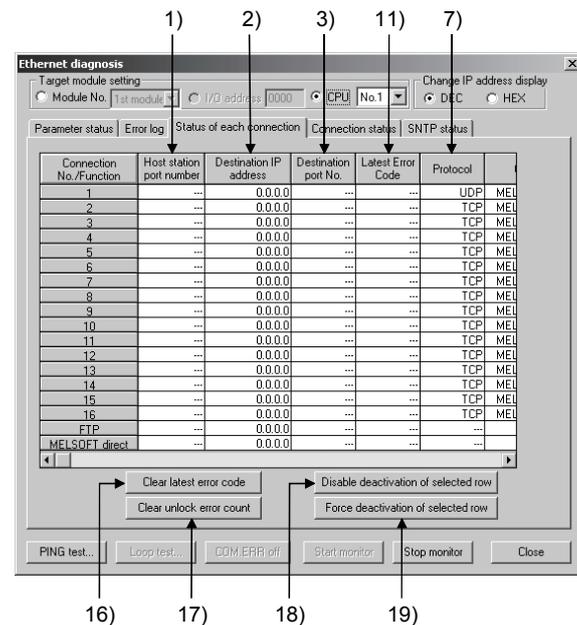
[Description]

1) Local Station port No.
Displays the own station port number.

2) Destination IP address
Displays the IP address on the other end of communication.

3) Destination port No.
Displays the port number on the other end of communication.

4) Open error code
Displays the open error code.

5) Fixed buffer transfer/reception error code
Displays the fixed buffer send error code.

6) Connection end code
Displays the connection termination code.

7) Protocol
Displays the UDP or TCP.

8) Open system
Displays Active, Unpassive or Full passive.
Displays MC protocol or MELSOFT connection for the Built-in Ethernet port QCPU.

9) Pairing open
Displays whether pairing is made or not.

10) Existence confirmation
Displays whether check is made or not.

11) Latest Error Code
Displays the error code.

12) TCP status
Displays the TCP status when the protocol is TCP.

13) Remote password status
Displays the remote password status.

14) Unlock error count
Displays the count of abnormal unlock completions.

15) Forced deactivation status
Displays the status of whether the connection is allowed.

16) [Clear latest error code] button
Clears the latest error code.

17) [Clear unlock error count] button
Clears the unlock error count.

18) [Disable deactivation of selected row] button
Allows the connection of the selected row.

19) [Force deactivation of selected row] button
Disallows the connection of the selected row.

21.5.5 Connection status

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Compatible with the Built-in Ethernet port QCPU only.

[Purpose]
Monitors the connection status.

[Operating Procedure]
[Diagnostics] → [Ethernet diagnostics] → <<Connection status>>

[Dialog Box]
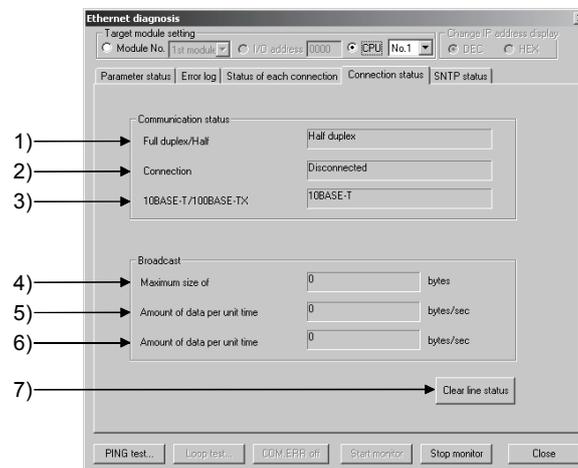
[Description]

1) Full duplex/Half
Displays Full duplex or Half duplex for the communication.

2) Connection
Displays the connection status.

3) 10BASE-T/100BASE-TX
Displays 10BASE-T or 100BASE-TX for the communication speed.

4) Maximum size
Displays the maximum size of detection.

5) Amount of data per unit time (latest)
Displays the amount of latest data per unit time.

6) Amount of data per unit time (maximum)
Displays the maximum amount of data per unit time.

7) | Clear line status | button
Clears the connection status.

21.5.6 SNTP status

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Compatible with the Built-in Ethernet port QCPU only.

[Purpose]
  Displays the execution of the time setting and the result of the setting.

[Operating Procedure]
  [Diagnostics] → [Ethernet diagnostics] →<<SNTP status>>

[Dialog Box]
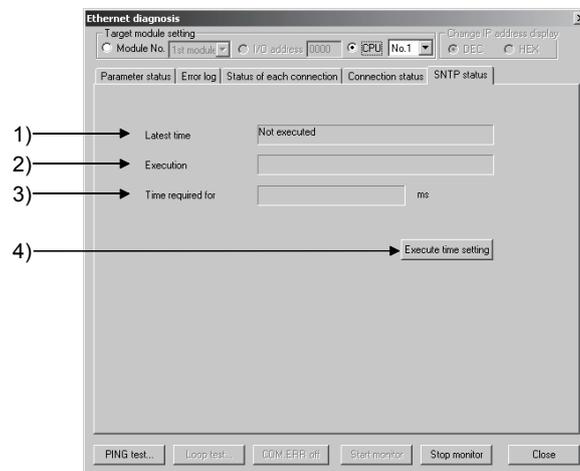
[Description]
  1) Latest time
      Displays the result of whether the time setting was successful or not.

  2) Execution
      Displays the executed date and time of the time setting.

  3) Time required for
      Displays the required response time.

  4) | Execute time setting | button
      Executes the time setting.
      After the execution, the contents in 1), 2), and 3) are cleared.

> POINT
>
> In order to execute the time setting, set the IP address of the SNTP server on
> the network to the parameter.

21.5.7 Status of each protocol

| A	Q/QnA	QS	FX
×	○＊1	○＊2	×

＊1: Compatible with the MELSECNET/H remote station.
＊2: Only compatible with the QSCPU whose first 5 digits
 of serial number is "10032" or higher.

[Purpose]

Monitors the status of each protocol.

[Operating Procedure]

Select [Diagnostics] → [Ethernet diagnostics] → <<Status of each protocol>> tab.

[Dialog Box]

1)   2)   3)   4)
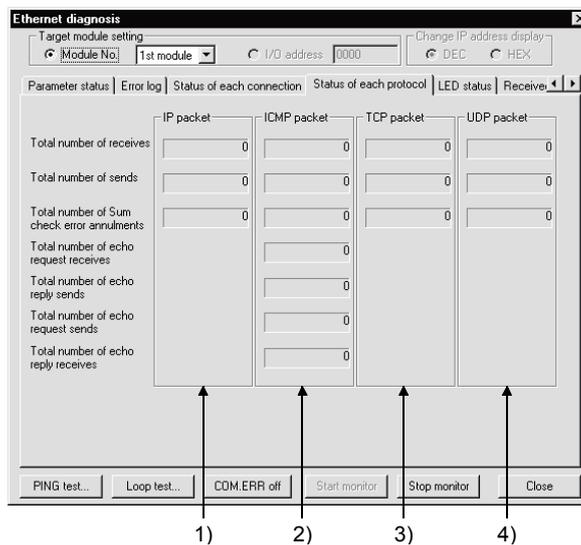
[Description]

1)   IP Packet

Total number of receives......Displays the total number of receive IP packets.

Total number of sends   ......Displays the total number of send IP packets.

Total number of Sum   ......Displays the number of times when the receive IP
check error annulments   packets were discarded due to sumcheck error.

2) ICMP Packet
Total number of receives......Displays the total number of receive ICMP
                              packets.
Total number of sends.........Displays the total number of send ICMP packets.
Total number of Sum
check error annulments........Displays the number of times when the receive
                              ICMP packets were discarded due to sumcheck
                              error.
Total number of
echo request receives ....Displays the total number of receive ICMP's echo
                              requests.
Total number of
echo reply sends..................Displays the total number of send ICMP's echo
                              replies.
Total number of
echo request sends ....Displays the total number of send ICMP's echo
                              requests.
Total number of
echo reply receives..............Displays the total number of receive ICMP's echo
                              replies.

3) TCP Packet
Total number of receives......Displays the total number of receive TCP packets.
Total number of sends.........Displays the total number of send TCP packets.
Total number of Sum
check error annulments........Displays the number of times when the receive
                              TCP packets were discarded due to sumcheck
                              error.

4) UDP Packet
Total number of receives......Displays the total number of receive UDP packets.
Total number of sends.........Displays the total number of send UDP packets.
Total number of Sum
check error annulments........Displays the number of times when the receive
                              UDP packets were discarded due to sumcheck
                              error.

21.5.8 LED status

A	Q/QnA	QS	FX
×	○*1	○*2	×

*1: Compatible with the MELSECNET/H remote station.
*2: Only compatible with the QSCPU whose first 5 digits
   of serial number is "10032" or higher.

[Purpose]
  Monitors the LED light-up status on the Ethernet module front.

[Operating Procedure]
  Select [Diagnostics] → [Ethernet diagnostics] → <<LED status>> tab.

[Dialog Box]
  Q series
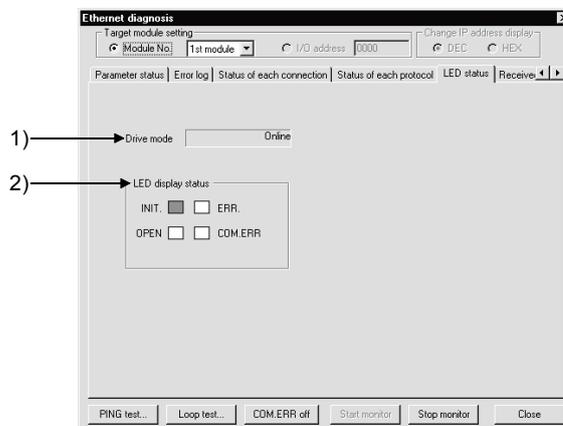
  QnA series
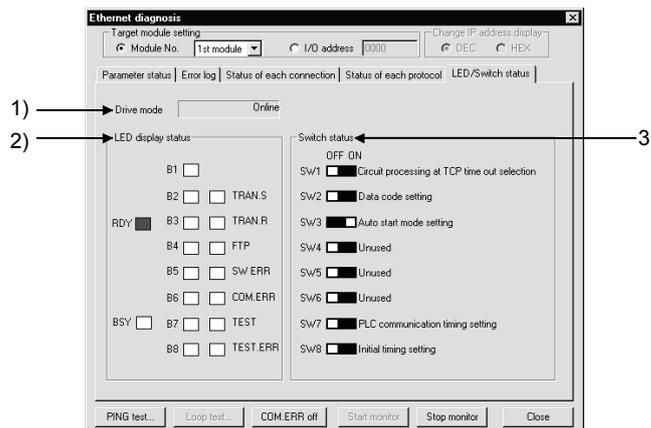
[Description]

1) Drive mode
   Displays the switch status (operation mode setting).
   A PLC communication error will occur if a RAM or ROM test is preset by the
   switch setting of the Ethernet module.

2) LED display status
   Displays the statuses of the INIT, OPEN, ERR. and COM.ERR LEDs.

3) Switch status (QnA series only)
   Displays the DIP switch statuses of the QE71.

21.5.9 Received e-mail information

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with the QCPU (Q mode) and MELSECNET/H remote station.

[Purpose]
Monitors the received e-mail information.

[Operating Procedure]
Select [Diagnostics] → [Ethernet diagnostics] → <<Received e-mail information>> tab.

[Dialog Box]
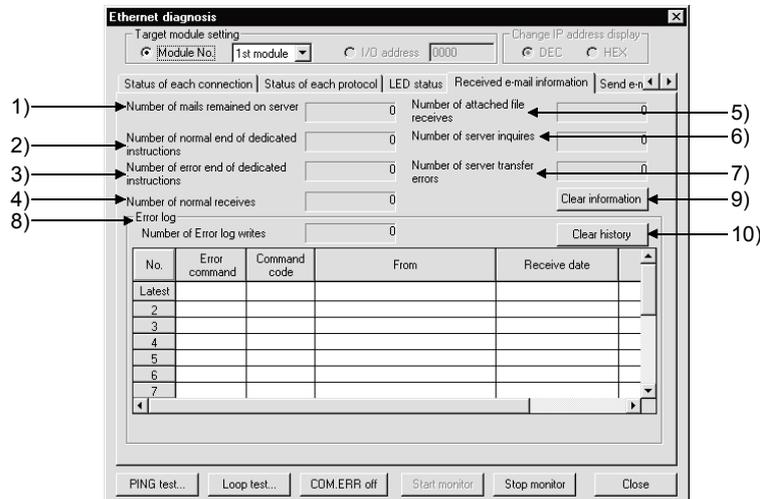
[Description]

1) Number of mails remained on server
Displays the number of mails remaining in the server.

2) Number of normal end of dedicated instructions
Displays the number of times when dedicated instructions were completed normally.

3) Number of error end of dedicated instructions
Displays the number of times when dedicated instructions were completed abnormally.

4) Number of normal receives
Displays the number of times when mails were received normally.

5) Number of attached file receives
Displays the number of times when attached files were received.

6) Number of server inquires
Displays the number of server inquiries.

7) Number of server transfer errors
Displays the number of server communication errors.

8) Error log
Displays the number of error log write times.
The error log items are indicated below.
- Error command
- Command code
- Sender
- Receiving date/hour
- Subject

9) Clear information button
Clears the count to zero.

10) Clear history button
Clears the error log write count to zero and clears all error history.

21.5.10 Sent e-mail information

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with the QCPU (Q mode)
　 and MELSECNET/H remote station.

[Purpose]
　Monitors the send e-mail information.

[Operating Procedure]
　Select [Diagnostics] → [Ethernet diagnostics] → <<Send e-mail information>> tab.

[Dialog Box]
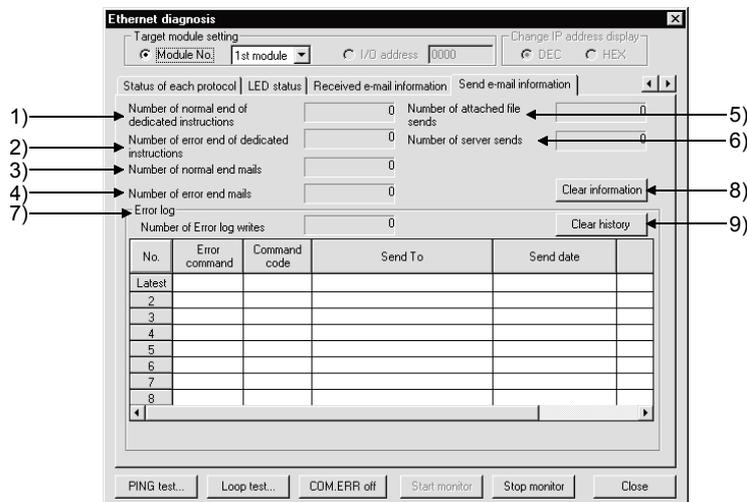
[Description]

1)　Number of normal end of dedicated instructions
　　Displays the number of times when dedicated instructions were completed normally.

2)　Number of error end of dedicated instructions
　　Displays the number of times when dedicated instructions were completed abnormally.

3)　Number of normal end mails
　　Displays the number of mails which were completed normally.

4)　Number of error end mails
　　Displays the number of mails which were completed abnormally.

5)　Number of attached file sends
　　Displays the number of times when attached files were sent.

6)　Number of server sends
　　Displays the number of server send times.

7) Error log
   Displays the number of error log write times.
   The error log items are indicated below.
   - Error command
   - Command code
   - Send destination
   - Sending date/hour
   - Subject

8) Clear information button
   Clears the count to zero.

9) Clear history button
   Clears the error log write count to zero and clears all error history.

21.5.11 PING test

A	Q/QnA	QS	FX
○	○	○∗	×

∗: Only compatible with the QSCPU whose first 5 digits of serial number is "10032"or higher.

[Purpose]

This test checks the Ethernet module which has completed initial processing on the Ethernet line or the existence of the specified IP address.

A PING test can be conducted either via an Ethernet board or in direct connection with the programmable controller.

[Operating Procedure]

Select [Diagnostics] → [Ethernet diagnostics] → PING test button.

Select [Diagnostics] → [Ethernet diagnostics] → Loop back test button → PING test button.

[Required Setting Items]

- Before starting a PING test, always set the Ethernet parameters and MNET/10 routing information.
  Refer to Section 16.2.1 for the setting example.
  For settings in the Station No. ↔ IP information screen, refer to the Q Corresponding Ethernet Interface Module User's Manual (Application).
- Make sure that the RUN and INIT LEDs of the Ethernet module are lit.

[PING Test Image Diagram]

- A PING test from GX Developer is valid for the Q, QnA and A series Ethernet modules.
- Performing a PING test on the system consisting of the Q series allows you to check:
- (1) Whether the line between the own station and the equipment on other end are connected properly.
- (2) Whether parameter setting for the own station Ethernet modules was made properly.
- (3) Whether initial processing for the own station Ethernet modules was completed normally.

Via Ethernet board (Q, QnA, A series)

Station number

Station number 2   Station number 1
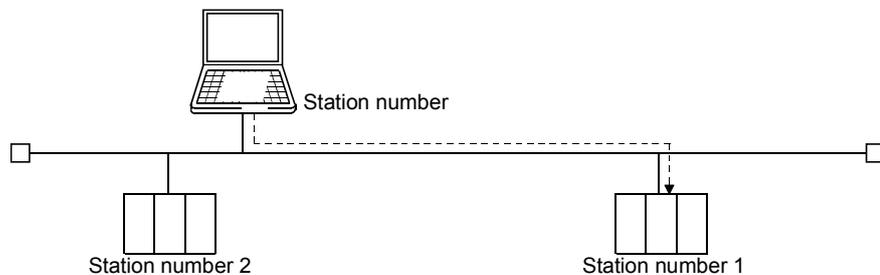
A PING test can be made only within the same segment.

In direct connection with the programmable controller (Q series only)
In direct connection with the programmable controller, a PING test can be
conducted only when the connected Ethernet module (station number 3 in the
following system example) is the Q series E71 (function version B).
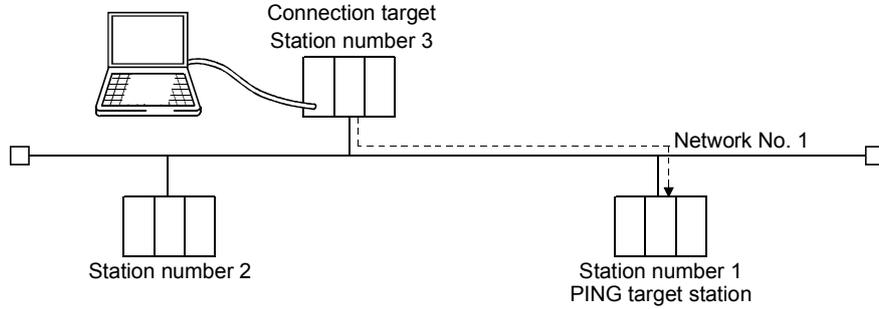
A PING test can be made only on the Ethernet module in the same segment as that
of the PING test target station.
Make the connection setup setting as shown below to conduct a PING test on
station number 2 of network No. 2 in the following system configuration.
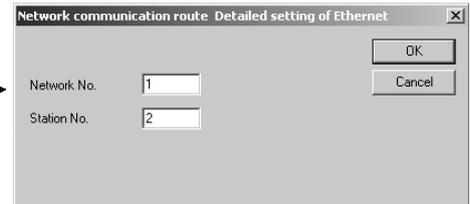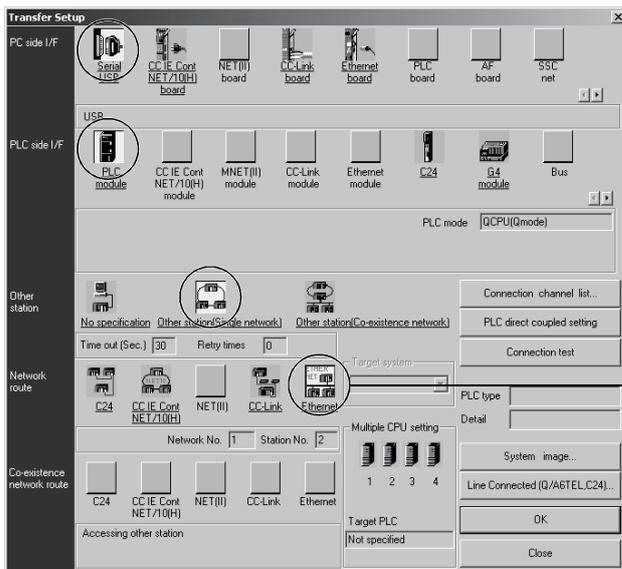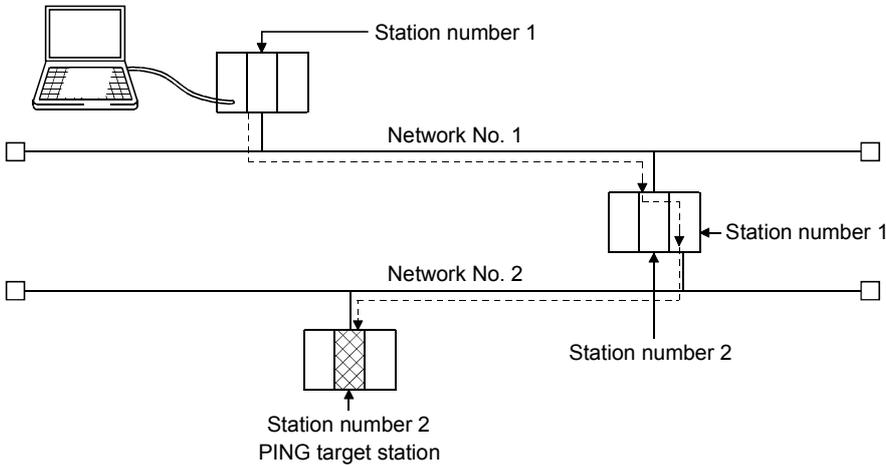
POINT

A PING test cannot be made via the MELSECNET/10, MELSECNET/H, CC-
Link, computer link or the like.

[Dialog Box]
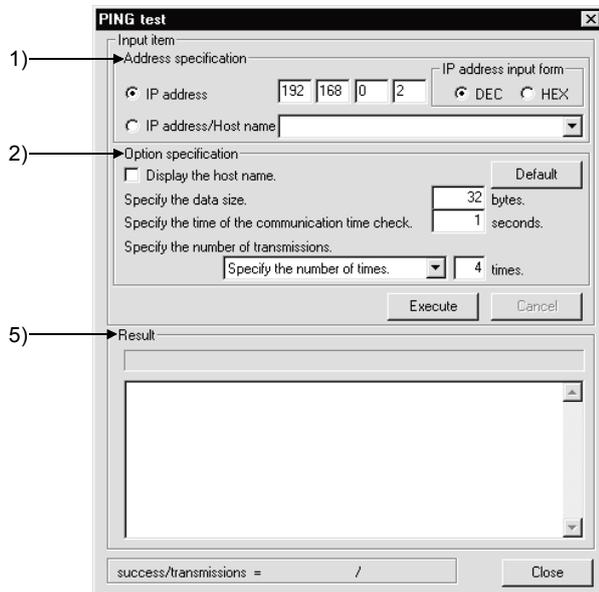
Ethernet board | When directly connecting programmable controller
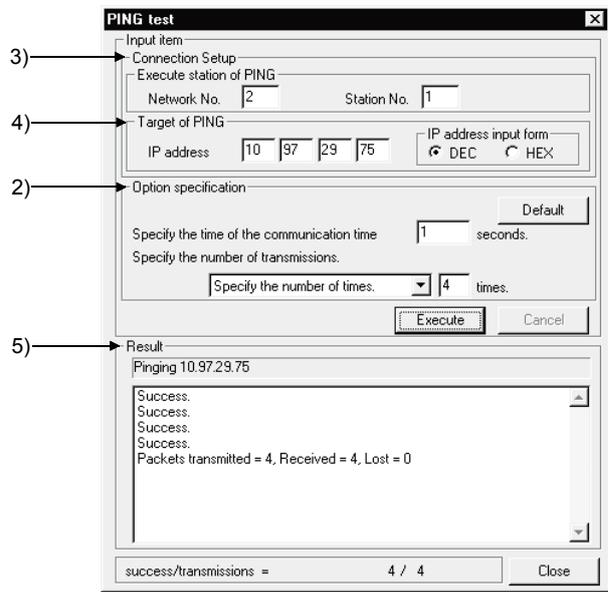
[Description]

1) Address specification
   Set the IP address of the module to be PING tested.

2) Option specification
   Turning on Display the host name displays the host name in Result.
   The range setting for specifying the data size is 1 to 8192 bytes.
   Communication time check period: 1 to 30 seconds
   Send count: 1 to 50 times or executed until a stop.

3) Execute station of PING
   Set the network number and station number to be PING tested.

4) Target of PING
   Set the IP address of the Ethernet module to be tested.

5) Result
   Ethernet board
     When OK
     Pinging Host name [192.168.0.2] with 32 bytes of data:
     Reply from 192.168.0.2: bytes = 32 time < 10ms TTL = 32
     When NG
     Request timed out.
   When directly connecting programmable controller
     When OK
     Success
     Packet transmitted = 4, Received = 4, Lost = 0
     When NG
     Timeout
     Packets transmitted = 4, Received = 0, Lost = 4

21.5.12 Loopback test

A	Q/QnA	QS	FX
×	○∗1	○∗2	×

∗1: Compatible with the QCPU (Q mode).
∗2: Only compatible with the QSCPU whose first 5 digits
of serial number is "10032" or higher.

[Purpose]
This test sends a loopback test message to the Q-compatible E71s (function version B) of the specified network number and station number in due order to check whether the initial processing of each module has been completed.
A loopback test is compatible with only the function version B of the Q-compatible E71.
The response of the Q-compatible E71 of function version A and the QnA/A series Ethernet modules are handled as no response if they are connected actually.
A loopback test can be conducted either via an Ethernet board or in direct connection with the programmable controller.

[Operating Procedure]
Select [Diagnostics] → [Ethernet diagnostics] → Loopback test button.

[Required Setting Items]
- Before starting a loopback test, always set the Ethernet parameters and MNET/10 routing information.
  Refer to Section 16.2.1 for the setting example.
- Make sure that the RUN and INIT LEDs of the Ethernet modules are lit.

[Loopback Test Image Diagram]
Via Ethernet board
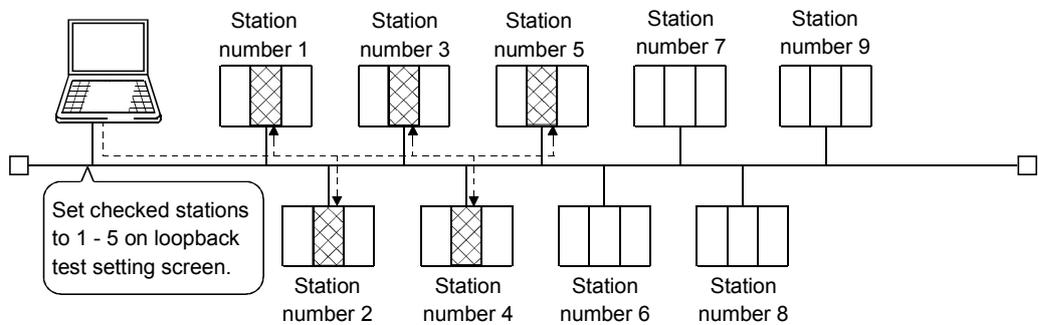
A loopback test can be made on the other network No.
If a loopback test is performed on station numbers 2 to 4 of network No. 2 in the following system configuration, the response of station 2 acting as a test conducting station is handled as "no response".
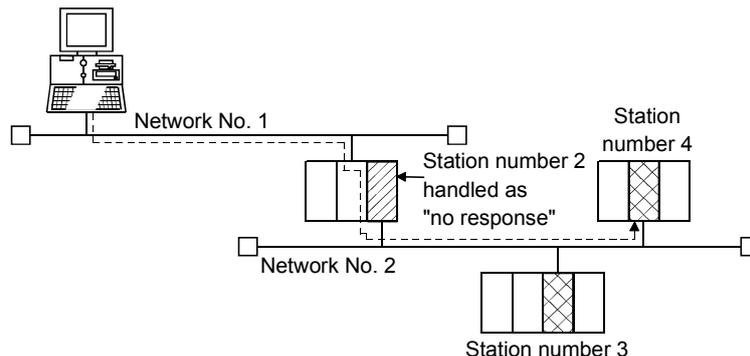
In direct connection with programmable controller
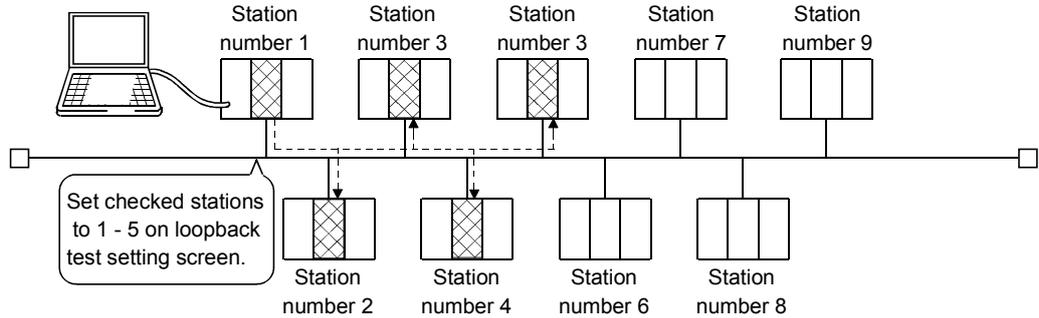
A loopback test can be made only on the Ethernet modules of the loopback test target network No.

Make the connection setup setting as shown below to conduct a loopback test on the Ethernet modules of network No. 2 in the following system configuration.
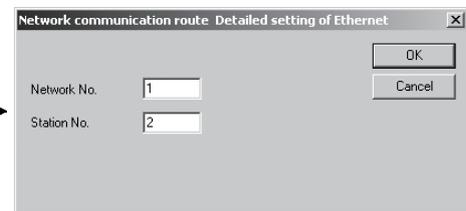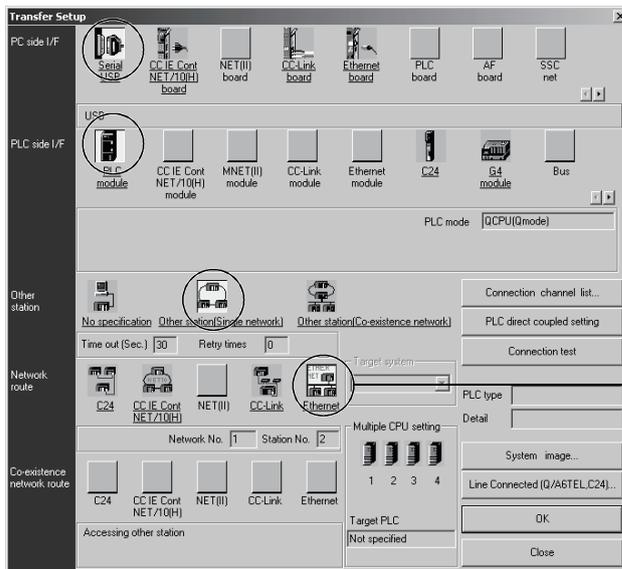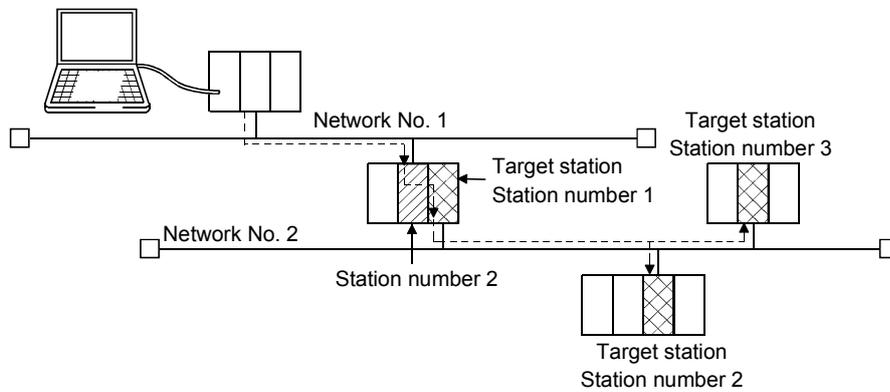
POINT

A loopback test is valid for only the system consisting of Ethernet only.
A loopback test cannot be made via the MELSECNET/10, MELSECNET/H, CC-Link, computer link or the like.

[Dialog Box]

```
Loop back test                                    [X]
 ┌─Setting Item──────────────────────┐  ┌──────────┐
                                          │  Execute  │
 1)──→Network No.        [    1   ]       └──────────┘
                   Starting node  End node ┌──────────┐
 2)──→Number of        [   1  ].. [   5  ] │  Cancel   │
      confirmation node                    └──────────┘
                                          ┌──────────┐
 3)──→Check at          [  10  ] seconds. │ PING test...│
      communication time                  └──────────┘
 └──────────────────────────────────┘
 ┌─Result────────────────────────────┐  ┌──────────┐
 4)──→                                    │  Close    │
    ┌──────────┬──────────────────┐▲     └──────────┘
    │Station No.│IP address/Error code│    ┌─IP address Change display─┐
    │          │                  │     │ (•) DEC   ( ) HEX │
    │          │                  │     └───────────────────┘
    │          │                  │
    │          │                  │
    │          │                  │
    │          │                  │
    │          │                  │
    │          │                  │
    │          │                  │      Number of response nodes
    │          │                  │▼     ┌───────────────┐
    └──────────┴──────────────────┘      └───────────────┘
 └───────────────────────────────────────────────────────┘
```
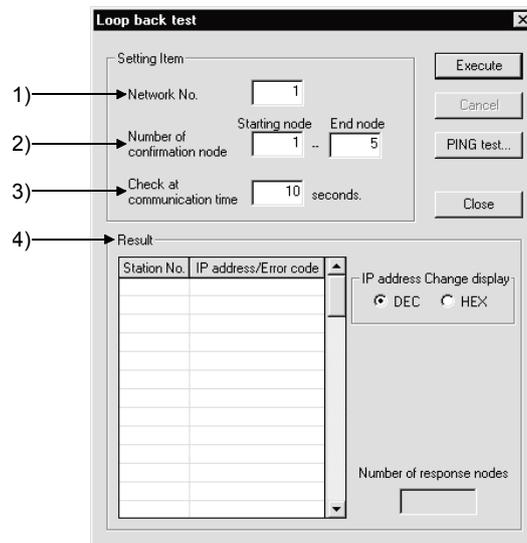
[Description]

1) Network No.
   Set the network number to be loopback tested.
   The setting range is 1 to 239.

2) Number of confirmation node
   Specify the station numbers you want to check.
   The setting range is 1 to 64.

3) Check at communication time
   The setting range is 1 to 99 seconds.
   The Ethernet parameters have TCP re-send timer in | Initial settings | Unless the communication time check period setting of a loopback test is longer than the TCP re-send timer setting, the Ethernet module may be regarded as non-existing if its connection is proper.

4) Result
   A loopback test is made in order, starting from station 1, and whether a response is given or not within the communication time check period is displayed in order of station numbers.
   Overlapping IP addresses, if any, are displayed red.

21.6 System Monitor

A	Q/QnA	QS	FX
×	○*	○	×

*: Compatible with QCPU (Q mode) and MELSECNET/H remote station.

[Purpose]
Monitors the system status of the programmable controller.
This function may be selected for the Q series only.

[Operating Procedure]
[Diagnostics] → [System monitor].

[Dialog Box]

For other than redundant CPU

For redundant CPU

[Description]
1) Installed status
   - Shows the special and similar modules loaded to the base selected among the main base and extension bases 1 to 7. (Double-clicking the model name indication shows the module detail information dialog box.)
   - The station number of the network module is displayed as "***", when "Specify station No. by program" is selected for Station No. specify setting in the network parameter, but a station number is not set in the program.
   - When the system is configured with the redundant CPU, the extension bases cannot be used.
   - When the A series is added to connect the special function modules of the A, "A intelli" appears on the screen.
   - The following table indicates the error status display categories for the programmable controller CPUs in a multi-CPU configuration.

Display Color	Category	Error Definition	Programmable Controller Status
Red	Major error	MAIN CPU down	CPU reset, etc.
Orange	Middle error	Stop error	Parameter error Instruction code error CPU STOP, etc.
Yellow	Minor error	Continuation error	Battery error Annunciator error ON CPU RUN enable error, etc.

2) Parameter status
   Shows the parameter settings written to the programmable controller. The parameters not set do not appear.

3) Base
   Normal bases are shown white and abnormal bases red.
   For the modules, refer to 4) Status.

4) Status
   - Unit system error
     Indicates that a module hardware fault (error equivalent to WDT error) has occurred or a module inoperative condition is detected.
   - Unit error
     Indicates that the environment required for the module to function is not completed. (Error equivalent to parameter error has occurred)
   - Unit warning
     Indicates inadequacy in user operation or sequence program (e.g. FROM, TO).
   - Module change
     Indicates that a module is replaced online.
   - Target system fault (for redundant CPU only)
     Indicates that the other redundant CPU connected with the monitor target redundant CPU by the tracking cable is faulty.

	Display Color	Programmable Controller Status	Remarks
Unit normal	White	RUN	
Unit system error	Red	STOP	
Unit error	Yellow	RUN	—
Unit warning	Orange	RUN	
Target system fault	Purple	RUN/STOP	Indicated by SM1610

5)   PLC diagnostics   button
Move the cursor to the special module displayed in Installed status and click
the   PLC diagnostics   button to show the Diagnostics screen.
The Diagnostics screen does not appear if the utility package has not been
installed.
For the diagnostic details of the corresponding special module, refer to the
manual of the corresponding utility.

<Example> Serial communication module monitoring
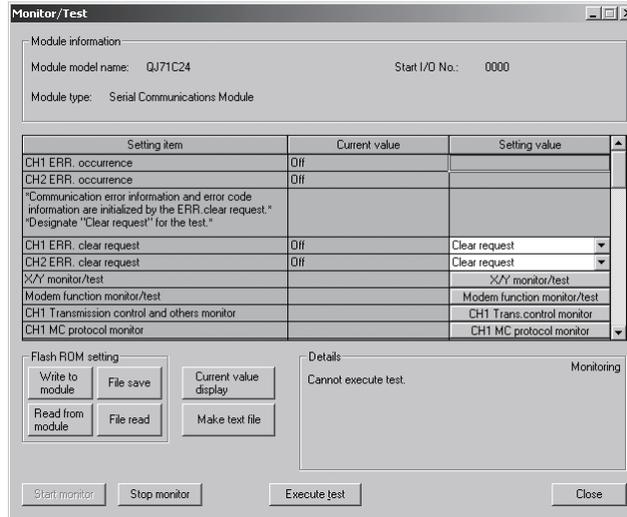
Note that the CC-Link IE controller network parameters need to be set in order
to display the CC IE Control diagnostics screen.
The following dialog box and the MELSECNET diagnostics screen are
displayed if the parameters are no set.
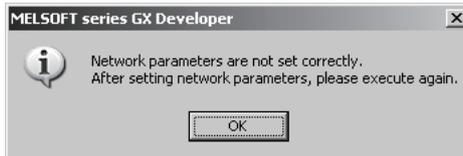
6)   │ Module Detail Information │ button
      When you choose the module model name displayed in Installed status, the
      following dialog box appears.
      "-B" in Product information indicates the function version of the module.

a) ────▶
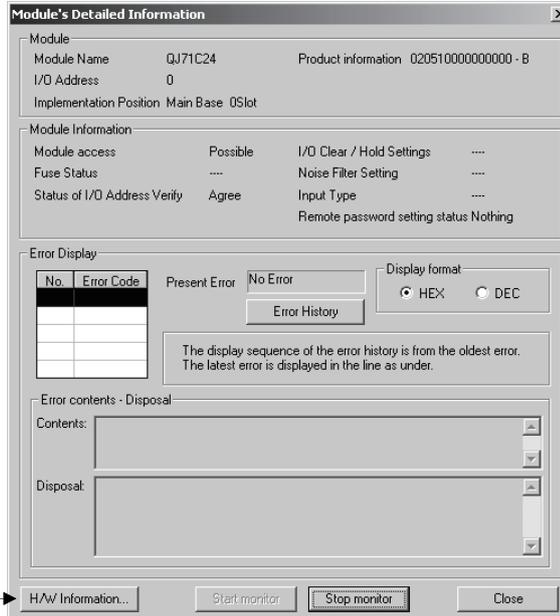
a)   │ H/W Information │ button
      H/W LED: As the module status is displayed, refer to the corresponding
                  module manual for details.
      H/W SW Information: Shows the hardware switch states.
      Data changes with the combination of GX Developer SW4D5-GPPW-E,
      GX Developer SW5D5-GPPW-E, GX Developer SW6D5-GPPW-E and
      module version.
      For details, refer to the corresponding module user's manual.
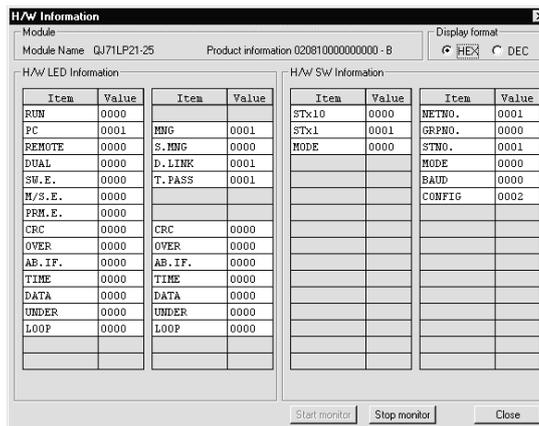
7) | Base Information | button
Shows the following information on the base.

```
Base Information                          ☒
 ─ Overall Information ──────────────────────
    Number of Base          1

    Number of Module        3

 ─ Base Information ─────────────────────────
    Base Name               Main Base

    Base Type               Q

    Number of Slot          8

    Number of Installed Module  3

                              ┌─────────┐
                              │  Close  │
                              └─────────┘
```
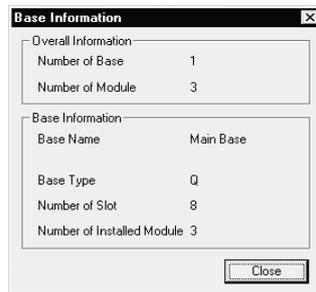
8) | Product Information List | button
Shows the product information list of the modules mounted on the base.
Product numbers are also displayed for the Universal model QCPU.

Slot	Type	Series	Model name	Points	I/O No.	Master PLC	Serial No	Ver.
PLC	PLC	Q	Q06HCPU	–	–	–	090120000000000	B
0-0	Intelli.	Q	QJ71GP21-SX	32pt	0000	–	090120000000000	B
0-1	–	–	None	–	–	–	–	–
0-2	–	–	None	–	–	–	–	–
0-3	–	–	None	–	–	–	–	–
0-4	–	–	None	–	–	–	–	–

| CSV file creating | | Close |
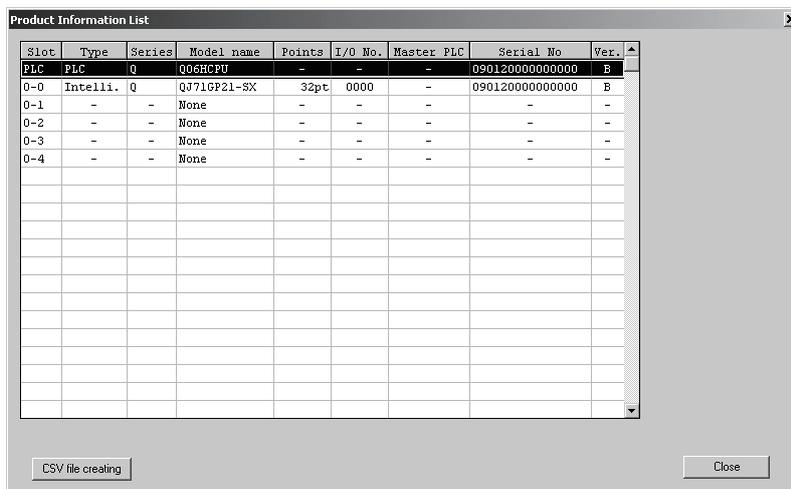
As clicking the | CSV file creating | button shows the [Save as] screen, set the file name.
The file can be opened using Excel or the like.

9) Mode
  - System monitor
    Choose when performing system monitor.
  - Online module change (can be selected only for the Process CPU, Redundant CPU and Remote I/O)
    Choose when making online module change.
    After the following confirmation dialog box for switching to the online module change mode has appeared, click the Yes button.
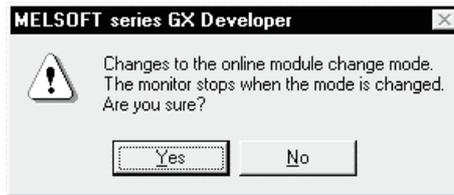
Refer to Section 21.7 for the explanation of online module change operation after the above operation.

10) Detailed inf. of power supply button
    Operating status of the power supply is displayed.
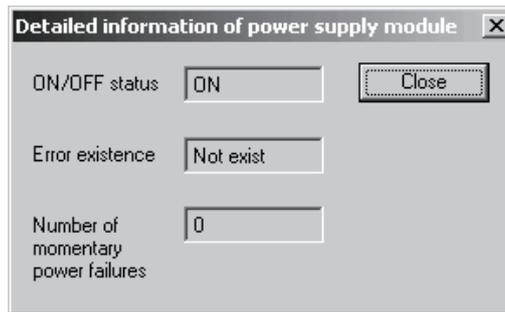
In the case of multiple CPU system, the information can be displayed only when specifying the connected destination as No.1 CPU.
To check the latest status, close this screen and then open it again.

11) Tracking cable status

  - Memory copy status
    Indicates the progress of the memory copy status.

  - Tracking cable fault
    Indicates the faulty status when the tracking cable becomes faulty.
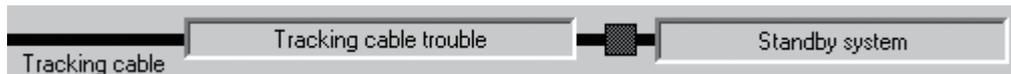
```
┌─────────────┐
│   POINT     │
└─────────────┘
```

(1) The following table appears if there are differences between PLC parameter I/O assignment and actual Installed status. Therefore, set the PLC parameter I/O assignment to meet the actual Installed status.

System monitor display status

Assignment	Actual Loading	Empty	Input	Output	Intelli
0 empty points	Installed status	Unmounting	m input points	m output points	m intelli points
	Parameter status	0 empty points	0 empty points	0 empty points	0 empty points
n empty points	Installed status	Unmounting	m input points	m output points	m intelli points
	Parameter status	n empty points	n empty points	n empty points	n empty points
0 input points	Installed status	Unmounting	m input points	m output points	m intelli points
	Parameter status	0 empty points	0 empty points	0 empty points	Assignment error
n input points	Installed status	Unmounting	m input points	m output points	m intelli points
	Parameter status	n empty points	n input points	n input points	Assignment error
0 output points	Installed status	Unmounting	m input points	m output points	m intelli points
	Parameter status	0 empty points	0 empty points	0 empty points	Assignment error
n output points	Installed status	Unmounting	m input points	m output points	m intelli points
	Parameter status	n empty points	n output points	n output points	Assignment error
0 intelli points	Installed status	Unmounting	m input points	m output points	m intelli points
	Parameter status	0 empty points	Assignment error	Assignment error	Assignment error
n intelli points	Installed status	Unmounting	m input points	m output points	m intelli points
	Parameter status	n empty points	Assignment error	Assignment error	n intelli points
No assignment	Installed status	Unmounting	m input points	m output points	m intelli points
	Parameter status	p empty points	m input points	m output points	m intelli points

n points : Number of assignment points
m points : Number of actual loading points
p points : Number of empty slot points

(2) When performing the system monitor for the power supply redundant system
When monitoring the system of the following condition, [Power supply 1] is not displayed.

(Condition)
When using the programmable controller and MELSECNET/H remote I/O[*1] incompatible with the power supply redundant system
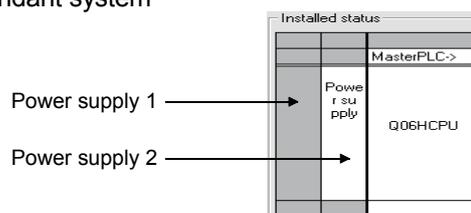
*1: For the version of programmable controller and MELSECNET/H remote I/O compatible with the power supply redundant system, refer to the following manuals.
- QCPU User's Manual (Hardware Design/ Maintenance and Inspection)
- QnUCPU User's Manual(Function Explanation, Program Fundamentals)
- Qn(H)/QnPH/QnPRHCPU User's Manual(Function Explanation, Program Fundamentals)
- Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O Network)

21.7 Online Module Change

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with the Process CPU/
redundant CPU/Remote I/O.

[Purpose]
  You can change a module without stopping the system.

[Operating Procedure]
  [Diagnosis] → [Online module change].

[Dialog Box]
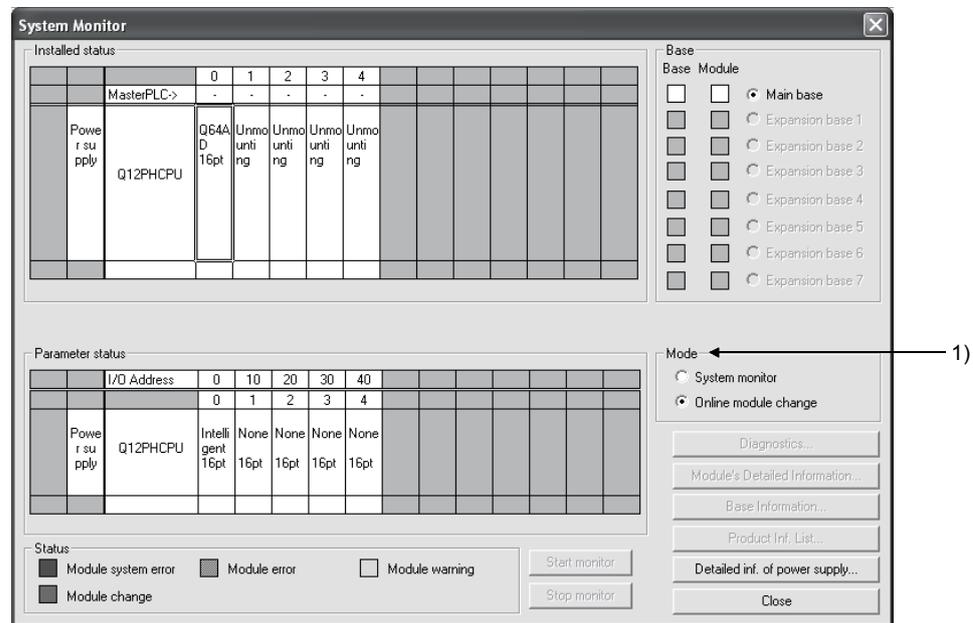
[Description]
  1) Mode
      • System monitor
        Choose when performing system monitor.
      • Online module change (Default)
        Choose when making online module change.
        Can be selected only when the PLC type is the Process CPU, redundant
        CPU or remote I/O.

POINT

When performing the online module change of the remote I/O station, use the
product of the following version.

Product name	Version
MELSECNET/H remote I/O station	Function version D ＊1
GX Developer	8.18U or later

＊1: For checking the function version, refer to the following manual.
    Q Corresponding MELSECNET/H Network System Reference Manual
    (Remote I/O network)

The following explains a sequence of operations for making online module change from System monitor.

Step 1   Choose the module you want to change from Mounting status on the System monitor screen. (Module selection waiting status)
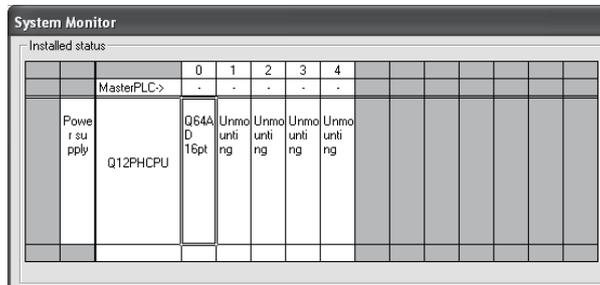
Step 2   After the Online module change dialog box has appeared, click the Execution button. (Online module change execution confirmation)
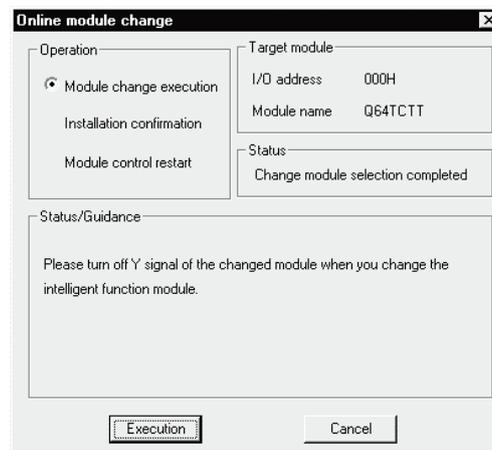
- Depending on the faulty condition of the module to be changed, the type of the module may not be acquired. In that case, "Unknown" appears in the Target module name display field.

Step 3   The dialog box indicating that online module change can be made
appears. (Online module change completion confirmation)
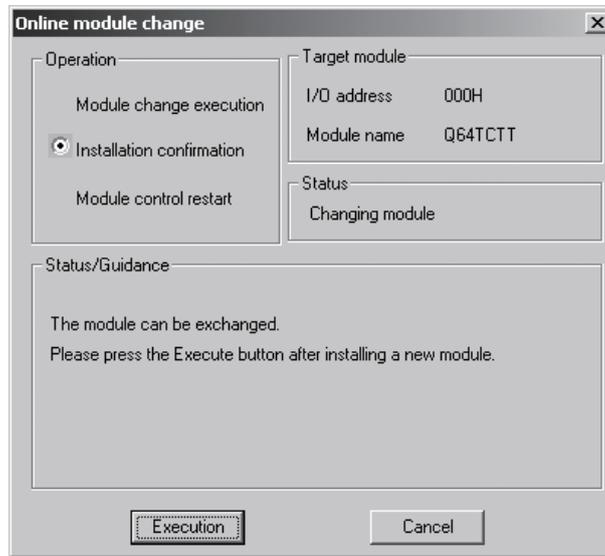
Step 4   After changing the module, click the Execution button.

Step 5   If online module change is completed properly, the following dialog box
appears. (Module control resumption confirmation)
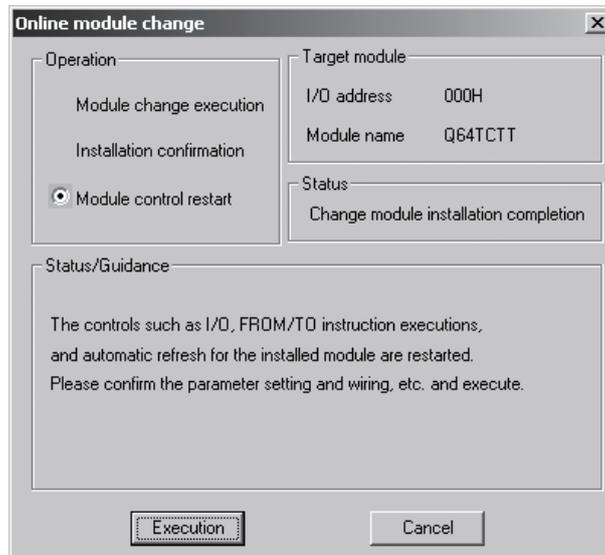
- If it is not completed properly, the following dialog box appears.
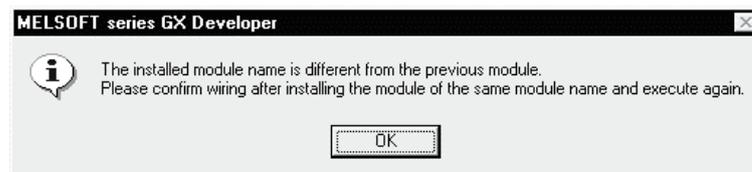
Click the OK button. As clicking that button displays the Online module change
dialog box, restart the procedure from Step 2.

POINT

When performing ladder monitor or device test during online module change

1. Temporary stop of online module change
   By clicking Cancel during online module change, you can temporarily stop online module change and perform ladder monitor or device test to check the system status.

2. Continuation of online module change
   By choosing [Diagnosis] - [Online module change], you can continue online module change from the temporary stop status.

   When you exited from GX Developer during online module change, you can restart GX Developer to continue online module change similarly.

Restrictions on online module change

(1)   GX Developer cannot perform the online module change of multiple modules simultaneously.

(2)   Note that if the Process CPU/redundant CPU is in either of the following statuses, online module change cannot be performed.
      1.   Programmable controller's RESET/L.CLR is reset.
      2.   Programmable controller is stopped due to stop error.

(3)   If online module change is performed from two personal computers to one programmable controller, the following dialog box appears on the personal computer where online module change was performed later.
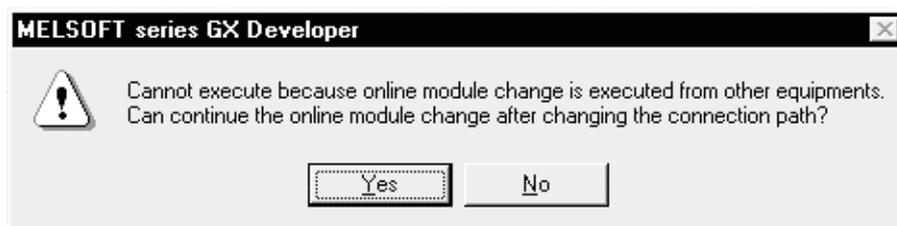
Clicking Yes shifts the right to perform online module change to the personal computer that made access later.

(4)   If the programmable controller is reset or powered off while the Online module change execution dialog box is being displayed, online module change cannot be continued and the following dialog box appears.
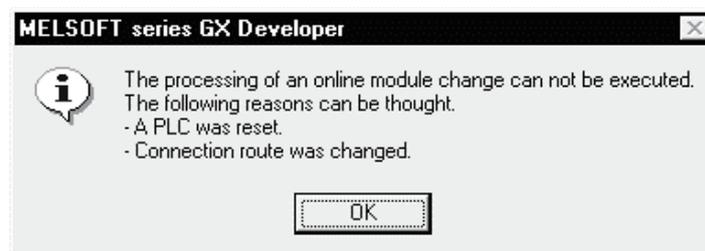
22. SETTING A6TEL/Q6TEL/FX DATA

The telephone line can be used for connection with the programmable controller.
When the telephone line is used to make communication, it is made via the modem
interface module (A6TEL/Q6TEL modem interface module), serial communication.
The following table lists the modules usable with each series. Modem Interface.

	Interface module		Serial Communication	
	A6TEL	Q6TEL	QnA Series	Q Series
Q series	—	—	○	—
QnA series	—	○	—	○
A series *1	○	○	—	—
FX series *2	—	—	—	—

*1: Since the QCPU (A mode) cannot use the A6TEL/Q6TEL, make
communication via the serial communication module (Q series).
*2: Can be set for only the FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC and
FX3UC programmable controllers.
Use the RS-232C communication function extension board or special
adaptor.

REMARK

For connection of telephone lines through QC24N and QJ71C24, refer to Section
16.2.4.

22.1 Function Setting Item List

A	Q/QnA	QS	FX
○	○*	×	○

*: Compatible with the QnACPU.

(1) Q6TEL/A6TEL
The following setting item list indicates what data may be created and written to the personal computer and A6TEL/Q6TEL when performing any function. (A/QnA series)

Setting \ A6TEL/Q6TEL Connection Method		Proximate Connection	Remote Access	Pager Notice	Q6TEL-Q6TEL Communication
PLC side	A6TEL	1) Cable connection 2) Switch setting	1) AT command registration 2) Switch setting 3) Cable connection 4) TEL data registration 　(a) AT command 　(b) Phone number	1) AT command registration 2) Phone number book creation 3) Switch setting 4) Cable connection 5) TEL data registration 　(a) AT command 　(b) Phone number 　(c) Notice data	No setting
	Q6TEL	1) Cable connection 2) Switch setting	1) AT command registration 2) Switch setting 3) Cable connection 4) TEL data registration 　(a) AT command 　(b) Phone number	1) AT command registration 2) Phone number book creation 3) Switch setting 4) Cable connection 5) TEL data registration 　(a) AT command 　(b) Phone number 　(c) Notice data	1) AT command registration 2) Phone number book creation 3) Switch setting 4) Cable connection 5) TEL data registration 　(a) AT command 　(b) Phone number 　(c) Q6TEL-Q6TEL communication data registration
Personal computer side (GX Developer)		No setting	1) AT command registration 2) Phone number book creation	No setting	No setting

Switch setting: For the A6TEL/Q6TEL DIP switch setting, refer to Section 16.2.4.
For connection cable details, refer to Section 2.1, 16.2.4.

(2) FXCPU series
Only remote access may be made. (Pager notices and Q6TEL-Q6TEL communication cannot be made.)

	Remote Access
PLC side	1) PC system setting (1) 2) PC system setting (2) 3) If you set modem initialization to the user registration mode in PC system setting (1), you must set the AT command in the sequence program.
Personal computer side	1) AT command registration 2) Phone number registration

22.2 Preparations for Connecting the Telephone Line

This section provides the procedures to start the remote access function, notice function and Q6TEL-Q6TEL communication function (QnA mode only) in a system using the A6TEL/Q6TEL.

22.2.1 Making remote access/pager notice (for ACPU)

A	Q/QnA	QS	FX
○	×	×	×

Since the A modes of the A6TEL and Q6TEL are the same, read "Q6TEL" as "A6TEL" when using the A6TEL.

```
                    ┌─────────────────┐
                    │      START      │
                    └────────┬────────┘
                             ↓
                    ┌─────────────────┐
                    │ Start GX Developer. │
                    └────────┬────────┘
                             ↓
                    ┌─────────────────┐
                    │ Create a phone number book. │ ------ Refer to Section 22.3.1.
                    └────────┬────────┘
                             ↓
  Set on            ┌─────────────────┐
  GX Developer      │ Register the AT command. │ ------ Refer to Section 22.3.2.
                    └────────┬────────┘
                             ↓
                    ┌─────────────────┐
                    │ Set the TEL data. │
                    └────────┬────────┘
                             ↓
                    ┌─────────────────┐
                    │ Set the A/QnA select switch of Q6TEL to A. │
                    └────────┬────────┘
                             ↓
  Set on Q6TEL      ┌─────────────────┐
                    │ Set only DIP switch 1 of Q6TEL to ON. │ ------ Refer to Section 16.2.4.
                    └────────┬────────┘
                             ↓
                    ┌─────────────────┐
                    │ Load Q6TEL to programmable controller. │
                    └────────┬────────┘
                             ↓
                    ┌─────────────────┐
                    │ Connect the personal computer and Q6TEL by RS-232 cable. │ ------ Refer to Section 16.2.4.
                    └────────┬────────┘
                             ↓
  Set on            ┌─────────────────┐
  GX Developer      │ Write the set data to Q6TEL. │ ------ Refer to Section 22.3.3.
                    └────────┬────────┘
                             ↓
                             1)
```

When making pager notice, refer to Section 22.3.3. When making remote access, set the AT command, password (any), line type and COM port only.

When using A6TEL, ignore this setting.

When using the A mode of Q6TEL, refer to Section 22.3.4.

1)

↓

| Power on the modems. |

↓

| Disconnect RS-232 cable connected to personal computer and Q6TEL and connect RS-232 cables which connect Q6TEL and modems. (Use the cables supplied with the modems.) | ┈ ┈ Make sure that the READY LED is lit. (Make sure that the MODEM, PRG, SD and RD LEDs are off.)

↓

Set on Q6TEL ┈ ┈ | Set DIP switch 1 of Q6TEL to OFF. | ┈ ┈ ┈ Refer to Section 16.2.4.

↓

| Connect "LINE" of modems with telephone line. |

↓

When modem does not have ANS/ORG/TEL switch | Set the modem switch to "TEL" mode. | ┈ ┈ ┈ Set when the modem has ANS/ORG/TEL switch.

↓

┈ ┈ ┈ This procedure ends here when using the pager notice function only.

personal computer side ↓

| If you have not yet registered the modem connected to the personal computer and selected the modem model, make their settings. |

↓

| Set the telephone line menu screen. | ┈ ┈ ┈ Refer to Section 22.4.1.

↓

Set on GX Developer ┈ | Connect the telephone line. | ┈ ┈ ┈ Refer to Section 22.4.1.

↓

┈ | Perform monitoring, etc. on GX Developer. |

↓

| Disconnect the telephone line. |

↓

(END)

| POINT |
| Set the connection destination before connecting the telephone line. |

22.2.2 Making remote access/pager notice (for QnACPU)

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with the QnACPU.

```
            ┌─────────────────────┐
            │        START        │
            └─────────────────────┘
                      │
            ┌─────────────────────┐
            │ Start GX Developer. │
            └─────────────────────┘
                      │
            ┌─────────────────────┐
            │ Create a phone      │ ----- Refer to Section 22.3.1.
            │ number book.        │
            └─────────────────────┘
                      │
            ┌─────────────────────┐
            │ Register the AT     │ ----- Refer to Section 22.3.2.
            │ command.            │
            └─────────────────────┘
                      │
            ┌─────────────────────┐
            │ Set the TEL data.   │ ----- When making pager notice, refer
            └─────────────────────┘       to Section 22.3.4.
```

Set on GX Developer

When making pager notice, refer to Section 22.3.4.
When making remote access, set the AT command, password (any), line type and COM port only.

Set on Q6TEL

Set the A/QnA select switch of Q6TEL to QnA. ----- Refer to Section 16.2.4.

Set only DIP switch 1 of Q6TEL to ON. ----- Refer to Section 16.2.4.

Load Q6TEL to programmable controller and make proximate connection. ----- Refer to Section 16.2.4.

Connect the personal computer and Q6TEL by RS-232 cable. ----- Refer to Section 16.2.4.

Set on GX Developer

Write the set data to Q6TEL. ----- Refer to Section 22.3.4.

Power on the modems.

1)

1)

Disconnect RS-232 cable connected to
personal computer and Q6TEL and connect
RS-232 cables which connect Q6TEL and
modems.
(Use the cables supplied with the modems.)

Make sure that the READY
LED is lit.
(Make sure that the MODEM,
PRG, SD and RD LEDs are off.)

Set on Q6TEL ------- Set DIP switch 1 of Q6TEL to OFF. ------ Refer to Section 16.2.4.

Connect "LINE" of modems with telephone
line.

When modem does
not have ANS/ORG/TEL
switch

Set the modem switch to "TEL" mode. ------- Set when the modem has
ANS/ORG/TEL switch.

personal computer side -------------------- This procedure ends here when
using the pager notice function only.

If you have not yet registered the modem
connected to the personal computer and
selected the modem model, make their
settings.

Set the telephone line menu screen. ------ Refer to Section 22.4.1.

Connect the telephone line. ------ Refer to Section 22.4.1.

Set on
GX Developer

Perform monitoring, etc. on GX Developer.

Disconnect the telephone line.

END

POINT
Set the connection destination before connecting the telephone line.

22.2.3 Making remote access (for FXCPU)

A	Q/QnA	QS	FX
×	×	×	○

FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC programmable controller side operation procedure

```
         ┌──────────────────────────┐
         │          START           │
         └────────────┬─────────────┘
                      │
   ┌──────────────────▼──────────────────┐
   │ Start the programming software of    │
   │ any of GPPW, FX-PCS/WIN,             │
   │ FR-PCS-KIT/98, FX-PCS-KIT/V and      │
   │ FX-A7PHP-KIT.                        │
   └──────────────────┬──────────────────┘
                      │
   ┌──────────────────▼──────────────────┐
   │ Read to the personal computer the    │
   │ sequence program written to the      │
   │ remote-accessed programmable         │
   │ controller.                          │
   └──────────────────┬──────────────────┘
                      │
   ┌──────────────────▼──────────────────┐
   │ Make PLC parameter setting and set   │ - - - - - Refer to Section 22.3.5.
   │ the modem connected to the           │
   │ programmable controller.             │
   └──────────────────┬──────────────────┘
                      │
   ┌──────────────────▼──────────────────┐
   │ Write the set parameters and program │
   │ to FXCPU.                            │
   └──────────────────┬──────────────────┘
                      │
   ┌──────────────────▼──────────────────┐
   │ Power off the programmable           │
   │ controller.                          │
   └──────────────────┬──────────────────┘
                      │
   ┌──────────────────▼──────────────────┐
   │ Connect the programmable controller  │
   │ with the modem and the modem with    │
   │ the telephone line.                  │
   └──────────────────┬──────────────────┘
                      │
   ┌──────────────────▼──────────────────┐
   │ Power on the programmable            │
   │ controller. (Modem initialization    │
   │ command is sent automatically.)      │
   └──────────────────┬──────────────────┘
                      │
   ┌──────────────────▼──────────────────┐
   │ programmable controller (modem)      │
   │ stands by, waiting for data to be    │
   │ sent.                                │
   └─────────────────────────────────────┘
```
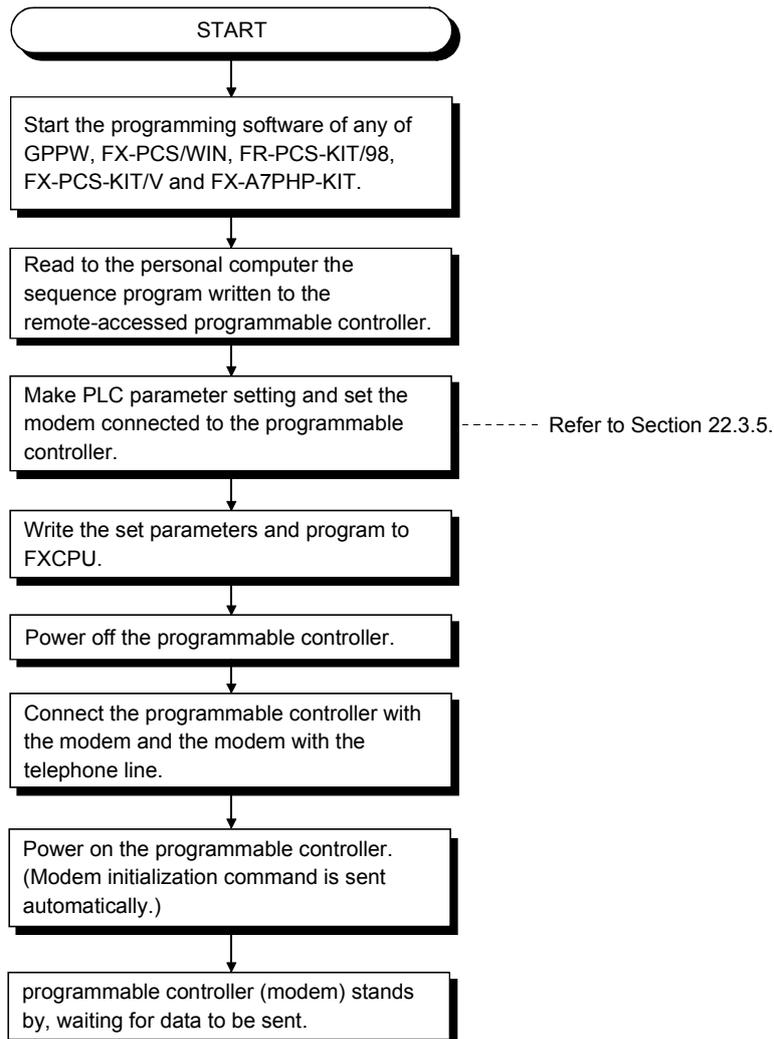
- Always power on in the modems and programmable controller in this order. If the programmable controller is powered on earlier than the modems, the initialization command sent to the modems at power-on of the programmable controller is made invalid, and a communication error will occur at the time of remote access. Also, if only the modems are powered on after power-on, the initialization command is cleared, resulting in a communication error similarly. In this case, switch power on again in the order of modems and programmable controller.
- The programmable controller which was placed in the standby status in this procedure can be remote-controlled by FX-PCS/WIN programming software.
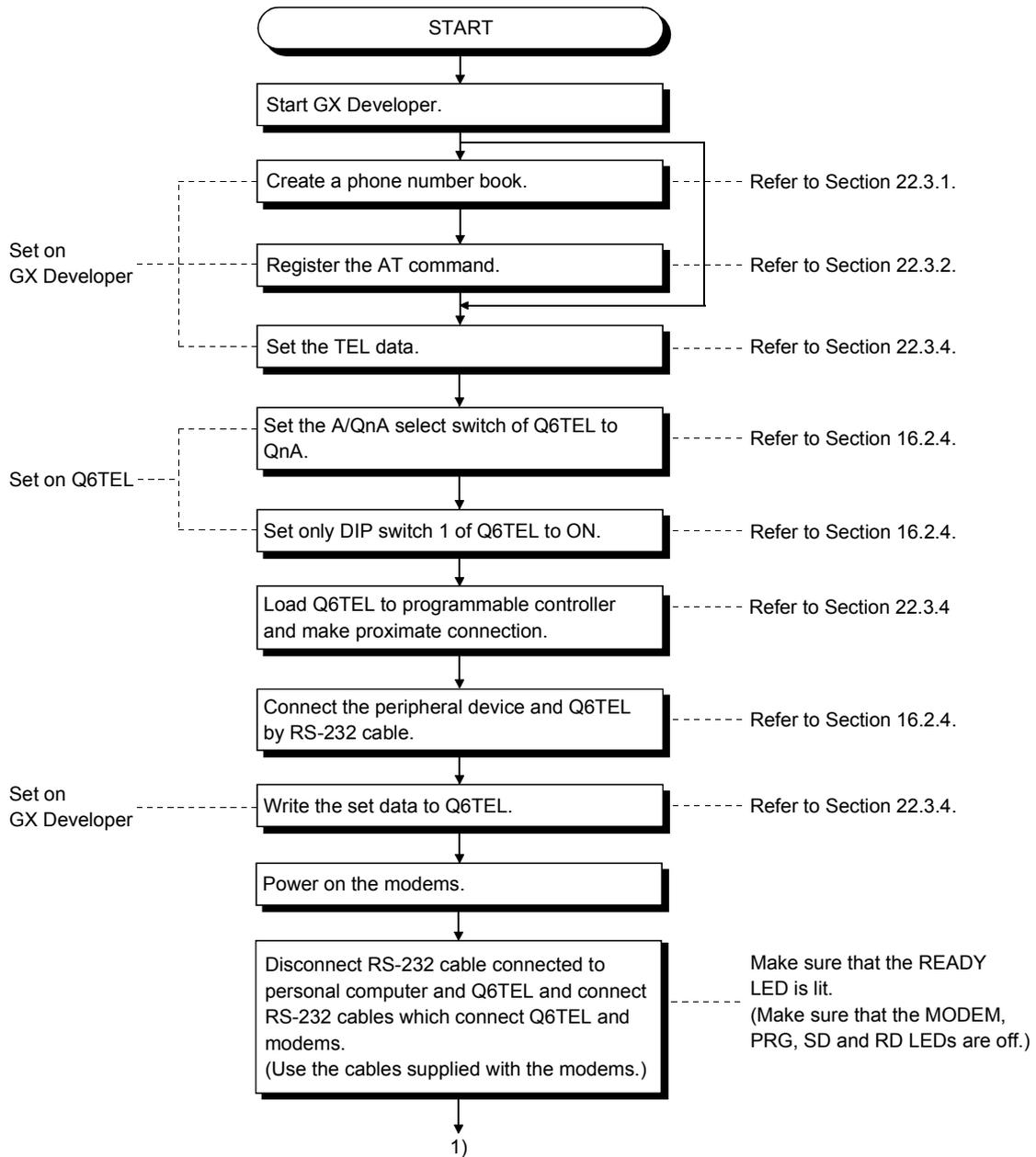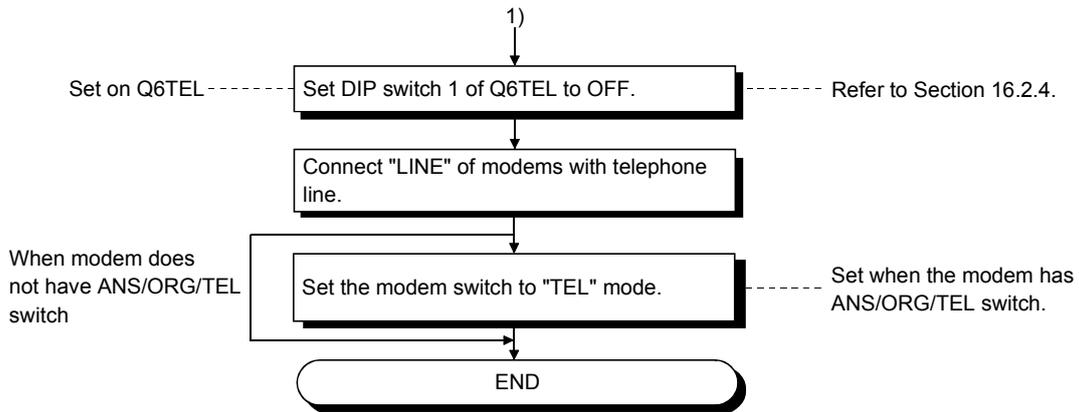
GX Developer side operation procedure

```
        ┌──────────────────────────────┐
        │            START             │
        └──────────────────────────────┘
                      │
        ┌──────────────────────────────┐
        │ Start GX Developer.          │
        └──────────────────────────────┘
                      │
        ┌──────────────────────────────┐
        │ Set the modem connected to   │ - - - - - Refer to Section 22.4.1.
        │ the personal computer.       │
        └──────────────────────────────┘
                      │
        ┌──────────────────────────────┐
        │ Set the phone number         │ - - - - - Refer to Section 22.4.1.
        │ registration.                │
        └──────────────────────────────┘
                      │
        ┌──────────────────────────────┐
        │ Select the personal computer │ - - - - - Refer to Section 22.4.1.
        │ side modem.                  │
        └──────────────────────────────┘
                      │
        ┌──────────────────────────────┐
        │ Connect the telephone line.  │ - - - - - Refer to Section 22.4.1.
        └──────────────────────────────┘
                      │
        ┌──────────────────────────────┐
        │ Perform monitoring, etc. on  │
        │ GX Developer.                │
        └──────────────────────────────┘
                      │
        ┌──────────────────────────────┐
        │ Disconnect the telephone     │ - - - - - Refer to Section 22.4.4.
        │ line.                        │
        └──────────────────────────────┘
                      │
        ┌──────────────────────────────┐
        │            END               │
        └──────────────────────────────┘
```

22.2.4 Making Q6TEL-Q6TEL communication

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with the QnACPU.

(1) Send side

START

Start GX Developer.

Create a phone number book. ----- Refer to Section 22.3.1.

Register the AT command. ----- Refer to Section 22.3.2.

Set on GX Developer

Set the TEL data. ----- Refer to Section 22.3.4.

Set the A/QnA select switch of Q6TEL to QnA. ----- Refer to Section 16.2.4.

Set on Q6TEL

Set only DIP switch 1 of Q6TEL to ON. ----- Refer to Section 16.2.4.

Load Q6TEL to programmable controller and make proximate connection. ----- Refer to Section 22.3.4

Connect the peripheral device and Q6TEL by RS-232 cable. ----- Refer to Section 16.2.4.

Set on GX Developer

Write the set data to Q6TEL. ----- Refer to Section 22.3.4.

Power on the modems.

Disconnect RS-232 cable connected to personal computer and Q6TEL and connect RS-232 cables which connect Q6TEL and modems.
(Use the cables supplied with the modems.) ----- Make sure that the READY LED is lit.
(Make sure that the MODEM, PRG, SD and RD LEDs are off.)

1)

1)

Set on Q6TEL ------- Set DIP switch 1 of Q6TEL to OFF. ------- Refer to Section 16.2.4.

Connect "LINE" of modems with telephone line.

When modem does not have ANS/ORG/TEL switch — Set the modem switch to "TEL" mode. ------ Set when the modem has ANS/ORG/TEL switch.

END

(2) Receive side

START

Start GX Developer.

Create a phone number book. ------- Refer to Section 22.3.1.

Register the AT command. ------- Refer to Section 22.3.2.

Set on GX Developer

Set the TEL data. ------- Refer to Section 22.3.4. (Set the Q6TEL side modem and Q6TEL side line type.)

Set the A/QnA select switch of Q6TEL to QnA. ------ Refer to Section 16.2.4.

Set on Q6TEL

Set only DIP switch 1 of Q6TEL to ON. ------ Refer to Section 16.2.4.

Load Q6TEL to programmable controller and make proximate connection. ------ Refer to Section 22.3.4

Connect the personal computer and Q6TEL by RS-232 cable.

1)

1)

Set on
GX Developer ┄┄┄┄┄┄┄ Write the set data to Q6TEL. ┄┄┄┄┄ Set the Q6TEL side connected
modem, password (any) and
telephone line type to the receive
side Q6TEL. Refer to Section 22.3.4.

Power on the modems.

Disconnect RS-232 cable connected to
personal computer and Q6TEL and connect
RS-232 cables which connect Q6TEL and
modems.
(Use the cables supplied with the modems.) ┄┄┄ Make sure that the READY
LED is lit.
(Make sure that the MODEM,
PRG, SD and RD LEDs are off.)

Set on Q6TEL ┄┄┄┄┄┄ Set DIP switch 1 of Q6TEL to OFF. ┄┄┄┄┄ Refer to Section 16.2.4.

Connect "LINE" of modems with telephone
line.

When modem does
not have ANS/ORG/TEL
switch

Set the modem switch to "TEL" mode. ┄┄┄ Set when the modem has
ANS/ORG/TEL switch.

END

22.3 Making Initial Setting of Data

22.3.1 Creating a phone number book

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]
Registers phone numbers.

[Operating Procedure]
[Tools] → [Set TEL data] → [Call book].

[Window]
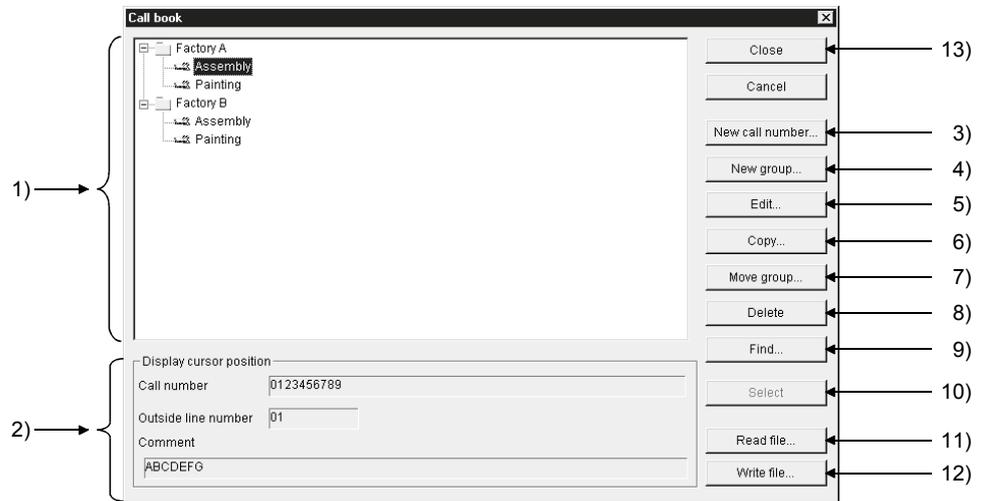
[Description]
1) Registered phone number display list
Shows the group names and the other end names of the phone numbers.
Registered phone number .... 18 or more characters
Outside line access number .....2 or more characters

2) Display cursor position field
Shows the registered data selected in the registered phone number display list.

3) | New call number | button
     Register a new phone number.

a) ——————→ Group name   Factory A

b) ——————→ Destination name   Assembly

c) ——————→ Call number   0123456789

d) ——————→ Outside line number | 01   ▼ |

e) ——————→ For only line connection
                 Password   ****
                 If omit to set the 'Password', it may be required during the line connection.

f) ——————→ Comment
             ABCDEFG

g) ——————————————————————→ | OK | | Cancel |

---
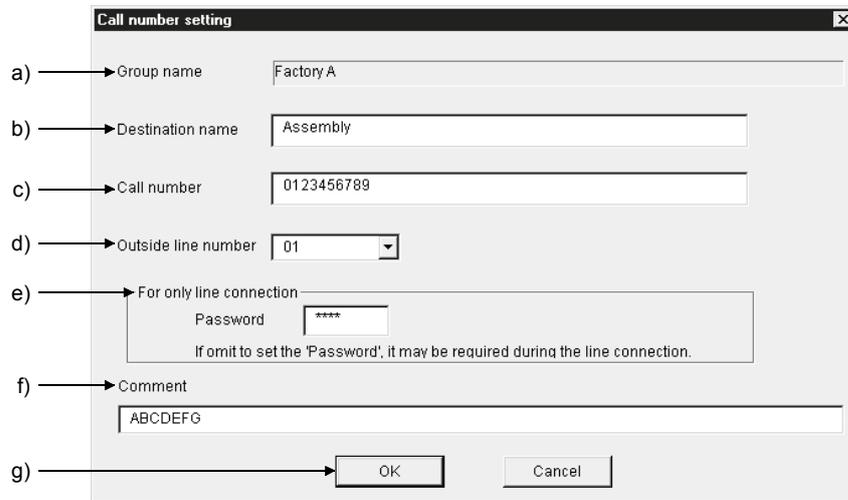
a)   Group name
     Shows the group name of the registered number.

b)   Destination name
     Enter the other end name of the phone number to be set.
     The number of set characters is within 50.

c)   Call number
     Enter the phone number.
     The number of set characters is within 50.

d)   Outside line number
     Set the outside line access number.
     The number of set characters is within 10.

e)   For only connection
     When a password has been set to the A6TEL/Q6TEL/Q Series C24, making
     this setting automatically starts password processing and connects the line.
     When a password has not been set to the A6TEL/Q6TEL, making this
     setting connects the line.

f)   Comment
     Enter the memo to the registered data.
     The number of set characters is within 60.

g) | OK | button
     Click this button when the setting is finished.

4) | New group | button
     Create a new group.
     Clicking the New group button shows the group setting dialog box.
     Enter and set the group name.
     The number of set characters is within 50.

5) $\boxed{\text{Edit}}$ button
Edits the registered data.
Choose the registered data you want to edit in the registered phone number display list.
Clicking the Edit button shows the phone number setting dialog box.
Edit each data.

6) $\boxed{\text{Copy}}$ button
Copies the registered phone numbers to another group.
Choose the registered data you want to copy in the registered phone number display list.
Clicking the Copy button shows the group setting dialog box.
Choose the copy destination group and click the $\boxed{\text{OK}}$ button.

7) $\boxed{\text{Move}}$ group button
Moves the registered phone numbers to another group.
Choose the registered data you want to copy in the registered phone number display list.
Clicking the Move group button shows the group setting dialog box.
Choose the move destination group and click the $\boxed{\text{OK}}$ button.

8) $\boxed{\text{Delete}}$ button
Deletes the registered group and phone numbers.
(You cannot batch-delete on a group basis.)

9) $\boxed{\text{Find}}$ button
Searches for the registered phone number. (Search match condition is partial match.)
All registered data are searched.
• Searching advance
When search conditions are entered into both the other end and phone number, data which satisfies both search conditions is searched for.

10) $\boxed{\text{Select}}$ button
Performs the phone number setting selection processing when the line connection dialog box is browsed.

11) $\boxed{\text{Read}}$ file button
Reads to GX Developer the phone number data registered to GPPA or GPPQ.
The operation method is the same as the TEL data creation file reading operation.

12) $\boxed{\text{Write}}$ file button
Writes the created phone number book to any folder specified.

13) $\boxed{\text{Close}}$ button
Saves the edited data and terminates the phone number book function.

[Setting Procedure]
1. Click the New group button. (When newly creating data)
   Enter the group name and create the group.

2. Choose the group where you want to register the phone number from the
   registered phone number display list.

3. Click the new phone number button.
   Enter and set each data (other end name, phone number, outside line access
   number, memo).

22.3.2 Registering the AT command

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]
Register the AT command.

[Operating Procedure]
[Tools] → [Set TEL data] → [AT command].

[Dialog Box]
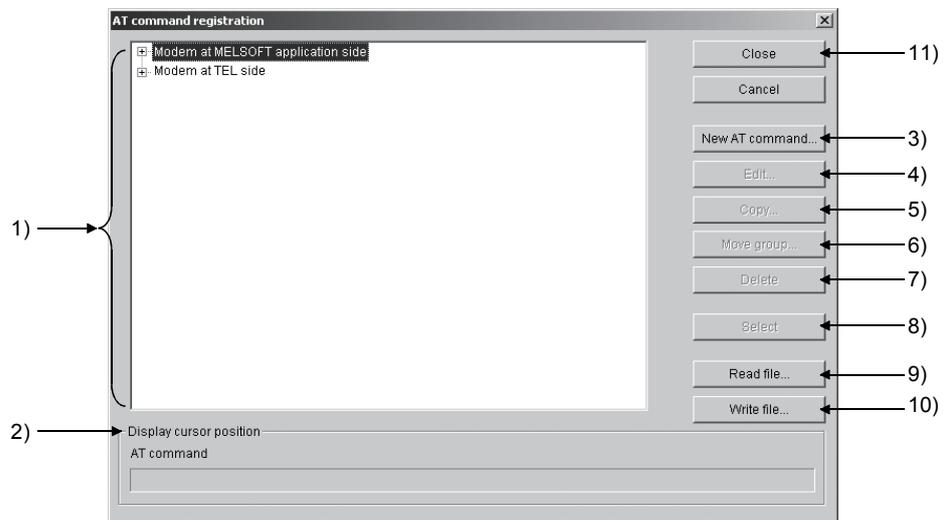
[Description]

1) Registered AT command display list
   Shows the headings of the AT commands.

2) Display cursor position field
   Shows the registered data selected in the registered AT command display list.

3) New AT command button
Registers a new AT command.

a) ———▶ Group name

Modem at the GPPW side

b) ———▶ Title

ABCD Modem

c) ———▶ AT command

ATQ0E1VX1S0=1

[OK]   [Cancel]   [Help of AT command...]

a)   Group name
Shows the group name of the new command.

b)   Heading
Enter the heading for the AT command to be registered.

c)   AT command
Enter the AT command for modem initialization.
The number of entered characters is up to 70 (70 for A6TEL/40 for Q6TEL).

4) Edit button
Edits the registered data.
Choose the registered data you want to edit in the registered AT command
display list.
Clicking the Edit button shows the AT command registration dialog box.
Edit each data.

5) Copy button
Copies the registered AT command to any other end.
Choose the registered data you want to copy in the registered AT command
display list.
Clicking the Copy button shows the group specifying dialog box.
Choose the copy destination (any other end) and click the OK button.

6) Move group button
Moves the registered AT command to any other end.
Choose the registered data you want to move in the registered AT command
display list.
Clicking the Move group button shows the group specifying dialog box.
Choose the move destination (any other end) and click the OK button.

7)   Delete button
     Deletes the registered AT commands.
     (You cannot batch-delete on a group basis.)

8)   Select button
     Performs the AT command selection processing when the line connection
     dialog box or TEL data creation dialog box is browsed.

9)   Read file button
     Reads the AT command from the specified file.

10) Write file button
     Writes the data set on the AT command registration screen to the specified file.

11) Close button
     Saves the edited data and terminates the AT command registration function.

[Setting Procedure]
  1. Choose the side where you want to register the AT command from the
      registered AT command display list.

  2. Click the New AT command button.
      Enter the heading and AT command to create the AT command.

22.3.3 Registering A6TEL data

A	Q/QnA	QS	FX
◯	×	×	×

[Purpose]
Register the A6TEL data.

[Operating Procedure]
[Tools] → [Set TEL data] → [TEL data].

[Dialog Box] (For use of A series)
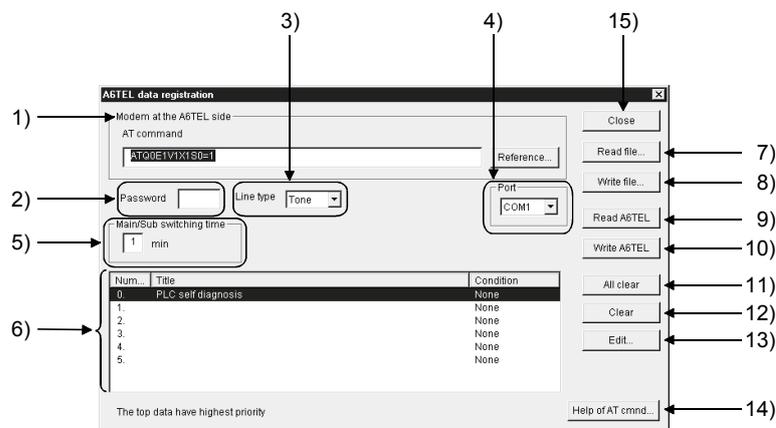
[Description] (For use of A series)

1) Modem at the A6TEL side
Set the AT command of the A6TEL side modem.
Direct input
Enter directly. The number of set characters is 70.
Browse (Only the AT command of the TEL side connection modem may be browsed)
Clicking the Browse button shows the AT command dialog box.
Choose the AT command you want to set, and click the Select button.

2) Password (Set any password)
Set the password for access to the A6TEL.
Set in four characters.

3) Line type
Choose the tone or pulse.

4) Port
    Set the communication port number used to read/write the A6TEL data.

5) Main/Sub switching time
    Regular and sub phone numbers can be set.
    • Notice destination when the regular and sub phone numbers have been registered

```
   ┌─→ Regular dialed ─→ 3 minutes ─→ Regular-sub      Sub dialed ─→ 3 minutes ─→ Regular-sub
   │   30 seconds        pause         switching ∗1  →  30 seconds     pause        switching ∗1
   │       │                           time pause         │                         time pause
   │       └──────── Repeated 3 times. ──┘                └──────── Repeated 3 times. ──┘
   └──────────────────────────────────────────────────────────────────────────────────────┘
```
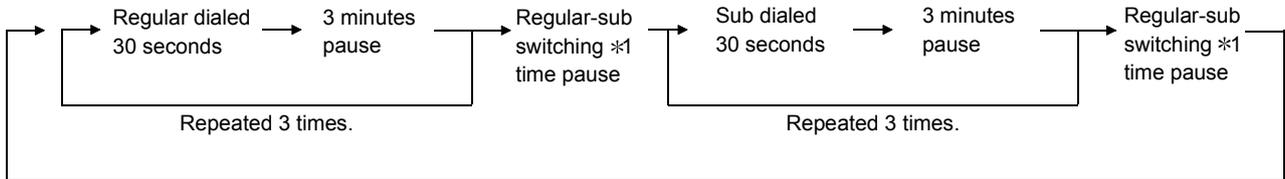
                Repeated until the handset is made on-hook at notice destination.

    • Notice destination when only the regular phone number has been registered

```
      ┌─→ Regular dialed ─→ 3 minutes ─→ Regular-sub
      │   30 seconds        pause         switching∗1
      │       │                           time pause
      │       └──────── Repeated 3 times. ──┘
      └──────────────────────────────────────────┘
```
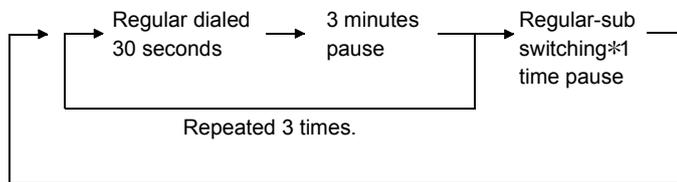
                        Permanent notice ∗2

    ∗1: Time can be set within the range 0 to 99 in increments of 1 minute.
    ∗2: Notice continues if the handset is made off-hook at notice destination.
        Clear the permanent notice by
        • Placing the personal computer and A6TEL online (telephone line connected), or
        • Moving the DIP switch 1 or 2 of the A6TEL from ON to OFF.

6) Notice data list
    Shows the titles and set conditions of the notice data.

7) | Read file | button
    Reads the A6TEL data file or GPPA format A6TEL data file.

8) | Write file | button
    Saves the TEL data created with GX Developer onto HD, FD or the like.

9) | Read A6TEL | button
    Reads the TEL data set to the A6TEL.
    The read data appears on the screen.

10) | Write A6TEL | button
    Writes the TEL data created with GX Developer to the A6TEL.

11) | Clear all | button
    Deletes all notice data registered.

12) | Clear | button
    Deletes only the notice data selected in the notice data list.

13) | Edit | button
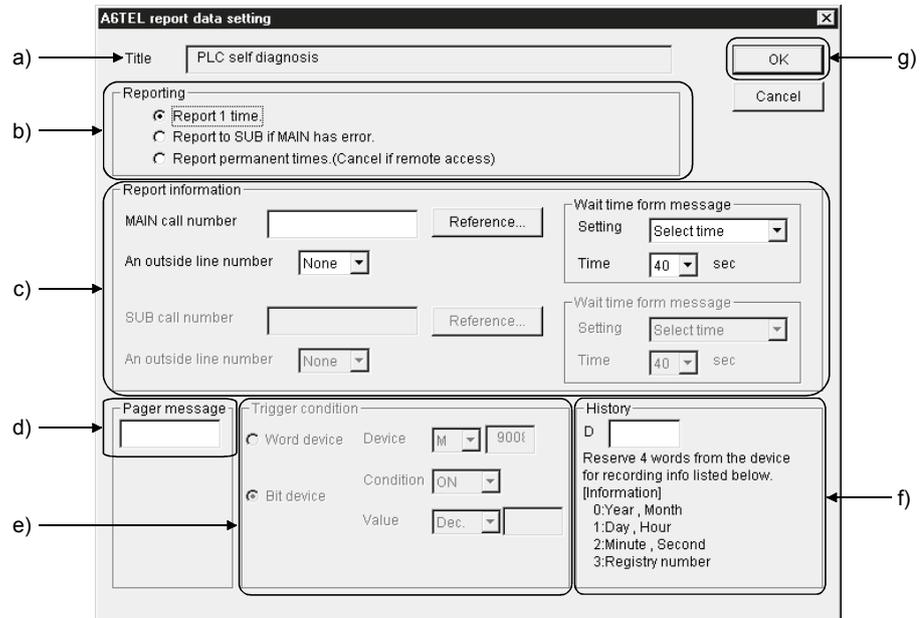
a)   Heading
     Sets the heading to the data to be set as the notice destination of the
     A6TEL.
     When the data written to the A6TEL once is reread, the heading is not
     displayed. (Since it is written to the personal computer only.)
     The number of set characters is 60.

b)   Reporting
     Choose the processing performed after the trigger conditions hold.

c)   Notice destination information
     Set the notice destination information.
     Phone number
     Set the phone number of the notice destination.
     • Only 0 to 9, ∗, # and - may be used.
     • The number of set characters is 17.
     Outside line access number
     • Set the outside line access number of the notice destination.
       0 to 9, # and ∗ may be selected.
     Pager announcement time
     • Setting
       Choose the time setting.
     • Set time (dial message pause time)
       Set pause time when it is needed from when the A6TEL make a phone
       call until it sends a message.
       The time that may be set is 0 to 99 seconds.

d)   Pager message
Set the message to be sent to the pager.
Message
• Up to 10 characters may be set using 0 to 9, # and ＊.

e)   Trigger condition
Set the trigger device, the device number, and the status (ON/OFF) for a
bit device, or the device value for a word device, which are used when the
A6TEL performs notice processing.

f)   History
Set the data registers which store the other end, date and time when the
A6TEL notified the pager. The setting range is D0 to 25980.

	b15 to b8	b7 to b0
Dn	Year	Month
Dn+1	Day	Hour
Dn+2	Minute	Second
Dn+3	Notice destination	

g)   OK button
Click this button when the setting is over.

14) Help of AT command button
Gives instructions for AT command setting.

15) Close button
Saves the edited data and terminates the TEL data registration function.

POINT

When using the A6TEL, Q6TEL (A mode) as a converter, double-click the PC side
I/F icon on the Connection Setup screen and set the items of the following screen.
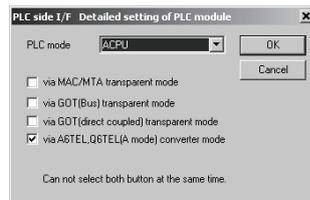
Also, the setting status appears on the Connection Setup screen.

YES/NO appears.
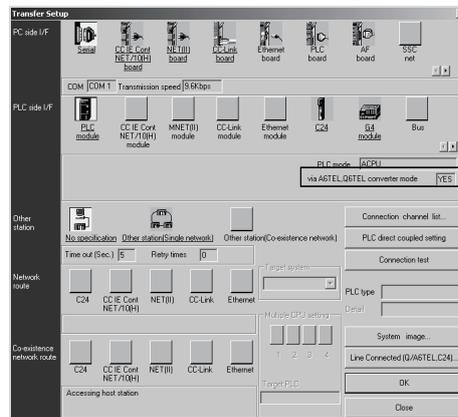
22.3.4 Registering Q6TEL data

A	Q/QnA	QS	FX
×	○✱	×	×

✱: Compatible with the QCPU (Q mode).

[Purpose]
Register the TEL data.

[Operating Procedure]
[Tools] → [Set TEL data] → [TEL data].

[Dialog Box] (For use of QnA series)
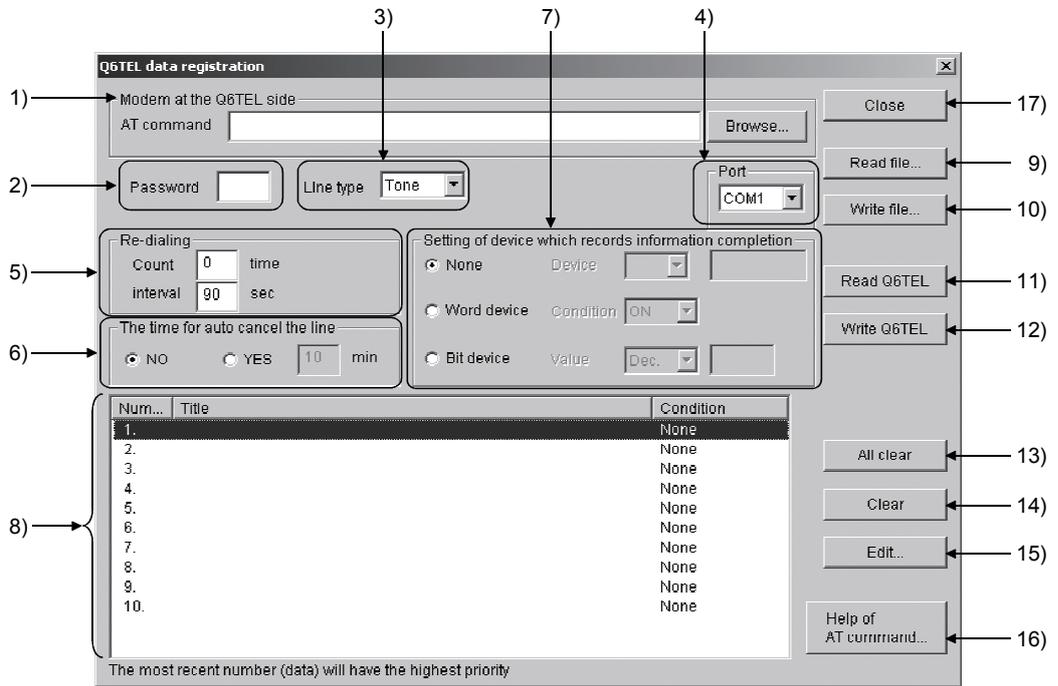
[Description] (For use of QnA series)

1) Modem at the Q6TEL side
    Set the AT command of the Q6TEL side modem.
    Direct input
    Enter directly.
    The number of set characters is 40.
    Browse (Only the AT command of the TEL side connection modem may be browsed)
    Clicking the Browse button shows the AT command dialog box.
    Choose the AT command you want to set, and click the Select button.

2) Password (may be omitted)
    Set the password for access to the Q6TEL.
    Set in four characters.

3) Line type
    Choose the tone, pulse or ISDN.

4) Port
   Set the communication port number used to read/write the Q6TEL data.

5) Redial
   Set the redialing function.
   Number of times that may be set
   Any number of times can be set between 1 and 99.
   Interval that may be set
   Any seconds can be set between 90 and 255 seconds.

6) The time for auto cancel the line
   Set the line disconnection time at no response.
   Time that may be set (The line is disconnected if there is no response after the
   set time has elapsed.)
   Any minutes can be set between 1 and 120 minutes.

7) The record device of report performed
   Set the device records of whether the Q6TEL has notified or not.
   ⊙ No
     Device record is not made.
   ⊙ Word device
     The set value of the word device is used for recording.
     Set the device/device number and device value.
     Usable device/device number
     • D0 to D25983   • R0 to 32767
     • W0 to 657F   • ZR0 to 65535
     Usable device value
     • Decimal -32768 to 32767
     • Hexadecimal 0 to FFFF (K0 to K32767 for T/C)
   ⊙ Bit device
     The set value of the bit device is used for recording.
     Set the device/device number and device status (ON, OFF).
     Usable device/device number
     • X0 to 1FFF   • W0.0 to 657F.F
     • Y0 to 1FFF   • R0.0 to 32767.F
     • M0 to 32767   • ZR0.0 to 1042431.F
     • L0 to 32767   • SM0 to 2047
     • B0 to B7FFF   • SB0 to 7FF
     • F0 to 32767   • SD0.0 to SD2047.F
     • D0.0 to 25983.F   • SW0.0 to 7FF.F

8) Notice data list
   Shows the titles and set conditions of the notice data.

9) Read file button
   Reads the Q6TEL data file or GPPQ format Q6TEL data file.

10) | Write file | button
Writes the Q6TEL data to a file as GX Developer format Q6TEL data.

11) | Read Q6TEL | button
Reads the TEL data set to the Q6TEL.
The read data appears on the screen.

12) | Write Q6TEL | button
Writes the TEL data created with GX Developer to the Q6TEL.

13) | Clear all | button
Deletes all notice data registered.

14) | Clear | button
Deletes only the notice data selected in the notice data list.

15) | Edit | button
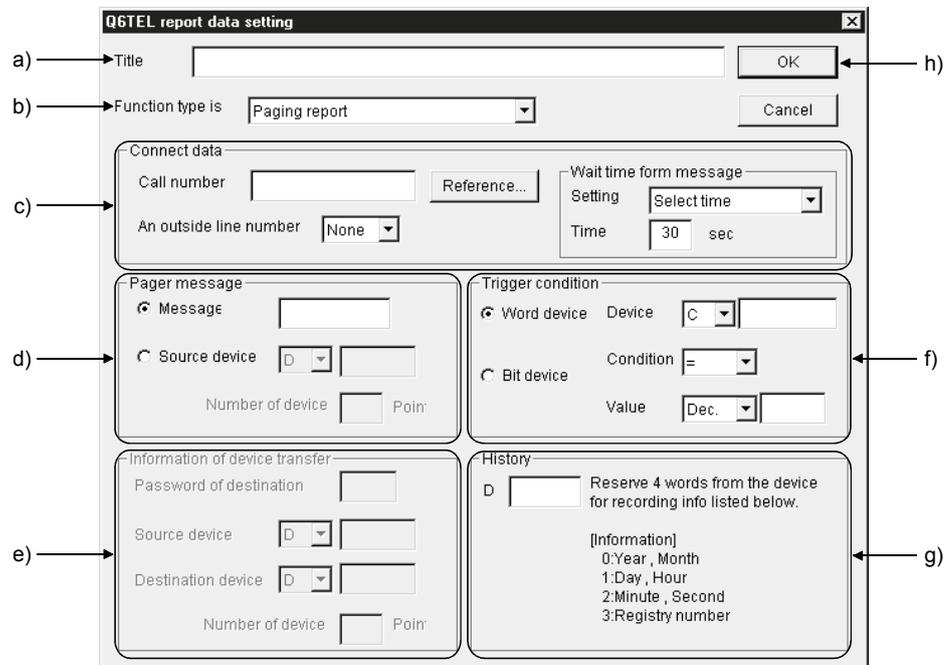
a)   Heading
Sets the heading to the data to be set as the notice destination of the
Q6TEL.
When the data written to the Q6TEL once is reread, the heading is not
displayed. (Since it is written to the personal computer only.)
The number of set characters is 60.

b)   Function type is
Set the notice destination.

   c)   Notice destination information
Set the notice destination information.
Phone number
- Set the phone number of the notice destination.
- Only 0 to 9, ✶, # and - may be used.
  (✶ and # are used for ISDN sub-address)
- The number of set characters is 17.
Outside line access number
- Set the outside line access number of the notice destination.
Pager announcement time
- Setting
  Choose the time setting.
- Set time (dial message pause time)
  Set pause time when it is needed from when the Q6TEL make a phone
  call until it sends a message.
  The time that may be set is 0 to 99 seconds.

   d)   Pager message
Set the message to be sent to the pager.
Message
- 0 to 9, # and ✶ may be selected.
- Set within 10 characters.
Transfer device
- When specifying the device, specify the first device of the transfer source
  and set how many points will be transferred.
Transferable device
- D0 to D25983   • ZR0 to ZR65535
- W0 to 657F   • R0 to R32767
The number of device points set is between 1 to 480.
Note that the number of characters displayed on the pager depends on the
pager used.

   e)   Device transfer information (may be set only when Q6TEL-Q6TEL
communication is set)
Set the device whose data will be transferred between the Q6TELs.
- D0 to D25983   • R0 to R32767
- ZR0 to ZR65535   • W0 to 657F

   f)   Trigger condition
Set the trigger device, the device number, and the status (ON/OFF) for a
bit device, or the device value for a word device, which are used when the
Q6TEL performs notice processing.

g) History
Set the data registers which store the other end, date and time when the Q6TEL notified the pager. The setting range is D0 to 25980.

	b15 to b8	b7 to b0
Dn	Year	Month
Dn+1	Day	Hour
Dn+2	Minute	Second
Dn+3	Notice destination	

h) OK button
Click this button when the setting is over.

16) Help of AT command button
Gives instructions for AT command setting.

17) Close button
Saves the edited data and terminates the TEL data registration function.

POINT

- Note that the device settings in the notice completion record device setting, transfer devices, device transfer information and history depend on the PLC parameter device setting.

- Switching from Q6TEL phone line mode to proximate connection mode.

  This section gives the way to choose the proximate connection mode with the Q6TEL fitted to the programmable controller.
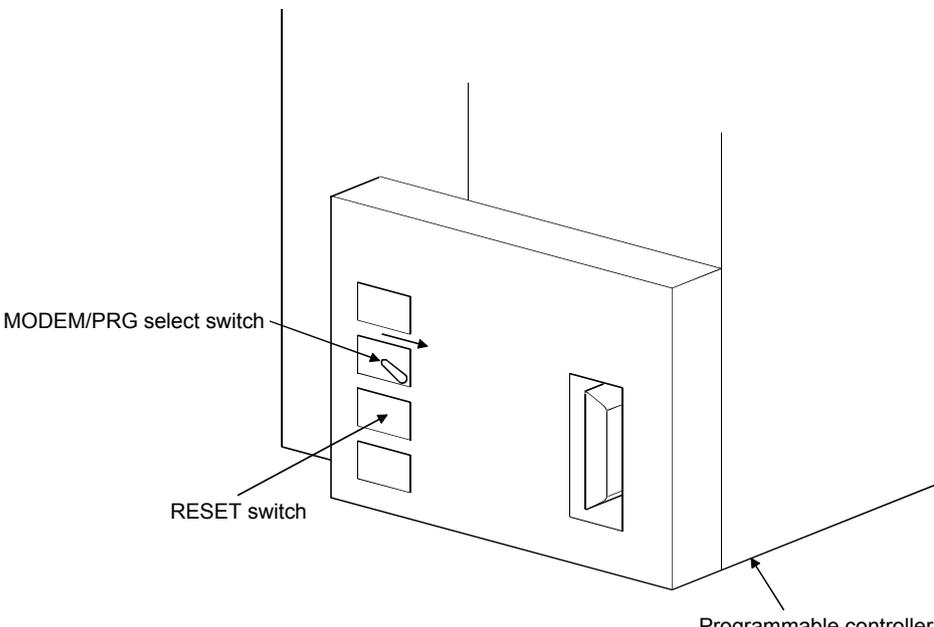
MODEM/PRG select switch

RESET switch

Programmable controller

Operation procedure

1) Hold the MODEM/PRG select switch in the right position and press the RESET switch.

2) Release only the RESET switch.

3) After making sure that the "READY" LED and "PRG" LED are lit (about 3 seconds until they turn on), release the MODEM/PRG select switch. This operation selects the proximate connection mode.

22.3.5 Setting the FXCPU

A	Q/QnA	QS	FX
×	×	×	○

[Purpose]
Set the modem function of the FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC and FX3UC programmable controller.

[Operating Procedure]
[PLC parameter] → <<PLC system (1)>>, <<PLC system (2)>> tab.

[Dialog Box]
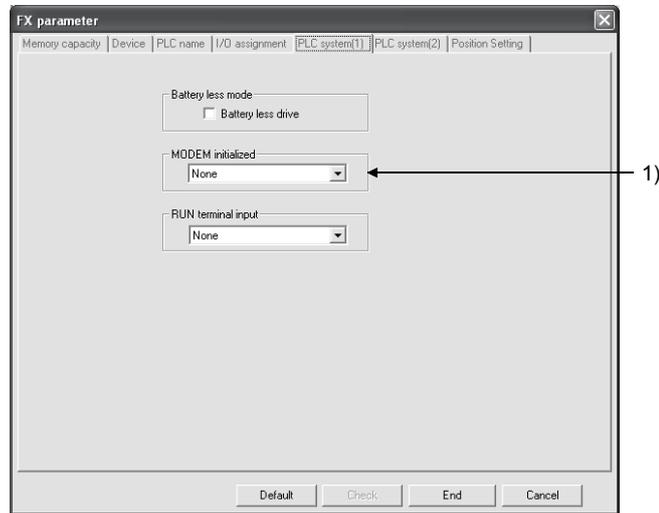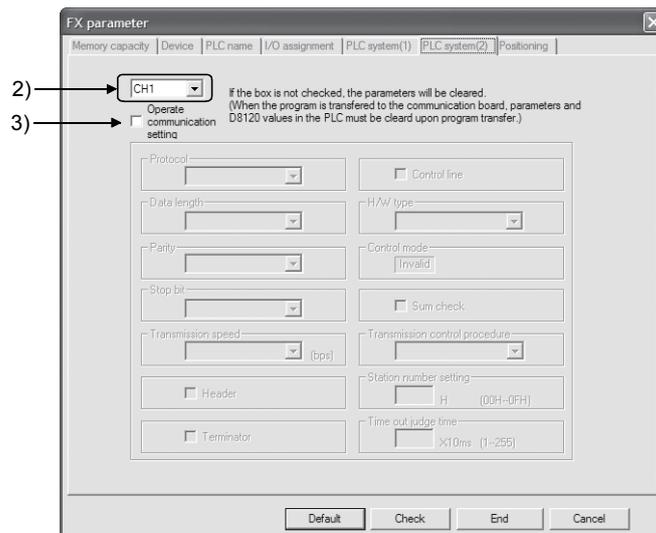
<<PLC system (1)>>

<<PLC system (2)>>

When the PLC type of the project is the FX3G or FX3U(C), the channel specification (CH1/CH2) combo box is displayed.

[Description]
1) MODEM initialized
Set the initialization command of the programmable controller side modem used for remote access of the programmable controller.

- AIWA (PV-AF288)
Set this mode when using the modem, AIWA (PV-AF288).
- OMRON (ME3314B)
Set this mode when using the modem, OMRON (ME3314B).
- User registration mode
Set this mode when using the modem other than AIWA (PV-AF288) or OMRON (ME3314B).
Refer to the next page for the registration of the AT command of the programmable controller.
The following shows the communication specifications when this mode is set.

Item	Description
Start bit	1 bit
Data length	7 bits
Parity	Even
Stop bit	1 bit

- User mode (8bit NP) (CH1) (FX3U, FX3UC only)
These modes can be set to the FX3U, FX3UC only.
Set either of these modes when using the modem of other than AIWA (PV-AF288) or OMRON (ME3314B) or when using the modem to which the communication specifications of the user registration mode cannot be set.
<FX3U and FX3UC series>
When using the FX3U-232-BD or the first FX3U-232ADP connected to the FX3U-CNV-BD, set to the PP modem mode (CH1).
When using the FX3U-232ADP connected to other than the FX3U-CNV-BD, set to the PP modem mode (CH2).
<FX3G series (14-point and 24-point types)>
When using the FX3G-232-BD or the first FX3U-232ADP connected to the FX3G-CNV-BD, set PP modem mode (CH1).
<FX3G series (40-point and 60-point types)>
When using the FX3G-232-BD or the first FX3U-232ADP connected to the FX3G-CNV-BD, set PP modem mode (CH1).
When using the FX3U-232ADP connected to the FX3G-232-BD and FX3G-CNV-BD, set PP modem mode (CH1). When using the FX3U-232BD, set PP modem mode (CH2).

Refer to the next page for the registration of the AT command of the programmable controller.
When either of these modes is set, the communication specifications are as indicated below.

Item	Description
Start bit	1 bit
Data length	8 bits
Parity	None
Stop bit	1 bit

- User mode (8bit NP) (CH2) (FX3U, FX3UC only)
Unavailable.

2)   Channel specification (FX3G, FX3U, FX3UC only)
Select the programmable controller side channel to communicate with the personal computer.

3)   Operate communication setting
Uncheck the check box to set the programmable controller to be remote-accessed.

[Instructions for sequence program]
To make remote access, the special data register D8120 (communication format) value of the programmable controller must be set to "0".
This setting can be cleared to "0" by unchecking the "Operate communication setting" check box in PLC system. However, remote access cannot be made if any value other than "0" is written in D8120 in the sequence program. In this case, correct the sequence program so that a specific value is not written to D8120.

[User setting of the modem]
When the "User register mode", "User mode (8bits NP) (CH1)" or "User mode (8bits NP) (CH 2)" has been selected for modem initialization in <PLC system setting (1)>, set the AT command of the modem in the following method.

- Initialization command system
  To initialize the modem, use the AT command developed by Hayes, U.S.A.
  This command is generally represented in the following format.

| A | T | Command+parameter | Command+parameter | Command+parameter | - - - - - - - - | CR | LF |

Confirm the details of the AT command in the manual of the modem used.

- If you choose the "User registration mode", "User mode (8bits NP) (CH1)", "User mode (8bits NP) (CH 2)" in the aforementioned "PLC system (1) setting", FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC or FX3UC programmable controller transmits the contents of data registers D1000 to D1059 and FX1S transmits the contents of data registers D200 to D255 as the modem initialization command to the modem via the RS-232 communication device after it has sent the AT&F (initialization to factory setting) command at power-on of the programmable controller.

Write the user-specified modem initialization command in advance to data registers D1000 to D1059 (FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC) and D200 to D255 (FX1S) using the personal computer current value changing function or sequence program.

Initialization command entry example: ATE0S0=2Q1&D0&M4Q0JO&W

Register No.	ASCII	Hexadecimal	Register No.	ASCII	Hexadecimal
D1000	A	41	D1013	&	26
D1001	T	54	D1014	M	4D
D1002	E	45	D1015	4	34
D1003	0	30	D1016	\	5C
D1004	S	53	D1017	Q	51
D1005	0	30	D1018	0	30
D1006	=	3D	D1019	\	5C
D1007	2	32	D1020	J	4A
D1008	Q	51	D1021	0	30
D1009	1	31	D1022	&	26
D1010	&	26	D1023	W	57
D1011	D	44	D1024	CR	0D
D1012	0	30	D1025	LF	0A

The initialization command registered by the user may be specified in D1000 and subsequent (FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC) and in D200 and subsequent (FX1S), but its transmission is ended as soon as "0" is read at any point during transmission.

In creating a sequence program, note that the input area of this initialization command for the modem should not overlap the area of the data registers used in a general sequence program.

- Settings of registered modem
  The following table lists the setting items and their data of the AT command of the modem pre-registered to the programmable controller.
  The setting items and their data may change with the modem. Confirm the actual settings in the manual of the modem used.

Setting Item	PV-AF288 (AIWA) ATE0S0=2Q1&D0&M5\Q0\JO&W	ME3314 (OMRON) ∗ ATE0S0=2Q1&D0&H0&R1S15=8&W
Command echo setting	E0 (no)	E0 (no)
Number of automatic incoming call ringers	S0=2 (twice)	S0=2 (twice)
Result code indication	Q1 (no)	Q1 (no)
DTR control	&D0 (normally ON)	&D0 (normally ON)
Communication mode	&M5 (V.42bis)	S15=8 (V.42bis)
Terminal flow control system	\Q0 (no)	&R1 (no)
Send data flow control	—	&H0 (no)
Terminal speed fixed mode	\J0 (fixed)	—
Write to nonvolatile memory	&W	&W

∗: The setting of the AT command compatible with the ME3314 (OMRON) has been added to version V2.01 or later (serial No. 78 or later) of the FX$_{2N}$ programmable controller.
  The FX$_{1S}$, FX$_{1N}$, FX$_{3G}$, FX$_{3U}$, FX$_{2NC}$, FX$_{3UC}$ programmable controller is compatible from its first products.

[Setting by programming software other than GX Developer]
- The FX$_{2N}$ or FX$_{2NC}$ programmable controller side setting may also be made using any of the following programming software.
  FX-PCS/WIN   Version V2.10 or later (for Windows®)
  FX-PCS-KIT/98 Version V4.00 or later (for PC-9800)
  FX-PCS-KIT/V Version V2.00 or later (for PC/AT)
  FX-A7PHP-KIT Version V3.00 or later (for A7PHP)

- Set the modem to be used in the "PLC mode setting" of any software.

- If D8120 (communication format) must be cleared to zero in the software other than FX-PCS/WIN, clear all programmable controller parameters and then re-set the parameters other than [], the keywords, etc.

- Use the user setting method, etc. for the modem as described in this manual.

22.4 Connecting/Disconnecting the Line

22.4.1 Connecting the line automatically

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]
 The connection method (automatic/callback/manual) for remote access is described.

[Operating Procedure]
 [Tools] → [Set TEL data] → [Connection].

[Dialog Box]
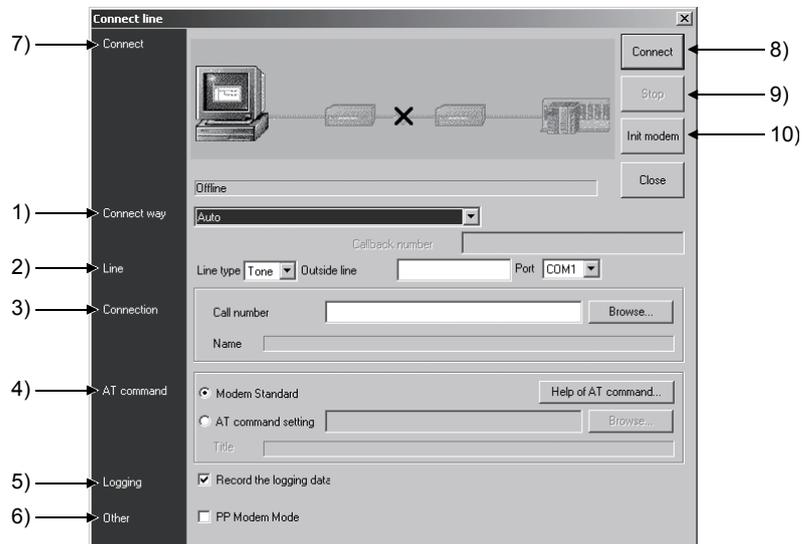
[Description]
 1) Connect way
    Choose Automatic/callback/manual (line connection via switchboard).
    Set the telephone number setting field when specifying the telephone number of the callback destination.
    For connection using the callback function, refer to Section 22.4.2.
    For manual connection, refer to Section 22.4.3.

 2) Line is
    Line type
        Choose Tone, Pulse or ISDN.
    Outside line number
        Set this number as necessary when making an outside call.
    Port
        Choose the COM port No. connected with the modem.

3)   Connection destination designation
Set the phone number of the other end.
Also, presetting the phone number in the phone number book allows the phone
number of the other end to be set from the Browse button.

4)   AT command designation
⊙ Standard
Specify the standard command of the modem.
⊙ AT command designation
If the line does not connect properly using the standard AT command, refer
to the data displayed by pressing the AT command help button and the
manual of the modem, and create the AT command.
When the FX programmable controller is connected, create the AT command
in accordance with the information of Help.

5)   Record the logging data
In the log file, you can check the line connection time, line disconnection time,
line usage time, line connection destination name, other end phone number,
callback, and error status or normal connection.
The storage place and file name of the log file are as follows.
Storage place : GX Developer installation destination\log
                          (Default: Melsec\Gppw\log)
Log file name : Year/Month/Day.dat (e.g. 980929.log)

6)   PP modem mode (not displayed for other than FXCPU)
This setting is enabled for only the FX3G, FX3U, FX3UC.
Check this check box when the "User mode (8bits NP) (CH1)" or "User mode
(8bits NP) (CH2)" has been set in the FX programmable controller setting.
Do not check this check box when any mode other than the "User mode (8bits
NP) (CH1)" or "User mode (8bits NP) (CH2)" has been set.

7)   Connect
The line connection status is displayed.
•   The equipment being accessed flickers.
When normal access is made, the equipment is displayed.
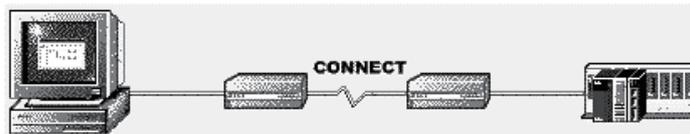
•   If an error occurs at any point during connection, the error-related location is
indicated by ⊞. (The corresponding equipment is grayed.)
In addition, the error-related cause is displayed as a message. Confirm the
corresponding location.
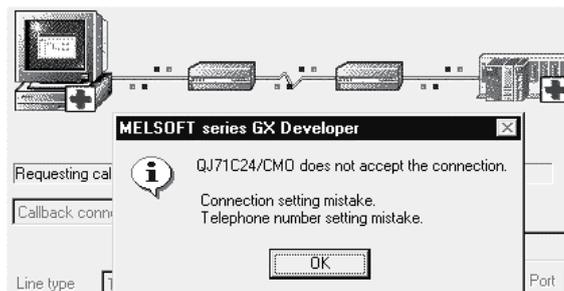
8)   Init modem button
     Initialize the modem when it did not respond to line connection.
     Clicking the Init modem button displays the following dialog box.

     Click the Yes button to initialize the modem (default: AT&F).
     The modem initialization command can be changed by choosing [Tools] -
     [Options] - <TEL function> tab-"Modem initialization AT command".
     If any problem occurs in modem initialization, the following dialog box appears.
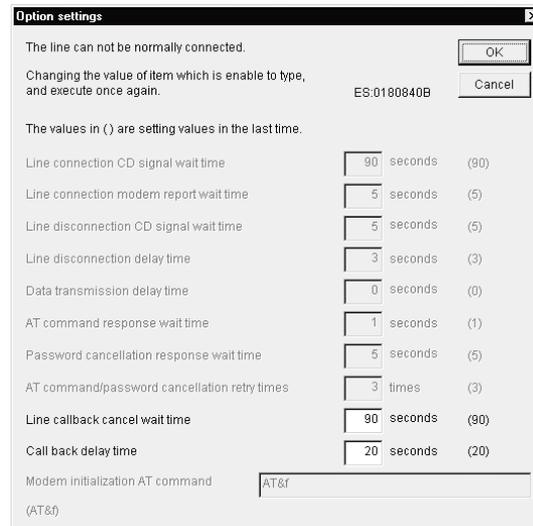
     The settings of only the items that will pose a problem in line connection can be
     changed.
     For details of the setting items, refer to the <TEL> tab setting in Section 15.12.

9)   Cancel button
     Used to stop line connection while it is in progress.

10) Connect button
     Clicking the Connect button connects the line.
     If a problem comes up in line connection, the option setting dialog box appears.
     For details of the setting items, refer to the <TEL> tab setting in Section 15.12.

[Setting Procedure]
 For automatic
 1. Set the line connection system.

 2. Set the line type, outside line number and port.

 3. Set the phone number of the other end.

 4. Specify the AT command. (Normally set the standard command.)

 5. Click the Connect button.
    If the line could not be connected, initialize the modem.

Refer to the following manual for precautions for using the callback function to
make line connection.
Q-Compatible Serial Communication Module User's Manual (Application)

POINTS

- Telephone line connection may also be made from "Online" → "Transfer setup".

- If a password has been set to the A6TEL/Q6TEL, the following dialog box appears to clear the password.
  If the password is wrong, the line is not connected.

```
┌─────────────────────────────────────────────┐
│ Cancel the password                      [×] │
├─────────────────────────────────────────────┤
│                                              │
│        Enter the password                    │
│                                              │
│        Password          ┌──────────────┐    │
│                          └──────────────┘    │
│                                              │
│     ┌─────────────┐      ┌─────────────┐     │
│     │     OK      │      │   Cancel    │     │
│     └─────────────┘      └─────────────┘     │
│                                              │
└─────────────────────────────────────────────┘
```

- If the line being connected is disconnected due to disturbance, the following dialog box appears to select whether the line is to be connected or disconnected.

```
┌─────────────────────────────────────────────┐
│ MELSOFT series GX Developer               [×]│
├─────────────────────────────────────────────┤
│   ⚠    Line has been disconnected. Re-connect the line ?  │
│                                              │
│        ┌─────────┐      ┌─────────┐          │
│        │   Yes   │      │   No    │          │
│        └─────────┘      └─────────┘          │
└─────────────────────────────────────────────┘
```

- When the line is connected, the line usage time dialog box appears.
  The connection time is shown in increments of 5 seconds, and the dialog box closes after the line is disconnected.
  To select whether the dialog box is shown or hidden, use "View" → "Elapsed time".

- If the connection destination is changed to another COM port or communication board (e.g. MELSECNET/10) by the connection destination designation during telephone line connection, the telephone line is kept connected and communication can be made in any communication path.

REMARK

The following items are to be set on the PLC and personal computer sides when a telephone line is used for serial communication (for the Q/QnA series).

Serial communication (Q series)

	Remote Access

PLC side	1) I/O assignment
	  setting Set the following items by software switching setting.
	  • CH1 transmission setting
	  • CH1 communication protocol setting
	  • CH2 transmission setting
	  • CH2 communication protocol setting
	  • Station number setting
	2) Set the following items in a sequence program.
	  • Write the initialization command (ATS0=1).
	  • Set the initialization request.
	    Write the initialization command (ATS0=1) in a sequence program.

Personal computer	1) AT command registration 2) Telephone number registration

Serial communication (QnA series)

	Remote Access

PLC side	1) Set the DIP switches of the module.
	2) Set the following items in a sequence program.
	  • Write the initialization command (ATS0=1).
	  • Set the initialization request.

Personal computer	1) AT command registration 2) Telephone number registration

22.4.2 Using callback function to make line connection

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Compatible with the QCPU (Q mode).

The callback function is designed to make line reconnection (callback) from the Q series C24 or Q series CMO after line connection from GX Developer to enable access from GX Developer to the QCPU (Q mode).
For 1) to 3), 9), the personal computer bears the call charge.
For 4) to 8), the Q series C24 or Q series CMO bears the call charge.
Refer to the following manual for details.
• Q-Compatible Serial Communication Module User's Manual (Application)

(1)   Auto line connect
      Choose this when the callback function has not been set to the Q series C24 or Q series CMO.

(2)   Auto line connect (Callback fixation)
      When the callback function has been set to the Q series C24 or Q series CMO, choosing this connects the line without using the callback function.
      Connection can be made from only the personal computer having the telephone number registered to the buffer memory (2101H).

(3)   Auto line connect (Callback number specification)
      When the callback function has been set to the Q series C24 or Q series CMO, choosing this connects the line without using the callback function.
      Connection can be made from any personal computer.

(4)   Callback connect (Fixation)
      Choosing this calls back only the personal computer having the telephone number registered to the buffer memory (2101H) of the Q series C24 or Q series CMO.

(5)   Callback connect (Number specification)
      Choosing this calls back any personal computer.

(6)   Callback request (Fixation)
      Choosing this gives a callback request from any personal computer and calls back the personal computer having the telephone number registered to the buffer memory (2101H) of the Q series C24 or Q series CMO. (The personal computer that was connected first is not called back.)

(7)   Callback request (Number specification)
      Choosing this gives a callback request from any personal computer and calls back any personal computer.
      (GX Developer that was connected first is not called back.)

(8)   Callback reception waiting
      When a callback request [fixation or number specification] is given to connect the line, choosing this causes the personal computer at the callback destination to select "Callback reception waiting" and connect the line.

(9)   Manual line connect
      This is independent of callback connection.
      Choose this when connecting the line via a switchboard.

Making the "Call back function designation" setting of GX Configurator-SC on the Q series C24 or Q series CMO enables line connection to be performed in any of the GX Developer connection systems given in the following table.
The following are the correspondences between the setting items of "Call back function designation" of GX Configurator-SC and those of the connection systems on the GX Developer side.

GX Developer Side Connection System (*1) Q Series C24 or Q series CMO Side Callback Function Designation	1)	2)	3)	4)	5)	6)	7)	8)	9)
Auto line connect	○								○
Setting 1: Auto line connect / Callback connect [Fixation]		○		○		○		○	
Setting 2: Auto line connect / Callback connect [Number specification]		○	○	○	○	○	○	○	
Setting 3: Auto line connect / Callback connect [Number specification, max. 10 units]			○		○		○	○	
Setting 4: Callback connect [Fixation]				○		○		○	
Setting 5: Callback connect [Number specification]				○	○	○	○	○	
Setting 6: Callback connect [Number specification, max. 10 units]						○	○	○	

○: Connectable

*1 The following gives the connection systems of GX Developer.
Connection system menu on [Connect line] screen
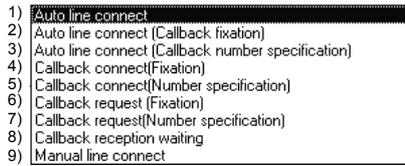
```
1) Auto line connect
2) Auto line connect (Callback fixation)
3) Auto line connect (Callback number specification)
4) Callback connect(Fixation)
5) Callback connect(Number specification)
6) Callback request (Fixation)
7) Callback request(Number specification)
8) Callback reception waiting
9) Manual line connect
```

1) Auto line connect
2) Auto line connect
   (Callback fixation)
3) Auto line connect
   (Callback number specification)
4) Callback connect (Fixation)
5) Callback connect
   (Number specification)

6) Callback request (Fixation)
7) Callback request
   (Number specification)
8) Callback reception waiting
9) Manual line connect

The following example assumes that Callback request (Number specification) was used to connect the line.

1 : ←———— Line connection from personal computer having telephone number Ⓐ
2 : ←------- Line connection to personal computer having telephone number ⓝ

Modem — Telephone number Ⓐ
Set "Callback request" [Number specification] on line connection screen.

Public line

Set any of settings 2, 3, 5 and 6 to specify the callback function.

Modem — Telephone number ⓝ
Set "Callback reception waiting" status on line connection screen.
Set "ATS0=1" as modem initialization command.

22.4.3 Connecting the line via a switchboard (manual connection)

A	Q/QnA	QS	FX
◯	◯	×	◯

This section explains the way to connect to a private branch line via a switchboard. Manual line connection cannot be made if the modem does not have the ANS/ORG/TEL select switch.

(1)   System configuration
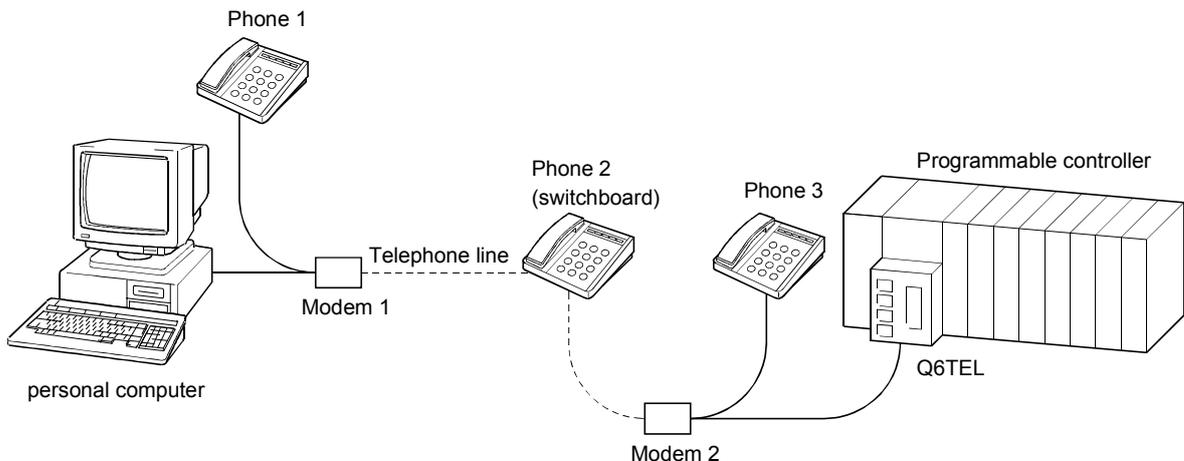
(2)   Operation procedure

1. [Tools] → [Set TEL data] → [Connection]
(Choose "Manual" as the line connection system in the line connection dialog box. For the operation procedure, refer to Section 22.4.1.)

2. Set modem 1 on the phone 1 side to the ORG mode and place modem 2 on the phone 3 side to the ANS mode.

3. Make a call from phone 1 to phone 2 (switchboard).

4. Connect phone 1 and phone 3 to the line at phone 2 (switchboard).

5. In conversation between phone 1 and phone 3, determine that the A6TEL/Q6TEL will be connected to the line.

6. Turn on the DATA switch of modem 2 on the phone 3 side.

7. After confirming the "beep" of modem 1 on the phone 1 side, turn on the DATA switch.

8. As soon as the "beep" of modem 1 on the phone 1 side has gone, press the Connection button of the personal computer.

When the line is connected properly, the "Line connected" dialog box appears.

(3)   Instructions

1) The operation timings in steps 6 and 7 are delicate.
   If connection is not made well, repeat the operation several times to adjust the timings.

2) The modems for manual line connection must have the "ANS ↔ ORG" select switch.
   AIWA PV-AF3361WW

3) For manual line connection, the automatic incoming call mode must have been cleared in theA6TEL/Q6TEL/FXCPU side modem.
   - For the modem which uses a switch to set to the automatic incoming call mode
     Set the automatic incoming call mode switch to the clear position.

   - Change "S0" to "S0=0" in the initialization command.
     When "S0" has already been set to other than 0, change it to "S0=0".

   - When the modem was set to other than the User registration mode or User mode (8bits NP) in the PLC system setting (1) of the FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2CN or FX3UC programmable controller, "S0=2" has been set to the initialization command.
     When making manual line connection, place the modem in the user registration mode and program the initialization command including "S0=0" for D1000 to D1059.
     Refer to Section 22.3.5.

22.4.4 Disconnecting the line

A	Q/QnA	QS	FX
○	○	×	○

[Purpose]

  The disconnection of the telephone line being connected is described.

[Operating Procedure]

  [Tools] → [Set TEL data] → [Disconnection].

[Dialog Box]

MEMO

APPENDICES

Appendix 1 Access Ranges in MELSECNET(II), MELSECNET/10, MELSECNET/H, and CC-Link IE Controller Network

1.1 Access Range with MELSECNET (II)

APP

A	Q/QnA	QS	FX
○	○*	×	×

*: Compatible with the QnACPU.

[PLC No. Designation Example]
For MELSECNET (II), MELSECNET/B:
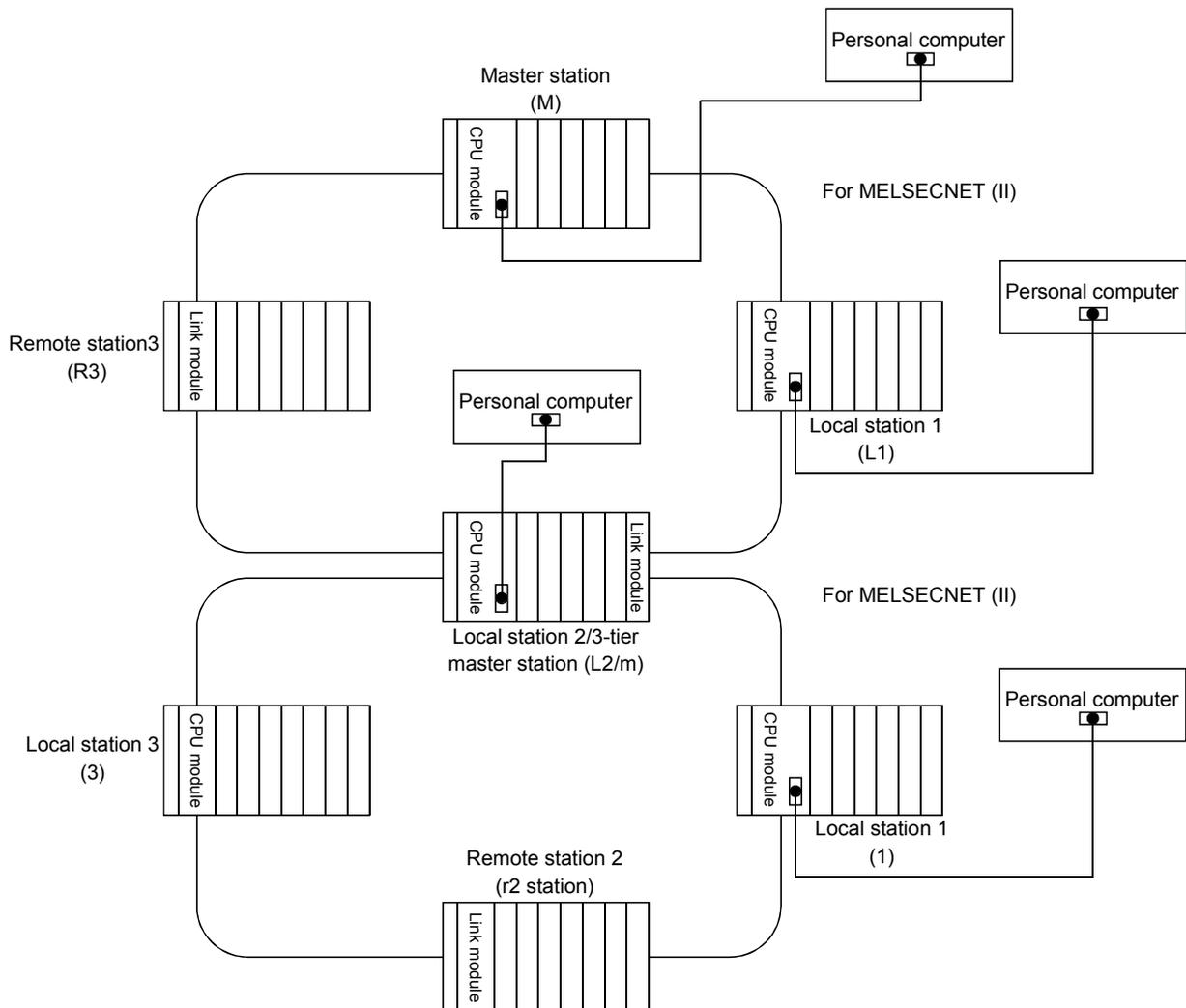
Designated PLC number

Personal computer-connected Station	Programmable controller Accessed by Personal computer						
	M	L1	L2/m	R3	l1	r2	l3
M	○	○	○	×	×	×	×
L1	○	○	×	×	×	×	×
L2/m	○	×	○	×	○	×	○
R3	○	×	×	×	×	×	×
l1	×	×	○	×	○	×	×
r2	×	×	○	×	×	×	×
l3	×	×	○	×	×	×	○

○ ... Designating the PLC number (station number) of the relevant programmable
controller allows access to all devices.

APP

POINT

Even if any tier in the figure above is MELSECNET/B, the designated numbers
are the same.

1.2 Access Range for an A Series Start

A	Q/QnA	QS	FX
○	×	×	×

For PLC to PLC network
- When using a MELSECNET/10 2-tier system:
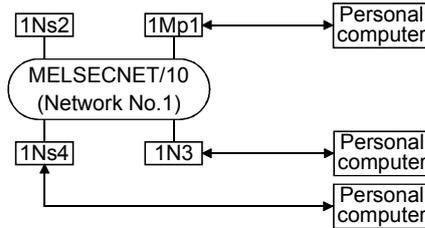
Personal computer-connected station	Station Accessible from Personal computer			
	1Mp1	1Ns2	1N3	1Ns4
1Mp1	FF	1-2	1-3	1-4
1N3	1-1	×	FF	×
1Ns4	1-1	1-2	1-3	FF

- When using a MELSECNET/10 multi-tier system:

Personal computer-connected Station	Station Accessible from Personal computer						
	1Mp1	1N2	1Ns3/2Mp1	1Ns4	2N2	2Ns3	2Ns4
1Mp1	FF	1-2	1-3	1-4	2-2	2-3	2-4
1N2	1-2	FF	×	×	×	×	×
1Ns3/2Mp1	1-1	1-2	FF	1-4	2-2	2-3	2-4
2N2	×	×	2-1	×	FF	×	×
2Ns3	1-1	1-2	2-1	1-4	2-2	2-3	FF

- When using a MELSECNET/10 / MELSECNET(II) composite system:

Personal computer-connected Station	Station Accessible from Personal computer							
	1Ns1	1N2	1Ns3/M	1Mp4	L1	L2	L3	R4
1Ns1	FF	1-2	1-3	1-4	×	×	×	×
1Ns3/M	1-1	1-2	FF	1-4	1	2	3	×
1Mp4	1-1	1-2	1-3	FF	×	×	×	×
L1	×	×	0	×	FF	×	×	×
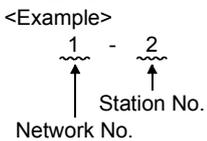
- When using an AnA/AnNCPU as an intermediate station:
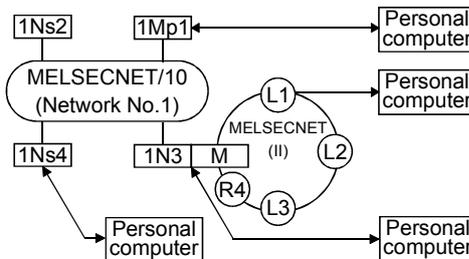
Personal computer-connected station	Station Accessible from Personal computer							
	1Mp1	1Ns2	1N3/M	1Ns4	L1	L2	L3	R4
1Mp1	FF	1-2	1-3	1-4	×	×	×	×
1N3/M	1-1	×	1-3	×	1	2	3	×
1Ns4	1-1	1-2	1-3	FF	×	×	×	×
L1	×	×	0	×	FF	×	×	×

[MELSECNET/10 PLC to PLC network]
Mp station...Control station
Ns station...Normal station (AnUCPU)
N station.....Normal station
(CPUs excluding AnU (AnA/AnNCPU))

[MELSECNET (II)]
M station.....Master station
L station......Local station
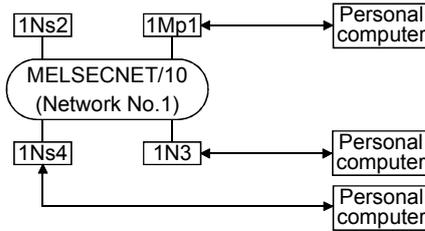R station.....Remote station
FF: Host station

"Station accessible from Personal computer" in the tables:
<Example>
1 - 2

Station No.
Network No.

For remote I/O network

- When using a MELSECNET/10 2-tier system:

Personal computer-connected Station	Station Accessible from Personal computer			
	1M$_R$	1R1	1R2	1R3
1M$_R$	FF	×	×	×
1R1	0	×	×	×
1R2	0	×	×	×

[MELSECNET/10 PLC to PLC network]
Mp station....Control station
Ns station....Normal station (AnUCPU)
N station......Normal station
(CPUs excluding AnU (AnA/AnNCPU))

[MELSECNET/10 Remote I/O network]
M$_R$ station...Master station (AnUCPU)
R station......Remote station

[MELSECNET (II)]
M station......Master station
L station.......Local station
R station......Remote station
FF: Host station

- When using a MELSECNET/10 multi-tier system:

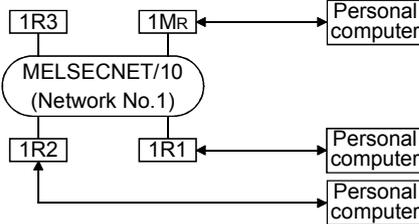| Personal computer-connected Station	Station Accessible from Personal computer						
	1Mp1	1N2	1Ns3/2M$_R$	1Ns4	2R1	2R2	2R3
1Mp1	FF	1-2	1-3	1-4	×	×	×
1N2	×	FF	×	×	×	×	×
1Ns3/2M$_R$	1-1	1-2	FF	1-4	×	×	×
2R1	1-1	1-2	0	1-4	×	×	×
2R2	1-1	1-2	0	1-4	×	×	×

- When using a MELSECNET/10, MELSECNET (II) composite system:

Personal computer-connected Station	Station Accessible from Personal computer										
	1Ns1	1N2	1Ns3/M	1Mp4/2M$_R$	2R1	2R2	2R3	L1	L2	L3	R4
1Ns1	FF	1-2	1-3	1-4	×	×	×	×	×	×	×
1Ns3/M	1-1	1-2	FF	1-4	×	×	×	1	2	3	×
1Mp4/2M$_R$	1-1	1-2	1-3	FF	×	×	×	×	×	×	×
2R1	1-1	1-2	1-3	0	×	×	×	×	×	×	×
2R2	1-1	1-2	1-3	0	×	×	×	×	×	×	×
L1	×	×	0	×	×	×	×	FF	×	×	×

Personal computer-connected Station	Station Accessible from Personal computer										
	1Mp1	1Ns2	1N3/M	1Ns4/2M$_R$	2R1	2R2	2R3	L1	L2	L3	R4
1Mp1	FF	1-2	1-3	1-4	×	×	×	×	×	×	×
1N3/M	×	×	FF	×	×	×	×	1	2	3	×
1Ns4/2M$_R$	1-1	1-2	1-3	FF	×	×	×	×	×	×	×
2R1	1-1	1-2	1-3	0	×	×	×	×	×	×	×
2R2	1-1	1-2	1-3	0	×	×	×	×	×	×	×
L1	×	×	0	×	×	×	×	FF	×	×	×

1.3 Access Range for a QnA Series Start

A	Q/QnA	QS	FX
×	○*	×	×

*: Compatible with the QnACPU.

For MELSECNET/10 PLC to PLC network
- When using a MELSECNET/10 2-tier system:

Designated PLC number

Personal computer-connected Station	Station Accessible from Personal computer			
	1Mp1	1Ns2	1N3	1Ns4
1Mp1	FF	1-2	×	1-4
1N3	×	×	×	×
1Ns4	1-1	1-2	×	FF

× : Access not possible

Mp station...Control station
Ns station...Normal station (QnACPU)
N station.....Normal station (CPUs excluding QnA (AnU/AnA/AnNCPU))

In the figure to the right, the first digit for each station indicates the network number and the final line indicates the station number.
    FF: Host station

"Station accessible from Personal computer" in the tables:
<Example>
    1 - 2
        ↑ Station No.
Network No.

- When using a MELSECNET/10 multi-tier system:

Designated PLC number

Personal computer-connected Station	Station Accessible from Personal computer						
	1Mp1	1N2	1Ns3/2Mp1	1Ns4	2N2	2Ns3	2Ns4
1Mp1	FF	×	1-3	1-4	×	2-3	2-4
1N2	×	×	×	×	×	×	×
1Ns3/2Mp1	1-1	×	FF	1-4	×	2-3	2-4
2N2	×	×	×	×	×	×	×
2Ns3	1-1	×	2-1	1-4	×	FF	2-4

× : Access not possible

- When using a MELSECNET/10, MELSECNET (II) composite system:
    (Intermediate station: QnACPU)

Designated PLC number

Personal computer-connected Station	Station Accessible from Personal computer							
	1Ns1	1N2	1Ns3/M	1Mp4	L1	L2	L3	R4
1Ns1	FF	×	1-3	1-4	×	×	×	×
1Ns3/M	1-1	×	FF	1-4	1	2	3	×
1Mp4	1-1	×	1-3	FF	×	×	×	×
L1	×	×	0	×	FF	×	×	×

× : Access not possible

(Intermediate station: AnU/AnA/AnNCPU)

Designated PLC number

Personal computer-connected Station	Station Accessible from Personal computer							
	1Mp1	1Ns2	1N3/M	1Ns4	L1	L2	L3	R4
1Mp1	FF	1-2	×	1-4	×	×	×	×
1N3/M	×	×	×	×	×	×	×	×
1Ns4	1-1	1-2	×	FF	×	×	×	×
L1	×	×	×	×	FF	×	×	×

× : Access not possible

POINT

To access a programmable controller in another station, routing parameters must be set by using the Personal computer function.
For details of the network parameters themselves, refer to the MELSECNET/10 Network System Reference Manual.

[MELSECNET/10
PLC to PLC network]
Mp station....Control
station
Ns station....Normal
station
(QnACPU)
N station......Normal
station
(CPUs excluding QnA
(AnU/AnA/AnNCPU))

[MELSECNET/10
Remote I/O network]
M$_R$ station...Master
station
(QnACPU)
R station......Remote
station

[MELSECNET (II)]
M station......Master
station
L station.......Local
station
R station......Remote
station

In the figure to the right, the first digit for each station indicates the network number and the final line indicates the station number.
However, the station number of M$_R$ (master station) is not shown because it is "0."
FF: Host station

"Station accessible from Personal computer" in the tables:
<Example>
1 - 2
↑ ↑
Network No. Station No.

For MELSECNET/10 remote I/O network
• When using a MELSECNET/10 2-tier system

Designated PLC number

Personal computer-connected Station	Station Accessible from Personal computer			
	1M$_R$	1R1	1R2	1R3
1M$_R$	FF	×	×	×
1R1	0	×	×	×
1R2	0	×	×	×

×: Access not possible

※1: 1. The following devices of a remote I/O station connected to GX Developer can be monitored: X, Y, B, W.
2. Ladder monitoring, status monitoring (in remote I/O stations connected to GX Developer, the CPU connected to the master station can be monitored).
3. Loop test, setting confirmation test, station order confirmation test, communication test (testing with a remote station treated as the host station is possible).
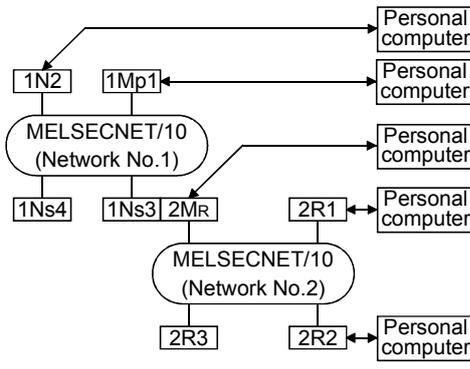
• When using a MELECNET/10 multi-tier system:

Designated PLC number

Personal computer-connected Station	Station Accessible from Personal computer						
	1Mp1	1N2	1Ns3/2MR	1Ns4	2R1	2R2	2R3
1Mp1	FF	×	1-3	1-4	×	×	×
1N2	×	×	×	×	×	×	×
1Ns3/2M$_R$	1-1	×	FF	1-4	×	×	×
2R1	1-1	×	1-3	1-4	×	×	×
2R2	1-1	×	0	1-4	×	×	×

×: Access not possible

• When using a MELSECNET/10, MELSECNET (II) composite system:

Designated PLC number

Personal computer-connected Station	Station Accessible from Personal computer										
	1Ns1	1N2	1Ns3/M	1Mp4/2M$_R$	2R1	2R2	2R3	L1	L2	L3	R4
1Ns1	FF	×	1-3	1-4	×	×	×	×	×	×	×
1Ns3/M	1-1	×	FF	1-4	×	×	×	1	2	3	×
1Mp4/2M$_R$	1-1	×	1-3	FF	×	×	×	×	×	×	×
2R1	1-1	×	1-3	0	×	×	×	×	×	×	×
2R2	1-1	×	1-3	0	×	×	×	×	×	×	×
L1	×	×	0	×	×	×	×	FF	×	×	×

×: Access not possible

Designated PLC number

Personal computer-connected Station	Station Accessible from Personal computer										
	1Mp1	1Ns2	1N3/M	1Ns4/2M$_R$	2R1	2R2	2R3	L1	L2	L3	R4
1Mp1	FF	1-2	×	1-4	×	×	×	×	×	×	×
1N3/M	×	×	×	×	×	×	×	×	×	×	×
1Ns4/2M$_R$	1-1	1-2	×	FF	×	×	×	×	×	×	×
2R1	1-1	1-2	×	0	×	×	×	×	×	×	×
2R2	1-1	1-2	×	0	×	×	×	×	×	×	×
L1	×	×	0	×	×	×	×	FF	×	×	×

×: Access not possible

1.4 Access Range for Q Series Start

A	Q/QnA	QS	FX
×	○∗1	○∗2	×

∗1: Compatible with the QCPU (Q mode).
∗2: Refer to QSCPU User's Manual (Function Explanation, Program Fundamentals)

For PLC-to-PLC network with MELSECNET/10, MELSECNET/H, and CC-Link IE controller network

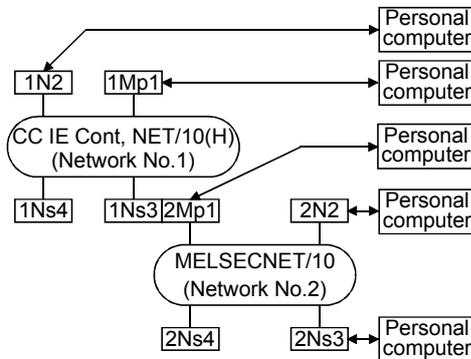- MELSECNET/10, MELSECNET/H, and CC-Link IE controller network in two-tier system
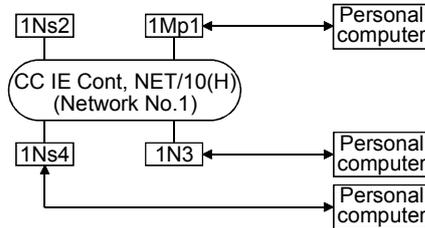
PLC numbers to be specified

Personal computer Connection Station	Station Accessible from Personal computer			
	1Mp1	1Ns2	1N3	1Ns4
1Mp1	FF	1-2	×	1-4
1N3	×	×	×	×
1Ns4	1-1	1-2	×	FF

× : Access not possible

- MELSECNET/10, MELSECNET/H, and CC-Link IE controller network in multi-tier system

PLC numbers to be specified

Personal computer-connected Station	Station Accessible from Personal computer						
	1Mp1	1N2	1Ns3/2Mp1	1Ns4	2N2	2Ns3	2Ns4
1Mp1	FF	×	1-3	1-4	×	2-3	2-4
1N2	×	×	×	×	×	×	×
1Ns3/2Mp1	1-1	×	FF	1-4	×	2-3	2-4
2N2	×	×	×	×	×	×	×
2Ns3	1-1	×	2-1	1-4	×	FF	2-4

× : Access not possible

Mp station...Control station
Ns station...Normal station (QCPU)
N station.....Ordinary station
CPU except Q/QnA (QCPU- A, AnU, AnA, AnNCPU)
The first digit of each station shown on the right indicates the network number, and the last digit the station number.

"Station accessible from Personal computer" in the tables:
<Example>

For remote I/O network of MELSECNET/H

- MELSECNET/H two-tier system

| 1R3 | | 1MR | ← | Personal computer |

MELSECNET/H (Network No.1)

| 1R2 | | 1R1 | ← | Personal computer |

← | Personal computer |

MELSECNET/H inter-PLC network

Mp station....Control station

Ns station....Ordinary station (QCPU (Q mode))

N station......Ordinary station

CPU except Q/QnA (AnU/AnA/AnNCPU)

MELSECNET/H remote I/O network

MR station...Master station (QCPU (Q mode))

R station......Remote station

The first digit of each station in the network area indicated on the right denotes the network number, and the last digit the station number.
However, the station number of MR (master station) is not given since it is 0.

"Station accessible from Personal computer" in the tables:
<Example>

1 - 2
↑ Station No.
Network No.

PLC numbers to be specified

Personal computer-connected Station	Station Accessible from Personal computer			
	1MR	1R1	1R2	1R3
1MR	FF	1-1	1-2	1-3
1R1	0	FF	1-2	1-3
1R2	0	1-1	FF	1-3

×: Access not possible

※1: 1. The devices X, Y, B and W of the remote I/O station connected with GX Developer can be monitored.
2. Line monitoring
3. Loop test, setting check test, station order check test, communication test (test can be made when remote station is connected to own station)
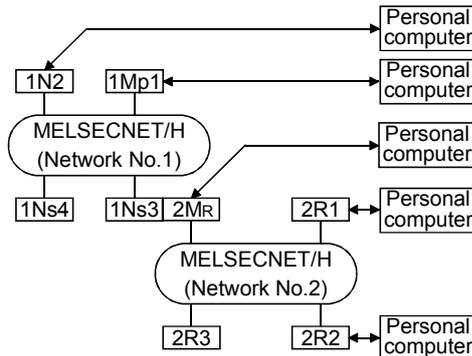
- MELSECNET/H multi-tier system

→ | Personal computer |

→ | Personal computer |

| 1N2 | | 1Mp1 | ← | Personal computer |

MELSECNET/H (Network No.1)

→ | Personal computer |

| 1Ns4 | | 1Ns3 | 2MR | | 2R1 | ← | Personal computer |

MELSECNET/H (Network No.2)

| 2R3 | | 2R2 | ← | Personal computer |

PLC numbers to be specified

Personal computer-connected Station	Station Accessible from Personal computer						
	1Mp1	1N2	1Ns3/2MR	1Ns4	2R1	2R2	2R3
1Mp1	FF	×	1-3	1-4	2-1	2-2	2-3
1N2	×	×	×	×	×	×	×
1Ns3/2MR	1-1	×	FF	1-4	2-1	2-2	2-3
2R1	1-1	×	0	1-4	FF	2-2	2-3
2R2	1-1	×	0	1-4	2-1	FF	2-3

×: Access not possible

Appendix 2 MELSECNET/10, MELSECNET/H Board, and CC-Link IE Controller Network Board Access Ranges

2.1 MELSECNET/10 Board, MELSECNET/H Board, and CC-Link IE controller network Board

A	Q/QnA	QS	FX
○	○	○	×

When using a CC-Link IE controller network, MELSECNET/10(H) board, confirm the MELSECNET board model names and driver versions indicated below.

	Board	Driver
MELSECNET/10 board for PC/AT	A70BDE-J71QLP23 (Optical loop) A70BDE-J71LP23GE A70BDE-J71QBR13 (Coaxial bus) A70BDE-J71QLR23 (Coaxial loop)	SW3DNF-MNET10
MELSECNET/H board for PC/AT	Q80BD-J71BR11 (Coaxial loop) Q80BD-J71LP21-25 (Optical loop) Q80BD-J71LP21S-25 (Optical loop) Q80BD-J71LP21G (Optical loop) Q80BD-J71LP21GE (Optical loop)	SW0DNC-MNETTH-B
CC-Link IE controller network board for PC/AT	Q80BD-J71GP21-SX (Optical loop) Q80BD-J71GP21S-SX (Optical loop)	SW1DNC-MNETTG-B

2.1.1 A series start

A	Q/QnA	QS	FX
◯	×	×	×

For MELSECNET/10 PLC-to-PLC network
- When using a MELSECNET/10 2-tier system:

1Ns2　1Mp1
MELSECNET/10 (Network No.1)　Personal computer 1
1Ns4　1N3

Designated PLC number

	Station Accessible from Personal computer			
	1Mp1	1Ns2	1N3	1Ns4
Personal computer 1	1-1	1-2	1-3	1-4

× : Access not possible

Mp station...Control

Ns station...Normal

N station.....Normal

(CPUs excluding AnU) (AnA/AnNCPU)

Personal computer 1 and 2 are peripheral devices that incorporate a MELSECNET/10 board.
In the figure to the right, the first digit for each station indicates the network number and the final line indicates the station number.

- When using a MELSECNET/10 multi-tier system:

1N2　1Mp1
MELSECNET/10 (Network No.1)　Personal computer 1
1Ns4　1Ns3 2Mp1　2N2
MELSECNET/10 (Network No.2)　Personal computer 2
2Ns4　2Ns3
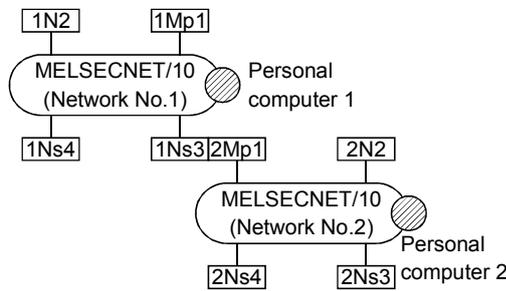
Designated PLC number

	Station Accessible from Personal computer								
	1Mp1	1N2	1Ns3/ 2Mp1	Personal computer 1	1Ns4	2N2	2Ns3	2Ns4	Personal computer 2
Personal computer 1	1-1	1-2	1-3	×	1-4	2-2	2-3	2-4	×
Personal computer 2	1-1	1-2	1-3	×	1-4	2-2	2-3	2-4	×

× : Access not possible

- When using a MELSECNET/10 / MELSECNET (II) composite system:

1N2　1Ns1
MELSECNET/10 (Network No.1)　Personal computer 1
L1
MELSECNET (II)　L2
1Mp4　1Ns3　M
R4　L3　Personal computer 2

Designated PLC number

	Station Accessible from Personal computer								
	1Mp1	1N2	1Ns3/ 2Mp1	1Ns4	Personal computer 1	L1	L2	R4	Personal computer 2
Personal computer 1	1-1	1-2	1-3	1-4	×	×	×	×	×
Personal computer 2	×	×	×	×	×	×	×	×	×

× : Access not possible

"Station accessible from Personal computer" in the tables:
<Example>
1　-
Station No.
Network No.

(Intermediate station: AnA/AnNCPU)

1Ns2　1Mp1
MELSECNET/10 (Network No.1)　Personal computer 1
L1
MELSECNET (II)　L2
1Ns4　1N3　M
R4　L3　Personal computer 2

Designated PLC number

	Station Accessible from Personal computer								
	1Mp1	1N2	1N3/ 2Mp1	1Ns4	Personal computer 1	L1	L2	R4	Personal computer 2
Personal computer 1	1-1	1-2	1-3	1-4	×	×	×	×	×
Personal computer 2	×	×	×	×	×	×	×	×	×

× : Access not possible

POINT

To access a programmable controller in another station, routing parameters must be set by using the GX Developer.
For details of the network parameter themselves, refer to the following manual.
- Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)
- Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O network)

For MELSECNET/10 remote I/O network
- When using a MELSECNET/10 multi-tier system:

[MELSECNET/10
PLC to PLC network]
Mp station....Control
             station
Ns station....Normal
             station
             (AnUCPU)
N station......Normal
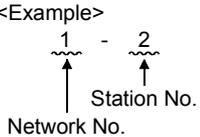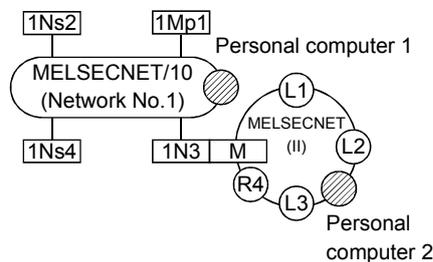   station
(CPUs excluding AnU
(AnA/AnNCPU))

[MELSECNET/10
Remote I/O network]
M$_R$ station...Master
             station
             (AnUCPU)
R station......Remote
             station

[MELSECNET (II)]
M station......Master
             station
L station.......Local
             station
R station......Remote
             station

Personal computer 1
and 2 are peripheral
devices that
incorporate a
MELSECNET/10
board.
In the figure to the
right, the first digit for
each station indicates
the network number
and the final line
indicates the station
number.
However, the station
number of M$_R$ (master
station) is not shown
because it is "0."

"Station accessible from
Personal computer" in
the tables:
<Example>

$\underset{\text{Network No.}}{\underline{1}} - \underset{\text{Station No.}}{\underline{2}}$

Designated PLC number

	Station Accessible from Personal computer						
	1Mp1	1N2	1Ns3/ 2M$_R$	1Ns4	2R1	2R2	2R3
Personal computer 1	1-1	1-2	1-3	1-4	✕	✕	✕

✕ : Access not possible

- MELSECNET/10 /MELSECNET (II) composite system

Designated PLC number

	Station Accessible from Personal computer										
	1Ns1	1N2	1Ns3/ M	1Mp4/ 2M$_R$	2R1	2R2	2R3	L1	L2	L3	R4
Personal computer 1	1-1	1-2	1-3	1-4	✕	✕	✕	✕	✕	✕	✕
Personal computer 2	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕

✕ : Access not possible

Designated PLC number

	Station Accessible from Personal computer										
	1Mp1	1Ns2	1N3/M	1Ns4/ 2M$_R$	2R1	2R2	2R3	L1	L2	L3	R4
Personal computer 1	1-1	1-2	1-3	1-4	✕	✕	✕	✕	✕	✕	✕
Personal computer 2	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕

✕ : Access not possible

2.1.2 QnA series start

A	Q/QnA	QS	FX
×	○✳	×	×

✳: Compatible with the QnACPU.

For MELSECNET/10 PLC-to-PLC network
- When using a MELSECNET/10 2-tier system:

Designated PLC number

	Station Accessible from Personal computer			
	1Mp1	1Ns2	1N3	1Ns4
Personal computer 1	1-1	1-2	×	1-4

× : Access not possible

- When using a MELSECNET/10 multi-tier system:

Designated PLC number

	Station Accessible from Personal computer								
	1Mp1	1N2	1Ns3/2Mp1	Personal computer 1	1Ns4	2N2	2Ns3	2Ns4	Personal computer 2
Personal computer 1	1-1	×	1-3	×	1-4	×	2-3	2-4	×
Personal computer 2	1-1	×	1-3	×	1-4	×	2-3	2-4	×

× : Access not possible

- When using a MELSECNET/10 / MELSECNET (II) composite system:

Designated PLC number

	Station Accessible from Personal computer								
	1Mp1	1N2	1Ns3/2Mp1	1Ns4	Personal computer 1	L1	L2	R4	Personal computer 2
Personal computer 1	1-1	×	1-3	1-4	×	×	×	×	×
Personal computer 2	×	×	×	×	×	×	×	×	×

× : Access not possible

(Intermediate station: AnU/AnA/AnNCPU)

Designated PLC number

	Station Accessible from Personal computer								
	1Mp1	1Ns2	1N3/2Mp1	1Ns4	Personal computer 1	L1	L2	R4	Personal computer 2
Personal computer 1	1-1	1-2	×	1-4	×	×	×	×	×
Personal computer 2	×	×	×	×	×	×	×	×	×

× : Access not possible

Mp station...Control station
Ns station...Normal station (QnACPU)
N station.....Normal station
(CPUs excluding AnU (AnU/AnA/AnNCPU))
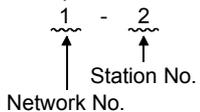Personal computer 1 and 2 are peripheral devices that incorporate a MELSECNET/10 board.
In the figure to the right, the first digit for each station indicates the network number and the final line indicates the station number.

"Station accessible from Personal computer" in the tables:
<Example>
1 - 2
Station No.
Network No.

POINT

To access a programmable controller in another station, routing parameters must be set by using the GX Developer.
For details of the network parameter themselves, refer to the following manual.
- For QnA/Q4AR MELSECNET/10 Network System Reference Manual

For MELSECNET/10 remote I/O network
- When using a MELSECNET/10 multi-tier system:

Designated PLC number

	Station Accessible from Personal computer						
	1Mp1	1N2	1Ns3/ 2M$_R$	1Ns4	2R1	2R2	2R3
Personal computer 1	1-1	✕	1-3	1-4	✕	✕	✕

✕ : Access not possible

- MELSECNET/10 /MELSECNET (II) composite system

Designated PLC number

	Station Accessible from Personal computer										
	1Ns1	1N2	1Ns3/ M	1Mp4/ 2M$_R$	2R1	2R2	2R3	L1	L2	L3	R4
Personal computer 1	1-1	✕	1-3	1-4	✕	✕	✕	✕	✕	✕	✕
Personal computer 2	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕

✕ : Access not possible

Designated PLC number

	Station Accessible from Personal computer										
	1Mp1	1Ns2	1N3/M	1Ns4/ 2M$_R$	2R1	2R2	2R3	L1	L2	L3	R4
Personal computer 1	1-1	1-2	✕	1-4	✕	✕	✕	✕	✕	✕	✕
Personal computer 2	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕

✕ : Access not possible

[MELSECNET/10 PLC to PLC network]
Mp station....Control station
Ns station....Normal station (QnACPU)
N station......Normal station
(CPUs excluding QnA (AnU/AnA/AnNCPU))

[MELSECNET/10 Remote I/O network]
M$_R$ station...Master station (QnACPU)
R station......Remote station

[MELSECNET (II)]
M station......Master station
L station.......Local station
R station......Remote station

Personal computer 1 and 2 are peripheral devices that incorporate a MELSECNET/10 board.
In the figure to the right, the first digit for each station indicates the network number and the final line indicates the station number.
However, the station number of M$_R$ (master station) is not shown because it is "0."

"Station accessible from Personal computer" in the tables:
<Example>

1 - 2

↑ Station No.
↑ Network No.

2.1.3 Q series start

A	Q/QnA	QS	FX
×	○＊1	○＊2	×

＊1: Compatible with the QCPU (Q mode).
＊2: Refer to QSCPU User's Manual (Function Explanation, Program Fundamentals)

For inter-PLC network of MELSECNET/10, MELSECNET/H, and CC-Link IE controller network

• MELSECNET/10, MELSECNET/H, and CC-Link IE controller network two-tier system:
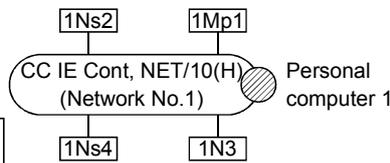
PLC numbers to be specified

	Station Accessible from Personal computer			
	1Mp1	1Ns2	1N3	1Ns4
Personal computer 1	1-1	1-2	×	1-4

× : Access not possible

• MELSECNET/10, MELSECNET/H, and CC-Link IE controller network multi-tier system:
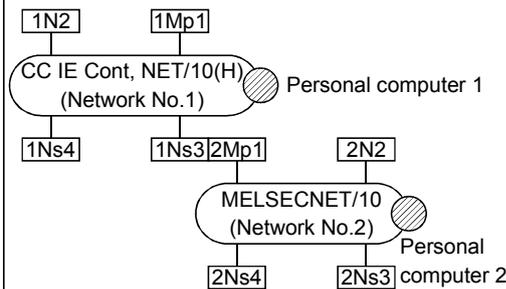
PLC numbers to be specified

	Station Accessible from Personal computer								
	1Mp1	1N2	1Ns3/ 2Mp1	Peripheral Device 1	1Ns4	2N2	2Ns3	2Ns4	Peripheral Device 2
Personal computer 1	1-1	×	1-3	×	1-4	×	2-3	2-4	×
Personal computer 2	1-1	×	1-3	×	1-4	×	2-3	2-4	×

× : Access not possible

For MELSECNET/10 remote I/O network

• MELSECNET/H multi-tier system
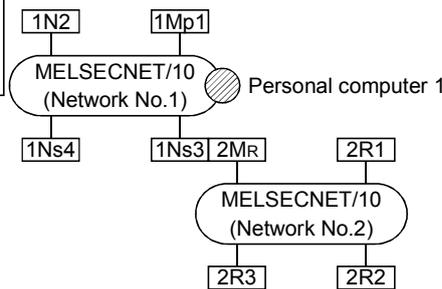
PLC numbers to be specified

	Station Accessible from Personal computer						
	1Mp1	1N2	1Ns3/2M$_R$	1Ns4	2R1	2R2	2R3
Personal computer 1	1-1	×	1-3	1-4	×	×	×

× : Access not possible

Mp station...Control station
Ns station...Ordinary station QCPU
N station.....Ordinary station
(CPU except Q/QnA (QCPU-A, AnU, AnA, AnNCPU))

Personal computer 1, 2 are those which have built-in MELSECNET/10 boards or MELSECNET/H boards or CC-Link IE controller network boards. The first digit of each station shown on the right indicates the network number, and the last digit the station number.

"Station accessible from Personal computer" in the tables:
<Example>

1 - 2
Station No.
Network No.
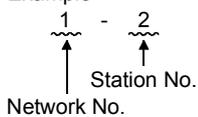
POINT

To access the other station programmable controller, routing parameter setting must be made using the GX Developer.
For details of the network parameter themselves, refer to the following manual.
  • Q Corresponding MELSECNET/H Network System Reference Manual
    (PLC to PLC network)
  • Q Corresponding MELSECNET/H Network System Reference Manual
    (Remote I/O network)

2.2 Access Range via an Ethernet Board

A	Q/QnA	QS	FX
○	○	○∗	×

∗: Refer to QSCPU User's Manual (Function Explanation, Program Fundamentals)
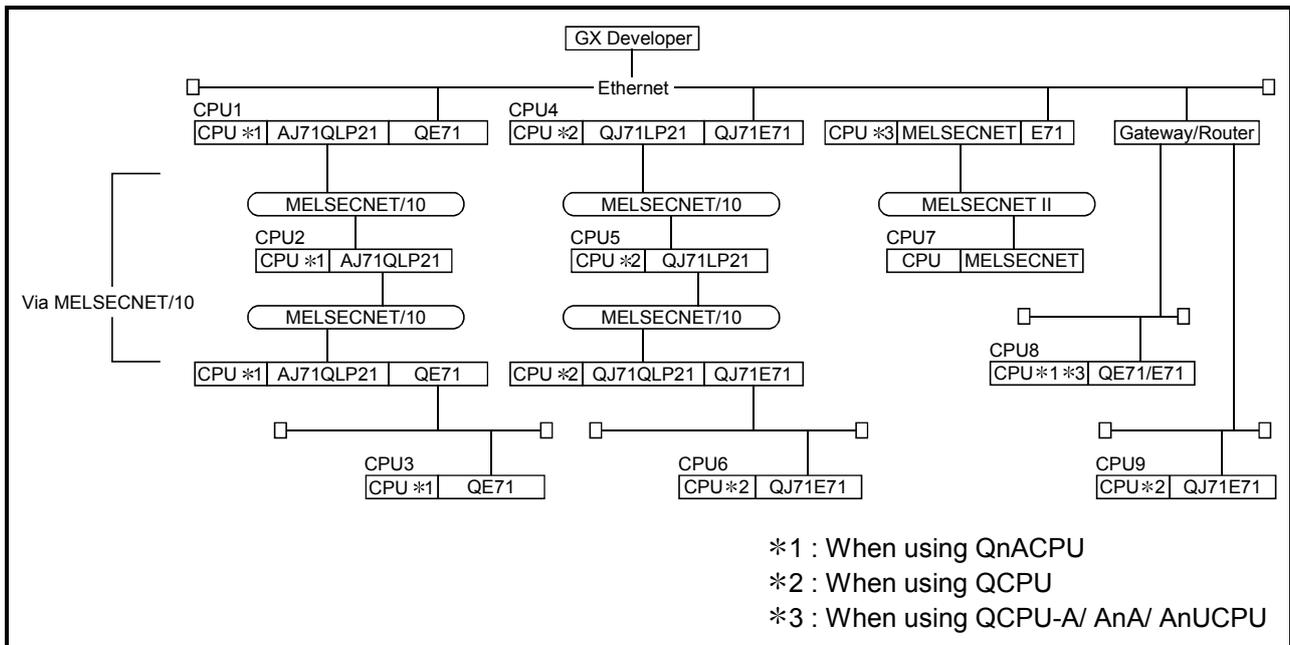
∗1 : When using QnACPU
∗2 : When using QCPU
∗3 : When using QCPU-A/ AnA/ AnUCPU

- The access range to master stations/local stations/remote stations/control stations/normal stations via MELSECNET (II)/MELSECNET/10 is the same as via a programmable controller direct link (via MELSECNET).

Applicable PLC / Function	CPU1	CPU2	CPU3	CPU4	CPU5	CPU6	CPU7	CPU8	CPU9
PLC read/write	○	○	○	○	○	○	○	×	○
Compare with PLC	○	○	○	○	○	○	○	×	○
Delete PLC *1	○	○	○	○	○	○	○	×	○
Change PLC data attributes *1	○	○	○	○	○	○	○	×	○
Keyword setup	○	○	○	○	○	○	○	×	○
Clear PLC memory	○	○	○	○	○	○	○	×	○
Format PLC memory *1	○	○	○	○	○	○	○	×	○
Arrange PLC memory *1	○	○	○	○	○	○	○	×	○
Set time	○	○	○	○	○	○	○	×	○
Remote operation	○	○	○	○	○	○	○	×	○
Ladder monitor	○	○	○	○	○	○	○	×	○
Batch monitor	○	○	○	○	○	○	○	×	○
Registration monitor	○	○	○	○	○	○	○	×	○
Buffer memory	○	○	○	○	○	○	○	×	○
Monitor condition/stop condition	×	×	×	×	×	×	×	×	×
Device test	○	○	○	○	○	○	○	×	○
Step execution	○	○	○	○	○	○	○	×	○
Partial execution	○	○	○	○	○	○	○	×	○
Skip execution *1	○	○	○	○	○	○	○	×	○
Sampling trace	○	○	○	○	○	○	○	×	○
Diagnostics PLC	○	○	○	○	○	○	○	×	○
MELSECNET diagnostics *2	○	○	○	○	○	○	○	×	○
Online change *1	○	○	○	○	○	○	○	×	○
Change TC setting	○	○	○	○	○	○	○	×	○

○: Access possible ×: Access not possible

*1: Accessible only to Q/QnACPU.

*2: Accessible only to network monitoring own and other stations.
(AnUCPU is handled as equivalent to AnACPU.)

A series

Corresponding Models	Corresponding Versions	Remarks
AJ71E71-S3,A1SJ71E71-B2-S3, A1SJ71E71-B5-S3	Initially shipped version and later versions	If a remote I/O is installed, or during communication, the error LED lights.
AJ71E71N-B2,A1SJ71E71N-B2, AJ71E71N-B5T,A1SJ71E71N-B5T, AJ71E71N-T,A1SJ71E71N-T, AJ71E71N-B5,A1SJ71E71N-B5, AJ71E71N3-T,A1SJ71E71N3-T	Initially shipped version and later versions	

• For the access to QCPU (A mode) or AnUCPU via Ethernet, refer to the point in Section 16.2.1 (1).

QnA series

Corresponding Models	Corresponding Versions	Remarks
AJ71QE71,AJ71QE71-B5, A1SJ71QE71-B2,A1SJ71QE71-B5	Function version B and later versions	—
AJ71QE71N-T, A1SJ71QE71N-T, AJ71QE71N-B5, A1SJ71QE71N-B5, AJ71QE71N-B2, A1SJ71QE71N-B2, AJ71QE71N-B5T, A1SJ71QE71N-B5T, AJ71QE71N3-T, A1SJ71QE71N3-T	Initially shipped version and later versions	—

Q series

Corresponding Models	Corresponding Versions	Remarks
QJ71E71, QJ71E71-B2, QJ71E71-B5, QJ71E71-100	Initially shipped version and later versions	—

2.3 Access Range via CC-Link (AJ65BT-G4)

A	Q/QnA	QS	FX
○	○	○*	×

∗: Refer to QSCPU User's Manual (Function Explanation, Program Fundamentals)
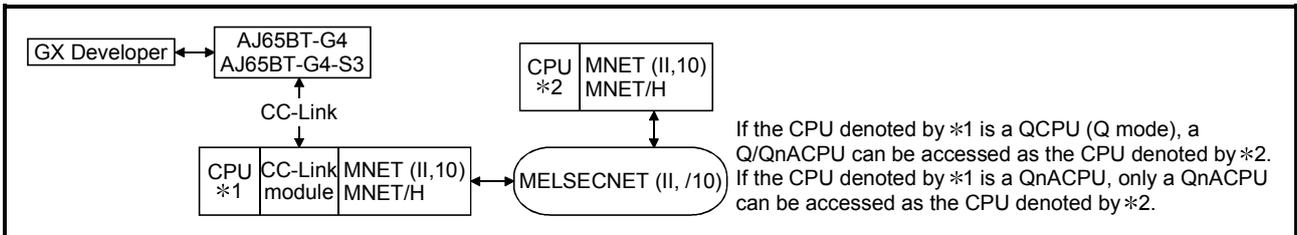
- The access range to master stations/local stations/remote stations/control stations/normal stations via MELSECNET (II)/MELSECNET/10 is the same as via a programmable controller direct link (via MELSECNET).
- When connecting to ACPU, routing through MELSECNET (II) or MELSECNET/10 is not possible.

○: Access possible　×: Access not possible　─: Function not supported by ACPU

Function / Applicable PLC	ACPU	QnACPU	QCPU (Q mode)
PLC read/write	○	○	○
Compare with PLC	○	○	○
Delete PLC	─	○	○
Change PLC data attributes	─	○	○
Keyword setup	○	○	○
Clear PLC memory	○	○	○
Format PLC memory	─	○	○
Arrange PLC memory	─	○	○
Set time	○	○	○
Remote operation	○	○	○
Ladder monitor	○	○	○
Batch monitor	○	○	○
Registration monitor	○	○	○
Buffer memory	○	○	○
Monitor condition/stop condition	─	×	×
Device test	○	○	○
Step execution	○	○	○
Partial execution	○	○	○
Skip execution	─	○	○
Sampling trace	○	○	○
Diagnostics PLC	○	○	○
MELSECNET diagnostics	×	○ ∗1	○ ∗1
Online change	○	○	○
Change TC setting	○	○	○

∗1: Only the network monitor host station and other stations can be accessed.
　(AnUCPU is treated as equivalent to AnACPU.)

Confirm that the AJ65BT-G4 is running one of the following software versions.

CPU	Module Name	AJ65BT-G4 Software Version
ACPU	AJ65BT-G4	A and later
QnACPU		B and later

2.4 Access Range via Computer Link

A	Q/QnA	QS	FX
○	×	×	×

The table below shows whether or not each function can be performed via the computer link module.

When accessing the master station, local station, remote station, control station or normal station via MELSECNET II or MELSECNET/10, the access range will be the same as when it is directly connected to the programmable controller (via MELSECNET).

Some functions cannot be used depending on the type of the programmable controller. For details on the availability of each function, see the user's manual of each programmable controller.

Applicable PLC ⟍ Function	ACPU
PLC read/write	○
Compare with PLC	○
Delete PLC	―
Change PLC data attributes	―
Keyword setup	○
Clear PLC memory	×
Format PLC memory	―
Arrange PLC memory	―
Set time	○
Remote operation	○
Ladder monitor	○
Batch monitor	○
Registration monitor	○
Buffer memory	×
Monitor condition/stop condition	―
Device test	○
Step execution	×
Partial execution	×
Skip execution	―
Sampling trace	×
PLC Diagnostics	○
MELSECNET diagnostics	×
Ethernet Diagnostics	×
CC-Link Diagnostics	×
Online change	×
Change TC setting	○

○: Access possible ×,―: Access not possible

The restrictions when executing ladder monitoring, batch monitoring, registration monitoring, device tests, or TC set value changes from a programmable controller via a computer link module are indicated below.

Computer Link Connected PLC	For AnACPU *2	For AnUCPU
AnACPU	○	○
AnUCPU	Possible within AnACPU range *1	○
Other than AnACPU, AnUCPU	○	○

*1 : Network parameters cannot be read.

*2 : When for AnA (C24) has been designated in connection destination designation when using a computer link module for AnUCPU.

- Setting of transmission specification setting switch

The setting switches at the C24 side are shown below.

Setting Item	Setting Made	Remarks
Main channel setting	RS-232	—
Data bit setting	8 bits	—
Transmission speed	Match with setting at GX Developer	—
Parity yes/no setting	Match with setting at GX Developer	—
Even/odd parity	Match with setting at GX Developer	—
Stop bits	1 bit	—
Sum check yes/no	Match with setting at GX Developer	—
Online program change (write during RUN) yes/no	Match with setting at GX Developer	—
Send side terminal resistor yes/no	Depends on system configuration *1	—
Receive side terminal resistor yes/no	Depends on system configuration *1	—
Computer link/multidrop setting	Computer link	AJ71UC24 A1SJ71UC24-R4 A1SJ71C24-R4

*1: Refer to the Computer Link/Multidrop Link Module User's Manual (Computer Link/Function, Printer Function).

2.5 Access Range via Serial Communication

A	Q/QnA	QS	FX
×	○	○∗	×

∗: Refer to QSCPU User's Manual (Function Explanation, Program Fundamentals)

The following table indicates whether each function that can be performed via serial communication is possible or not.

Function \ Applicable PLC	QCPU	QnACPU
PLC read/write	○	○
Compare with PLC	○	○
Delete PLC	○	○
Change PLC data attributes	○	○
Keyword setup	—	○
Password setup	○	—
Clear PLC memory	○	○
Format PLC memory	○	○
Arrange PLC memory	○	○
Set time	○	○
Remote operation	○	○
Ladder monitor	○	○
Batch monitor	○	○
Registration monitor	○	○
Buffer memory	○	○
Monitor condition/stop condition	×	×
Device test	○	○
Step execution	○	○
Partial execution	○	○
Skip execution	○	○
Sampling trace	○	○
PLC Diagnostics	○	○
MELSECNET diagnostics	○	○
Ethernet Diagnostics	○	○
CC-Link Diagnostics	○	○
Online change	○	○
Change TC setting	○	○

○: Access possible

2.6 Access Range for Mixed System

A	Q/QnA	QS	FX
×	○	○∗	×

∗: Refer to QSCPU User's Manual (Function Explanation, Program Fundamentals)

The access range for compound system is explained using the following combination example of Ethernet, MELSECNET/10, and CC-Link.

GX Developer
Q series start

Ethernet
Network No. 1
QJ71E71
QJ71LP21
CPU1

MELSECNET/10
Network No. 2

QE71
AJ71QLP21
CPU2

Ethernet
Network No. 3
CPU3

AJ61BT11
CPU4
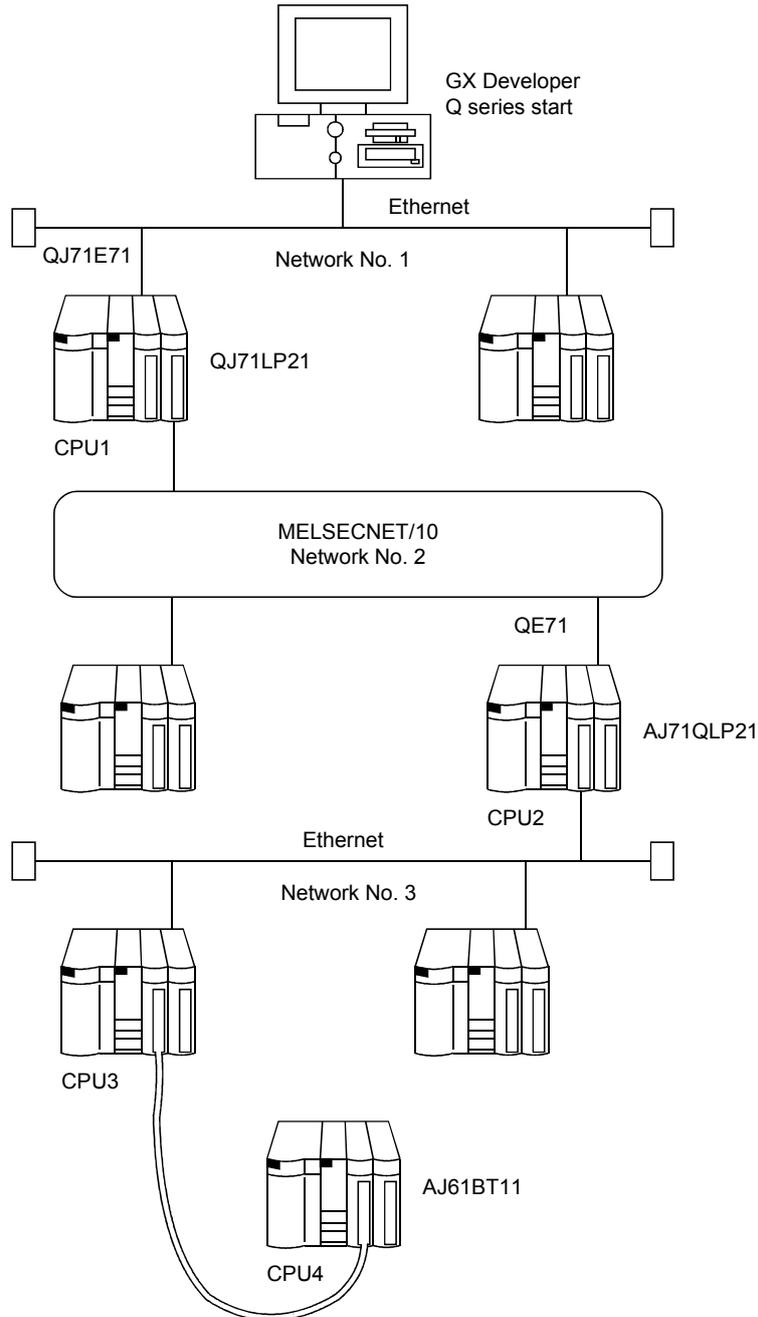
> **POINT**
>
> Ethernet is equivalent to MELSECNET/10.
> Set the network numbers and station numbers with the network parameters.

Applicable PLC / Function	CPU1	CPU2	CPU3	CPU4
PLC read/write	○	○	○	○
Compare with PLC	○	○	○	○
Delete PLC	○	○	○	○
Change PLC data attributes	○	○	○	○
Keyword setup	○	○	○	○
Clear PLC memory	○	○	○	○
Format PLC memory	○	○	○	○
Arrange PLC memory	○	○	○	○
Set time	○	○	○	○
Remote operation	○	○	○	○
Ladder monitor	○	○	○	○
Batch monitor	○	○	○	○
Registration monitor	○	○	○	○
Buffer memory	○	○	○	○
Monitor condition/stop condition	×	×	×	×
Device test	○	○	○	○
Step execution	○	○	○	○
Partial execution	○	○	○	○
Skip execution	○	○	○	○
Sampling trace	○	○	○	○
Diagnostics PLC	○	○	○	○
MELSECNET diagnostics	○	○	○	○
Online change	○	○	○	○
Change TC setting	○	○	○	○

○: Access possible
×: Access not possible

POINT
If the E71 module is connected to network No. 2 or No. 3, it cannot be accessed from GX Developer.

Appendix 3 Using Data of Other Applications

3.1 Using Excel Files as Device Comments

A	Q/QnA	QS	FX
○	○	○	○

[Purpose]
Uses data created with Excel as device comments.

[Operating Procedure]
This explanation assumes that you have already started up Excel and GX Developer.

(1) Drag the Excel cell and designate the range that will enable it to be used as a comment in GX Developer.

(Operation in Excel)
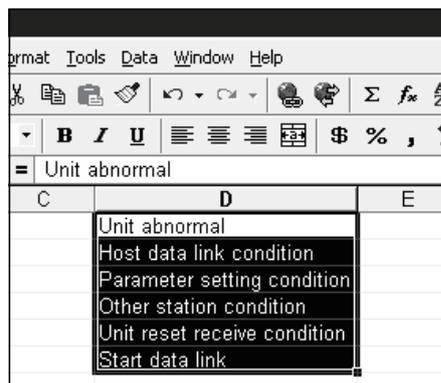
(2) In Excel, select [Edit] → [Copy], or click 🖺 (Ctrl + C).

(3) Click the position where the comment is to be pasted and move the cursor.

(Operation at GX Developer)

(4) In GX Developer, select [Edit] → [Paste], or click 🗐 (Ctrl + V) to paste the Excel comment to GX Developer.

Device	Comment	Label
X0	Unit abnormal	
X1	Host data link condition	
X2	Parameter setting condition	
X3	Other station condition	
X4	Unit reset receive condition	
X5	Start data link	
X6		
X7		
X8		

3.2 Using Word Files as Device Comments

	A	Q/QnA	QS	FX
	○	○	○	○

[Purpose]
Uses data created in Word as device comments.

[Operating Procedure]
This explanation assumes that you have already started up Word and GX Developer.

(1) Enter the comments in Word.
After each device comment, press the $\boxed{\text{Enter}}$ key to insert a carriage return.

(2) Drag the created comments and designate the range for their use as GX Developer comments.

(Operation in Word)
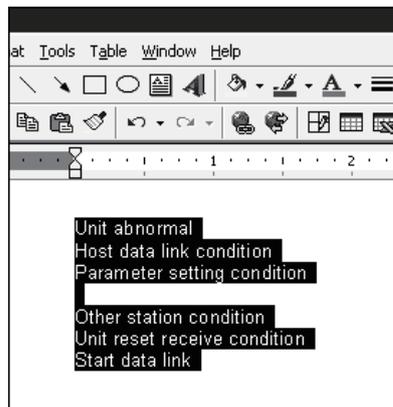
(2) In Word, select [Edit] → [Copy], or click $\boxed{\text{📋}}$ ($\boxed{\text{Ctrl}}$ + $\boxed{\text{C}}$).

(3) Click the location where the comment is to be pasted and move the cursor.

(Operation at GX Developer)

(4) In GX Developer, select [Edit] → [Paste], or click 📋 (Ctrl + V) to paste the Word comment in GX Developer.

Device	Comment	Label
X0	Unit abnormal	
X1	Host data link condition	
X2	Parameter setting condition	
X3		
X4	Other station condition	
X5	Unit reset receive condition	
X6	Start data link	
X7		
X8		

Device [X0] [Display]

POINT

- When entering device comments, inserting a carriage return between two comments makes one line of the comment table blank.

- When creating comments in Word, if they are entered continuously without carriage returns they are handled as a single comment: always insert carriage returns between individual comments.

Appendix 4 Restrictions on PLC Type Change

A	Q/QnA	QS	FX
○	○	×	○

When the PLC series/type is changed, there are the following restrictions.

(1) Restrictions on PLC series/type change
Refer to the following table for the restrictions on PLC series/type change.

Before Change \ After Change	A	QnA	Q (A mode) *1	Q (Q mode) *2	Motion controller (SCPU) *3	FX
A	Table 1/ Table 1.1	Table 2	Table 1 (A→A4U equivalent)	Table 2/Table 3 *4 (A→QnA equivalent)	Table 1 (A→A equivalent)	Table 6
QnA	Table 2	No restrictions	Table 2 (QnA→A4U equivalent)	Table 4	Table 2 (QnA→A equivalent)	Change not possible
Q (A mode) *1	Table 1 (A4U→A equivalent)	Table 2 (A4U→ QnA equivalent)	No restrictions	Table 2/Table 3 *4 (A4U→QnA equivalent)	Table 1 (A4U→A equivalent)	Table 6 (A4U→FX equivalent)
Q (Q mode) *2, *5, *7	Table 2/Table 3 *4 (QnA→A equivalent)	Table 4	Table 2/Table 3 *4 (QnA→A4U equivalent)	Table 8/Table 9/ Table 10/ Table 11 *6/ Table 12 *8/ Table 13	Table 2/Table 3 *4 (QnA→A4U equivalent)	Change not possible
Motion controller (SCPU) *3	Table 5 (A→A equivalent)	Table 5 (A→QnA equivalent)	Table 5 (A→A4U equivalent)	Table 5 (A→QnA equivalent)	Table 1 (A→A equivalent)	Table 5 (A→FX equivalent)
FX	Table 6	Change not possible	Table 6 (FX→A4U equivalent)	Change not possible	Table 5 (FX→A equivalent)	Table 7/ Table 7.1

*1: The QCPU-A has the specifications equivalent to those of the A4U.
   For the restrictions on any change from/to the QCPU-A, regard it as the A4U and refer to the table.

*2: The QCPU has the specifications equivalent to those of the QnA series.
   For the restrictions on any change from/to the QCPU, regard it as the QnA series and refer to the table.

*3: The motion controller (SCPU) has the specifications equivalent to those of the A series.
   For the restrictions on any change from/to the motion controller (SCPU), regard it as the A series and refer to the table.

*4: Refer to Table 2 (A↔QnA) and Table 3 (A↔QCPU) from the specifications as listed above (*1, *2, *3).

*5: When multi-CPU related setting has been made, the programs, parameters and device comments are handled as follows.
   Parameters
   (1) The multi CPU setting is deleted.
   (2) When the multiple CPUs have been I/O assigned, the multi CPU setting is deleted and the special and I/O module assignment is shifted forward.
   (3) When the PLC type is changed to the A series, the type data is deleted if characters other than alphanumeric characters are set in the type setting field of I/O assignment.
   Device comments
   (1) The device ranges (U200 to U3FF, U3E0\G** to U3FF\G**) increased for multiple CPUs are deleted.

*6: When changing the PLC type from the redundant CPU to another CPU or from another CPU to the redundant CPU, the information is converted into that of the Process CPU once and then converted into that of the specified PLC type. Change the PLC type after confirming the restrictions on PLC type change (Table 11 and Table 8, Table 9, Table 10).

Redundant CPU ⇄ Process CPU ⇄ Other than Redundant CPU
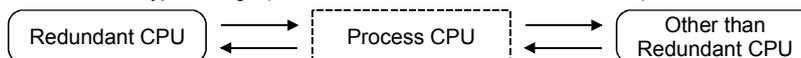
*7: When changing the PLC type from the QCPU (Q mode) to another CPU, the network setting of CC-Link IE controller network is deleted.

*8: When changing the PLC type from the Universal model QCPU to another CPU or vice versa, the information is converted into that of the High Performance model QCPU once and then converted into that of the specified PLC type.
   Change the PLC type after confirming the Restrictions on PLC Type Change (Table 12, Table 8, Table 9, Table 10, and Table 11).

Universal model QCPU → High Performance model QCPU → Other than Universal model QCPU
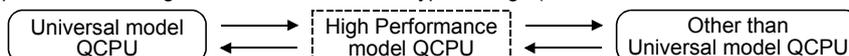
(2) PLC type change in label program
    During label programming, the PLC type change may be converted only between the same series CPUs, i.e. between QCPU (Q mode) and QCPU (Q mode) or between QnACPU and QnACPU.

(3) Unchangeable instructions/devices
    The instructions/devices that cannot be converted by PLC type change are converted into the following devices.
    After executing the PLC type change, search for the following devices and correct them to the instructions/devices available for the new PLC series/type.

New CPU type	Devices that need to be modified because of unconvertibility
Basic model QCPU	SM999, SD999
High performance model QCPU	SM1255, SD1255
Universal model QCPU	SM1255, SD1255
Process CPU	SM1255, SD1255
Redundant CPU	SM1255, SD1255
QnACPU	SM1255, SD1255
ACPU	M9255, D9255
FXCPU	M8255, D8255

POINT
For CPU details, refer to the corresponding User's Manual.

Table 1 Restrictions on PLC Type Change between ACPU and ACPU

Item	Restrictions
Programs	• If there are devices that are outside the programmable controller handling range, write a program to the programmable controller after making corrections. Devices outside the range may be displayed on the ladder display screen but an error will occur at the time of programmable controller RUN. • When the PLC type after change is the one which cannot create subprograms, subprograms are deleted.
Device comment	• All device comments are converted. (Device comments out of the device range of the new PLC type are deleted.)
PLC parameters	

	Memory capacity	• If the PLC type capacity before change is smaller than the PLC type capacity after change, the capacity of the PLC type before change is used. • If the PLC type capacity before change is larger than the PLC type capacity after change, the capacity of the PLC type after change is used. In this case, part of the program before change may sometimes be deleted. • When the PLC type after change is the one which cannot create subprograms, sub sequence programs are deleted. • If the sequence + microcomputer program capacity exceeds the capacity of the PLC type after change, the microcomputer capacity is zeroed. Also, part of the program before change may sometimes be deleted.
	PLC RAS, PLC system, devices	• If the PLC type after change has the same item or range, the data of the PLC type before change is retained. However, if there are devices that cannot be used at the PLC type after change, the default is set.
	I/O allocation	• All cleared.

Network parameters

MELSECNET, MELSECNET(II), MELSECNET(II) combination, MELSECNET/10, MELSECNET/MINI		

PLC Type			Description
AnN	→	AnN	• Settings are retained.
		AnA	• Settings are retained.
		AnU	• Settings are retained. However, the module's first I/O No. is set to 00H.
AnA	→	AnN	• MELSECNET master station settings are retained. Other station settings but the above are deleted.
		AnA	• Settings are retained.
		AnU	• Settings are retained. However, the module's first I/O No. is set to 00H.
AnU	→	AnN	• MELSECNET master station settings are retained. Other station settings but the above are deleted.
		AnA	• MELSECNET master station, MELSECNET(II) combination master station and MELSECNET(II) settings are retained. Other station settings but the above are deleted.
		AnU	• Settings are retained. However, if there is any one module whose setting of the network's first I/O No exceeds that of the actual I/O of the PLC after change, 0H, 20H, 40H or 60H is automatically assigned to the first I/O No.

Device memory	• All devices are converted. (Devices out of the device range of the new PLC type are deleted.)

Table 1.1 PLC Parameter Settings for PLC Type Change between ACPU and ACPU

Before Change ＼ After Change	A0J2H	A1FX	A1N	A2N-S1	A2N	A3N	A1SJ / A1S	A1SJH / A1SH	A2S (S1)	A2SH	A2CJ	A2C	A2A-S1	A2A	A3A	A2USH-S1	A2U / A2U-S1 / A2US (S1) / A2AS-S30 / A2AS-S60	A3U	A4U
A0J2H	○	—	○	○	○	—	○	○	○	—	—	—	—	—	—	—	—	—	—
A1FX	—	○	—	○	○	—	○	○	○	—	—	—	—	—	—	—	—	—	—
A1N	○	—	○	○	○	○	○	○	○	—	—	—	—	—	—	—	—	—	—
A2N / A2N-S1	—	—	—	○	○	—	○	○	○	—	—	—	—	—	—	—	—	—	—
A3N	—	—	—	—	—	○	—	—	—	—	—	—	—	—	—	—	—	—	—
A1S / A1SJ	—	—	—	○	○	○	○	○	○	—	—	—	—	—	—	—	—	—	—
A1SH / A1SJH	—	—	—	—	○	—	—	○	—	○	—	—	—	—	—	—	—	—	—
A2S	—	—	—	○	○	—	○	○	○	—	—	—	—	—	—	—	—	—	—
A2SH	—	—	—	—	○	—	—	○	○	○	—	—	—	—	—	—	—	—	—
A2C / A2CJ	—	—	—	—	—	—	—	—	—	—	○	—	—	—	—	—	—	—	—
A2A / A2A-S1	—	—	—	—	—	—	—	—	—	—	—	—	○	○	○	○	○	○	○
A3A	—	—	—	—	—	—	—	—	—	—	—	—	—	○	○	○	○	○	○
A2U / A2U-S1 / A2US / A2US-S1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	○	○	○	○
A2USH-S1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	○	○	○	○
A3U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	○	○
A4U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	○	○

○: Settings of PLC type before change are retained

—: Default to settings of PLC type after change, or partial deletion

Table 2 Restrictions on PLC Type Change between ACPU and QnACPU

Item		Restrictions	
		A → QnA	QnA → A
Programs		All programs are changed.	• Unchangeable data names (other than MAIN, SUB1, etc.) are deleted. • If the maximum number of steps is exceeded, part of the program is deleted. Note that if the same instruction is used, the number of steps of the A series may become greater.
		• Unchangeable instructions and devices are changed into SM1255/SD1255.	• Unchangeable instructions and devices are changed into M9255/D9255.
		• Changeable only when "special module's first I/O number designation" or "network's other station number designation" has been constant specified using changeable dedicated instructions (e.g. ZCOM). <Example>	

Changeable	Unchangeable
LEDA ZCOM	LEDA ZCOM
SUB H0	LEDC D0 ....Unchangeable since the network module's first
LEDR	LEDR I/O No. is device specified.

Item		Restrictions	
Device comments		• All of them are changed.	• Device comments which exceed the device range of the PLC type after change and non-existing device comments are deleted. Comments other than the above are retained intact.
PLC parameters			
	Memory capacity	• No change	• For any of MAIN, SUB1, SUB2 and SUB3, set the maximum capacity of the PLC after change. • For comments, extension comments, etc., set them to the default.

	Latch range	A		QnA	QnA		A
		L		No change	B		B
		Extension counters		No change	F		Not subject to change
		Retentive timers		No change	V		Not subject to change
		C latch range		C latch range	T	→	Low-speed timers
		D latch range		D latch range	ST		Not subject to change
		B latch range		B latch range	C		C
		W latch range		W latch range	D		D
		Lowest device number of: Low-speed timers High-speed timers Extension low-speed timers Extension high-speed timers	→	Head of T latch range	W		W
		Highest device number of: Low-speed timers High-speed timers Extension low-speed timers Extension high-speed timers		End of T latch range	• Set the device numbers exceeding the ACPU's device ranges to the maximum values of the corresponding devices.		
	I/O allocation	Settings are retained intact.					

(To the next page)

Table 2 Restrictions on PLC Type Change between ACPU and QnACPU (Continue)

Item	Restrictions	
	A → QnA	QnA → A
Network parameters *1		

MELSECNET(II, 10)	AnA/AnN → QnA
	• Settings are retained.
	• Module's first I/O No. is set to 00H because there is no module's first I/O No. in the network parameters of the AnN/AnA.
	
	AnU → QnA
	• Settings are retained.
		QnA → AnN
		• MELSECNET master station settings are retained.
		QnA → AnA
		• MELSECNET master station, MELSECNET(II) combination master station and MELSECNET(II) settings are retained.
		QnA → AnU
		• Any of the following items set is deleted.
		  MELSECNET/10 (standby station)
		  MELSECNET/10 (multiple remote master station)
		  MELSECNET (parallel remote master station)
		  MELSECNET/10 (multiple remote sub station)
		  MELSECNET/10 (parallel remote sub station)
		  Ethernet, CC-Link
		  Settings but the above are deleted.

MELSECNET/MINI	• Settings are retained.	• Settings are retained. However, the transmission status at line error is deleted.
Device memory	• All devices are converted.	• Devices out of the device range of the new PLC type and nonexistent devices are deleted. Other than above are held.
Device initial value	———————	• Device initial values are deleted.

*1: When pairing has been set in the network range assignment/station-inherent parameter, the lower number setting is held and the higher number setting returns to the default.

Table 3 Restrictions on PLC Type Change between ACPU and QCPU

Item	Restrictions	
	A → Q (Q mode)	Q (Q mode) → A
Programs	• All programs are changed.	• Unchangeable data names (other than MAIN, SUB1, etc.) are deleted. • If the maximum number of steps is exceeded, part of the program is deleted. Note that if the same instruction is used, the number of steps of the A series may become greater.
	• Unchangeable instructions and devices are changed into M1255/D1255 *1.	• Unchangeable instructions and devices are changed into M9255/D9255.
Device comments	• All are changed.	• Unchangeable SD/SM are deleted.

PLC parameters	• All are changed.	• Unchangeable parameters are deleted.
		  However, the type, points, model name, first I/O of I/O allocation are changed.
		  Also, when the base mode setting for the QCPU is 8 or more modules, the on-base positions and first I/O number may differ from the actual ones.

Network parameters *2		
MELSECNET(II)	• MELSECNET(II) parameters are deleted.	———————
MELSECNET/10(H)	• MELSECNET/10 parameters are changed into those in MELSECNET/10 mode.	• Setting of relay station number in MELSECNET/10(H) routing parameters is discarded.
CC-Link IE controller network	———————	• CC-Link IE controller network parameters are deleted.
MELSECNET/MINI	• MELSECNET/MINI parameters are deleted.	———————
CC-Link	———————	• CC-Link parameters are deleted.
Ethernet	———————	• Ethernet parameters are deleted.
Device memory	• All devices are converted.	• Devices out of the device range of the new PLC type and nonexistent devices are deleted. Other than above are held.
Device initial value	———————	• Device initial values are deleted.

*1: When the PLC type is changed to the Basic model QCPU, the 9000s of the special M/D are assigned to the 400s of the SM/SD. (Refer to Section 4.14 for the operation procedure.)

*2: When pairing has been set in the network range assignment/station inherent parameter, the lower number setting is held and the higher number setting returns to the default.

Table 4 Restrictions on PLC Type Change between QnACPU and QCPU

Item	Restrictions	
	QnA → Q (Q mode)	Q (Q mode) *1 → QnA
Program	————	• The PID instruction deleted by the Q12PH/Q25PHCPU is converted into SM1255.
	• Unchangeable instructions are changed into SM1255.	
Devices comments	• All are changed.	
PLC parameters	• All are changed.	• Unchangeable parameters are deleted. However, only the type, points, model name, first I/O of I/O allocation are changed. Also, when the base mode setting for the QCPU is 8 or more modules, the on-base positions and first I/O number may differ from the actual ones. • The value set in "High speed" of Timer limit setting is rounded up between 1 and 100 ms. (Example: 0.1 ms → 1 ms)
Network parameters *2		
MELSECNET(II)	• MELSECNET(II) parameters are deleted.	————
MELSECNET/10(H)	• MELSECNET/10 parameters are changed into those in MELSECNET/10 mode.	• Setting of the relay station number in MELSECNET/10(H) routing parameters is discarded. • Only 0 to 1FFF(H) of the MELSECNET/10(H) common parameters are changed. Station settings of 2000(H) and later are deleted. • The baud rate setting is deleted.
CC-Link IE controller network	————	• CC-Link IE controller network parameters are deleted.
MELSECNET/MINI	• MELSECNET/MINI parameters are deleted.	————
CC-Link	• When the CC-Link parameters of 5 or more modules have been set, those of the fifth module and later are deleted.	• Unchangeable CC-Link parameters are deleted.
Ethernet	• "Ethernet operation setting" – "Use the KeepAlive" is set.	• Unchangeable Ethernet parameters are deleted.
Device memory	• All devices are converted.	
Device initial value	• All device initial values are converted.	

*1: When Q12PH/Q25PHCPU data are converted into QnACPU data, the following items of the network parameters are deleted.
   • When the network range assignment has been set in the multiplexed remote sub-master setting
   • Management station/control station switching parameter.
   • Group No.
*2: When pairing has been set in the network range assignment/station-inherent parameter, the lower number setting is held and the higher number setting returns to the default.

Table 5 Restrictions on PLC Type Change between Motion Controller (SCPU) and Other CPU

The A171SHCPU has specifications equivalent to those of the A2HCPU, the A172SHCPU has specifications equivalent to those of the A2SHCPU memory or I/O enhancement, and the A273UHCPU(S3) has specifications equivalent to those of the A3UCPU.

Other CPU	Restrictions	
	Motion controller (SCPU) → Other PLC series	Other PLC series → Motion controller (SCPU)
A series	• Motion controller-dedicated instructions are changed as they are. However, making a program check results in instruction code error.	Equivalent to A series → A series. Refer to Table 1.
QnA series/Q series	• Motion controller-dedicated instructions are changed into M1255.	Equivalent to QnA series → A series. Refer to Table 2. Equivalent to Q series → A series. Refer to Tables 2 and 3.
FX series	• Motion controller-dedicated instructions are changed into M8255.	Equivalent to FX series → A series. Refer to Table 6.

Table 6 Restrictions on PLC Type Change between ACPU and FXCPU

Item	Restrictions	
	A → FX	FX → A
Programs	• Excess program part after change is deleted.	
	• Sub programs are deleted. • Unchangeable devices are changed into M8255/D8255. • Unchangeable instructions are changed into OUT M8255.	• Unchangeable devices are changed into M9255/D9255. • Unchangeable instructions are changed into OUT M9255. However, LDP, LDF, ORP, ORF, ANDP and ANDF instructions become contact instructions without P and F, and devices are changed into M9255. Also, INV, MEP and MEF are changed into AND M9255, and STL into OUT M9255.
	• The instructions and devices which have been changed into M9255/D9255 and M8255/D8255 should be corrected by the device check of the program check function. However, when the FX0(S), FX0N or FX1 programmable controller has been selected, replacement for these device numbers cannot be made. In this case, execute the device check of the program check function.	
Memory capacity	• Changed into the maximum capacity of the PLC type after change.	
File register capacity, comment capacity	• Set to 0 blocks if the PLC type after change is not compatible with this function.	• Set to the defaults of the PLC type after change.
Network parameters	• Deleted	• Set to the defaults of the PLC type after change.
Statements, notes	Settings are retained intact. However, the range in excess of the setting capacity is deleted.	
Device comments, device memories	Settings are retained intact. However, devices not existing in the PLC after change or the data in excess of the range are deleted.	

Table 7 Restrictions on PLC Type Change between FXCPU and FXCPU

Item	Restrictions

Programs	• Unchangeable element numbers and application instructions are not changed.
	  Therefore, correct programs properly before or after change and make a program check.
	  (If programs before corrections are transferred to the programmable controller, a program error will occur.)
	• Excess program part is deleted.
	• If the PLC type after change is the FX0/FX0SCPU, the memory capacity is set to 2000.
	  The part exceeding this CPU's actual step count of 800 is deleted.
	• For the file registers and RAM file registers, their settings are retained intact.
	  After change, therefore, correct them by search/replacement to have proper device numbers.

Memory capacity	• If the maximum capacity of the PLC type before change is larger than that of the PLC type after change, the maximum capacity of the PLC type after change is used.
File register capacity, comment capacity	• Set to 0 blocks if the PLC type after change is not compatible with this function.

Table 7.1 Changes Made between PLC Types (FXCPU ↔ FXCPU)

Change Type	Memory Capacity	Comment Capacity	File Register Capacity	Latch Range	Entry Code	Title	PLC mode: Serial Setting	I/O Allocations
FX1N(C) → FX0(S)	● (2000)	● (Block 0)	● (Block 0)	●	◎	●	●	●
FX1N(C) → FX0N	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	●	●
FX1N(C) → FX1	★ (2000 to 4000)	★	● (Block 0)	●	◎	◎	●	●
FX1N(C) → FX1S	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	◎	●
FX1N(C) → FX2(C)	★ (2000 to 8000)	★	★	●	◎	◎	●	●
FX1N(E) → FX2N(C)	★ (2000 to 16000)	★	★	●	◎	◎	◎	●
FX1N(C) → FX3G	★ (2000 to 32000)	★	★	●	◎	◎	◎	●
FX1N(C) → FX3U(C)	★ (2000 to 64000)	★	★	●	◎	◎	◎	●
FX1S → FX0(S)	● (2000)	● (Block 0)	● (Block 0)	●	◎	●	●	●
FX1S → FX0N	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	●	●
FX1S → FX1	★ (2000 to 4000)	★	● (Block 0)	●	◎	◎	●	●
FX1S → FX1N(C)	★ (2000 to 8000)	★	★	●	◎	◎	◎	●
FX1S → FX2(C)	★ (2000 to 8000)	★	★	●	◎	◎	●	●
FX1S → FX2N(C)	★ (2000 to 16000)	★	★	●	◎	◎	◎	●
FX1S → FX3G	★ (2000 to 32000)	★	★	●	◎	◎	◎	●
FX1S → FX3U(C)	★ (2000 to 64000)	★	★	●	◎	◎	◎	●
FX0(S) → FX0N	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	●	●
FX0(S) → FX1	★ (2000 to 4000)	★	● (Block 0)	●	◎	◎	●	●
FX0(S) → FX1N	★ (2000 to 8000)	★	★	●	◎	◎	●	●
FX0(S) → FX1S	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	●	●
FX0(S) → FX2(C)	★ (2000 to 8000)	★	★	●	◎	◎	●	●
FX0(S) → FX2N(C)	★ (2000 to 16000)	★	★	●	◎	◎	●	●
FX0(S) → FX3G	★ (2000 to 32000)	★	★	●	◎	◎	●	●
FX0(S) → FX3U(C)	★ (2000 to 64000)	★	★	●	◎	◎	●	●
FX0N → FX0(S)	● (2000)	● (Block 0)	● (Block 0)	●	◎	●	●	●
FX0N → FX1	★ (2000 to 4000)	★	● (Block 0)	●	◎	◎	●	●
FX0N → FX1S	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	●	●
FX0N → FX1N(C)	★ (2000 to 8000)	★	★	●	◎	◎	●	●
FX0N → FX2(C)	★ (2000 to 8000)	★	★	●	◎	◎	●	●
FX0N → FX2N(C)	★ (2000 to 16000)	★	★	●	◎	◎	●	●
FX0N → FX3G	★ (2000 to 32000)	★	★	●	◎	◎	●	●
FX0N → FX3U(C)	★ (2000 to 64000)	★	★	●	◎	◎	●	●
FX1 → FX0(S)	● (2000)	● (Block 0)	● (Block 0)	●	◎	●	●	●
FX1 → FX0N	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	●	●
FX1 → FX1S	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	●	●
FX1 → FX1N(C)	★ (2000 to 8000)	★	★	●	◎	◎	●	●
FX1 → FX2(C)	★ (2000 to 8000)	★	★	●	◎	◎	●	●
FX1 → FX2N(C)	★ (2000 to 16000)	★	★	●	◎	◎	●	●
FX1 → FX3G	★ (2000 to 32000)	★	★	●	◎	◎	●	●
FX1 → FX3U(C)	★ (2000 to 64000)	★	★	●	◎	◎	●	●

Change Type	Memory Capacity	Comment Capacity	File Register Capacity	Latch Range	Entry Code	Title	PLC mode: Serial Setting	I/O Allocations
FX2(C) → FX0(S)	● (2000)	● (Block 0)	● (Block 0)	●	◎	●	●	●
FX2(C) → FX0N	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	●	●
FX2(C) → FX1	★ (2000 to 4000)	★	● (Block 0)	●	◎	◎	●	●
FX2(C) → FX1S	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	●	●
FX2(C) → FX1N(C)	★ (2000 to 8000)	★	★	●	◎	◎	●	●
FX2(C) → FX2N(C)	★ (2000 to 16000)	★	★	●	◎	◎	●	●
FX2(C) → FX3G	★ (2000 to 32000)	★	★	●	◎	◎	●	●
FX2(C) → FX3U(C)	★ (2000 to 64000)	★	★	●	◎	◎	●	●
FX2N(C) → FX0(S)	● (2000)	● (Block 0)	● (Block 0)	●	◎	●	●	●
FX2N(C) → FX0N	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	●	●
FX2N(C) → FX	● (2000 to 4000)	★	★ (Block 0)	●	◎	◎	●	●
FX2N(C) → FX1S	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	◎	●
FX2N(C) → FX1N(C)	★ (2000 to 8000)	★	★	●	◎	◎	◎	●
FX2N(C) → FX2	★ (2000 to 8000)	★	★	●	◎	◎	●	●
FX2N(C) → FX3G	★ (2000 to 32000)	★	★	●	◎	◎	◎	●
FX2N(C) → FX3U(C)	★ (2000 to 64000)	★	★	●	◎	◎	◎	●
FX3G → FX0(S)	● (2000)	● (Block 0)	● (Block 0)	●	◎	●	●	●
FX3G → FX0N	● (2000)	★ (Block 0 to 3)	● (Block 0 to 3)	●	◎	◎	●	●
FX3G → FX1	★ (2000 to 4000)	★	● (Block 0)	●	◎	◎	●	●
FX3G → FX1S	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	◎	●
FX3G → FX1N(C)	★ (2000 to 8000)	★	★	●	◎	◎	◎	●
FX3G → FX2(C)	★ (2000 to 8000)	★	★	●	◎	◎	●	●
FX3G → FX2N(C)	★ (2000 to 16000)	★	★	●	◎	◎	◎	●
FX3U(C) → FX0(S)	● (2000)	● (Block 0)	● (Block 0)	●	◎	●	●	●
FX3U(C) → FX0N	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	●	●
FX3U(C) → FX1	★ (2000 to 4000)	★	● (Block 0)	●	◎	◎	●	●
FX3U(C) → FX1S	● (2000)	★ (Block 0 to 3)	★ (Block 0 to 3)	●	◎	◎	◎	●
FX3U(C) → FX1N(C)	★ (2000 to 8000)	★	★	●	◎	◎	◎	●
FX3U(C) → FX2(C)	★ (2000 to 8000)	★	★	●	◎	◎	●	●
FX3U(C) → FX2N(C)	★ (2000 to 16000)	★	★	●	◎	◎	◎	●
FX3U(C) → FX3G	★ (2000 to 32000)	★	★	●	◎	◎	◎	●

◎: Settings before change are retained.

●: Defaults of the CPU type after change are set.

★: Change can be designated in a dialog box.
When the comment or file register capacities can be changed in a dialog box, the range of setting may vary according to the memory capacity setting.

Table 8 Restrictions on changing between Basic model QCPU and High Performance model QCPU.

Item		Restrictions	
		Basic model QCPU → High Performance model QCPU	High Performance model QCPU → Basic model QCPU
Programs	Instructions	• Incompatible instructions and devices are converted into SM1255.	• Incompatible instructions are converted into SM999.
	Devices		• Incompatible devices (SM1024, SD1024) are converted into SD999. • For conversion to the Q00J, file registers (R, ZR) are converted into SD999. (This also applies to conversion from Q00/Q01 to Q00J)
Device memory Device comments		• Common comments are not created automatically. Create them as necessary.	• Common comments, if present, are deleted.

PLC parameters		• Serial communication function setting is deleted. *1
		• File register is set as shown below
		  Target memory: Standard RAM
		  File name: MAIN
		  Capacity: 64K
			• Inconvertible parameters are deleted.
			However, only I/O assignment type, number of points, type and first I/O are converted.
			If multi CPU setting is changed from High Performance model QCPU to Basic model QCPU when eight or more base modes have been set, the position on base and first I/O may be inconsistent.

Network parameters			
	CC-Link IE controller network	• No restrictions	• Inconvertible parameters are deleted. • When 2 or more modules have been specified in the CC-Link IE controller network, MELSECNET/H or MELSECNET/10 setting, the second and latter modules are deleted.
	MELSECNET/H MELSECNET/10	• No restrictions	• Inconvertible parameters are deleted. • When 2 or more modules have been specified in the CC-Link IE controller network, MELSECNET/H or MELSECNET/10 setting, the second and latter modules are deleted.
	CC-Link *2	• No restrictions	• When 3 or more modules have been specified in the CC-Link setting, the third and latter modules are deleted. • When the first I/O of the conversion source data is more than 800H, automatic setting is made to within the range that can be handled by the Basic Model QCPU. • Inconvertible parameters are deleted.
	Ethernet	—	• When 2 or more modules have been specified in the Ethernet setting, the second and latter modules are deleted. • Inconvertible parameters are deleted.

*1: When the Q00/Q01CPU is changed to the Q00J, the setting is converted into no check (not used).

*2: When the CC-Link parameters have not been set, the refresh destinations of RX/RY are automatically assigned to X/Y400-7FF automatically.
Note that X/Y400 to 7FF used as empty memory will be overwritten with link refresh when High Performance model QCPU or Process CPU is changed to Basic model QCPU.

Table 9 Restrictions on changing between High Performance model QCPU and Process CPU.

Item		Restrictions	
		High Performance model QCPU → Process CPU	Process CPU → High Performance model QCPU
Programs	Instructions	• The PID instruction deleted by Process CPU is converted into SM1255.	• No restrictions
	Devices	• No restrictions	
Device memory Device comments		• No restrictions	• No restrictions
PLC parameters		• Deselect "Perform internal arithmetic operations in double precision" if it has been selected in PLC system settings. • Default setting is made to the program memory check of the PLC RAS setting (2).	• Program memory check setting of the PLC RAS setting (2) is deleted.
Network parameters			
	MELSECNET/H MELSECNET/10	• No restrictions	• Delete MNET/H multiplexed remote master or MNET/H multiplexed remote sub-master.

Table 10 Restrictions on changing between Process CPU and Basic model QCPU

Item		Restrictions	
		Process CPU → Basic model QCPU	Basic model QCPU → Process CPU
Program	Instructions	• The PID instruction deleted by the Process CPU is converted into SM999.	• Incompatible instructions are converted into SM1255.
	Devices	• Incompatible devices (SM1024, SD1024) are converted into SM999. • For conversion to the Q00J, file registers (R, ZR) are converted into SD999. (This also applies to conversion from Q00/Q01 to Q00J)	
Device memory Device comments		• Common comments, if present, are deleted.	• Common comments are not created automatically. Create them as necessary.
PLC parameters		• Inconvertible parameters are deleted. However, only I/O assignment type, number of points, type and first I/O are converted. If multi CPU setting is changed from Process CPU to Basic model QCPU when eight or more base modes have been set, the position on base and first I/O may be inconsistent.	• When "Executed at double precision of floating-point operation processing" has been selected in the PLC system setting, it is deselected. • Serial communication function setting is deleted. *1 • File register is set as shown below. Target memory: Standard RAM File name: MAIN Capacity: 64K • Default setting is made to the program memory check of the PLC RAS setting (2).
Network parameters			
	CC-Link IE controller network	• Inconvertible parameters are deleted. • When 2 or more modules have been specified in the CC-Link IE controller network, MELSECNET/H or MELSECNET/10 setting, the second and latter modules are deleted.	• No restrictions
	MELSECNET/H MELSECNET/10	• Inconvertible parameters are deleted. • When 2 or more modules have been specified in the CC-Link IE controller network, MELSECNET/H or MELSECNET/10 setting, the second and latter modules are deleted.	• No restrictions
	CC-Link *2	• When 3 or more modules have been specified in the CC-Link setting, the third and latter modules are deleted. • When the first I/O of the conversion source data is more than 800H, automatic setting is made within the range that can be handled by the Basic model QCPU. • Inconvertible parameters are deleted.	• No restrictions
	Ethernet	• When 2 or more modules have been specified in the Ethernet setting, the second and latter modules are deleted. • Inconvertible parameters are deleted.	—

*1: When the Q00/Q01CPU is changed to the Q00J, the setting is converted into no check (not used).

*2: When the CC-Link parameters have not been set, the refresh destinations of RX/RY are automatically assigned to X/Y400-7FF automatically.
Note that X/Y400 to 7FF used as empty memory will be overwritten with link refresh when High Performance model QCPU or Process CPU is changed to Basic model QCPU.

Table 11 Restrictions on changing between Redundant CPU and Process CPU

Item		Restrictions	
		Redundant CPU → Process CPU	Process CPU → Redundant CPU
PLC parameters		• Default setting is made to the A-compatible SM, SD refresh setting of the PLC system setting. • When I/O assignment setting is made, the setting of Slot 0 is deleted, and the type is set to Empty and the number of points is set to 0 points. (When there are settings of Slot 1 and later.)	• A-compatible SM, SD refresh setting of the PLC system setting is deleted. • "Wait" is set when "Low speed" has been set to the execution tab of the program setting. • Default setting is made to the low speed execution monitoring time in the WDT setting of the PLC RAS setting (1). • Default setting is made to the low speed program execution time in the PLC RAS setting (1). • Only the I/O assignment setting of Slot 0 of the Process CPU is deleted, and the I/O assignment settings of Slot 1 and later are set for the Duplex CPU. *1
Redundant parameters		• Redundant parameters are deleted.	• Default setting is made to the redundant parameters.
Network parameters *2			
	CC-Link IE controller network	• The redundant setting is deleted. • The pairing settings of the host station and its paired station are set to "Disable".	• The station number is set to 63 when it is 64. • The default is set to the redundant setting.
	MELSECNET/H	• Group setting is deleted. • Block setting of System B is deleted.	• The following network type is deleted. MNET/H standby station MNET/H (Remote master) MNET/H (Multiplexed remote sub) • The return setting of MNET/H (Multiplexed remote master) is deleted. • The baud rate setting is deleted.
	Mode (System B)	—	• "Online" is set.
Ethernet			
	Station number	• Group setting is deleted. • If "OPS connection" has been set in the open setting, it is deleted. • Block setting of System B is deleted.	• The following station numbers are set. System A: Station number of Process CPU. System B: Station number greater by 1 than that of Process CPU. 1 is set when the station number of Process CPU is 64.
	Mode (System B)		• "Online" is set.
	IP address		Refer to *3.
	System switching request is issued at disconnection detection		• "Checked" is set.
	System switching request is issued at communication error		• "Not checked" is set.
	CC-Link	• Block setting of System B is deleted.	• CC-Link parameters whose parameter type is other than "Master station (redundant function)" are deleted, and set as the parameters of System A and System B. • Refresh devices RX, RY, RWr, RWw are deleted.
Multi CPU setting		• Default setting is made to the control CPU specification. • Default setting is made to the multi CPU setting.	• Multi CPU specification is returned to the default setting. • Control CPU specification is deleted. (Only when the multi CPU parameters exist) • Multi CPU setting is deleted. (Only when the multi CPU parameters exist)

∗1: The following is an example of I/O assignment setting when the PLC type is changed from the Process CPU to the redundant CPU.

(Before PLC type change)

	Power supply module	CPU module	Input module (16)	Input module (32)	Output module (16)	Output module (32)	A/D module (16)	

Slot number: 0 1 2 3 4 ....

Module (number of points)

I/O number:
```
      00   10   30   40   60
      ≀    ≀    ≀    ≀    ≀     ............
      0F   2F   3F   5F   6F
```

(After PLC type change)

	Power supply module	CPU module	Input module (32)	Output module (16)	Output module (32)	A/D module (16)	

Slot number: 0 1 2 3 4 ....

Module (number of points)

I/O number:
```
           10   30   40   60
           ≀    ≀    ≀    ≀      ............
           2F   3F   5F   6F
```

∗2: When pairing has been set in the network range assignment/station-specific parameter, the lower number setting is held and the higher number setting returns to the default.

∗3: The following indicates the Ethernet IP address setting made on the redundant CPU side when the PLC type is changed from the Process CPU to the redundant CPU.

System A: Set the IP address of the Process CPU.

System B: Based on the set IP address of System A, determine and set the IP address of System B with the following priorities.

Set System A IP address	System B IP address to be set	Remarks
255.255.255.255	255.255.255.255	The same IP address as that of System A is set to System B.
0.0.0.255	192.0.1.254	When the IP address of System A is "0.0.0.255" or "255.255.255.254", "192.0.1.254" is set to System B.
255.255.255.254		
..*.254	*.*.*.253	When the fourth item of System A is "254", "253" is set to System B. * indicates that the same IP address is set to System A and System B.
..*.255	*.*.*.254	When the fourth item of System A is "255", "254" is set to System B. * indicates that the same IP address is set to System A and System B.
Other than above Example) *.*.*.66	The same IP address as that of System A is set to the first to third items. The IP address increased by 1 is set to the fourth item. Example) *.*.*.67	—

Table 12 Restrictions on changing between Universal model QCPU and High Performance model QCPU

Item	Restrictions	
	Universal model QCPU → High Performance model QCPU	High Performance model QCPU → Universal model QCPU
Program		
Instruction	• Unsupported instructions and devices are converted into SM1255/SD1255. • Motion dedicated instructions are converted.	• Unsupported instructions are converted into SM1255/SD1255. • Motion dedicated instructions are converted.
Device		• A series-compatible SM/SD devices (SM/SD 1000 to 1255) are converted to Q/QnA series-compatible SM/SD devices.
SFC program	• No restrictions	• The settings of block parameter are deleted. • Deleted when the execution control SFC program is set for the SFC program setting.
Device memory Device comment	• Device comments which exceed the device range of the PLC after change and non-existing device comments and device memory are deleted. Comments other than the above are retained.	• Device comments which exceed the device range of the PLC after change and non-existing device comments and device memory are deleted. Comments other than the above are retained.
Device initial value	• Device range settings of ZR 1042432 or later are deleted.	• No restrictions
PLC parameter	• Inconvertible parameters are deleted. • The value set in "High speed" of Timer limit setting is rounded up between 1 and 100 ms. (Example: 0.1 ms → 1 ms) • Set "Program memory" to "Transfer to" on the Boot file tab. • Set the setting range for SB/SW on the Device tab to the default. • When Device total on the Device tab is out of the range, make the default setting. • When either M or B in the device setting exceeds 32K points, the default is set to the parameter for setting device points. • When 0 point is set to S in the device setting, 8K points is set. • When the file capacity of file register in the PLC file is set to 1019K points or more, 1018K points is set. • When the setting is set to diagnose the redundant power supply system in the PLC RAS setting, the setting is deleted. • The built-in Ethernet port settings and remote password for CPU in the Built-in Ethernet port QCPU are deleted. • When the serial communication setting is set for Q00UJ/Q00U/Q01U/Q02UCPU, the setting is deleted.	• Inconvertible parameters are deleted. • When Constant scanning is set on the PLC RAS tab, set "Execute it while waiting for constant scan setting" of Service processing setting on the PLC system tab. • When "Low speed" is selected on Execute type in the Program tab, change it to "Wait". • When "Standard ROM" is selected on "Transfer to" in the Boot file tab, change it to "Memory card (ROM)". • When changing to the Q00UJ/Q00U/Q01U, the boot file settings are deleted. • "Latch data backup operation valid contact" in the <<PLC system>> is set as default. • "Transfer to Standard ROM at Latch data backup operation" and "File used in SP. DEVST/S. DEVLD instruction" in the <<PLC file>> are set as default. • When the Capacity of File register in the <<PLC file>> is set, all device ranges are set for "Latch setting of file register" in the <<Device>>. • When changing to the Q00UJ/Q00U/Q01U/Q02UCPU, the multiple CPU settings are deleted. [*1]

∗1: When changing Basic model QCPU to Universal model QCPU (Q00UJ/Q00U/Q01U/Q02UCPU), if a device out of the range is set, only the refresh setting is deleted.
When changing Universal model QCPU (Q00UJ/Q00U/Q01U/Q02UCPU) to Basic model QCPU, if a device out of the range is set, or the start device setting is set to each CPU module, only the refresh setting is deleted.

(From the previous page)

Item		Restrictions	
		Universal model QCPU → High Performance model QCPU	High Performance model QCPU → Universal model QCPU
Network parameter			
	MELSECNET/H MELSECNET/10	• When the module to be deleted by Change PLC type (module unsupported by the PLC after change) is set to Valid module during other station access, set it to the first module. • When ZR 1042432 or later, or SB/SW 0800 or later is set for the CPU side device setting range of refresh parameter, the exceeded range is deleted.	• Inconvertible MELSECNET/10(H) parameters are deleted. • The following network types are deleted. MNET/H Stand by station • When the module to be deleted by Change PLC type (module unsupported by the PLC after change) is set to Valid module during other station access, set it to the first module. • When changing to the Q02UCPU and the total of CC-Link IE controller network, MELSECNET/10, and MELSECNET/H modules is three or more, the two modules with smaller start I/O numbers are left. • When changing to the Q00UJ/Q00U/Q01UCPU and the total of CC-Link IE controller network, MELSECNET/10, and MELSECNET/H modules is two or more, a single module with smaller start I/O number is left.
	CC-Link IE controller network	• For CC IE Control (Normal station), the module whose Station No. specify setting is set to "Specify station No. by program" is deleted. When the number of CC-Link IE controller network modules that was not deleted by the operation above is three or more, the two modules with smaller start I/O numbers are left. • If the Total stations is 65 or more, 64 is set. • The settings of the 65th station and later for Network range assignment are deleted. • If the Valid module during other station access is deleted, it is set as a first module. • The Intermediate station No. of the Routing parameters which are 65 or more is deleted. • When ZR 1042432 or later or SB/SW 0800 or later is set for the CPU side device setting range of refresh parameter, the exceeded range is deleted.	• When changing to the Q02UCPU and the total of CC-Link IE controller network, MELSECNET/10, and MELSECNET/H modules is three or more, the two modules with smaller start I/O numbers are left. • When changing to the Q00UJ/Q00U/Q01UCPU and the total of CC-Link IE controller network, MELSECNET/10, and MELSECNET/H modules is two or more, a single module with smaller start I/O number is left.
	CC-Link	• When ZR 1042432 or later, or SB/SW 0800 or later is set for the refresh device of refresh parameter, the setting is deleted.	• When changing to the Q02UCPU, the settings of the 5th module and later are deleted. • When changing to the Q00UJ/Q00U/Q01UCPU, the settings of the 3rd module and later are deleted.
	Ethernet	• No restrictions	• When changing to the Q02UCPU, the settings of the 3rd module and later are deleted. • When changing to the Q00UJ/Q00U/Q01UCPU, the settings of the 2nd module and later are deleted.
Sampling trace		• Sampling trace files are deleted.	• Sampling trace files are deleted.

Table 13 Restrictions on the model change of the Universal model QCPU

After change / Before change	Q00UJ	Q00U Q01U	Q02U	Built-in Ethernet port QCPU	Q03UD/Q04UDH/ Q06UDH/Q10UDH/ Q13UDH/Q20UDH/ Q26UDH
Q00UJ	-	No restrictions	No restrictions	Refer to *16.	Refer to *16.
Q00U Q01U	Refer to *1, *4, and *5.	No restrictions	No restrictions	Refer to *16.	Refer to *16.
Q02U	Refer to *1, *4, *5, *6, *7, *8, and *9.	Refer to *2, *5, *6, *7, *8, and *9.	-	Refer to *16.	Refer to *16.
Built-in Ethernet port QCPU	Refer to *1, *4, *5, *6, *7, *8, *9, *10, *11, and *12.	Refer to *2, *5, *6, *7, *8, *9, *10, *11, and *12.	Refer to *3, *10, *11, *12, *13, *14, and *15.	No restrictions	Refer to *10.
Q03UD/Q04UDH/ Q06UDH/Q10UDH/ Q13UDH/Q20UDH/ Q26UDH	Refer to *1, *4, *5, *6, *7, *8, *9, *11, and *12.	Refer to *2, *5, *6, *7, *8, *9, *11, and *12.	Refer to *3, *11, *12, *13, *14, and *15.	No restrictions	No restrictions

*1: The settings in "Use the same file name as the program.SP.DEVST/S.DEVLD" in the PLC file tab of the PLC parameter dialog box are deleted.

*2: 1K point is set for "Capacity" in "Use the same file name as the program.SP.DEVST/S.DEVLD" in the PLC file tab of the PLC parameter dialog box.

*3: When 17K points or more has been set for "Capacity" in "Use the same file name as the program.SP.DEVST/S.DEVLD" in the PLC file tab of the PLC parameter dialog box, 16K points are set.

*4: When "Standard RAM" has been selected in "Target memory" of "Module error log (Intelligent function module)" in the PLC RAS (2) tab of the PLC parameter dialog box, the target memory is changed to "System memory".

*5: When each value set in "Module error log (Intelligent function module)" of the PLC RAS (2) tab of the PLC parameter dialog box exceeds the maximum value that can be set to the CPU module after change, the set value is rounded off to the maximum value.

*6: When the total of CC-Link IE controller network module, MELSECNET/H module, and MELSECNET/10 module is two or more in the network (MELSECNET/H or MELSECNET/10) parameter dialog box, the settings of the module with the smallest start I/O number is left.

*7: When the total of CC-Link IE controller network module, MELSECNET/H module, and MELSECNET/10 module is two or more in the network (CC-Link IE controller network) parameter dialog box, the settings of the module with the smallest start I/O number is left.

*8: The settings of the 3rd module and later in the network (CC-Link) parameter dialog box are deleted.

*9: The settings of the 2nd module and later in the network (Ethernet) parameter dialog box are deleted.

*10: The settings in the Built-in Ethernet port tab of the PLC parameter dialog box and the remote password set for the CPU module are deleted.

*11: The settings in the Multiple CPU settings screen of the PLC parameter dialog box are deleted.

*12: Sampling trace files are deleted.

*13: When the total of CC-Link IE controller network module, MELSECNET/H module, and MELSECNET/10 module is three or more in the network (MELSECNET/H or MELSECNET/10) parameter dialog box, the settings of the two modules with smaller start I/O numbers are left.

*14: When the total of CC-Link IE controller network module, MELSECNET/H module, and MELSECNET/10 module is three or more in the network (CC-Link IE controller network) parameter dialog box, the settings of the two modules with smaller start I/O numbers are left.

*15: The settings of the 3rd module and later in the network (Ethernet) parameter dialog box are deleted.

*16: The settings in the Serial tab of the PLC parameter dialog box are deleted.

Appendix 5 Examples of Wiring RS-232 Cable for Connection of C24 and Personal computer

5.1 A Series

A	Q/QnA	QS	FX
○	×	×	×

• Connection of RS-232 interface

(1) When a 25-pin connector is used in a computer link module

Computer Link Module Side		GX Developer Side
Signal Name	Pin No.	Signal Name
FG	1	FG
SD(TXD)	2	SD(TXD)
RD(RXD)	3	RD(RXD)
RS	4	RS
CS(CTS)	5	CS(CTS)
DSR(DR)	6	DSR(DR)
SG	7	SG
CD	8	CD
DTR(ER)	20	DTR(ER)
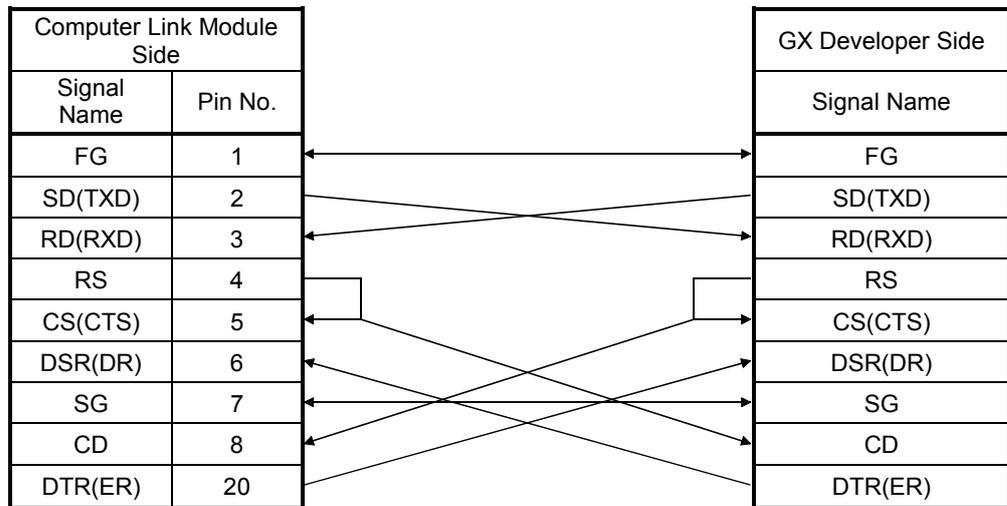
(2) When a 25-pin connector is used in a computer link module

If the connection between the computer link module and the GX Developer is made in the manner shown below, designate "without CD terminal check".

Computer Link Module Side		GX Developer Side
Signal Name	Pin No.	Signal Name
FG	1	FG
SD(TXD)	2	SD(TXD)
RD(RXD)	3	RD(RXD)
RS	4	RS
CS(CTS)	5	CS(CTS)
DSR(DR)	6	DSR(DR)
SG	7	SG
CD	8	CD
DTR(ER)	20	DTR(ER)
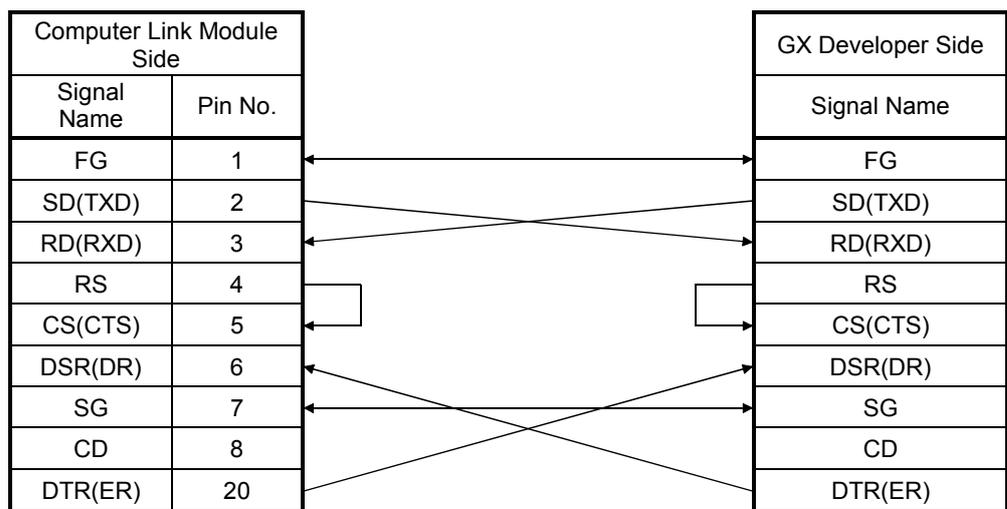
Buffer memory setting
CD terminal check (address 10Bh): Without check
DTR control (address 11Ah): Yes (C24-S8, UC24)

(3) When an 9-pin connector is used in a computer link module

(Example of connection)

Computer Link Module Side		Cable Connection and Signal Direction	External Device Side
Signal Name	Pin No.		Signal Name
CD	1		CD
RD(RXD)	2		RD(RXD)
SD(TXD)	3		SD(TXD)
DTR(ER)	4		DTR(ER)
SG	5		SG
DSR(DR)	6		DSR(DR)
RS(RTS)	7		RS(RTS)
CS(CTS)	8		CS(CTS)

Set "without CD terminal check".

(4) When an 9-pin connector is used in a computer link module

(Example of connection)

Computer Link Module Side		Cable Connection and Signal Direction	External Device Side
Signal Name	Pin No.		Signal Name
CD	1		CD
RD(RXD)	2		RD(RXD)
SD(TXD)	3		SD(TXD)
DTR(ER)	4		DTR(ER)
SG	5		SG
DSR(DR)	6		DSR(DR)
RS(RTS)	7		RS(RTS)
CS(CTS)	8		CS(CTS)

∗: DC code control or DTR/DSR control is enabled by connecting the DTR and DSR signals of the computer link module to an external device as shown above.

5.2 QnA Series

A	Q/QnA	QS	FX
×	○*	×	×

*: Compatible with the QnACPU.

(1) When a 25-pin connector is used in a serial communication module

   (a) Example of connection to an external device that allows the CD signal (No. 8 pin) to be turned ON/OFF

Serial communication module Side		Cable Connection and Signal Direction (Full-/Half-Duplex Communication)	GX Developer Side
Signal Name	Pin No.		Signal Name
FG	1		FG
SD(TXD)	2		SD(TXD)
RD(RXD)	3		RD(RXD)
RS	4		RS
CS(CTS)	5		CS(CTS)
DSR(DR)	6		DSR(DR)
SG	7		SG
CD	8		CD
DTR(ER)	20		DTR(ER)

DC code control or DTR/DSR control is enabled by connecting the QC24 (N) to an external device as shown above.

   (b) Example of connection to an external device that does not allow the CD signal (No. 8 pin) to be turned ON/OFF

Serial communication module Side		Cable Connection and Signal Direction (Full-Duplex Communication)	GX Developer Side
Signal Name	Pin No.		Signal Name
FG	1		FG
SD(TXD)	2		SD(TXD)
RD(RXD)	3		RD(RXD)
RS	4		RS
CS(CTS)	5		CS(CTS)
DSR(DR)	6		DSR(DR)
SG	7		SG
CD	8		CD
DTR(ER)	20		DTR(ER)

DC code control or DTR/DSR control is enabled by connecting the QC24 (N) to an external device as shown above.

(1) When a 9-pin connector is used in a serial communication module

    (a) Example of connection to an external device that allows the CD signal (No. 1 pin) to be turned ON/OFF

Serial communication module Side		Cable Connection and Signal Direction (Full- / Half-Duplex Communication)	GX Developer Side
Signal Name	Pin No.		Signal Name
CD	1		CD
RD(RXD)	2		RD(RXD)
SD(TXD)	3		SD(TXD)
DTR(ER)	4		DTR(ER)
SG	5		SG
DSR(DR)	6		DSR(DR)
RS(RTS)	7		RS(RTS)
CS(CTS)	8		CS(CTS)

       DC code control or DTR/DSR control is enabled by connecting the QC24 (N) to an external device as shown above.

    (b) Example of connection to an external device that does not allow the CD signal (No. 1 pin) to be turned ON/OFF

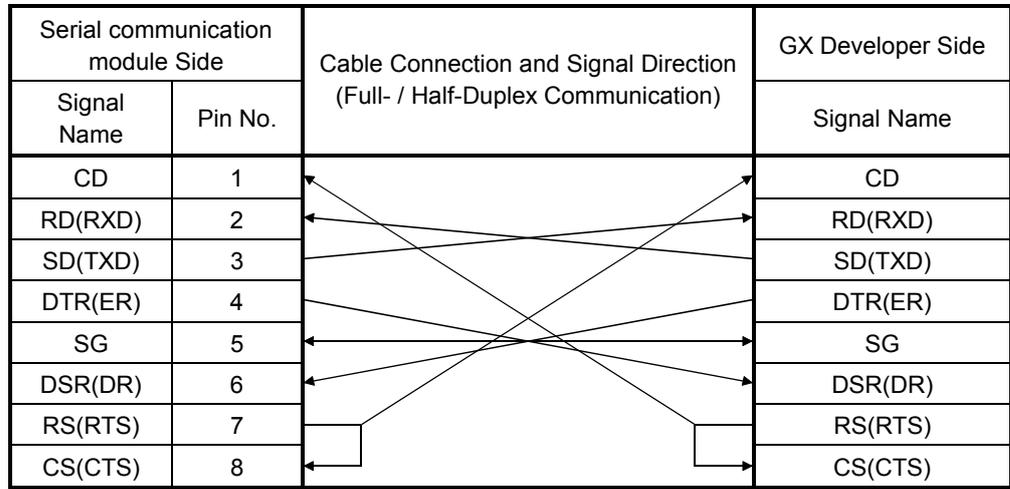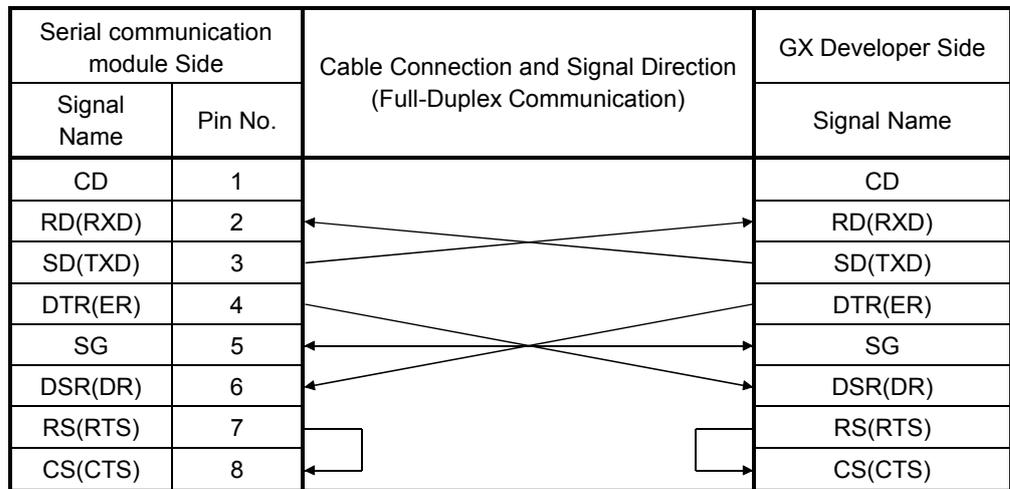| Serial communication module Side		Cable Connection and Signal Direction (Full-Duplex Communication)	GX Developer Side
Signal Name	Pin No.		Signal Name
CD	1		CD
RD(RXD)	2		RD(RXD)
SD(TXD)	3		SD(TXD)
DTR(ER)	4		DTR(ER)
SG	5		SG
DSR(DR)	6		DSR(DR)
RS(RTS)	7		RS(RTS)
CS(CTS)	8		CS(CTS)

       DC code control or DTR/DSR control is enabled by connecting the QC24 (N) to an external device as shown above.

5.3 Q Series

A	Q/QnA	QS	FX
×	○∗	×	×

∗: Compatible with the QCPU (Q mode).

The connector specifications are indicated below.

Pin Number	Signal Code	Signal Name	Signal Direction Q-compatible C24 ↔ external device
1	CD	Receive carrier detection	←
2	RD (RXD)	Receive data	←
3	SD (TXD)	Send data	→
4	DTR (ER)	Data terminal ready	→
5	SG	Send ground	← →
6	DSR (DR)	Data set ready	←
7	RS (RTS)	Request to send	→
8	CS (CTS)	Clear to send	←
9	RI (CI)	Call indication	←

(1) Connection example which can turn ON/OFF CD signal (No. 1 pin)

Serial communication module Side		Cable Connection and Signal Direction (Connection example for full duplex/half duplex communication)	GX Developer Side
Signal Name	Pin No.		Signal Name
CD	1		CD
RD (RXD)	2		RD (RXD)
SD (TXD)	3		SD (TXD)
DTR (ER)	4		DTR (ER)
SG	5		SG
DSR (DR)	6		DSR (DR)
RS (RTS)	7		RS (RTS)
CS (CTS)	8		CS (CTS)
RI (CI)	9		

(2) Connection example which cannot turn ON/OFF CD signal (No. 1 pin)
Connection example for exercising DC code control or DTR/DSR control

Serial communication module Side		Cable Connection and Signal Direction (Connection example for full duplex communication)	GX Developer Side
Signal Name	Pin No.		Signal Name
CD	1		CD
RD (RXD)	2		RD (RXD)
SD (TXD)	3		SD (TXD)
DTR (ER)	4		DTR (ER)
SG	5		SG
DSR (DR)	6		DSR (DR)
RS (RTS)	7		RS (RTS)
CS (CTS)	8		CS (CTS)
RI (CI)	9		

Appendix 6 ROM Writer Wiring Examples

A	Q/QnA	QS	FX
○	×	×	○

The wiring of the RS-232 cable that connects a personal computer and ROM writer is shown here.
Make the cable used for the wiring shown below yourself in accordance with the specifications of the ROM writer to be used.

Personal computer		Cable Connection and Signal Direction	ROM WRITER	
Signal Name	Pin No.		Pin No.	Signal Name
FG	–		1	FG
SD	3		2	SD
RD	2		3	RD
RST	7		4	RTS
CTS	8		5	CTS
DSR	6		6	DSR
SG	5		7	SG
DTR	4		20	DTR

An example of wiring of the RS-232 cable that connects a personal computer and ROM writer is shown here.
If RTS and CTS are not used at the ROM writer side, short RTS and CTS at the personal computer side.

Appendix 7 Programmable Controller Version Correspondence Chart

7.1 QnA series function versions

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with the QnACPU.

When using the functions shown in the table, use the module for function version B.
To use the functions in this manual listed following, each version of QnACPU (except Q4ARCPU), Ethernet interface module, and CC-Link system master/local modules have restrictions. (Refer to Appendix 7.2 for more information about Q4ARCPU.)
If there is a version higher than those listed in the table, the corresponding functions can be used.

Module / Function	Programmable controller	Ethernet	CC-Link
	Q2ACPU, Q2ACPUS1, Q3ACPU, Q4ACPU, Q2AS(H)CPU, Q2AS(H)S1	AJ71QE71(B5), A1SJ71QE71-B2, A1SJ71QE71-B5	AJ61QBT11, A1SJ61QBT11
Local device Monitoring/testing	9707B or later	—	—
High-speed communication	9707B or later	—	—
Ethernet parameters	9707B or later	9707B or later	—
CC-Link parameters	9707B or later	—	9707B or later

—: Irrelevant function

POINT

- When using the functions above, use a module that has the following code (9707B or later) inscribed in the DATE entry on the ratings nameplate.

MELSEC
CE
PROGRAMMABLE CONTROLLER

DATE 9707 B
MITSUBISHI ELECTRIC CORPORATION JAPAN
80992D01JH01

Year/month of manufacture   Function version

MITSUBISHI
CPU UNIT
MODEL

DATE   9707 B
CE
MITSUBISHI ELECTRIC   80992D008H3B
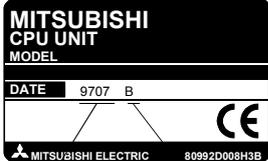
Year/month of manufacture   Function version

7.2 Q4ARCPU function version

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Compatible with the QnACPU.

The table below explains the items listed following.
1. Comparisons between QnACPU functions of other than Q4ARCPU and Q4ARCPU.
2. Comparisons of the differences between versions of Q4ARCPU.

When connecting to the Ethernet, use the improved version of the Q4ARCPU (production date (last two numbers of the Western calendar year and the two numbers for the month) is "0012" or later, that software product is version B or higher) and QE71 function version B.
Because the Q4ARCPU does not support the settings, do not make settings for the Ethernet parameters FTP parameters/Router relay parameter.

	Programmable Controller Version	Ethernet Connection		CC-Link Parameters	High Speed Communication	Local Device Monitor/Test
		Local Station	Other Station			
Q2ACPU, Q2AS1CPU, Q3ACPU, Q4ACPU, Q2AS(H)CPU, Q2AS(H)S1	Function Version A	×＊1	×＊1	×＊1	×	×
	Function Version B	○	○	○	○	○
Q4ARCPU	Production date is "0012", software product is version A or earlier	×＊1	×＊1	×＊1	×	×
	Production date is "0012", software product is version B or later	○	○	×＊1	×	×

＊1: Parameters can be set by the GX Developer
Even if you write parameters set with GX Developer (SW6D5C-GPPW-E 6.04E or earlier product) to the Q4ARCPU, the Q4ARCPU swill ignore the set parameters.

7.3 Checking the Q series function version

A	Q/QnA	QS	FX
×	○✱	×	×

✱: Compatible with the QCPU (Q mode).

The function version of the module can be checked by confirming the rating plate on the right hand side of the module and GX Developer.

(1) To make check in the "SERIAL field of the rating plate" on the right hand side of the module
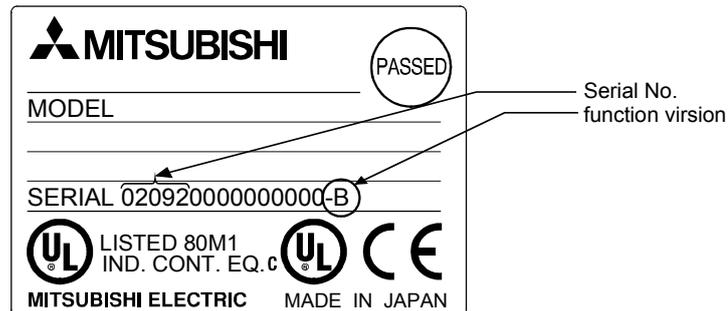
(2) To make check on GX Developer

[Operating Procedure]
Choose [Diagnostics] → [System monitor] → | Module's Detailed Information | button → "Product information".
For details, refer to Section 21.6 "System Monitor".

Appendix 8 Restrictions and Cautions

A	Q/QnA	QS	FX
○	○∗	×	×

∗: Compatible with the QnACPU.

The following is a list of restrictions and cautions to be observed when operating GX Developer.
Read these restrictions before attempting GX Developer operations.
The symbol "^" is appended to those restrictions in the list that also apply to GPPA/GPPQ.
Items in the list that are marked "<Caution>" are cautions relating to GX Developer only.
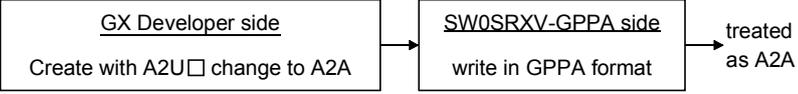
[Interpreting the Lists]

Example:

GPPA	GPPQ
○	—

............Indicates that the restriction when using ACPU with GX Developer is the same as that which applies when using GPPA.

GPPA	GPPQ
○ <Caution>	—

............Indicates that the caution when using ACPU with GX Developer is the same as that which applies when using GPPA.

GPPA	GPPQ
○ <Caution>	—

............Indicates that the caution when using ACPU with GX Developer is exclusive to GX Developer.

Item	Restrictions/Cautions	GPPA	GPPQ
Comment reading/writing	When editing comments there is no particular need to set a comment capacity. However, an error is displayed on writing to the CPU if no capacity is found to be set on checking the parameters of the personal computer.	— <Caution>	—
	When extension comments have been designated for a program created with GPPA (valid program setting), when these extension comments are read by GX Developer, they are assigned to common comments regardless of the GPPA designation.	— <Caution>	—
	When a file created with ACPU or GPPA is written to GX Developer, if there is any duplication between the comments for common devices and extension comments, the extension comments take priority and therefore the common device comments cannot be read.	—	—
	When comments created with GX Developer are written in GPPA format to the FD or HD of a personal computer, the comments can be written regardless of the comment capacity in the parameters. The comments can be used when GPPA is started up by carrying out comment memory capacity setting, then reading the comments in the file maintenance mode.	○	—
	With GX Developer, device comments and device memories can be created within the ranges designated in the parameters, but even after completing writing to the GPPQ format, it may not be possible to write to GPPQ. In this case the size of the data to be written must be reduced.	—	—
	When second half M comments for main and sub use are read to GX Developer, since the range setting is included in S, they are allocated to S.	—	—

Item	Restrictions/Cautions	GPPA	GPPQ
Comment reading/writing	If X/Y comments 2 are written without range setting at GX Developer, reading is carried out in accordance with the X and Y attributes respectively.	—	—
	The restriction on sub-system names is up to 10 characters for GPPQ and up to 8 characters for GX Developer. On reading subsystem names from GPPQ format, they are shortened to 8 characters. If these subsystem names are written back to GPPQ, they are written as 8 characters.	—	○
	When peripheral statements/notes created with GPPQ are written to a PLC, they cannot be read out with GX Developer; they must be read with GPPQ.	—	— <Caution>
	When comments are written in GPPA format, one of the original files at the GPPA side is deleted. When writing comments 2, comments 1 are deleted; when writing comments 1, comments 2 are deleted.	— <Caution>	—
	When comments are written to an A1NCPU, if MAIN (program-classified comment) is selected when writing to the PLC, comments F0 to F127 are written unconditionally to the PLC, regardless of range selection. Reading is carried out in the same way.	— <Caution>	—
	When comments edited as comments 2 at GX Developer are written to an ACPU/GPPA format file as comments 1, they are displayed as incorrect characters by GPPA.	— <Caution>	—
	When comments are written to an ACPU/GPPA format file, if a two-byte character starts at the 16th character (for comments 2)/15th character (for comments 1), writing is carried out with the 16th/15th character left blank.	—	—
	For comment data, common comments and comments by program can be created up to 32K points, respectively. By creating comment data for both common comments and comments by program, up to 64K points can be created.	—	—
Parameter setting	When using a memory cassette larger than A3MCA-18, if the total capacity - excluding extension comments - set in capacity setting in the parameters exceeds 144 K bytes, when the extension comments are written it may not be possible to write the second half. In this case the first half 1024 points must be divided into 64-point units.	○	—
	When local device or latch clear key valid/invalid designations are made in the parameters, set a range in device setting.	—	○
	When file registers are set, a file register capacity must be set in the parameters.	○	—
	When parameters for which no settings have been made with GPPA, or whose parameter screens have been opened in GPPA but then closed with "END" without making any settings, are verified - in GPPA - against GX Developer parameters set in the same way, a verification mismatch may occur. The mismatch occurs due errors, for example, in the initial value data of blank items, but there is no difference in operation when the parameter data is written to a PLC and executed, so there is no problem in actual use.	—	—
	When file registers are designated in the MELSECNET/10 refresh parameter settings, a capacity setting must be made for file registers in the memory capacity settings.	○	—
	Since MELSECNET/10 network parameters store the time at which the parameter settings were made with GX Developer, when network parameters are verified between GPPA/GPPQ and GX Developer, the result my be a setting time mismatch even if the set data matches.	— <Caution>	○
	If MELSECNET/10 (multiplex remote master) or MNET/10 (parallel remote master) is set for four modules in the network parameters and these settings are written in GPPQ format and verified against the same parameter settings in GPPQ, a verification error will occur. Since the parameters themselves are correct, there is no problem in actual use.	—	—

Item	Restrictions/Cautions	GPPA	GPPQ
Parameter settings	If a blanks are set for "refresh parameters" and "link parameter constant scan (GPPA only)" in the GPPA/GPPQ and GX Developer parameters, this is the same as settings of "0 points" and "0 ms." respectively at GPPA.	―	―
	When the device settings are changed, the following files that have already been written to the PLC must be written again: Sequence programs, SFC programs, monitor registration, sampling trace data, Device memory, device initial values.	―	○
	With regard to PLC data reading of the network parameters: 1. When parameters are set (written) in the PLC, the written parameters are read. 2. When parameters have not been set in the PLC, the actual link module mounting status detected by the PLC is read.	―	○
	When verification against parameters created with SW0IVD-GPPQ or SW1IVD-GPPQ is executed, a "parameter mismatch" may occur even if the settings match. If this happens, first read the parameters with SW2IVD-GPPQ, then write the parameters again.	―	○
	To create a subsequence, a capacity of 2K or more must be set in the parameter mode.	○	―
Change PLC type	If a PLC type change is made to a PLC type that does not allow the creation of subprograms, subprograms are deleted.	― <Caution>	―
	When a program is written to the PLC after changing the PLC type, out-of-range devices/instructions cause an error and cannot be written. When data is written to a GPPA format file and read with GPPA, instruction code abnormalities are displayed. The same applies when data is written to a GPPQ format file and read with GPPQ.	―	―
	If the PLC type is changed in the network system shown below, all the network parameters before the change are retained. However, in the case of AnUCPU, if there is even one module for which the first network I/O number exceeds the actual I/O range of the PLC type changed to, the first I/O numbers are automatically allocated to 0H, 20H, 40H, 60H (assuming there are four modules). (Where A4U changes to A3U, A4U changes to A2U, A3U changes to A2U) For changes between network systems, the changes are to the defaults. | Network system	PLC system | |---|---| | AnN systems | A0J2H, A1N, A2N, A3N, A1S, A1SH, A2S (S1), A2SH, A2C | | AnA systems | A2A (S1), A3A | | AnU systems | A2U, A2USH-S1, A3U, A4U, A2AS (S1), A2AS-S30, A2AS-S60 |	―	―
	If microcomputer programs cannot be accommodated when a PLC type change is made, all microcomputer programs are deleted.	―	―
	If the capacity before the change is smaller than the maximum capacity of the PLC type changed to, the memory capacity is set as that before the change. If it is larger than the maximum memory capacity of the PLC type to be changed to, the memory capacity is set as the maximum memory capacity of the PLC type changed to.	○	―
	If the program capacity decreases, the programs are curtailed at the number of steps equivalent to the reduced capacity. If this curtailment occurs part way through a ladder program, the entire block is eliminated. As for SFC program, the program itself is deleted.	―	―

Item	Restrictions/Cautions	GPPA	GPPQ
Change PLC type	If the sequence programs + microcomputer programs exceed the capacity of the PLC type changed to, the microcomputer program capacity is set to 0.	—	—
	To execute "PLC read" when connected to a CPU that is not in the PLC type list, carry out a PLC type change as follows. • When connecting to A1SCPU with a PLC type other than A1S at the GX Developer side, read by changing the PLC type to A2N.	—	—
	When a PLC type change is executed, if there are devices that cannot be used at the PLC after the change, that range of devices is automatically deleted. (For the "A" series, this includes device comments.)	○	—
	When a PLC type change is executed, if a setting that exceeds the maximum device range for the PLC after the change is made, the setting is automatically changed to the maximum possible. (For the "A" series, this includes device comments.)	○	—
	When the number of programs before change exceeds the number of allowable programs of the programmable controller after change, the programs are deleted by the number of the excess.	—	—
PLC type	A connected CPU that does not support A1, A2, or A3 is recognized as AnN but cannot be used.	—	—
Ladder input	The ladder block has 24 lines of parallel contacts and line insertion is not possible.	—	○
	The line return destination and source must have the same number. The same number cannot be used more than once. The line return numbers must be serial numbers. It is not possible to insert a ladder between the line return source and destination.	○	○
	If the contacts/coils to be overwritten straddle multiple contacts, ladder input is not possible.	—	○
	Inserting a contact in the first row does not make it possible to make an insertion at a line return.	—	○
	If a vertical line that crosses an instruction is drawn, conversion will not be possible.	—	○
	In a ladder block with two or more lines where an instruction cannot be accommodated on one line, you must create a line return and input the instruction on the next line.	—	—
	Enter When ladder information has been read into the key-in data field by pressing the [Enter] key, the cursor cannot be moved.	—	—
	The maximum number of instruction and device characters that can be written at one contact is eight. If the total number of characters is more than this, multiple rows must be used.	—	—
	If a vertical line that crosses a statement is drawn, a conversion error occurs on attempting conversion.	—	○
	A CHG instruction input check is not performed on programs of programmable controllers that do not allow the creation of subprograms, such as A2ACPU and A2UCPU. When the programmable controller is set to RUN an error occurs.	— <Caution>	—
	For special function module instructions and data link instructions such as "G.~ ", "Z.~ ", "U.~ " and "J.~ ", the instruction check and device combination check are not executed. If the instruction or device combination is incorrect, the corresponding error is detected when it is executed.	—	○

	When using ASC, LEDA or LEDB instruction in an A series project, note the following points:
	1. The ASCII character, ", cannot be used in ASC, LEDA or LEDB instruction.
	    Example: ASC ABC"DEFG DO
	2. Following two ASCII characters, ; and blank (space), cannot be used together in ASC instruction.
	    Example: ASC ABC ;DEF DO
		—
		<Caution>
			—

Item	Restriction/Note	GPPA	GPPQ
Online change	When online change is executed with respect to an A4UMCA-128E memory cassette, the transmission may take several minutes. During the transmission, operation continues in accordance with the program before the change. After the transmission, sequence processing stops for a maximum of 2 seconds.	○	—
	When online change is executed with respect to an A3NCPU, the CHG instruction is automatically disabled. On completion of conversion, the CHG instruction is executed.	○	—
	During online change, RUN/STOP/PAUSE/STEP RUN key switch operations are prohibited.	○	○
	If there is a pulse instruction in the program to be written, the PLC does not execute this instruction after the PLC write operation. It is executed after its execution condition changes from OFF to ON.	○	○
Import file/ Export file	With the GX Developer, the ACPU program, including a micro computer program, can be backed up (saving the project after "Read from PLC") and restored (write to PLC). However, the micro computer program disappears when performing either of the following operations. • Editing MELSAPII program. • Clicking the END button in the [PLC parameter] screen.	—	—
	Depending on the GPPA, there are versions that cannot be selected although the same model name exists in the PLC type list. If the PLC type is not represented with GPPA, change to a PLC type that is represented with GPPA (at GX Developer) and then write the data. Example: GX Developer side Create with A2U☐ change to A2A → SW0SRXV-GPPA side write in GPPA format → treated as A2A	—	—
	Since they are not represented in the PLC type list at the GPPA side, files created with models such as A3HCPU cannot be read with GX Developer. (It is not possible to read or write files of incompatible PLCs.)	—	—
	When a GPPA/GPPQ format program that contains an END instruction part way through is read to GX Developer, the part of the program up to the END instruction is read. The part after the END instruction is not read.	—	—
	On reading a device memory from ACPU/GPPA format with GX Developer, the information of the preceding coils of T/C devices is not read out, and consequently when the data is written again to ACPU/GPPA format and verified at GPPA, a preceding coil mismatch occurs.	—	—
Device test	When a forced set/reset operation is executed while the PLC is in the RUN state, program execution at the PLC is given priority.	○	○
	When an input (X) is forcibly reset, the PLC operates as though it were ON even if program input is OFF. If a process input is ON the PLC will process it as ON even if a forced reset is executed.	○	○
	The local device test requires a range to be set in the parameters in advance.	—	○
	Even if the present value is set to a smaller value than the set value after time up of a timer or counter, the time up status is retained.	○	○
PLC write/read	When a ladder with peripheral statements is written to a PLC, the statements are not written to the PLC, and the ladder must therefore be stored in the HD.	○ <Caution>	○ <Caution>
	When the PLC read dialog box is opened again after writing a ladder to the PLC and displaying the list, and then using another programming tool (GX Developer/GPPA/GPPQ, etc.) to, for example, delete PLC data, the contents of the data list may differ from the current status of the PLC data. In this case the list must be updated.	—	—

Item	Restriction/Note	GPPA	GPPQ
PLC communication	When communicating with a programmable controller, no distinction is made between A2US(S1)CPU and A2U(S1)CPU, and therefore access to a CPU when using an A2US(S1)/A2U(S1) is dealt with as access to A2U(S1)CPU.	—	—
	PLC communication is not possible with a GX Developer started up. PLC communication is possible with one of these only, under the conditions indicated below. • When GX Developer is used, check if there is a system (control panel) COM port. If there is not, one must be registered. In this state, PLC communication using GPPA/GPPQ is not possible. • When using GPPA/GPPQ, eliminate the system (control panel) COM port. In this state, PLC communication using GX Developer is not possible. • PLC communication with respect to A2USH-S1 with two GX Developers started up is not possible. GX Developer GX Developer ——✕—— A2USH-S1	—	—
	During communication, e.g. PLC read/PLC write, do not disconnect the cable for connection of the personal computer and programmable controller and connect it to another programmable controller.	—	—
TC set value	When a TC set value change is applied twice, the change is made to the first set value. If there is a duplicated set value change, the program contents must be checked in a program data check.	—	—
	Since GPPA allows reading/writing of T/C set values alone, there are T/C set values that are not used in the program. Since GX Developer only reads and writes set values for T/C values that exist in the program, set values that do not exist in the program cannot be handled. (When T/C set values are read and written, unused T/C set values at an ACPU are deleted.)	—	—
	T/C set values used in SAP2 are not handled by GX Developer and they are therefore cleared to 0 when written to an APC/GPPA format file.	—	—
Printing	Data is not printed in accordance with PAGEn (the designated No. becomes the printed page number).	—	—
	GPPA/ACPU print titles are not read/written.	—	—
	Since #CPU# prints the data for the CPU type from the designated position, if the CPU type exceeds 5 characters, blanks must be created at the rear.	—	—
File reading/writing	For file reading/writing with respect to a GPPA that does not allow selection of the same PLC model name, the PLC is treated as a PLC type within the range supported by the GPPA.	—	—
	Reading/writing to files created with SW0S is not possible.	—	—
Note creation	Notes cannot be created for instructions that straddle multiple lines.	—	—
	Notes cannot be created for dedicated instructions.	—	—
	If the coil associated with a note is deleted, the note is also deleted.	—	◯ <Caution>
	The note of the first coil in a ladder block is made to correspond to the first step of the ladder block. Other notes are written to the steps of individual coils.	—	—

Item	Restriction/Note	GPPA	GPPQ
Find/Replace	It is not possible to search for character strings in comments and device names in the ladder display window. (This is possible for notes and statements only.)	—	○
	When the device with the searched device name has both common and program-specific device name settings, the comment reflection destination/reference destination in the options is not followed.	—	—
	When an online change setting is made for a write conversion setting, the find/Replace menu cannot be selected.	—	○
Statements/ notes	P/I statements that are not used in a program with GPPA are not written to GX Developer.	—	—
	When multiple P,I statements have been created for the same P,I with GX Developer, the first P,I statement encountered is written in GPPA format. The other, redundant, P,I statements are not written.	—	—
	When line statements/notes are created other than at the head of a ladder block with GPPA, statements at steps part way through a block are not written to GX Developer. If a note is allocated to the first step of a ladder block, it is read in association with the first coil of the ladder block. For other notes, if the step they are assigned to is a coil, they are read in association with that coil.	—	—
	It is not possible to communicate with a PLC while using GPPA/GPPQ at the same port. Either use a different port or quit GPPA/GPPQ (close the DOS prompt too), before using the port.	—	—
	When using the Windows version of, for example, SW[]NIW-GOT800P, simultaneous access to the same port is not possible. Communication with one of the packages only is possible.	—	—
Step execution/ Partial execution	After the set break condition has been satisfied, the PLC breaks operation after running for several steps.	—	○
	Step run via A7BD-J71AP21/AR21 is only possible with A2ACPU and A3ACPU.	○	—
Fault history	If storing the fault history file at a location other than the internal RAM, use the drive name and file name.	—	○
Video card	When using an S3 TRIO64V+ video card, the display may not be normal; in this case "none" must be set for "hardware accelerator" in the graphics detailed setting dialog box.	—	—
Ladder display	Out-of-range devices can be displayed in the ladder display. However, an error occurs if an out-of-range designation is made in ladder editing. Out-of-range devices can be checked in the program check.	—	○ <Caution>
	For an illegal ladder that has no MPP corresponding to MPS, a ladder error is displayed by GPPA, but GX Developer displays the ladder, treating this as a ladder creation fault.	—	—
Processing at GX Developer	When operations that take some time, such as PLC memory clear, are executed, it may not be possible to redisplay the GX Developer display, or the operation of another application may be held up.	—	—
Device memory clear	Since latch clear/non-clearance follows the latch range of the PLC parameters of the project that is currently opened at the personal computer, if there is a discrepancy between the parameters stored in the CPU and the latch range, the latch range may be cleared even if latched devices are designated as not included in the range for clearance.	—	—
Writing to a memory cassette	When using an A4UMCA-＊E EEPROM, the memory setting switch must be set to the ROM side.	○	—

Item	Restriction/Note	GPPA	GPPQ
Device name registration	With GPPA, the first 8 characters of a comment are input as the device name, but with GX Developer the device name must be registered. Similarly, when printing with device names, the device names must be registered.	—	—
Starting the initialization file	The maximum number of windows that can be automatically opened by starting program restart or initialization files is 20.	—	—
Instruction input by device name	When instructions are input in a ladder by using device names (LD, 'LS11), they are input by searching for the device that corresponds to the device name from the comment data, but when the same device name is set more than once, the device found first in the search is used.	—	—
Short cut keys	Numeric keys cannot be used as shortcut keys.	—	—
Windows task bar	When GX Developer is started up while "Always on Top" or "Auto hide" is not specified in the property settings of the Windows task bar, nothing can be displayed in front of the task bar. To display in front of the task bar, set " Always on Top " or " Auto hide " for the task bar.	—	—
Parameter mismatch	When the same data as parameter data written in GPPA format is created with GPPA, there may be a mismatch in the data contents. However, both are correct as parameters and can be used without problems.	—	—
Memory capacity setting	When A1NCPU is selected with GPPA, the default for the comment capacity in memory capacity setting is 64K bytes, but the GX Developer default for comment capacity is 0K bytes.	—	—
Window No.	When the device batch monitor, registration monitor, or buffer memory batch monitor window is opened, the window whose number is one higher than the window last opened is displayed. Even if you close the open window and open another one, the number of the window opened last is counted up.	—	—
Compare	If verification is executed when there is an END instruction part way through the program in the programmable controller, the part of the program up to the END instruction is verified.	—	—
Duplicate coil result display	The duplicate coil check result display displays details of the step positions where duplicate coils were found in a search from the head of the program.	—	—
About access to remote I/O	When a cable is connected to a master station/control station/remote I/O and remote I/O is designated, communication is not possible. A master station/other station that is not remote I/O must be designated.	—	—
Printing	When printing with device names, device comments and contact use destinations appended on the right, characters in the final line of device comments may be missing, depending on the printer. This problem can be avoided by making the left and right margins smaller in page setting.	—	—
	When printing a large quantity of data, set the printer spool setting to "send printing data directly to the printer."	—	—
Monitoring	When ladder monitoring is executed after setting a monitor condition and monitor stop condition, it is not possible to carry out device test/batch/registration monitoring, or PLC diagnosis.	—	—
	When multiple GX Developers are started on the same personal computer and access to the same programmable controller is made from the same port, the following functions are not executed concurrently. Monitor values may become abnormal. • Program list monitor, monitoring the interrupt program list, setting monitor conditions, setting monitor stop conditions, measuring scan time.	—	—
	When displaying a screen on such as the System Monitor screen during ladder monitoring, update of the ladder monitor values is suspended.	—	—

Item	Restriction/Note	GPPA	GPPQ
Personal computer	Depending on the personal computer, the GX Developer may be sent incorrect information on the remaining capacity of the main memory, leading to problems with starting and operation. In this case, you must close other applications and increase the free memory area.	—	—
Import file (reading immediately after starting GX Developer)	This applies to A series. When a project has been created at the reading destination PLC type and the data is read (the status is "project name not set"), comments are read in accordance with the comment range at the GPPA side.	—	—
Monitoring with Ethernet	It is not possible to simultaneously monitor with another GPP via an Ethernet connection.	—	—
Open project	Read-only and write-protected (e.g. FD) projects cannot be opened. When a project which was saved when displayed in a large GX Developer window on a personal computer with high resolution is opened on a low-resolution personal computer, it may be displayed at the original large window size and project off the screen. Projects that are saved in their maximized state present no problem.	—	—
Connection destination designation	QCPU-A is inaccessible in the following case. GX Developer ↔ AF board or CPU board ↔ MELSECNET/10 other station QCPU-A	—	—
Serial communication function	To change the device to GX Developer, while communicating between Basic model QCPU and an external device using serial communication, execute the following operation. • When connecting from GX Developer, make the settings according to the transmission speed set in the serial communication settings. For more details of the operation, refer to Section 16.1.1.	—	—
Label program/FB	When a label program or FB is read using GX Developer of any other language, it cannot be read properly if the label name has been created in other than alphanumeric characters.	—	—
	When the already compiled label program or FB is read using GX Developer of any other language, it will return to a not yet compiled status. In this case, recompile it and write it to the PLC.	—	—
Data such as program	When handling a project using GX Developer of any other language, use alphanumeric characters in the program name and data name.	—	—

Appendix 9 SW ☐ D5-GPPW Compatibility

(1) When opening the data created with GX Developer (SW8D5C-GPPW-E) using GX Developer (SW2D5C-GPPW-E) or earlier

Function, Data	Restrictions
SFC program	SFC data cannot be read.
Macro	Macro-registered (with device comments) device comments are developed as line-to-line comments.
Project name	If the project name of 9 or more characters has been set on GX Developer (SW4D5C-GPPW-E), 8 and latter characters are not displayed when the project name is read on the version of GX Developer (SW2D5C-GPPW-E) or earlier.

(2) When opening the data created with GX Developer (SW8D5C-GPPW-E) using GX Developer (SW3D5C-GPPW-E) or earlier

Function, Data	Restrictions
Comment display	Comment display format is fixed to 3×5. (Cannot be changed to 2×8 or 4×8)
Project	When the Q series project was created on GX Developer (SW8D5C-GPPW-E), it cannot be handled on the version of GX Developer (SW3D5C-GPPW-E) or earlier.

(3) When opening the data created with GX Developer (SW8D5C-GPPW-E) using GX Developer (SW4D5C-GPPW-E) or earlier

Function, Data	Restrictions
Device memory	If multiple device memories have been created with GX Developer (SW8D5C-GPPW-E), they cannot be handled on the version of GX Developer (SW4D5C-GPPW-E) or earlier. (For details, refer to Section 2.5.1.)

(4) When opening the data created with GX Developer (SW8D5C-GPPW-E) using GX Developer (SW5D5C-GPPW-E) or earlier

Function, Data	Restrictions
Parameters	When multi-CPU parameters were set, for example, they cannot be handled on the GX Developer (SW5D5C-GPPW-E or earlier) version. (Refer to Section 2.5.2 for details.)
Label program	On GX Developer (SW5D5C-GPPW-E or earlier), only execute programs converted from label programs may be read.
Remote I/O project	Remote I/O projects cannot be handled on the GX Developer (SW5D5C-GPPW-E or earlier) version.

(5) When opening the data created with GX Developer (SW8D5C-GPPW-E) using GX Developer (SW6D5C-GPPW-E) or earlier

Function, Data	Restrictions
Project	The project created on the Q00J/Q00/Q01CPU cannot be handled on GX Developer (SW6D5C-GPPW-E or earlier).
	The project created by specifying "Use Label + FB" cannot be handled on GX Developer (SW6D5C-GPPW-E or earlier).
Parameters	When the "MELSOFT" connection" Ethernet parameter has been set, it cannot be handled on the GX Developer (SW6D5C-GPPW-E 6.04E or earlier) version. (Refer to Section 2.5.3 for details.)

(6) When opening the data created with GX Developer Version 8.00A (SW8D5C-GPPW-E) using GX Developer Version 7.09K (SW7D5C-GPPW-E) or earlier

Function, Data		Restrictions
Project		The project created using Process CPU cannot be handled by GX Developer Version 7.09K (SW7D5C-GPPW-E) or earlier
Parameters	When creating a project using GX Developer Version 7.10L to 7.18U (SW7D5C-GPPW-E)	Parameters cannot be handled by GX Developer Version 7.09K (SW7D5C-GPPW-E) or earlier. "Enable online module change" setting in "High speed interrupt setting", "Multiplexed remote master"/"Net/H (Multiplexed remote sub)" or "Multi CPU" is not relevant.
	When creating a project using GX Developer Version 7.19V (SW7D5C-GPPW-E) or later	Parameters cannot be handled when "High speed interrupt setting", "Multiplexed remote master"/"Net/H (Multiplexed remote sub)" or "Multi CPU" has been set. However, they can be handled by GX Developer Version 7.09K (SW7D5C-GPPW-E) or earlier through GX Developer Version 7.19V (SW7D5C-GPPW-E) if "High speed interrupt setting" and "Multiplexed remote master"/"Net/H (Multiplexed remote sub)" are not set while "Enable online module change" is not set in "Multi CPU". (Refer to Section 2.5.4 for details.)

(7) When opening the data created with GX Developer Version 8.00A (SW8D5C-GPPW-E) using GX Developer Version 7.20W (SW7D5C-GPPW-E) or earlier

Function, Data	Restrictions
Parameters	Parameters cannot be handled when handling the project of Basic model QCPU, if settings are made on [SFC] tab, [PLC file] tab, [PLC system] tab, "Multiple CPU", [E-mail setting] tab and [Interrupt setting] tab.
Structure	The program including structure cannot be handled by GX Developer Version 7 (SW7D5C-GPPW-E) or earlier. Compiling the project including structure will result in failure. If the project including structure has been opened and compiled, its structure definition will not be read when opened by Version 8.00A (SW8D5C-GPPW-E) or later.
ST	The project including ST cannot be handled by GX Developer Version 7 (SW7D5C-GPPW-E). If the project including ST has been opened and saved with name, it will be read as ladder program when opened by Version 8.00A (SW8D5C-GPPW-E) or later.
SFC program	The SFC program of Basic model QCPU cannot be handled by GX Developer Version 7 (SW7D5C-GPPW-E) or earlier. If the project including SFC program of Basic model QCPU has been opened and saved with name, the SFC program cannot be read.

(8) When opening the data created with GX Developer Version 8.03D (SW8D5C-GPPW-E) using GX Developer Version 8.02C (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Parameters	If "Remote net (Ver. 2 mode)", "Remote net (Additional mode) or "Case of CPU STOP setting" has been set in CC-Link parameter setting, the data cannot be handled by GX Developer Version 8.02C (SW8D5C-GPPW-E) or earlier. (Refer to Section 2.5.6 for details.)

(9) When opening the data created with GX Developer Version 8.05F (SW8D5C-GPPW-E) using GX Developer Version 8.04E (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Parameters	"Use the Keep Alive" under "Ethernet parameter setting" – "Operational settings" – "TCP existence confirmation setting" is changed to "Use the Ping" by either of the following operations. 1. When "Ethernet operations" setting screen is closed with End button. 2. When PLC type is changed to other than QCPU (Q mode), and then return to QCPU (Q mode). (Refer to Section 2.5.7 for details.)

(10) When opening the data created with GX Developer Version 8.18UT (SW8D5C-GPPW-E) using GX Developer Version 8.17T (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Parameters	When either of the following items has been set, the data cannot be handled by GX Developer Version 8.17T (SW8D5C-GPPW-E) or earlier 1. Parameters related to the redundant CPU have been set. 2. "OPS connection" has been set as the open method on the open setting screen. (Refer to Section 2.5.8 for details.) 3. When "Station information setting" has been set in the CC-Link parameter, the "Remote station point" of the "Station information" is changed.

(11) When opening the data created with GX Developer Version 8.20W (SW8D5C-GPPW-E) using GX Developer Version 8.19V (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Parameters	When "MNET/H Ext. mode (Control station)" or "MNET/H Ext. mode (Normal station)" has been set for MELSECNET/H, the data cannot be handled by GX Developer Version 8.19V (SW8D5C-GPPW-E) or earlier. (Refer to Section 2.5.9 for details.)

(12) When opening the data created with GX Developer Version 8.22Y (SW8D5C-GPPW-E) using GX Developer Version 8.20W (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Transfer setup	When "USB" has been set via GOT transparent mode in the PC side interface setting, it cannot be accessed by GX Developer Version 8.21X (SW8D5C-GPPW-E) or earlier. (Refer to Section 2.5.10 for details.)

(13) When opening the data created with GX Developer Version 8.24A (SW8D5C-GPPW-E) using GX Developer Version 8.22Y (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Parameters	When either of the following items has been set, the data cannot be handled by GX Developer Version 8.22Y (SW8D5C-GPPW-E) or earlier. (Refer to Section 2.5.11 for details.) 1. When the "Set the start device to each PLC" of the "Refresh settings" is set with the multiple CPU setting 2. When the memory check is set with the [PLC RAS setting (2)] tab

(14) When opening the data created with GX Developer Version 8.27D (SW8D5C-GPPW-E) using GX Developer Version 8.25B (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Parameters	After executing any of the following operations, "No conditional settings" is changed to "No conditional settings (Character String send)" in the "Condition for inspection" of "Ethernet parameter setting"- "E-mail settings" - "Ethernet news setting". 1. When "Ethernet news setting" setting screen is closed with End button. 2. When PLC type is changed to other than QCPU (Q mode), and then return to QCPU (Q mode). (Refer to Section 2.5.12 for details.)

(15) When opening the data created with GX Developer Version 8.29F (SW8D5C-GPPW-E) using GX Developer Version 8.28E (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions

Parameters	1. When "MNET/H Ext. mode (Control station)" or "MNET/H Ext. mode (Normal station)" has been set for MELSECNET/H, the data cannot be handled by GX Developer Version 8.28E (SW8D5C-GPPW-E) or earlier.
	2. After any of the following operations, the setting value of transient setting on "Transient setting" - "Network range assignment" - "Supplementary settings" is changed to "2".
	  1) When "MNET/10(H) common parameters supplemental" setting screen is closed with End button.
	  2) When PLC type is changed to other than QCPU (Q mode), and then return to QCPU (Q mode)
	(Refer to Section 2.5.13 for details.)

(16) When opening the data created with GX Developer Version 8.30G (SW8D5C-GPPW-E) is opened using GX Developer Version 8.29F (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
FB definition program	The FB definition program having more than 500 steps cannot be edited, replaced and converted.

(17) When opening the data created with GX Developer Version 8.32J (SW8D5C-GPPW-E) is opened using GX Developer Version 8.30G (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Parameters	When the following CC-Link parameters have been set, the data cannot be handled by GX Developer Version 8.30G (SW8D5C-GPPW) or earlier. • Parameters for the fifth module or later • Block guarantee of cyclic data per station in the Operational setting screen (The QCPU (Q mode) only)
SFC program	• If a program including (a) block statement(s) is read from the PLC, the program is read without the block statement(s). • When the project including (a) block statement(s) is read from a PLC, and then the SFC diagram is converted and saved, the block statement(s) will disappear.

(18) When opening the data created with GX Developer Version 8.40S (SW8D5C-GPPW-E) is opened using GX Developer Version 8.39R (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Project	The QSCPU project cannot be opened.

(19) When opening the data created with GX Developer Version 8.45X (SW8D5C-GPPW-E) using GX Developer Version 8.41T (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Project	The project created with the Universal model QCPU cannot be handled on GX Developer Version 8.41T (SW8D5C-GPPW-E) or earlier.
Parameter	• When CC IE Control (Control station) or CC IE Control (Normal station) is selected as Network type on the Setting the number of Ethernet/CC IE/ MELSECNET cards. screen, the data cannot be handled by GX Developer Version 8.41T (SW8D5C-GPPW-E) or earlier. • When any of the following network parameters has been set, the data cannot be handled by GX Developer Version 8.41T (SW8D5C-GPPW-E) or earlier. (1) END asynchronous settings is set on the Supplementary setting in the Assignment the MNET network range, screen for MELSECNET/H remote I/O network. (2) Master station (Extension base) is set to Type of the CC-Link parameter for redundant CPU system. (3) Ethernet (Extension base) is set to Type of the Ethernet parameter for redundant CPU system.

(20) When opening the data created with GX Developer Version 8.48A (SW8D5C-GPPW-E) using GX Developer Version 8.45X (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Project	Projects created with the Q02UCPU cannot be handled on GX Developer Version 8.45X (SW8D5C-GPPW-E) or earlier.
Parameter	Parameters created with the Universal model QCPU (excluding the Q02UCPU) cannot be handled on GX Developer Version 8.45X (SW8D5C-GPPW-E).
Global variable setting Device comment Device memory Device initial value	Devices ZR 1042432 or later created with the Universal model QCPU (excluding the Q02UCPU) cannot be handled on GX Developer Version 8.45X (SW8D5C-GPPW-E).
SFC program	SFC programs created with the Universal model QCPU (excluding the Q02UCPU) cannot be handled on GX Developer Version 8.45X (SW8D5C-GPPW-E).
Sampling trace	Sampling trace files created with the Universal model QCPU (excluding the Q02UCPU) cannot be handled on GX Developer Version 8.45X (SW8D5C-GPPW-E).

(21) When opening the data created with GX Developer Version 8.62Q (SW8D5C-GPPW-E) using GX Developer Version 8.58L (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Project	Projects created with the Q13UDHCPU or Q26UDHCPU cannot be handled on GX Developer Version 8.58L (SW8D5C-GPPW-E) or earlier.
Parameter	• When either of the following parameters has been set, the data cannot be handled on GX Developer Version 8.58L (SW8D5C –GPPW-E) or earlier. (1) "File usability setting" is set on the <<Program>> tab of the Universal model QCPU (2) "H/W error time PLC operation mode" is set on the <<I/O assignment>> tab of the remote I/O

(22) When opening the data created with GX Developer Version 8.65T (SW8D5C-GPPW-E) using GX Developer Version 8.62Q (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Parameter	• When any of the following parameters has been set, the data cannot be handled by GX Developer Version 8.62Q (SW8D5C-GPPW-E) or earlier. (1) A QSCPU project where "Safety data monitoring time" has been set in the Setting the CC-Link list. screen (2) A QSCPU project where "CC IE Control (Normal station)" or "Ethernet" has been set at Network type in network parameter

(23) When opening the data created with GX Developer Version 8.68W (SW8D5C-GPPW-E) using GX Developer Version 8.65T (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Project	Projects created with the Q02PH, Q03UDE, Q04UDEH, Q06PH, Q06UDEH, Q13UDEH, and Q26UDEH cannot be handled on GX Developer Version 8.65T (SW8D5C-GPPW-E) or earlier.
Parameter	• When any of the following parameters has been set, the data cannot be handled by GX Developer Version 8.65T (SW8D5C-GPPW-E) or earlier. (1) The points of either M or B in the <<Device>> tab exceed 32k points in the project of the Universal model QCPU. (2) 0 point is set for S in the <<Device>> tab in the project of the Universal model QCPU. (3) "Use ZZ" is set in the project of the Universal model QCPU. (4) The setting of the redundant power supply system in the <<PLC RAS>> tab is set not to diagnose in the project of the Universal model QCPU. (5) CC IE Control is selected for the network type in the project of the Q00JCPU, Q00CPU, Q01CPU, Q12PHCPU, Q12PRHCPU, Q25PHCPU, and Q25PRHCPU. • Comments, device memory, and device initial values created within the extended device range are deleted in the project of the Universal model QCPU.
Sampling trace	• The auto start setting of the sampling trace cannot be changed in the project of the Universal model QCPU.

(24) When opening the data created with GX Developer Version 8.70Y (SW8D5C-GPPW-E) using GX Developer Version 8.68W (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Parameter	When any of the following parameters has been set, the data cannot be handled by GX Developer Version 8.68W (SW8D5C-GPPW-E) or earlier. • When extended data register or extended link register has been set in the Universal model QCPU project

(25) When opening the data created with GX Developer Version 8.72A (SW8D5C-GPPW-E) using GX Developer Version 8.70Y (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Project	Projects created with the FX$_{3G}$ cannot be handled on GX Developer Version 8.70Y (SW8D5C-GPPW-E) or earlier.

(26) When opening the data created with GX Developer Version 8.78G (SW8D5C-GPPW-E) using GX Developer Version 8.74C (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Project	Projects created with the Q00UJ, Q00U, Q01U, Q10UDH, Q10UDEH, Q20UDH, Q20UDEH cannot be handled on GX Developer Version 8.74C (SW8D5C-GPPW-E) or earlier.
Parameter	When any of the following parameters has been set, the data cannot be handled by GX Developer Version 8.74C (SW8D5C-GPPW-E) or earlier. (1) When the same network number is set for CC IE Control network number on the Ethernet/CC IE/MELSECNET setting screen. (2) When any of the twist is set for the Baud rate setting of MNET/H mode on the Ethernet/CC IE/MELSECNET setting screen. (3) "Use serial communication" is set in the serial communication setting for Q02UCPU. (4) The PLC module change is set in the PLC system setting for Universal model QCPU. (5) Some of index registers are specified as local devices in the device setting for Universal model QCPU. (6) Compatibility with A-PLC is selected in the PLC system setting for Universal model QCPU. (7) For QnUDE(H)CPU, "Socket communication" is set for the open system in the open settings of the built-in Ethernet port.
Instruction	When instructions or rising pulse close contact/falling pulse close contact that are newly added for Universal model QCPU are used, and if the project is opened using GX Developer Version 8.74C (SW8D5C-GPPW-E) or earlier, an instruction code error occurs.

(27) When opening the data created with GX Developer Version 8.82L (SW8D5C-GPPW-E) using GX Developer Version 8.80J (SW8D5C-GPPW-E) or earlier

Function, Data	Restrictions
Parameter	• When the following parameter has been set, the data cannot be handled by GX Developer Version 8.80J (SW8D5C-GPPW-E) or earlier. (1) When "Module error log (Intelligent function module)" has been set in the PLC RAS (2) tab for the Universal model QCPU

Appendix 10 GX Developer and GX Simulator Operations

A	Q/QnA	QS	FX
○	○	×	○

GX Developer can be used in combination with all versions of GX Simulator. However, if the project of the PLC type is not supported by GX Simulator, GX Simulator cannot be started. (It can be started by installing the latest version of GX Simulator.)

The following table indicates the functions that cannot be selected by GX Developer when GX Simulator is used for debugging.

Menu	Item
Online	Transfer setup
	Read from PLC
	Verify with PLC
	Write to PLC (Flash ROM)
	Change PLC data attributes
	PLC user data (Read/Write/Delete)
	Monitor (Write mode)
	Monitor condition setup
	Monitor stop condition setup
	Interrupt program monitor list
	Scan time measurement
	Forced input output registration/cancellation
	Executional conditioned device test (Register/Check/Disable/ Batch disable)
	Sampling trace
	Redundant operation
	Program memory batch transfer
	Latch data backup operation (Backup/Delete backup data)
	PLC module change (Create backup data/Restore)
	Keyword setup/Password setup (Register/Delete/Disable)
	Clear PLC memory
	Arrange PLC memory
	Set time
Diagnostics	MELSECNET diagnostics
	CC IE Control diagnostics
	Ethernet diagnostics
	CC-Link / CC-Link/LT diagnostics
	System monitor
	Online module change

Appendix 11 Notes on FX Series Programming

The points to note when programming with the FX series are given here. For general points of difference and notes, refer to Section 1.2.

11.1 Ladder Monitor Display

A	Q/QnA	QS	FX
×	×	×	○

The differences between the FXGP(DOS)/FXGP(WIN) monitor display and GX Developer monitor display are indicated here.

- Differences in monitor display of PLS and PLF instructions
  In GX Developer, the GX Developer format display method is set as the default, but if the "PLSPLF instruction ladder monitor" check box in the [Tools] → [Options] <<program common>> sheet is checked, display is in the FXGP(DOS) or FXGP(WIN) format. Whichever display is selected, there is no effect on the actual operation of FXCPU.

  Example: Comparison of monitor displays according to setting contents
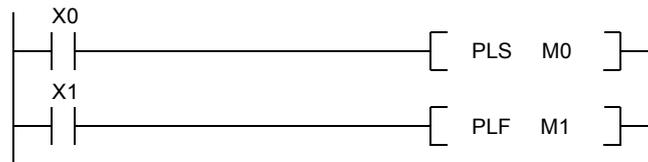
(1) Monitoring PLS instructions

- GX Developer format display
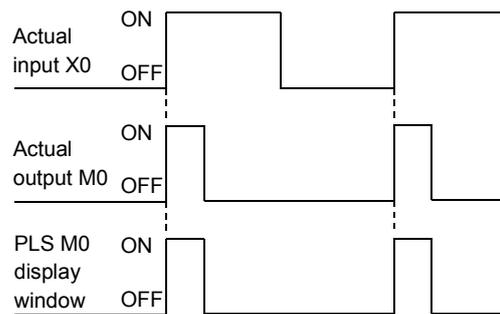
- FXGP(DOS), FXGP(WIN) format display
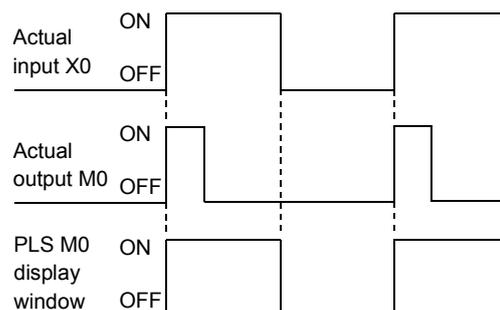
Monitoring PLF instructions
- GX Developer format display

| Actual input X1 | ON |
| | OFF |

| Actual output M1 | ON |
| | OFF |

| PLS M1 display window | ON |
| | OFF |

- FXGP(DOS), FXGP(WIN) format display

| Actual input X1 | ON |
| | OFF |

| Actual output M1 | ON |
| | OFF |

| PLS M1 display window | ON |
| | OFF |
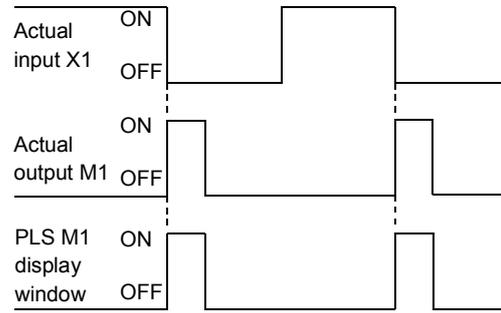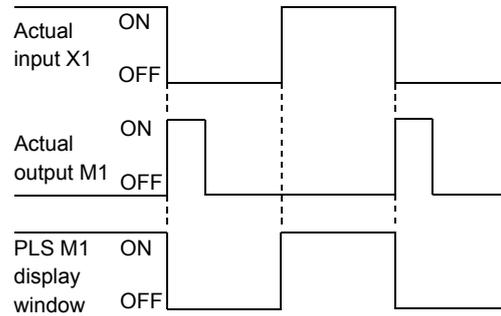
- Differences in monitoring OUT T and OUT C instructions
  The OUT coil monitor display on resetting timer and counter present values is different when using the "A" series or QnA series than it is when using the FX series.

  - Display when using the "A" series or QnA series

ON display   ON display

```
       ┤ ├────────────────────────( C0    K100 )◄── Off
       X3
       ┤ ├──────────────────────[ RST    C0 ]
```
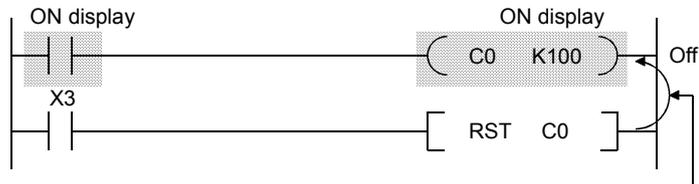
When RST C0 is driven with X3 ON, the present value of C0 is reset and the display of OUT C0 is also turned off.

  - Display when using the FX series

ON display   ON display

```
       ┤ ├────────────────────────( C0    K100 )
       X3
       ┤ ├──────────────────────[ RST    C0 ]
```
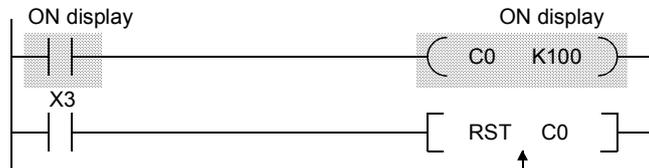
When RST C0 is driven with X3 ON, the present value of C0 is reset but the display of OUT C0 remains unchanged. (ON display continues until the drive contact of OUT C0 goes OFF.)

11.2 Handling of Comments

A	Q/QnA	QS	FX
×	×	×	○

- With FXGP(DOS), a distinction is made when entering comments: comments written in the programmable controller are called "comments 1", and comments held only at the Personal computer side are called "comments 2."
  With GX Developer, all comments are managed as device comments, and the distinction between comments 1 and comments 2 does not exist.
  When device comments are written to a programmable controller, a comment capacity must be secured in "PLC parameter setting" (refer to Section 13.1), and the comment range among the device comments to be written to the programmable controller must be set in "comment range setting" (refer to Section 9.7.)

- Comments of up to 16 characters can be written to a programmable controller, but some models, such as FXGP(DOS) and A6GPP, can only handle up to 15 characters, which means that the 16th character cannot be displayed. When comments are used in common, enter device comments of up to 15 characters (refer to Section 9.1.6).

- Comparison of comment configuration

FXGP(DOS)

FXCPU

Comments 2

Sequence program

Comments 1 → Comments 1

Set capacity for comments

GX Developer

FXCPU

Drive comment

Designated range

Sequence program

Comments 1

Set capacity for comments
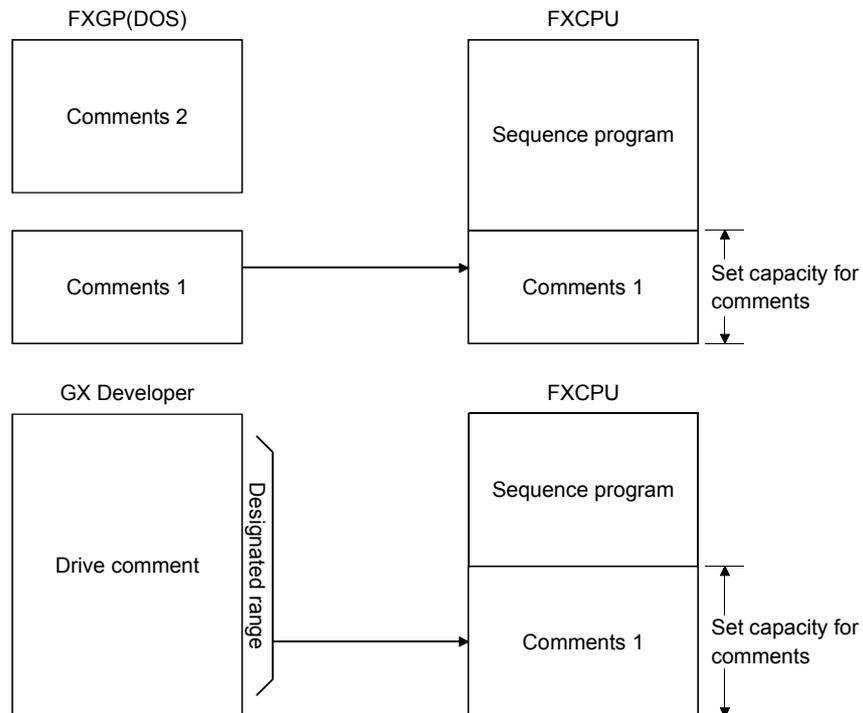
Appendix 12 Instruction Conversion Lists

12.1 Instruction Conversion List for A ↔ QnA series Conversion

A	Q/QnA	QS	FX
○	○*	×	×

*: Compatible with the QnACPU.

A ↔ QnA conversions will not be successful under the following conditions: in these cases make the necessary correction after executing the conversion instruction by referring to the following lists.

The indications *, *1, *2, *3, *4, *5, *6, and *7 in the lists refer to sources and destinations.

Device correspondence table for A → QnA conversions

A Series	QnA Series	Remarks
M	M	
M9000 to	SM1000 to	
L	L	
F	F	
S	M	
X	X	
Y	Y	
B	B	
D	D	
D9000 to	SD1000 to	
A0, 1	SD718, 719	
R	R	
W	W	
T	T, ST	ST is governed by the parameter settings
C	C	
P	P	If out-of-range, the instruction becomes OUT SM1255
I	I	If out-of-range, the instruction becomes OUT SM1255
N	N	If out-of-range, the instruction becomes OUT SM1255
K	K	
H	H	
" "	" "	Character strings are handled
Z, Z1~Z6	Z0~Z6	
K	K	
V, V1 to V6	Z7 to Z13	

Devices that contain out-of-range device parts or extension parts are changed to SM1255 if bits and SD1255 if words.

Converting "A" standard instructions to QnA series:

A Series	QnA Series	Remarks
OUT T∗ ∗2	OUT T∗ ∗2	H(OUTH) and ST are governed by the parameter settings
	OUT ST∗ ∗2	
	OUT C∗ ∗2	
OUT C∗ ∗2	OUTH T∗ ∗2	
	OUTH ST∗ ∗2	
	OUTH C∗ ∗2	
SUB ∗1	OUT SM1255	A dedicated instructions are excepted.
CHG	OUT SM1255	
SUM ∗1	SUM ∗1 SD718	
DSUM ∗1	DSUM ∗1 SD718	
ASC ∗1 ∗2	OUT SM1255	
LRDP ∗1 ∗2 ∗3 ∗4	OUT SM1255	
LWTP ∗1 ∗2 ∗3 ∗4	OUT SM1255	
RFRP ∗1 ∗2 ∗3 ∗4	OUT SM1255	
RTOP ∗1 ∗2 ∗3 ∗4	OUT SM1255	

Converting "A" standard instructions to QnA series:

A Series	QnA Series	Remarks
LEDA ∗1	OUT SM1255	"A" dedicated instructions are excepted.
LEDB ∗2	OUT SM1255	"A" dedicated instructions are excepted.
CHK ∗1 ∗2	OUT SM1255	
STC	OUT SM1255	
CLC	OUT SM1255	

Converting structured program dedicated instructions to QnA series:

Refer to the QnACPU Programming Manual(Common Instructions) (for AnACPU/AnUCPU)

A Series	QnA Series	Remarks
LEDA(LEDB) IX LEDC ∗1 LEDR	OUT SM1255 LEDC ∗1 LEDR	Section 7.6.9 Index qualification of entire ladder
LEDA IXEND	OUT SM1255	
LEDA CHK	OUT SM1255	Section 7.10.1 Special format failure checks
LEDA CHKEND	OUT SM1255	Section 7.10.2 Changing check format of CHK instruction

Converting character string processing instructions to QnA series (for AnACPU/AnUCPU)

A Series	QnA Series	Remarks
LEDA/LEDB SCMP LEDC ∗1 LEDC ∗2 LEDC ∗3 LEDR	OUT SM1255 LEDC ∗1 LEDC ∗2 LEDC ∗3 LEDR	Section 6.1.4 Character string data comparisons

Converting instructions for file registers to QnA series (for AnACPU/AnUCPU)

A Series	QnA Series	Remarks
LEDA/LEDB RSET LEDC/SUB ∗1 LEDR	OUT SM1255 LEDC ∗1/OUT SM1255 LEDR	Section 7.14.1 Switching file register numbers
LEDA/LEDB BMOVR LEDC ∗1 LEDC ∗2 LEDC/SUB ∗3 LEDR	OUT SM1255 LEDC ∗1 LEDC ∗2 LEDC ∗3/OUT SM1255 LEDR	Section 6.4.5 Block 16-bit data transfers
LEDA/LEDB BXCHR LEDC ∗1 LEDC ∗2 LEDC/SUB ∗3 LEDR	OUT SM1255 LEDC ∗1 LEDC ∗2 LEDC ∗3/OUT SM1255 LEDR	Section 6.4.8 Block 16-bit data exchanges
LEDA/LEDB ZRRD	OUT SM1255	Section 7.18.3 Direct 1-byte read from file register
LEDA/LEDB ZRWR	OUT SM1255	Section 7.18.4 File register direct 1-byte write
LEDA/LEDB ZRRDB	OUT SM1255	Section 7.18.3 Direct 1-byte read from file register
LEDA/LEDB ZRWRB	OUT SM1255	Section 7.18.4 File register direct 1-byte write

Converting instructions for data link to QnA series (for AnACPU/AnUCPU)

A Series	QnA Series	Remarks
LEDA/LEDB LRDP SUB *1 LEDC *2 LEDC *3 SUB *4 LEDC *5 LEDR	OUT SM1255 OUT SM1255 LEDC *2 LEDC *3 OUT SM1255 LEDC *5 LEDR	Section 8.3.2 Reading device data from local stations (MELSECNET)
LEDA/LEDB LWTP SUB *1 LEDC *2 LEDC *3 SUB *4 LEDC *5 LEDR	OUT SM1255 OUT SM1255 LEDC *2 LEDC *3 OUT SM1255 LEDC *5 LEDR	Section 8.3.4 Writing data to devices at local stations (MELSECNET)
LEDA/LEDB ZNFR SUB K/H* SUB *1 LEDC *2 SUB *3 SUB *4 LEDC *5 LEDR	OUT SM1255 OUT SM1255 OUT SM1255 LEDC *2 OUT SM1255 OUT SM1255 LEDC *5 LEDR	Section 8.2.8 Reading data from special function modules at remote I/O stations
LEDA/LEDB ZNTO SUB K/H* SUB *1 LEDC *2 SUB *3 SUB *4 LEDC *5 LEDR	OUT SM1255 OUT SM1255 OUT SM1255 LEDC *2 OUT SM1255 OUT SM1255 LEDC *5 LEDR	Section 8.2.9 Writing data to special function module of remote I/O station

Converting program switching instructions to QnA series (for AnACPU/AnUCPU)

A Series	QnA Series	Remarks
LEDA ZCHG0	OUT SM1255	Model Q2AS(H) CPU(S1) User's Manual Appendix 4.5
LEDA ZCHG1	OUT SM1255	
LEDA ZCHG2	OUT SM1255	
LEDA ZCHG3	OUT SM1255	Q2A(S1)/Q3A/Q4ACPU User's Manual Appendix 4.5

Converting instructions for CC-Link to QnA series

Refer to the CC-Link System Master Local Module type AJ61QBT11/A1SJQBT11 User's Manual (for AnSHCPU)

A Series	QnA Series	Remarks
LEDA/LEDB RLPA SUB K/H∗ LEDC ∗1 LEDC ∗2 LEDR	OUT SM1255 OUT SM1255 LEDC ∗1 LEDC ∗2 LEDR	QnACPU Programming Manual(Common Instructions) Section 7.8.1 Special function modules 1-and 2-word data read operations Section 7.8.2 Special function modules 1-and 2-word data write operations.
LEDA/LEDB RRPA SUB K/H∗ LEDC ∗1 LEDR	OUT SM1255 OUT SM1255 LEDC ∗1 LEDR	
LEDA/LEDB RITO SUB K/H∗ SUB ∗1 LEDC ∗2 LEDC ∗3 LEDR	OUT SM1255 OUT SM1255 OUT SM1255 LEDC ∗2 LEDC ∗3 LEDR	Section 15.6.9 RITO instruction
LEDA/LEDB RIWT SUB K/H∗ SUB ∗1 LEDC ∗2 LEDC ∗3 LEDR	OUT SM1255 OUT SM1255 OUT SM1255 LEDC ∗2 LEDC ∗3 LEDR	Section 15.6.5 RIWT instruction
LEDA/LEDB RIRCV SUB K/H∗ SUB ∗1 LEDC ∗2 LEDC ∗3 LEDC ∗4 LEDR	OUT SM1255 OUT SM1255 OUT SM1255 LEDC ∗2 LEDC ∗3 LEDC ∗4 LEDR	Section 15.6.7 RIRCV instruction

Converting instructions for CC-Link to QnA series (for AnSHCPU) (Continued)

A Series	QnA Series	Remarks
LEDA/LEDB RISEND SUB K/H∗ SUB ∗1 LEDC ∗2 LEDC ∗3 LEDC ∗4 LEDR	OUT SM1255 OUT SM1255 OUT SM1255 LEDC ∗2 LEDC ∗3 LEDC ∗4 LEDR	Section 15.6.6 RISEND instruction
LEDA/LEDB RDGET SUB K/H∗ SUB ∗1 LEDC ∗2 LEDC ∗3 LEDR	OUT SM1255 OUT SM1255 OUT SM1255 LEDC ∗2 LEDC ∗3 LEDR	Section 15.6.10 RDGET instruction
LEDA/LEDB RDPUT SUB K/H∗ SUB ∗1 LEDC ∗2 LEDC ∗3 LEDR	OUT SM1255 OUT SM1255 OUT SM1255 LEDC ∗2 LEDC ∗3 LEDR	Section 15.6.11 RDPUT instruction
LEDA/LEDB RDMON SUB K/H∗ SUB ∗1 LEDC ∗2 LEDC ∗3 LEDR	OUT SM1255 OUT SM1255 OUT SM1255 LEDC ∗2 LEDC ∗3 LEDR	Section 15.6.12 RDMON instruction

Device correspondence table for QnA → A conversions

QnA Series	A Series	Remarks
M	M	
SM	M9255	
SM1000 to	M9000 to	
L	L	
F	F	
V	M9255	
S	M9255	
TR	M9255	
X	X	
Y	Y	
FX	M9255	
FY	M9255	
B	B	
SB	M9255	
DX	X	
DY	Y	
D	D	
SD	D9255	
SD718, 719	A0, 1	
SD1000 to	D9000 to	
FD	D9255	
G	D9255	
SG	D9255	
VD	D9255	
A	D9255	
R	R	
ZR0 to 8191	R0 to 8191	
ZR8192 to	D9255	
W	W	
SW	D9255	
T	T	
C	C	
ST	T	
Z0 to Z6	Z, Z1 to Z6	
Z7 to Z13	V, V1 to V6	
Z14 to	D9255	
P	P	If out-of-range, the instruction becomes OUT M9255
I	I	If out-of-range, the instruction becomes OUT M9255
N	N	If out-of-range, the instruction becomes OUT M9255
U	M9255	All instructions become OUT M9255
J	M9255	All instructions become OUT M9255
BL	M9255	All instructions become OUT M9255
K	K	
H	H	

Device correspondence table for QnA → A conversions (Continued)

QnA Series	A Series	Remarks
E	D9255	
" "	" "	
Z0 to Z6	Z, Z1 to Z6	If the device part is a device that cannot be converted, all devices containing this code become M9255 or D9255.
Z7 to Z13	V, V1 to V6	If the device part is a device that cannot be converted, all devices containing this code become M9255 or D255.
Z14 to	M9255, D9255	All devices containing this code become M9255 or D9255.
K	K	If the device part is a device that cannot be converted, all devices containing this code become M9255 or D255.
.	M9255, D9255	All devices containing this code become M9255 or D9255.
@	M9255, D9255	All devices containing this code become M9255 or D9255.
U	M9255, D9255	All devices containing this code become M9255 or D9255.
J	M9255, D9255	All devices containing this code become M9255 or D9255.
BL	M9255, D9255	All devices containing this code become M9255 or D9255.

Devices that contain out-of-range device parts or extension parts are changed to M9255 if bits and D9255 if words.

Converting QnA series instructions to A series instructions

Q/QnA Series	A Series	
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
LDP *1	LD M9255	
LDF *1	LD M9255	
ORP *1	OR M9255	
ORF *1	OR M9255	
ANDP *1	AND M9255	
ANDF *1	AND M9255	
EGP *1	AND M9255	
EGF *1	AND M9255	
MEP	AND M9255	
MEF	AND M9255	
INV	AND M9255	
OUT DY *	OUT M9255	LEDA DOUT LEDC Y* LEDR
OUT T/ST/C256 *2	OUT M9255	
OUTH T/ST/C256 *2	OUT M9255	
SET DY*	OUT M9255	LEDA/LEDB DSET LEDC Y* LEDR
RST DY*	OUT M9255	LEDA/LEDB DRST LEDC Y* LEDR

Converting QnA series instructions to A series instructions (continued)

QnA Series	A Series	
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
FF *1	OUT M9255	LEDB FF LEDC *1 LEDR
DELTA *1	OUT M9255	
PAGE *1	OUT M9255	
LDE= *1 *2 ORE= *1 *2 ANDE= *1 *2	LD= D9255 D9255 OR= D9255 D9255 AND= D9255 D9255	
LDE<> *1 *2 ORE<> *1 *2 ANDE<> *1 *2	LD<> D9255 D9255 OR<> D9255 D9255 AND<> D9255 D9255	
LDE> *1 *2 ORE> *1 *2 ANDE> *1 *2	LD> D9255 D9255 OR> D9255 D9255 AND> D9255 D9255	
LDE>= *1 *2 ORE>= *1 *2 ANDE>= *1 *2	LD>= D9255 D9255 OR>= D9255 D9255 AND>= D9255 D9255	
LDE< *1 *2 ORE< *1 *2 ANDE< *1 *2	LD< D9255 D9255 OR< D9255 D9255 AND< D9255 D9255	
LDE<= *1 *2 ORE<= *1 *2 ANDE<= *1 *2	LD<= D9255 D9255 OR<= D9255 D9255 AND<= D9255 D9255	
LD$= *1 *2 OR$= *1 *2 AND$= *1 *2	LD= D9255 D9255 OR= D9255 D9255 AND= D9255 D9255	
LD$<> *1 *2 OR$<> *1 *2 AND$<> *1 *2	LD<> D9255 D9255 OR<> D9255 D9255 AND<> D9255 D9255	
LD$> *1 *2 OR$> *1 *2 AND$> *1 *2	LD> D9255 D9255 OR> D9255 D9255 AND> D9255 D9255	
LD$>= *1 *2 OR$>= *1 *2 AND$>= *1 *2	LD>= D9255 D9255 OR>= D9255 D9255 AND>= D9255 D9255	
LD$< *1 *2 OR$< *1 *2 AND$< *1 *2	LD< D9255 D9255 OR< D9255 D9255 AND< D9255 D9255	
LD$<= *1 *2 OR$<= *1 *2 AND$<= *1 *2	LD<= D9255 D9255 OR<= D9255 D9255 AND<= D9255 D9255	

Converting QnA series instructions to A series instructions (continued)

QnA Series	A Series	
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
BKCMP= ∗1 ∗2 ∗3 ∗4	OUT M9255	
BKCMP<> ∗1 ∗2 ∗3 ∗4	OUT M9255	
BKCMP> ∗1 ∗2 ∗3 ∗4	OUT M9255	
BKCMP>= ∗1 ∗2 ∗3 ∗4	OUT M9255	
BKCMP< ∗1 ∗2 ∗3 ∗4	OUT M9255	
BKCMP<= ∗1 ∗2 ∗3 ∗4	OUT M9255	
E+ ∗1 ∗2	OUT M9255	
E+ ∗1 ∗2 ∗3	OUT M9255	LEDA/LEDB ADD LEDC ∗1 LEDC ∗2 LEDC ∗3 LEDR
E- ∗1 ∗2	OUT M9255	
E- ∗1 ∗2 ∗3	OUT M9255	LEDA/LEDB SUB LEDC ∗1 LEDC ∗2 LEDC ∗3 LEDR
E∗ ∗1 ∗2 ∗3	OUT M9255	LEDA/LEDB MUL LEDC ∗1 LEDC ∗2 LEDC ∗3 LEDR
E/ ∗1 ∗2 ∗3	OUT M9255	LEDA/LEDB DIV LEDC ∗1 LEDC ∗2 LEDC ∗3 LEDR
$+ ∗1 ∗2	OUT M9255	
$+ ∗1 ∗2 ∗3	OUT M9255	LEDA/LEDB SADD LEDC ∗1 LEDC ∗2 LEDC ∗3 LEDR
BK+ ∗1 ∗2 ∗3 ∗4	OUT M9255	
BK- ∗1 ∗2 ∗3 ∗4	OUT M9255	
INT ∗1 ∗2	OUT M9255	LEDA/LEDB INT LEDC ∗1 LEDC ∗2 LEDR
DINT ∗1 ∗2	OUT M9255	LEDA/LEDB DINT LEDC ∗1 LEDC ∗2 LEDR

Converting QnA series instructions to A series instructions (continued)

| QnA Series | A Series | |
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
FLT *1 *2	OUT M9255	LEDA/LEDB FLOAT LEDC/SUB *1 LEDC *2 LEDR
DFLT *1 *2	OUT M9255	LEDA/LEDB DFLOAT LEDC/DXNR *1 LEDC *2 LEDR
DBL *1 *2	OUT M9255	
WORD *1 *2	OUT M9255	
GRY *1 *2	OUT M9255	
DGRY *1 *2	OUT M9255	
GBIN *1 *2	OUT M9255	
DGBIN *1 *2	OUT M9255	
DNEG *1	OUT M9255	
ENEG *1	OUT M9255	
BKBCD *1 *2 *3	OUT M9255	
BKBIN *1 *2 *3	OUT M9255	
EMOV *1 *2	OUT M9255	
$MOV *1 *2	OUT M9255	LEDA/LEDB SMOV LEDC *1 LEDC *2 LEDR
BXCH *1 *2	OUT M9255	
SWAP *1	OUT M9255	LEDA/LEDB SWAP LEDC *1 LEDR
GOEND	OUT M9255	
RFS *1 *2	OUT M9255	
DAND *1 *2 *3	OUT M9255	
DOR *1 *2 *3	OUT M9255	
DXOR *1 *2 *3	OUT M9255	
DXNR *1 *2 *3	OUT M9255	
BKAND *1 *2 *3 *4	OUT M9255	
BKOR *1 *2 *3 *4	OUT M9255	
BKXOR *1 *2 *3 *4	OUT M9255	
BKXNR *1 *2 *3 *4	OUT M9255	
TEST *1 *2 *3	OUT M9255	LEDA/LEDB TEST LEDC *1 LEDC/SUB *2 LEDC *3 LEDR

Converting QnA series instructions to A series instructions (continued)

QnA Series	A Series	
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
DTEST *1 *2 *3	OUT M9255	LEDA/LEDB DTEST LEDC *1 LEDC/SUB *2 LEDC *3 LEDR
BKRST *1 *2	OUT M9255	
DSER *1 *2 *3 *4	OUT M9255	LEDA/LEDB DSER LEDC *1 LEDC *2 LEDC/SUB *4 LEDR
NDIS *1 *2 *3	OUT M9255	LEDA/LEDB DIS LEDC *1 LEDC *2 LEDC *3 LEDR
NUNI *1 *2 *3	OUT M9255	LEDA/LEDB UNI LEDC *1 LEDC *2 LEDC *3 LEDR
WTOB *1 *2 *3	OUT M9255	LEDA/LEDB WTOB LEDC *1 LEDC *2 LEDC/SUB *3 LEDR
BTOW *1 *2 *3	OUT M9255	LEDA/LEDB BTOW LEDC *1 LEDC *2 LEDC/SUB *3 LEDR
MAX *1 *2 *3	OUT M9255	
DMAX *1 *2 *3	OUT M9255	
MIN *1 *2 *3	OUT M9255	
DMIN *1 *2 *3	OUT M9255	
SORT *1 *2 *3 *4 *5	OUT M9255	
DSORT *1 *2 *3 *4 *5	OUT M9255	
WSUM *1 *2 *3	OUT M9255	
DWSUM *1 *2 *3	OUT M9255	
BREAK *1 *2	OUT M9255	
CALL *1 *2	OUT M9255	
CALL *1 *2 *3	OUT M9255	
CALL *1 *2 *3 *4	OUT M9255	
CALL *1 *2 *3 *4 *5	OUT M9255	
CALL *1 *2 *3 *4 *5 *6	OUT M9255	

Converting QnA series instructions to A series instructions (continued)

QnA Series	A Series	
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
FCALL *1	OUT M9255	
FCALL *1 *2	OUT M9255	
FCALL *1 *2 *3	OUT M9255	
FCALL *1 *2 *3 *4	OUT M9255	
FCALL *1 *2 *3 *4 *5	OUT M9255	
FCALL *1 *2 *3 *4 *5 *6	OUT M9255	
ECALL *1 *2	OUT M9255	
ECALL *1 *2 *3	OUT M9255	
ECALL *1 *2 *3 *4	OUT M9255	
ECALL *1 *2 *3 *4 *5	OUT M9255	
ECALL *1 *2 *3 *4 *5 *6	OUT M9255	
ECALL *1 *2 *3 *4 *5 *6 *7	OUT M9255	
EFCALL *1 *2	OUT M9255	
EFCALL *1 *2 *3	OUT M9255	
EFCALL *1 *2 *3 *4	OUT M9255	
EFCALL *1 *2 *3 *4 *5	OUT M9255	
EFCALL *1 *2 *3 *4 *5 *6	OUT M9255	
EFCALL *1 *2 *3 *4 *5 *6 *7	OUT M9255	
IXSET *1 *2	OUT M9255	
FPOP *1 *2	OUT M9255	
FINS *1 *2 *3	OUT M9255	
FDEL *1 *2 *3	OUT M9255	
CHKST	OUT M9255	
CHK	OUT M9255	
CHKCIR	OUT M9255	
CHKEND	OUT M9255	
PTRA	OUT M9255	
PTRAR	OUT M9255	
PTRAEXE	OUT M9255	
BINDA *1 *2	OUT M9255	LEDA/LEDB BINDA LEDC/SUB *1 LEDC *2 LEDR
DBINDA *1 *2	OUT M9255	LEDA/LEDB DBINDA LEDC/DXNR *1 LEDC *2 LEDR
BINHA *1 *2	OUT M9255	LEDA/LEDB BINHA LEDC/SUB *1 LEDC *2 LEDR

Converting QnA series instructions to A series instructions (continued)

QnA Series	A Series	
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
DBINHA *1 *2	OUT M9255	LEDA/LEDB DBINHA LEDC/DXNR *1 LEDC *2 LEDR
BCDDA *1 *2	OUT M9255	LEDA/LEDB BCDDA LEDC/SUB *1 LEDC *2 LEDR
DBCDDA *1 *2	OUT M9255	LEDA/LEDB DBCDDA LEDC/DXNR *1 LEDC *2 LEDR
DABIN *1 *2	OUT M9255	LEDA/LEDB DABIN LEDC *1 LEDC *2 LEDR
DDABIN *1 *2	OUT M9255	LEDA/LEDB DDABIN LEDC *1 LEDC *2 LEDR
HABIN *1 *2	OUT M9255	LEDA/LEDB HABIN LEDC *1 LEDC *2 LEDR
DHABIN *1 *2	OUT M9255	LEDA/LEDB DHABIN LEDC *1 LEDC *2 LEDR
DABCD *1 *2	OUT M9255	LEDA/LEDB DABCD LEDC *1 LEDC *2 LEDR
DDABCD *1 *2	OUT M9255	LEDA/LEDB DDABCD LEDC *1 LEDC *2 LEDR
COMRD *1 *2	OUT M9255	LEDA/LEDB COMRD LEDC *1 LEDC *2 LEDR

Converting QnA series instructions to A series instructions (continued)

QnA Series	A Series	
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
LEN *1 *2	OUT M9255	LEDA/LEDB LEN LEDC *1 LEDC *2 LEDR
STR *1 *2 *3	OUT M9255	LEDA/LEDB STR LEDC *1 LEDC/SUB *2 LEDC *3 LEDR
DSTR *1 *2 *3	OUT M9255	LEDA/LEDB DSTR LEDC *1 LEDC/DXNR *2 LEDC *3 LEDR
VAL *1 *2 *3	OUT M9255	LEDA/LEDB VAL LEDC *1 LEDC *2 LEDC *3 LEDR
DVAL *1 *2 *3	OUT M9255	LEDA/LEDB DVAL LEDC *1 LEDC *2 LEDC *3 LEDR
ESTR *1 *2 *3	OUT M9255	
EVAL *1 *2	OUT M9255	
ASC *1 *2 *3	OUT M9255	LEDA/LEDB ASC LEDC *1 LEDC *2 LEDC/SUB *3 LEDR
HEX *1 *2 *3	OUT M9255	LEDA/LEDB HEX LEDC *1 LEDC *2 LEDC/SUB *3 LEDR
RIGHT *1 *2 *3	OUT M9255	
LEFT *1 *2 *3	OUT M9255	
MIDR *1 *2 *3	OUT M9255	
MIDW *1 *2 *3	OUT M9255	
INSTR *1 *2 *3 *4	OUT M9255	
EMOD *1 *2 *3	OUT M9255	
EREXP *1 *2 *3	OUT M9255	

Converting QnA series instructions to A series instructions (continued)

QnA Series	A Series	
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
SIN *1 *2	OUT M9255	LEDA/LEDB SIN LEDC *1 LEDC *2 LEDR
COS *1 *2	OUT M9255	LEDA/LEDB COS LEDC *1 LEDC *2 LEDR
TAN *1 *2	OUT M9255	LEDA/LEDB TAN LEDC *1 LEDC *2 LEDR
ASIN *1 *2	OUT M9255	LEDA/LEDB ASIN LEDC *1 LEDC *2 LEDR
ACOS *1 *2	OUT M9255	LEDA/LEDB ACOS LEDC *1 LEDC *2 LEDR
ATAN *1 *2	OUT M9255	LEDA/LEDB ATAN LEDC *1 LEDC *2 LEDR
RAD *1 *2	OUT M9255	LEDA/LEDB RAD LEDC *1 LEDC *2 LEDR
DEG *1 *2	OUT M9255	LEDA/LEDB DEG LEDC *1 LEDC *2 LEDR
SQR *1 *2	OUT M9255	LEDA/LEDB SQR LEDC *1 LEDC *2 LEDR
EXP *1 *2	OUT M9255	LEDA/LEDB EXP LEDC *1 LEDC *2 LEDR

Converting QnA series instructions to A series instructions (continued)

QnA Series	A Series	
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
LOG *1 *2	OUT M9255	LEDA/LEDB LOG LEDC *1 LEDC *2 LEDR
BSQR *1 *2	OUT M9255	LEDA/LEDB BSQR LEDC/SUB *1 LEDC *2 LEDR
BDSQR *1 *2	OUT M9255	LEDA/LEDB BDSQR LEDC/DXNR *1 LEDC *2 LEDR
BSIN *1 *2	OUT M9255	LEDA/LEDB BSIN LEDC/SUB *1 LEDC *2 LEDR
BCOS *1 *2	OUT M9255	LEDA/LEDB BCOS LEDC/SUB *1 LEDC *2 LEDR
BTAN *1 *2	OUT M9255	LEDA/LEDB BTAN LEDC/SUB *1 LEDC *2 LEDR
BASIN *1 *2	OUT M9255	LEDA/LEDB BASIN LEDC *1 LEDC *2 LEDR
BACOS *1 *2	OUT M9255	LEDA/LEDB BACOS LEDC *1 LEDC *2 LEDR
BATAN *1 *2	OUT M9255	LEDA/LEDB BATAN LEDC *1 LEDC *2 LEDR
LIMIT *1 *2 *3 *4	OUT M9255	LEDA/LEDB LIMIT LEDC/SUB *1 LEDC/SUB *2 LEDC/SUB *3 LEDC *4 LEDR

Converting QnA series instructions to A series instructions (continued)

| QnA Series | A Series | |
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
DLIMIT *1 *2 *3 *4	OUT M9255	LEDA/LEDB DLIMIT LEDC/DXNR *1 LEDC/DXNR *2 LEDC/DXNR *3 LEDC *4 LEDR
BAND *1 *2 *3 *4	OUT M9255	LEDA/LEDB BAND LEDC/SUB *1 LEDC/SUB *2 LEDC/SUB *3 LEDC *4 LEDR
DBAND *1 *2 *3 *4	OUT M9255	LEDA/LEDB DBAND LEDC/DXNR *1 LEDC/DXNR *2 LEDC/DXNR *3 LEDC *4 LEDR
ZONE *1 *2 *3 *4	OUT M9255	LEDA/LEDB ZONE LEDC/SUB *1 LEDC/SUB *2 LEDC/SUB *3 LEDC *4 LEDR
DZONE *1 *2 *3 *4	OUT M9255	LEDA/LEDB DZONE LEDC/DXNR *1 LEDC/DXNR *2 LEDC/DXNR *3 LEDC *4 LEDR
RSET *1	OUT M9255	
QDRSET *1	OUT M9255	
QCDSET *1	OUT M9255	
DATERD *1	OUT M9255	LEDA/LEDB DATERD LEDC *1 LEDR
DATEWR *1	OUT M9255	LEDA/LEDB DATEWR LEDC *1 LEDR
DATE+ *1 *2 *3	OUT M9255	
DATE- *1 *2 *3	OUT M9255	
SECOND *1 *2	OUT M9255	
HOUR *1 *2	OUT M9255	

Converting QnA series instructions to A series instructions (continued)

| QnA Series | A Series | |
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
PIDINIT ∗1	OUT M9255	LEDA/LEDB PIDINIT LEDC ∗1 LEDR
PIDCONT ∗1	OUT M9255	LEDA PIDCONT LEDC ∗1 LEDR
PID57 ∗1 ∗2 ∗3	OUT M9255	LEDA PID57 SUB ∗1 LEDC/SUB ∗2 LEDC ∗3 LEDR
PIDSTOP ∗1	OUT M9255	
PIDRUN ∗1	OUT M9255	
PIDPRMW ∗1 ∗2	OUT M9255	
MSG ∗1	OUT M9255	
PKEY ∗1	OUT M9255	
PSTOP ∗1	OUT M9255	
POFF ∗1	OUT M9255	
PSCAN ∗1	OUT M9255	
PLOW ∗1	OUT M9255	
ZRRDB ∗1 ∗2	OUT M9255	
ZRWRB ∗1 ∗2	OUT M9255	
ADRSET ∗1 ∗2	OUT M9255	
KEY ∗1 ∗2 ∗3 ∗4	OUT M9255	LEDA KEY LEDC ∗1 LEDC ∗2 LEDC ∗3 LEDC ∗4 LEDR
UDCNT1 ∗1 ∗2 ∗3	OUT M9255	
UDCNT2 ∗1 ∗2 ∗3	OUT M9255	
TTMR ∗1 ∗2	OUT M9255	
STMR ∗1 ∗2 ∗3	OUT M9255	
ROTC ∗1 ∗2 ∗3 ∗4	OUT M9255	
RAMP ∗1 ∗2 ∗3 ∗4 ∗5	OUT M9255	
SPD ∗1 ∗2 ∗3	OUT M9255	
PLSY ∗1 ∗2 ∗3	OUT M9255	
PWM ∗1 ∗2 ∗3	OUT M9255	
MTR ∗1 ∗2 ∗3 ∗4	OUT M9255	
IMASK ∗1	OUT M9255	
IX ∗1	OUT M9255	
IXEND	OUT M9255	

Converting QnA series instructions to A series instructions (continued)

QnA Series	A Series	
	Common Instructions	Dedicated Instructions (for AnA, AnUCPU)
IXDEV	OUT M9255	
S. ＊＊＊＊	OUT M9255	
Z. ＊＊＊＊	OUT M9255	
G. ＊＊＊＊	OUT M9255	
J. ＊＊＊＊	OUT M9255	

12.2 Instruction Conversion List for A ↔ FX Series Conversion

A	Q/QnA	QS	FX
○	×	×	○

The rules for device and instruction conversions when performing A ↔ FX conversions are given here.

For instructions that cannot be converted, make a correction after instruction conversion by referring to the lists.

The instruction conversion list for conversions from A to FX is given in pages 72 to 77.

The instruction conversion list for conversions from FX to A is given in pages 78 to 84.

The indications ＊1, ＊2, ＊3, ＊4, ＊5, ＊6, and ＊7 in the lists refer to sources and destinations.

Device correspondence table for A → FX conversions

A Series	FX Series	Remarks
M	M	
M9000 to	M8255	
L	M8255	
F	M8255	
S	S	
X	X	The hexadecimal input numbers of the "A" series are condensed as octal numbers headed by X0 for the FX series
Y	Y	The hexadecimal input numbers of the "A" series are condensed as octal numbers headed by X0 for the FX series
B	M8255	
D	D	
D9000 to	D8255	
A0¤1	D8255	
R	D1000 to	
W	D8000 to	
T	T	
C	C	
Z, Z1 to Z6	Z, Z1 to Z6	
172.16.	V, V1 to V6	
P	P	If out-of-range, the instruction becomes OUT M8255
I	I	If out-of-range, the instruction becomes OUT M8255
N	N	If out-of-range, the instruction becomes OUT M8255
K	K	
H	H	
" "	" "	
Z, Z1 to Z6	Z, Z1 to Z6	
K	K	
V, V1 to V6	V, V1 to V6	

Devices that contain out-of-range device parts or extension parts are changed to M8255 if bits and D8255 if words.

Converting A series to FX series

A Series	FX Series	Remarks
NOP	NOP	
LD ＊1	LD ＊1	
LDI ＊1	LDI ＊1	
OR ＊1	OR ＊1	
ORI ＊1	ORI ＊1	
AND ＊1	AND ＊1	
ANI ＊1	ANI ＊1	
ORB	ORB	
ANB	ANB	
MPS	MPS	
MRD	MRD	
MPP	MPP	
OUT ＊1	OUT ＊1	
OUT T/C＊ ＊2	OUT T/C＊ ＊2	
SET ＊1	SET ＊1	
RST ＊1	RST ＊1	
PLS ＊1	PLS ＊1	
PLF ＊1	PLF ＊1	
SFT ＊1	OUT M8255	
SFTP ＊1	OUT M8255	
MC ＊1 ＊2	MC ＊1 ＊2	
STOP	OUT M8255	
MCR ＊1	MCR ＊1	
FEND	FEND	
END	END	
NOPLF	OUT M8255	
P＊,I＊	P＊,I＊	
LD= ＊1 ＊2 OR= ＊1 ＊2 AND= ＊1 ＊2	LD= ＊1 ＊2 OR= ＊1 ＊2 AND= ＊1 ＊2	For models other than FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC: LD/OR/AND M8255
LD<> ＊1 ＊2 OR<> ＊1 ＊2 AND<> ＊1 ＊2	LD<> ＊1 ＊2 OR<> ＊1 ＊2 AND<> ＊1 ＊2	For models other than FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC: LD/OR/AND M8255
LD> ＊1 ＊2 OR> ＊1 ＊2 AND> ＊1 ＊2	LD> ＊1 ＊2 OR> ＊1 ＊2 AND> ＊1 ＊2	For models other than FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC: LD/OR/AND M8255
LD>= ＊1 ＊2 OR>= ＊1 ＊2 AND>= ＊1 ＊2	LD>= ＊1 ＊2 OR>= ＊1 ＊2 AND>= ＊1 ＊2	For models other than FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC: LD/OR/AND M8255
LD< ＊1 ＊2 OR< ＊1 ＊2 AND< ＊1 ＊2	LD< ＊1 ＊2 OR< ＊1 ＊2 AND< ＊1 ＊2	For models other than FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC: LD/OR/AND M8255

A Series	FX Series	Remarks
LD<= *1 *2 OR<= *1 *2 AND<= *1 *2	LD<= *1 *2 OR<= *1 *2 AND<= *1 *2	For models other than FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC: LD/OR/AND M8255
LDD= *1 *2 ORD= *1 *2 ANDD= *1 *2	LDD= *1 *2 ORD= *1 *2 ANDD= *1 *2	For models other than FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC: LD/OR/AND M8255
LDD<> *1 *2 ORD<> *1 *2 ANDD<> *1 *2	LDD<> *1 *2 ORD<> *1 *2 ANDD<> *1 *2	For models other than FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC: LD/OR/AND M8255
LDD> *1 *2 ORD> *1 *2 ANDD> *1 *2	LDD> *1 *2 ORD> *1 *2 ANDD> *1 *2	For models other than FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC: LD/OR/AND M8255
LDD>= *1 *2 ORD>= *1 *2 ANDD>= *1 *2	LDD>= *1 *2 ORD>= *1 *2 ANDD>= *1 *2	For models other than FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC: LD/OR/AND M8255
LDD< *1 *2 ORD< *1 *2 ANDD< *1 *2	LDD< *1 *2 ORD< *1 *2 ANDD< *1 *2	For models other than FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC: LD/OR/AND M8255
LDD<= *1 *2 ORD<= *1 *2 ANDD<= *1 *2	LDD<= *1 *2 ORD<= *1 *2 ANDD<= *1 *2	For models other than FX1S, FX1N, FX2N, FX3G, FX3U, FX1NC, FX2NC, FX3UC: LD/OR/AND M8255
+ *1 *2	ADD *1 *2 D8255	
+ *1 *2 *3	ADD *1 *2 *3	
- *1 *2	SUB *1 *2 D8255	
- *1 *2 *3	SUB *1 *2 *3	
D+ *1 *2	DADD *1 *2 D8255	
D+ *1 *2 *3	DADD *1 *2 *3	
D- *1 *2	DSUB *1 *2 D8255	
D- *1 *2 *3	DSUB *1 *2 *3	
* *1 *2 *3	MUL *1 *2 *3	
/ *1 *2 *3	DIV *1 *2 *3	
D* *1 *2 *3	DMUL *1 *2 *3	
D/ *1 *2 *3	DDIV *1 *2 *3	
B+ *1 *2	OUT M8255	
B+ *1 *2 *3	OUT M8255	
B- *1 *2	OUT M8255	
B- *1 *2 *3	OUT M8255	
DB+ *1 *2	OUT M8255	
DB+ *1 *2 *3	OUT M8255	
DB- *1 *2	OUT M8255	
DB- *1 *2 *3	OUT M8255	
B* *1 *2 *3	OUT M8255	
B/ *1 *2 *3	OUT M8255	

A Series	FX Series	Remarks
DB＊ ＊1 ＊2 ＊3	OUT M8255	
DB/ ＊1 ＊2 ＊3	OUT M8255	
INC ＊1	INC ＊1	
DINC ＊1	DINC ＊1	
DEC ＊1	DEC ＊1	
DDEC ＊1	DDEC ＊1	
BCD ＊1 ＊2	BCD ＊1 ＊2	
DBCD ＊1 ＊2	DBCD ＊1 ＊2	
BIN ＊1 ＊2	BIN ＊1 ＊2	
DBIN ＊1 ＊2	DBIN ＊1 ＊2	
NEG ＊1	NEG ＊1	FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
MOV ＊1 ＊2	MOV ＊1 ＊2	
DMOV ＊1 ＊2	DMOV ＊1 ＊2	
CML ＊1 ＊2	CML ＊1 ＊2	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
DCML ＊1 ＊2	DCML ＊1 ＊2	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
BMOV ＊1 ＊2 ＊3	BMOV ＊1 ＊2 ＊3	For FX1N, FX1S, FX1, FX0: M8255
FMOV ＊1 ＊2 ＊3	FMOV ＊1 ＊2 ＊3	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
XCH ＊1 ＊2	XCH ＊1 ＊2	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
DXCH ＊1 ＊2	DXCH ＊1 ＊2	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
CJ ＊1	CJ ＊1	
SCJ ＊1	CJ ＊1	
SUB ＊1	OUT M8255	
CHG	OUT M8255	
WAND ＊1 ＊2	WAND ＊1 ＊2 D8255	
WAND ＊1 ＊2 ＊3	WAND ＊1 ＊2 ＊3	
WOR ＊1 ＊2	WOR ＊1 ＊2 D8255	
WOR ＊1 ＊2 ＊3	WOR ＊1 ＊2 ＊3	
WXOR ＊1 ＊2	WXOR ＊1 ＊2 D8255	
WXOR ＊1 ＊2 ＊3	WXOR ＊1 ＊2 ＊3	
WXNR ＊1 ＊2	OUT M8255	
WXNR ＊1 ＊2 ＊3	OUT M8255	
DAND ＊1 ＊2	DAND ＊1 ＊2 D8255	
DOR ＊1 ＊2	DOR ＊1 ＊2 D8255	
DXOR ＊1 ＊2	DXOR ＊1 ＊2 D8255	
DXNR ＊1 ＊2	OUT M8255	
ROR ＊1	ROR D8255 ＊1	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
RCR ＊1	RCR D8255 ＊1	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
ROL ＊1	ROL D8255 ＊1	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
RCL ＊1	RCL D8255 ＊1	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
DROR ＊1	OUT M8255	
DRCR ＊1	OUT M8255	
DROL ＊1	OUT M8255	
DRCL ＊1	OUT M8255	

A Series	FX Series	Remarks
SFR ∗1 ∗2	OUT M8255	
SFL ∗1 ∗2	OUT M8255	
BSFR ∗1 ∗2	OUT M8255	
BSFL ∗1 ∗2	OUT M8255	
DSFR ∗1 ∗2	OUT M8255	
DSFL ∗1 ∗2	OUT M8255	
BSET ∗1 ∗2	OUT M8255	
BRST ∗1 ∗2	OUT M8255	
DECO ∗1 ∗2 ∗3	DECO ∗1 ∗2 ∗3	
ENCO ∗1 ∗2 ∗3	ENCO ∗1 ∗2 ∗3	
SEG ∗1 ∗2	SEGD ∗1 ∗2	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
DIS ∗1 ∗2 ∗3	OUT M8255	
UNI ∗1 ∗2 ∗3	OUT M8255	
SER ∗1 ∗2 ∗3	SER ∗1 ∗2 D8255 ∗3	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
SUM ∗1	SUM ∗1 D8255	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
DSUM ∗1	DSUM ∗1 D8255	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
ASC ∗1 ∗2	ASC ∗1 ∗2	For FX1N, FX1S, FX1, FX0N, FX0: OUT M8255
CALL ∗1	CALL ∗1	For FX1N, FX1S, FX0N, FX0: M8255
FIFW ∗1 ∗2	OUT M8255	
FIFR ∗1 ∗2	OUT M8255	
FROM ∗1 ∗2 ∗3 ∗4	FROM ∗1 ∗2 ∗3 ∗4	For FX1S, FX1, FX0: M8255
DFRO ∗1 ∗2 ∗3 ∗4	DFROM ∗1 ∗2 ∗3 ∗4	For FX1S, FX1, FX0: M8255
TO ∗1 ∗2 ∗3 ∗4	TO ∗1 ∗2 ∗3 ∗4	For FX1S, FX1, FX0: M8255
DTO ∗1 ∗2 ∗3 ∗4	DTO ∗1 ∗2 ∗3 ∗4	For FX1S, FX1, FX0: M8255
LRDP ∗1 ∗2 ∗3 ∗4	OUT M8255	
LWTP ∗1 ∗2 ∗3 ∗4	OUT M8255	
RFRP ∗1 ∗2 ∗3 ∗4	OUT M8255	
RTOP ∗1 ∗2 ∗3 ∗4	OUT M8255	
PR ∗1 ∗2	PR ∗1 ∗2	For FX1N, FX1S, FX0N, FX0: M8255
PRC ∗1 ∗2	OUT M8255	
LED ∗1	OUT M8255	
LEDC ∗1	OUT M8255	
LEDR	OUT M8255	
LEDA ∗1	OUT M8255	
LEDB ∗1	OUT M8255	
SLT	OUT M8255	
SLTR	OUT M8255	
STRA	OUT M8255	
STRAR	OUT M8255	
WDT	WDT	
DUTY ∗1 ∗2 ∗3	OUT M8255	
CHK ∗1 ∗2	OUT M8255	
STC	SET M8022	

A Series	FX Series	Remarks
CLC	RST M8022	
JMP ＊1	CJ ＊1	
DI	DI	
EI	EI	
IRET	IRET	
FOR ＊1	FOR ＊1	
NEXT	NEXT	
RET	SRET	For FX_1, FX_0: M8255
COM	OUT M8255	

Device correspondence table for FX → A conversions

FX Series	A Series	Remarks
M	M	
M8000 to	M9255	
S	M9255	The octal input numbers of the FX series are condensed as hexadecimal numbers headed by X0 for the "A" series
X	X	The octal input numbers of the FX series are condensed as hexadecimal numbers headed by X0 for the "A" series
Y	Y	
D	D	
D8000 to	D9255	
T	T	
C	C	
Z, Z1 to Z6	Z, Z1 to Z6	
V, V1 to V6	V, V1 to V6	
V7, Z7	D9255	
P	P	If out-of-range, the instruction becomes OUT M9255
I	I	If out-of-range, the instruction becomes OUT M9255
N	N	If out-of-range, the instruction becomes OUT M9255
K	K	
H	H	
""	""	
Z, Z1 to Z6	Z, Z1 to Z6	If the device part is a device that cannot be converted, all devices containing this code become M9255 or D255.
V, V1 to V6	V, V1 to V6	If the device part is a device that cannot be converted, all devices containing this code become M9255 or D255.
V7, Z7	M9255, D9255	All devices containing this code become M9255 or D9255.
R	M9255, D9255	All devices containing this code become M9255 or D9255.
U	M9255, D9255	All devices containing this code become M9255 or D9255.
G	M9255, D9255	All devices containing this code become M9255 or D9255.
D□, □	M9255, D9255	All devices containing this code become M9255 or D9255.
E	M9255, D9255	All devices containing this code become M9255 or D9255.
K	K	If the device part is a device that cannot be converted, all devices containing this code become M9255 or D255.

Devices that contain out-of-range device parts or extension parts are changed to M9255 if bits and D9255 if words.

Converting FX series to A series

FX Series	A Series	Remarks
NOP	NOP	
LD ＊1	LD ＊1	
LDI ＊1	LDI ＊1	
LDP ＊1	LD M9255	
LDF ＊1	LD M9255	
OR ＊1	OR ＊	
ORI ＊1	ORI ＊1	
ORP ＊1	OR M9255	
ORF ＊1	OR M9255	
AND ＊1	AND ＊1	
ANI ＊1	ANI ＊1	
ANDP ＊1	AND M9255	
ANDF ＊1	AND M9255	
INV	AND M9255	
MEP	AND M9255	
MEF	AND M9255	
ORB	ORB	
ANB	ANB	
MPS	MPS	
MRD	MRD	
MPP	MPP	
OUT ＊1	OUT ＊1	
OUT T/C0 to 199 ＊2	OUT T/C ＊2	
OUT C200 to ＊2	OUT M9255	32-bit counters are not changed.
SET ＊1	SET ＊1	
RST ＊1	RST ＊1	
PLS ＊1	PLS ＊	
PLF ＊1	PLF ＊	
MC ＊1 ＊2	MC ＊1 ＊2	
MCR ＊1	MCR ＊1	
FEND	FEND	
END	END	
P＊,I＊	P＊,I＊	
LD= ＊1 ＊2 OR= ＊1 ＊2 AND= ＊1 ＊2	LD= ＊1 ＊2 OR= ＊1 ＊2 AND= ＊1 ＊2	
LD<> ＊1 ＊2 OR<> ＊1 ＊2 AND<> ＊1 ＊2	LD<> ＊1 ＊2 OR<> ＊1 ＊2 AND<> ＊1 ＊2	
LD> ＊1 ＊2 OR> ＊1 ＊2 AND> ＊1 ＊2	LD> ＊1 ＊22 OR> ＊1 ＊2 AND> ＊1 ＊2	
LD>= ＊1 ＊2 OR>= ＊1 ＊2 AND>= ＊1 ＊2	LD>= ＊1 ＊2 OR>= ＊1 ＊2 AND>= ＊1 ＊2	

FX Series	A Series	Remarks
LD< *1 *2	LD< *1 *2	
OR< *1 *2	OR< *1 *2	
AND< *1 *2	AND< *1 *2	
LD<= *1 *2	LD<= *1 *2	
OR<= *1 *2	OR<= *1 *2	
AND<= *1 *2	AND<= *1 *2	
LDD= *1 *2	LDD= *1 *2	
ORD= *1 *2	ORD= *1 *2	
ANDD= *1 *2	ANDD= *1 *2	
LDD<> *1 *2	LDD<> *1 *2	
ORD<> *1 *2	ORD<> *1 *2	
ANDD<> *1 *2	ANDD<> *1 *2	
LDD> *1 *2	LDD> *1 *2	
ORD> *1 *2	ORD> *1 *2	
ANDD> *1 *2	ANDD> *1 *2	
LDD>= *1 *2	LDD>= *1 *2	
ORD>= *1 *2	ORD>= *1 *2	
ANDD>= *1 *2	ANDD>= *1 *2	
LDD< *1 *2	LDD< *1 *2	
ORD< *1 *2	ORD< *1 *2	
ANDD< *1 *2	ANDD< *1 *2	
LDD<= *1 *2	LDD<= *1 *2	
ORD<= *1 *2	ORD<= *1 *2	
ANDD<= *1 *2	ANDD<= *1 *2	
CMP	OUT M9255	
DCMP	OUT M9255	
ZCP	OUT M9255	
DZCP	OUT M9255	
DECMP	OUT M9255	
DEZCP	OUT M9255	
ADD *1 *2 *2	+ *1 *2 *3	
SUB *1 *2 *2	- *1 *2 *3	
DADD *1 *2 *2	D+ *1 *2 *3	
DSUB *1 *2 *2	D- *1 *2 *3	
MUL *1 *2 *3	* *1 *2 *3	
DIV *1 *2 *3	/ *1 *2 *3	
DMUL *1 *2 *3	D* *1 *2 *3	
DDIV *1 *2 *3	D/ *1 *2 *3	
DEADD *1 *2 *3	OUT M9255	
DESUB *1 *2 *3	OUT M9255	
DEMUL *1 *2 *3	OUT M9255	
DEDIV *1 *2 *3	OUT M9255	
INC *1	INC *1	
DINC *1	DINC *1	

FX Series	A Series	Remarks
DEC ＊1	DEC ＊1	
DDEC ＊1	DDEC ＊1	
BCD ＊1 ＊2	BCD ＊1 ＊2	
DBCD ＊1 ＊2	DBCD ＊1 ＊2	
BIN ＊1 ＊2	BIN ＊1 ＊2	
DBIN ＊1 ＊2	DBIN ＊1 ＊2	
INT ＊1 ＊2	OUT M9255	
DINT ＊1 ＊2	OUT M9255	
GRY ＊1 ＊2	OUT M9255	
DGRY ＊1 ＊2	OUT M9255	
GBIN ＊1 ＊2	OUT M9255	
DGBIN ＊1 ＊2	OUT M9255	
NEG ＊1	NEG ＊1	
DNEG ＊1	OUT M9255	
DEBCD	OUT M9255	
DEBIN	OUT M9255	
MOV ＊1 ＊2	MOV ＊1 ＊2	
DMOV ＊1 ＊2	DMOV ＊1 ＊2	
CML ＊1 ＊2	CML ＊1 ＊2	
DCML ＊1 ＊2	DCML ＊1 ＊2	
BMOV ＊1 ＊2 ＊3	BMOV ＊1 ＊2 ＊3	
FMOV ＊1 ＊2 ＊3	FMOV ＊1 ＊2 ＊3	
XCH ＊1 ＊2	XCH ＊1 ＊2	
DXCH ＊1 ＊2	DXCH ＊1 ＊2	
SWAP ＊1	OUT M9255	
SMOV	OUT M9255	
DSWAP ＊1	OUT M9255	
DFMOV ＊1 ＊2 ＊3	OUT M9255	
CJ ＊1	CJ ＊1	
REF	OUT M9255	
REFF	OUT M9255	
HSCS	OUT M9255	
DHSCS	OUT M9255	
HSCR	OUT M9255	
DHSCR	OUT M9255	
HSZ	OUT M9255	
DHSZ	OUT M9255	
WAND ＊1 ＊2 ＊3	WAND ＊1 ＊2 ＊3	
WOR ＊1 ＊2 ＊3	WOR ＊1 ＊2 ＊3	
WXOR ＊1 ＊2 ＊3	WXOR ＊1 ＊2 ＊3	
DAND ＊1 ＊2 ＊3	DAND ＊1 ＊2	
DOR ＊1 ＊2 ＊3	DOR ＊1 ＊2	
DXOR ＊1 ＊2 ＊3	DXOR ＊1 ＊2	

FX Series	A Series	Remarks
ROR *1 *2	ROR *2	
RCR *1 *2	RCR *2	
ROL *1 *2	ROL *2	
RCL *1 *2	RCL *2	
DROR *1 *2	DROR *2	
DRCR *1 *2	DRCR *2	
DROL *1 *2	DROL *2	
DRCL *1 *2	DRCL *2	
SFTR *1 *2 *3 *4	OUT M9255	
SFTL *1 *2 *3 *4	OUT M9255	
WSFR *1 *2 *3 *4	OUT M9255	
WSFL *1 *2 *3 *4	OUT M9255	
SFWR *1 *2 *3	OUT M9255	
SFRD *1 *2 *3	OUT M9255	
SER *1 *2 *3 *4	SER *1 *2 *4	
DSER *1 *2 *3 *4	OUT M9255	
DECO *1 *2 *3	DECO *1 *2 *3	
ENCO *1 *2 *3	ENCO *1 *2 *3	
SORT *1 *2 *3 *4 *5	OUT M9255	
ASC *1 *2	ASC *1 *2	
ZRST *1 *2	OUT M9255	
SUM *1 *2	SUM *1	
DSUM *1 *2	DSUM *1	
BON *1 *2 *3	OUT M9255	
DBON *1 *2 *3	OUT M9255	
MEAN *1 *2 *3	OUT M9255	
DMEAN *1 *2 *3	OUT M9255	
ANS *1 *2 *3	OUT M9255	
ANR	OUT M9255	
FLT *1 *2	OUT M9255	
DFLT *1 *2	OUT M9255	
CALL *1	CALL *1	
FROM *1 *2 *3 *4	FROM *1 *2 *3 *4	
DFROM *1 *2 *3 *4	DFRO *1 *2 *3 *4	
TO *1 *2 *3 *4	TO *1 *2 *3 *4	
DTO *1 *2 *3 *4	DTO *1 *2 *3 *4	
PR *1 *2	PR *1 *2	
HEX *1 *2 *3	OUT M9255	
ASCI *1 *2 *3	OUT M9255	
SQR *1 *2	OUT M9255	
DSQR	OUT M9255	
DESQR *1 *2	OUT M9255	

FX Series	A Series	Remarks
DSIN *1 *2	OUT M9255	
DCOS *1 *2	OUT M9255	
DTAN *1 *2	OUT M9255	
TCMP	OUT M9255	
TZCP	OUT M9255	
TADD	OUT M9255	
TSUB	OUT M9255	
TRD	OUT M9255	
TWR	OUT M9255	
PID	OUT M9255	
TKY	OUT M9255	
DTKY	OUT M9255	
HKY	OUT M9255	
DHKY	OUT M9255	
DSW	OUT M9255	
SEGD	OUT M9255	
SEGL	OUT M9255	
ARWS	OUT M9255	
RS	OUT M9255	
PRUN	OUT M9255	
DPRUN	OUT M9255	
CCD	OUT M9255	
VRRD	OUT M9255	
VRSC	OUT M9255	
MNET	OUT M9255	
ANRD	OUT M9255	
ANWR	OUT M9255	
RMST	OUT M9255	
RMWR	OUT M9255	
DRMWR	OUT M9255	
RMRD	OUT M9255	
DRMRD	OUT M9255	
RMMN	OUT M9255	
BLK	OUT M9255	
MCDE	OUT M9255	
WDT	WDT	
TTMR	OUT M9255	
STMR	OUT M9255	
ROTC	OUT M9255	
SPD	OUT M9255	
PLSY	OUT M9255	
PWM	OUT M9255	

FX Series	A Series	Remarks
MTR	OUT M9255	
DPLSY	OUT M9255	
IST	OUT M9255	
ABSD	OUT M9255	
DABSD	OUT M9255	
INCD	OUT M9255	
ALT	OUT M9255	
RAMP	OUT M9255	
PLSR	OUT M9255	
DPLSR	OUT M9255	
DI	DI	
EI	EI	
IRET	IRET	
SRET	RET	
FOR ∗1	FOR ∗1	
NEXT	NEXT	
STL ∗1	OUT M9255	
RET	OUT M9255	
DABS	OUT M9255	
ZRN	OUT M9255	
DZRN	OUT M9255	
PLSV	OUT M9255	
DPLSV	OUT M9255	
DRVI	OUT M9255	
DDRVI	OUT M9255	
DRVA	OUT M9255	
DDRVA	OUT M9255	
HOUR	OUT M9255	
DHOUR	OUT M9255	
RD3A	OUT M9255	
WR3A	OUT M9255	
RS2	OUT M9255	
DEMOV	OUT M9255	
DESTR	OUT M9255	
DEVAL	OUT M9255	
DEXP	OUT M9255	
DLOGE	OUT M9255	
DLOG10	OUT M9255	
DENEG	OUT M9255	
DASIN	OUT M9255	
DACOS	OUT M9255	
DATAN	OUT M9255	
DRAD	OUT M9255	

FX Series	A Series	Remarks
DDEG	OUT M9255	
DSZR	OUT M9255	
DVIT	OUT M9255	
DDVIT	OUT M9255	
HTOS	OUT M9255	
DHTOS	OUT M9255	
STOH	OUT M9255	
DSTOH	OUT M9255	
RND	OUT M9255	
CRC	OUT M9255	
DHCMOV	OUT M9255	
LEN	OUT M9255	
RIGHT	OUT M9255	
LEFT	OUT M9255	
MIDR	OUT M9255	
MIDW	OUT M9255	
$ MOV	OUT M9255	
POP	OUT M9255	
SFR	OUT M9255	
SFL	OUT M9255	
LIMIT	OUT M9255	
DLIMIT	OUT M9255	
BAND	OUT M9255	
DBAND	OUT M9255	
ZONE	OUT M9255	
DZONE	OUT M9255	
SCL	OUT M9255	
DSCL	OUT M9255	
IVCK	OUT M9255	
IVDR	OUT M9255	
IVRD	OUT M9255	
IVWR	OUT M9255	
IVBWR	OUT M9255	
DHSCT	OUT M9255	
LOADR	OUT M9255	
SAVER	OUT M9255	
INITR	OUT M9255	
LOGR	OUT M9255	
SCL2	OUT M9255	
DSCL2	OUT M9255	
RWER	OUT M9255	
INITER	OUT M9255	
ZPUSH	OUT M9255	
ZPOP	OUT M9255	

FX Series	A Series	Remarks
WSUM	OUT M9255	
DWSUM	OUT M9255	
WTOB	OUT M9255	
BTOW	OUT M9255	
UNI	OUT M9255	
DIS	OUT M9255	
SORT2	OUT M9255	
DSORT2	OUT M9255	
COMRD	OUT M9255	
DUTY	OUT M9255	
BK+	OUT M9255	
DBK+	OUT M9255	
BK-	OUT M9255	
DBK-	OUT M9255	
BKCMP=	OUT M9255	
DBKCMP=	OUT M9255	
BKCMP>	OUT M9255	
DBKCMP>	OUT M9255	
BKCMP<	OUT M9255	
DBKCMP<	OUT M9255	
BKCMP<>	OUT M9255	
DBKCMP<>	OUT M9255	
BKCMP<=	OUT M9255	
DBKCMP<=	OUT M9255	
BKCMP>=	OUT M9255	
DBKCMP>=	OUT M9255	
STR	OUT M9255	
DSTR	OUT M9255	
VAL	OUT M9255	
DVAL	OUT M9255	
INSTR	OUT M9255	
DABIN	OUT M9255	
DDABIN	OUT M9255	
BINDA	OUT M9255	
DBINDA	OUT M9255	
FDEL	OUT M9255	
FINS	OUT M9255	
RBFM	OUT M9255	
WBFM	OUT M9255	
DTBL	OUT M9255	

12.3 Instruction Conversion List for Q ↔ A/QnA Series Conversion

A	Q/QnA	QS	FX
○	○	×	×

When the PC type is changed from QCPU to ACPU or from QCPU to QnACPU, the instructions added newly to the Q series are all changed into M9255 (A series) or SM1255 (QnA series).
The following instructions have become compatible with the Q series.

Instruction	Description
UNIRD	Reads module information
TRACE	Sets trace
TRACER	Resets trace
S.FWRITE	Writes binary data
S.FREAD	Reads binary data
S.FORMAT	Reads word devices from other programmable controller
G.READ	Reads word devices from other programmable controller
G.SREAD	Writes word devices from other programmable controller
G.SWRITE	Writes word devices from other programmable controller
S.REQ	Transient request from other programmable controller
GINT	Interrupt instruction from other programmable controller
PLOAD	Program load from memory card
PUNLOAD	Program unload from SPM
PSWAP	Load + unload
RBMMOV	High-speed file register block transfer

POINT

When the A series is changed to the Q series, any instruction device existing in the A series but not existing in the Q series is converted into SM999 (Basic Model QCPU) or SM1255 (High Performance Model QCPU, Process CPU).

In addition, some types of instructions are converted into SM999 or SM1255 on more than one line.

Because of incompatibility with the Q series, the following instructions are changed into SM1255 when the QnA series is changed to the Q series.

	Description	Instruction Name
AD57/A58 control instructions	Display mode setting	MCODE
	Canvas screen display	CPS1
	VRAM display address change	CPS2
	Canvas transfer	CMOV
	Screen clear	CLS
	VRAM clear	CLV
	Scroll up/down	CSCRU, CSCRD
	Cursor display	CON1, CON2
	Cursor erasure	COFF
	Cursor locating	LOCATE
	Normal/reverse display of displayed characters	CNOR, CREV
	Normal/reverse character display switching	CRDSP, CRDSPV
	Character color designation	COLOR
	Character color changing	CCDSP, CCDSPV
	ASCII character display	PRN, PR
	ASCII character write	PRNV, PRV
	Character display	EPRN, EPRV
	Character write	EPRNV, EPRV
	Continuous display of the same character	CR1, CR2, CC1, CC2
	Minus display	CINMP
	Hyphen display	CINHP
	Period display	CINTP
	Numeric character display	CIN0 to CIN9
	Alphabetic character display	CINA to CINZ
	Space display	CINP
	Designated field clear	CINCLR
	ASCII code conversion	INPUT
	VRAM data read	GET
	VRAM data write	PUT
	Display status read	STAT
	PID monitor	PID57
AJ71PT32-S3 control instructions	Key input from operation box	INPUT
	Data transmission of the specified number of bytes in no-protocol mode	PRN
	Data transmission up to 00H code in no-protocol mode	PR
	Data receive in no-protocol mode	INPUT
	Communication to/from remote terminal module	MINI
	Error reset to remote terminal module	MINIERR
	Communication status read	SPBUSY
	Forced suspension of communication processing	SPCLR

	Description	Instruction Name
AJ71C21(S1) control instructions	Data transmission of the specified number of bytes	PRN2, PRN4
	Data transmission up to 00H	PR2, PR4
	Data receive	INPUT2, INPUT4
	Access to RAM memory	GET, PUT
	Communication status read	SPBUSY
	Forced suspension of communication processing	SPCLR
AD59(S1) control instructions	Printer output	PRN, PR
	Data read/write from/to memory card	GET, PUT
Write to EEPROM	Write to EEPROM	EROMWR
Sampling trace, status latch related instructions	Sampling trace	STRA
	Sampling trace reset	STRAR
	Status latch set	SLT
	Status latch reset	SLTR
Program trace related instructions	Program trace trigger	PTRA
	Program trace reset	PTRAR
	Program trace execution	PTRAEXE
LED indication related instructions	LED indication of ASCII code	LED
	LED indication instruction for comment	LEDC
	LED indication of comment	LEDC
AJ71C24(S3, S6, S8)/AJ71UC24 control instructions	Data transmission	PR, PRN
	Data receive	INPUT
	Communication status read	SPBUSY
	Forced suspension	SPCLR
AD61(S1) high-speed counter module control instructions	Preset value data setting	PVWR1, PVWR2
	Magnitude, coincidence judging set value data write	SVWR1, SVWR2
	Current value read	PVRD1, PVRD2
Program changing instruction (A4UCPU only)	Changing to specified program	ZCHG
CC-Link dedicated instructions	Network parameter setting	RLPA
	Automatic refresh parameter setting	RRPA
	Automatically updated buffer memory read	RITO
	Write to remote I/O station buffer memory	RIWT
	Read from intelligent device station buffer memory (with handshake)	RIRCV
	Write to intelligent device station buffer memory (with handshake)	RISEND
Data link instructions	Local station word device read	LRDP
	Local station word device write	LWTP
	Data read from remote I/O station special function module	ZNFR
	Data write to remote I/O station special function module	ZNTO

	Description	Instruction Name
Structured program instructions *1	Ladder index qualification	IX, IXEND
	Fault check pattern changing	CHK, CHKEND
BCD type real number processing instructions *1	Square root	BSQR, BDSQR
	Trigonometric function	BSIN, BCOS, BTAN, BASIN, BACOS, BATAN
Floating-point type real number processing *1	Real number → integer	INT, DINT
	Integer → real number	FLORT, DFLOAT
	Four arithmetic operations	ADD, SUB, MUL, DIV
	Angle → radian	RAD
	Radian → angle	DEG
	Trigonometric function	SIN, COS, TAN, ASIN, ACOS, ATAN
	Square root	SQR
	Exponent	EXP
	Natural logarithm	LOG
Character string processing instructions *1	BIN → ASCII	BINDA, DBINDA, BINHA, DBINHA
	BCD → ASCII	BCDDA, DBCDDA
	ASCII → BIN	DABIN, DDABIN, HABIN, DHABIN
	ASCII → BCD	DABCD, DDABCD
	Device comment read	COMRD
	Character string length detection	LEN
	BIN → decimal character string	STR, DSTR
	Decimal character string → BIN	VAL, DVAL
	Character string transfer	SMOV
	Character string association	SADD
	Character string comparison	SCMP
Extended file register instructions *1	Block number designation	RSET
	Block transfer	BMOVR
	Block exchange	BXCHR
	Single word-based direct read/write	ZRRD, ZRWR
	Single byte-based direct read/write	ZRRDB, ZRWRB
PID operation instructions *1	Control data setting	PIDINT
	PID operation	PIDCONT
AD61 instructions	Preset value data setting	PVWR
	Magnitude, coincidence judging set value data setting	SVWR
	Current value read	PVRD

*1: Since the Basic Model does not have these instructions, they are converted into SM999.
When the instructions are converted into those of the High Performance Model QCPU, they are converted into the corresponding instructions.

12.4 Instruction Conversion List for Redundant CPU ↔ CPU other than Redundant CPU Conversion

A	Q/QnA	QS	FX
○	○	×	○

This section shows the instructions and devices to be converted when converting the sequence program, i.e., changing the PLC type of the sequence program between redundant CPU and CPU other than Redundant CPU.
The PLC type is changed to the High Performance model QCPU once and then changed to the specified PLC type.
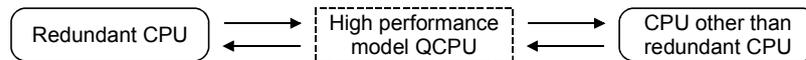
(1) When changing from other than redundant CPU to redundant CPU
   (a) The following table indicates the instructions converted into OUT SM1255.

	Description	Instruction Name
QCPU instruction	Program download	PLOADP
	Program unload	PUNLOADP
	Load + unload	PSWAPP
	Write to host CPU shared memory	S.TO
Motion dedicated instruction	Read of other CPU device data to host CPU device	S.DDRD
	Write of host CPU device data to host CPU device	S.DDWR
	Motion SFC program start request	S.SFCS
	Torque limit value change during operation/stop in real mode	S.CHGT
	Servo program start request	S.SVST
	Axis speed change during positioning or JOG operation	S.CHGV
	Current value change for stopping axis/synchronous encoder/cam axis	S.CHGA
	Other CPU interrupt program start request	S.GINT
Display instruction	ASCII code print instruction	PR
	Comment print instruction	PRC
Peripheral device instruction	Key input from peripheral device	KEY
Other convenient instruction	1-phase input up/down counter	UDCNT1
	2-phase input up/down counter	UDCNT2
	Teaching timer	TTMR
	Special function timer	STMR
	Shortest access control for rotary table	ROTC
	Tilt signal	RAMP
	Pulse density measurement	SPD
	Fixed cycle pulse output	PLSY
	Pulse width modulation	PWM
	Matrix input	MTR
Program control instruction	Program low-speed execution registration instruction	PLOW

(b) Devices converted into SD1255
The following indicates the devices converted into SD1255 when data of the CPU other than redundant CPU are converted into those of the redundant CPU.

U3E0 to U3FF, U3E0\G to U3FF\G

When the device is used in a dedicated instruction, it is changed to OUT SM1255.
(Example) G.XXX U3E0 → OUT SM1255

(2) When changing from redundant CPU to other than redundant CPU
(a) Redundant CPU → QCPU (Q mode) other than redundant CPU

	Before change	After change		
	(Redundant CPU)	Basic model QCPU	High Performance model QCPU	Process CPU
Control system switching instruction	SP.CONTSW	OUT SM999	OUT SM1255	OUT SM1255
PID control instruction	PIDINIT	PIDINIT	PIDINIT	OUT SM1255
	PIDCONT	PIDCONT	PIDCONT	OUT SM1255
	PIDSTOP	PIDSTOP	PIDSTOP	OUT SM1255
	PIDRUN	PIDRUN	PIDRUN	OUT SM1255
	PIDPRMW	PIDPRMW	PIDPRMW	OUT SM1255
	S.PIDINIT	S.PIDINIT	S.PIDINIT	OUT SM1255
	S.PIDCONT	S.PIDCONT	S.PIDCONT	OUT SM1255
	S.PIDSTOP	S.PIDSTOP	S.PIDSTOP	OUT SM1255
	S.PIDRUN	S.PIDRUN	S.PIDRUN	OUT SM1255
	S.PIDPRMW	S.PIDPRMW	S.PIDPRMW	OUT SM1255

(b) Redundant CPU → CPU other than redundant CPU

	Before change	After change		
	(Redundant CPU)	A series	QnA series	FX series
Control system switching instruction	SP.CONTSW	OUT M9255	OUT SM1255	OUT M8255
PID control instruction	PIDINIT	OUT M9255	PIDINIT	OUT M8255
	PIDCONT	OUT M9255	PIDCONT	OUT M8255
	PIDSTOP	OUT M9255	PIDSTOP	OUT M8255
	PIDRUN	OUT M9255	PIDRUN	OUT M8255
	PIDPRMW	OUT M9255	PIDPRMW	OUT M8255
	S.PIDINIT	OUT M9255	S.PIDINIT	OUT M8255
	S.PIDCONT	OUT M9255	S.PIDCONT	OUT M8255
	S.PIDSTOP	OUT M9255	S.PIDSTOP	OUT M8255
	S.PIDRUN	OUT M9255	S.PIDRUN	OUT M8255
	S.PIDPRMW	OUT M9255	S.PIDPRMW	OUT M8255

12.5 Instruction Conversion List for High Performance model QCPU ↔ Universal model QCPU

A	Q/QnA	QS	FX
×	○	×	×

This section shows the instructions to be converted when converting the sequence program, i.e., changing the PLC type of the sequence program between High Performance model QCPU and Universal model QCPU.
When changing to Universal model QCPU, the PLC type is changed to High Performance model QCPU once and then changed to Universal model QCPU.

| Universal model QCPU | ← → | High Performance model QCPU | ← → | CPU other than Universal model QCPU and High Performance model QCPU |
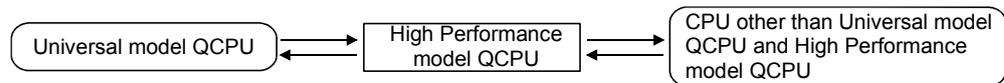
(1) When changing from High Performance model QCPU to Universal model QCPU
   (a) The following table indicates the instructions to be converted at the time of changing the PLC type by checking the "Convert motion dedicated sequence instruction" check box.

	High Performance model QCPU, Universal model QCPU (Q00UJ, Q00U, Q01U, Q02U)	Universal model QCPU (except Q00UJ, Q00U, Q01U, and Q02U)	
	Before change	Checked	Not checked
Motion dedicated instruction	S(P).SFCS	D(P).SFCS	S(P).SFCS
	S(P).SVST	D(P).SVST	S(P).SVST
	S(P).CHGV	D(P).CHGV	S(P).CHGV
	S(P).CHGT	D(P).CHGT	S(P).CHGT
	S(P).CHGA	D(P).CHGA	S(P).CHGA
	S(P).DDWR	D(P).DDWR	S(P).DDWR
	S(P).DDRD	D(P).DDRD	S(P).DDRD
	S(P).GINT	D(P).GINT	S(P).GINT

(2) When changing from Universal model QCPU to High Performance model QCPU
   (a) The following table indicates the instructions to be converted at the time of
       changing the PLC type by checking the "Convert motion dedicated
       sequence instruction" check box.

	Universal model QCPU (except Q00UJ, Q00U, Q01U, and Q02U)	High Performance model QCPU, Universal model QCPU (Q00UJ, Q00U, Q01U, Q02U)	
	Before change	Checked	Not checked
Motion dedicated instruction	D(P).SFCS	S(P).SFCS∗1	SM1255
	D(P).SVST	S(P).SVST∗2	SM1255
	D(P).CHGV	S(P).CHGV∗2	SM1255
	D(P).CHGT	S(P).CHGT∗2	SM1255
	D(P).CHGA	S(P).CHGA∗2	SM1255
	D(P).DDWR	S(P).DDWR∗3	SM1255
	D(P).DDRD	S(P).DDRD∗3	SM1255
	D(P).GINT	S(P).GINT∗4	SM1255

∗1: When the number of arguments is 2, correct the arguments after the CPU module type is changed.

∗2: When the number of arguments is 3, correct the arguments after the CPU module type is changed.

∗3: When a character string is used in the argument, correct the argument after the CPU module type is changed.

∗4: When the number of arguments is 3 or more, correct the arguments after the CPU module type is changed.

Appendix 13 Functions Added to Upgrade from Previous Version

The following functions, which were not available for GX Developer Version 7.20W (SW7D5C-GPPW-E), have been added to GX Developer Version 8.03D (SW8D5C-GPPW-E).

Item	Description
Operating Environment	Windows® XP is supported.
ST	ST (structured text) is available for program creation.
Label program	Structures can be created.
Verify	Block specification with SFC is available for verification.
Online	GOT transparent mode is usable.
Diagnosis	CC-Link bridge module can be diagnosed.
Parameter	Network parameters for CC-Link Version2 can be created.
Write to PLC	Writes label programs to programmable controller.
Project data list	Data name sorting function is newly added.

The following functions, which were not available for GX Developer Version 8.03D (SW8D5C-GPPW-E), have been added to GX Developer Version 8.10L (SW8D5C-GPPW-E).

Item	Description	Reference
Device block replacement	Replaces multiple devices at a time.	Section 6.4.8
Cross reference window display	Displays where the specified device or label is used.	Section 3.18

The following functions, which were not available for GX Developer Version 8.12N (SW8D5C-GPPW-E), have been added to GX Developer Version 8.18U (SW8D5C-GPPW-E).

Item	Description	Reference
PLC type	Q12PRHCPU, Q25PRHCPU and FX3UCCPU are added.	Chapter 2, etc.
Redundant parameters	Used to set the redundant CPU operation and tracking.	Section 13.4
Redundant operation	Switches the redundant CPU status from GX Developer.	Section 18.7
Online module change	Online module change of the remote I/O station is supported.	Section 21.7
Keyword/Password setup	The confirmation dialog box was added.	Section 19.1.1 Section 19.2.1
MELSECNET diagnostics	The diagnostic functions of "Each station PLC operation mode status", "Each station paring status" and "Each station PLC system status" were added to the other station information.	Section 21.2.8

The following functions, which were not available for GX Developer Version 8.18U (SW8D5C-GPPW-E), have been added to GX Developer version 8.20W (SW8D5C-GPPW-E).

Item	Description	Reference
Parameter	"MNET/H Ext. mode (Control station)" and "MNET/H Ext. mode (Normal station)" were added.	—
PLC series	The CNC series was added.	Section 2.4
Device comment	Comment can be created without being conscious of the comment range setting. (Compatible with the QCPU (Q mode) and QnACPU)	Section 16.3.4
Diagnosis	"Each station network type status" was added to the other station information screen.	Section 21.2.8

The following functions, which were not available for GX Developer Version 8.20W (SW8D5C-GPPW-E), have been added to GX Developer version 8.22Y (SW8D5C-GPPW-E).

Item	Description	Reference
Transfer Setup	Supports the USB connection via GOT transparent mode.	Section 16.2.5
Remote operation	FX1SCPU enabled to operate the remote (remote RUN/STOP).	Section 18.6
MELSECNET diagnostics	On other station information screen, when the power supply is provided for the module with the external supply power, "PWR" is displayed in area of error information display.	Section 21.2.8

The following functions, which were not available for GX Developer Version 8.22Y (SW8D5C-GPPW-E), have been added to GX Developer version 8.24A (SW8D5C-GPPW-E).

Item	Description	Reference
PLC type	FX3UCPU are added.	Chapter 2, etc.
Parameter	The refresh settings of multiple CPU parameter enabled to set any start device to each No.1 to 4 CPU.	—
	The process CPU was corresponding to the remote network Ver.2 mode and the remote network addition mode of CC-Link.	—
	The process CPU added the setting of the program memory check.	Section 13.1.2
System Monitor	The high performance model QCPU and process CPU was corresponding to power supply redundant system.	Section 21.6
SFC program batch online change (write during RUN)	The process CPU enabled the batch online change of SFC program.	—
Sampling Trace	The standard RAM was added to the trace data (setting + result) destination of sampling trace.	Section 17.11

The following functions, which were not available for GX Developer Version 8.24A (SW8D5C-GPPW-E), have been added to GX Developer Version 8.27D (SW8D5C-GPPW-E).

Item	Description	Reference
Project copy	Enabled to copy a program from execution program to label programming.	Section 4.8
Setting options	Enabled to set falling instruction as non-execution.	Section 15.12 Section 16.9.3
Screen operation	Supports wheel mouse.	—

The following functions, which were not available for GX Developer Version 8.27D (SW8D5C-GPPW-E), have been added to GX Developer version 8.29F (SW8D5C-GPPW-E).

Item	Description	Reference
Confirming project memory size	Enabled to calculate memory capacity necessary for writing to programmable controller.	Section 15.7
Parameter	MELSECNET/H Extended mode (Control station) and (Normal station) are newly added to existing network parameters of the QnPRHCPU.	—
	Enabled to change transient setting in parameter setting of QCPU MNET/H remote master station.	—
Ladder display	Supports display color change of line statement, reduced display of current monitored values and setting of number of device comment lines.	Section 3.12 Section 3.15 Section 15.12

The following functions, which were not available for GX Developer Version 8.29F (SW8D5C-GPPW-E), have been added to GX Developer version 8.30G (SW8D5C-GPPW-E).

Item	Description	Reference
Device block replacement	Enabled to specify a label.	Section 6.4.8
FB definition program	The maximum program capacity is increased from 500 steps to 2048 steps.	—
Device Test	Has improved the operability to word device. • Changed the cursor position immediately after the screen display from the device input field to the setting value field. • Enabled to directly transfer from the setting value field to the Set button when selecting with TAB key.	Section 18.1

The following functions, which were not available for GX Developer Version 8.30G (SW8D5C-GPPW-E), have been added to GX Developer version 8.32J (SW8D5C-GPPW-E).

Item	Description	Reference
Parameters	• "Unit count" in "CC-Link" has been increased to 8 modules. For the applicable module, refer to Section 13.2.2. • "Block guarantee of cyclic data per station" has been added in the Operational setting screen of "CC-Link". (The QCPU (Q mode) only)	Section 13.2.2
SFC program	A block statement has been added for a comment on each block (only compatible with the Q/QnACPU).	—

The following function, which was not available for GX Developer Version 8.32J (SW8D5C-GPPW-E), has been added to GX Developer version 8.35M (SW8D5C-GPPW-E).

Item	Description	Reference
Creating circuit	Enabled to insert/delete a column to/from the head stage and last stage.	Section 6.2.5

The following function, which was not available for GX Developer Version 8.35M (SW8D5C-GPPW-E), has been added to GX Developer Version 8.37P (SW8D5C-GPPW-E).

Item	Description	Reference
SFC program	The check box to use block statements has been added to the Block information setting screen.	—

The following functions, which were not available for GX Developer Version 8.37P (SW8D5C-GPPW-E), have been added to GX Developer version 8.40S (SW8D5C-GPPW-E).

Item	Description	Reference
PLC series	The QSCPU series was added.[1]	—
PLC type	QS001CPU are added.	—

[1]: For added and updated functions to support the QSCPU, refer to the GX Developer Version 8 Operating Manual (Safety Programmable Controller).

The following function, which was not available for GX Developer Version 8.40S (SW8D5C-GPPW-E), has been added to GX Developer Version 8.41T (SW8D5C-GPPW-E).

Item	Description	Reference
Print	"Additional information" and "Print conditions" to specify the locations where contacts or coils are used, or device comments have been added.	Section 14.5.2

The following functions, which was not available for GX Developer Version 8.41T (SW8D5C-GPPW-E), have been added to GX Developer Version 8.45X (SW8D5C-GPPW-E).

Item	Description	Reference
PLC type	The Q03UD, Q04UDH, and Q06UDH have been added.	—
Parameter	The following PLC parameters have been added to the Universal model QCPU. • PLC Synchronous start up and Multiple CPU high speed transmission area setting on the Multiple CPU settings screen. • Service processing setting on <<PLC system>> • Indexing setting of ZR device on <<Device>> • Switch settings of CPU module on <<I/O assignment>>	Section 13.1.1 Section 13.1.2
	END asynchronous settings has been added to the Supplementary setting in the Assignment the MNET network range. screen for MELSECNET/H remote I/O network.	Section 13.2.1
	MNET/G(Control station) and MNET/G(Normal station) have been added to the network parameter of the High Performance model QCPU.	Section 13.2.2
	Master station (extension base) has been added to Type of the CC-Link parameter in redundant CPU system.	
	Ethernet (extension base) has been added to Type of the Ethernet parameter in redundant CPU system.	
Check parameter	Duplication check to the refresh target of CC-Link IE controller network, MELSECNET/10(H), and CC-Link with the End button and Check button on the Setting the number of Ethernet/CC IE/ MELSECNET cards. screen or Setting the CC-Link list. screen have been added.	Section 13.2.3
	Duplication check for the refresh targets of CC-Link IE controller network, MELSECNET/10(H) and CC-Link on the Check parameter screen has been added.	Section 15.4
Diagnostics	CC IE Control diagnostics has been added.	Section 21.3
	CSV file save, occurrence order display, and PLC number selection of error log of diagnostics for the QCPU have been added.	Section 21.1.3
Program memory batch transfer	Program memory batch transfer has been added for the Universal model QCPU.	Section 16.10
Options	Online change/TC setting value change program memory transfer settings has been added for the Universal model QCPU.	Section 15.13
Cross reference list	Block START step in SFC program has been added to the search target.	Section 6.4.15
Cross reference		Section 3.18
Print	Block START step in SFC program has been added to the print target.	Section 14.5.11
Sampling trace	Whether to bracket the values in a CSV file with [ ] can be selected at file creation	Section 17.11
	The target memory and target file name of the sampling trace currently registered can be displayed.	
	The sampling trace being executed by the QCPU (Q mode) can be aborted using a peripheral device.	

The following functions, which were not available for GX Developer Version 8.45X (SW8D5C-GPPW-E), are added to GX Developer Version 8.48A (SW8D5C-GPPW-E).

Item	Description	Reference
PLC type	Q02U is added.	—
SFC program	SFC program is supported for the Universal model QCPU.	—
Parameter	The following PLC parameters are supported for the Universal model QCPU. • Host CPU number, Online module change setting, and Communication area setting (refresh setting) in the Multiple CPU settings • "Not use high speed transmission" setting in the Multiple CPU settings • Latch data backup operation valid contact in <<PLC system>> • Transfer to Standard ROM at Latch data back up operation, File used in SP.DEVST/S.DEVLD instruction in <<PLC system>> • Latch setting of File register in <<Device>> • <<SFC>>	Section 13.1.1 Section 13.1.2
	MNET/G (Control station), MNET/G (Normal station), and MNET/H (Remote master) are added to the network parameter of the Universal model QCPU.	Section 13.2.2
	Following network parameters are supported in the Setting the number of Ethernet/CC IE/ MELSECNET cards. screen of the Universal model QCPU. • Low speed LB/LW in 'Send range for each station' setting of the Network range assignment (MELSECNET/H) • "Station inherent parameters" of the Network range assignment (MELSECNET/10, H) • "Station inherent parameters" of the normal station (MELSECNET/10, H) • Interlink transmission parameter	
Print	PLC parameter, network parameter, and production number in the Product information list for the Universal model QCPU are added.	Section 14.6
Transfer setup	The CC-Link IE controller network board is added to PC side I/F.	Chapter 16
Read from/write to PLC	Online change in units of files can be performed to the Universal model QCPU. (excluding SFC programs)	Section 16.3
Latch data backup operation	Latch data backup function is added to the Universal model QCPU.	Section 16.11.1 Section 16.11.2
Device/buffer memory batch monitoring	Display format of real numbers (double precision) is added to the Universal model QCPU.	Section 17.5.1 Section 17.5.2
Registered device monitor		Section 17.6
Sampling trace	Following trace conditions are added to the Universal model QCPU. • Each Multiple CPU high speed transmission cycle setting of the Trace point setup • Condition setting of word device for the trace point detail setting • Condition setting of word device for the trigger point detail setting	Section 17.11
Device test	Current value change for real numbers (double precision) is supported.	Section 18.1
Diagnostics	MELSECNET/G diagnostics can be performed to the Universal model QCPU.	Section 21.3
	Product number is added to the Product Information List of the System Monitor for the Universal model QCPU.	Section 21.6

The following function, which was not available for GX Developer Version 8.48A (SW8D5C-GPPW-E), are added to GX Developer Version 8.55H (SW8D5C-GPPW-E).

Item	Description	Reference
Device comment	This function supports the function that searches for a device comment or label comment.	—

The following functions, which were not available for GX Developer Version 8.55H (SW8D5C-GPPW-E), are added to GX Developer Version 8.58L (SW8D5C-GPPW-E).

Item	Description	Reference
Safety function block	The safety function block is added.	(Safety Programmable Controller)
	A function to check whether devices set in the Auto device setting are used in the program is added.	(Safety Programmable Controller)
Parameter	In QnPRHCPU, No. of boards in module on the CC-Link parameter screen can be set up to 8.	Section 13.2.2

The following functions, which were not available for GX Developer Version 8.58L (SW8D5C-GPPW-E), are added to GX Developer Version 8.62Q (SW8D5C-GPPW-E).

Item	Description	Reference
Operating environment	Windows Vista® is supported.	(Startup)
PLC type	Q13UDH and Q26UDH are added.	—
Parameter	Availability of local devices can be set with the Universal model QCPU.	—
	"H/W error time PLC operation mode" can be set to intelligent function module on remote I/O station.	—
Transfer setup	Connection via C24 with the GOT transparent mode is supported.	Section 16.2.5

The following functions, which were not available for GX Developer Version 8.62Q (SW8D5C-GPPW-E), are added to GX Developer Version 8.65T (SW8D5C-GPPW-E).

Item	Description	Reference
Parameter	CC-Link IE controller network and Ethernet are compatible with a QSCPU project.	Section 13.3
	Safety data monitoring time has been added to CC-Link Safety parameter.	(Safety Programmable Controller)

The following functions, which were not available for GX Developer Version 8.65T (SW8D5C-GPPW-E), are added to GX Developer Version 8.68W (SW8D5C-GPPW-E).

Item	Description	Reference
PLC type	Q02PH, Q03UDE, Q04UDEH, Q06PH, Q06UDEH, Q13UDEH, and Q26UDEH are added.	—
Parameter	CC IE Control (Control station) and CC IE Control (Normal station) are added to the network parameter of the Basic model QCPU, Process QCPU, Redundant CPU, and Built-in Ethernet port QCPU.	Section 13.2.2
	The following PLC parameters are supported for the Universal model QCPU. • Extension of bit device points (M, B) in <<Device>> • Usability of index register ZZ in <<Device>> • 0 can be set to device S in <<Device>> • Diagnostics of redundant power supply system in <<PLC RAS>>	Section 13.1.2
	The screen name of the network parameter is changed. • MELSECNET/Ethernet to Ethernet/CC IE/MELSECNET	—
Program memory batch transfer	The option to judge whether to execute the program memory batch transfer function is added.	Section 16.10
monitor	The monitor condition is supported for the Universal model QCPU.	Section 17.7
Debug	The executional conditioned device test is supported for the Universal model QCPU.	Section 18.2
	The forced input/output data registration/cancellation is supported for the Universal model QCPU.	Section 18.3.1
Sampling trace	The auto start setting of the sampling trace is supported for the Universal model QCPU.	Section 17.11.1 Section 17.11.2
Scan time measurement	The scan time measurement is supported for the Universal model QCPU.	Section 17.10
Network	MELSECNET/G is compatible with the CC-Link IE, and its name is changed to CC-Link IE controller network.	—

The following functions, which were not available for GX Developer Version 8.68W (SW8D5C-GPPW-E), are added to GX Developer Version 8.70Y (SW8D5C-GPPW-E).

Item	Description	Reference
Parameter	The extended data register and extended link register are supported for the Universal model QCPU.	Section 13.1.2
Change PLC type	Motion dedicated instruction conversion at the time of changing PLC type to Universal model QCPU is supported.	Section 4.14 Appendix 12.5

The following functions, which were not available for GX Developer Version 8.70Y (SW8D5C-GPPW-E), are added to GX Developer Version 8.72A (SW8D5C-GPPW-E).

Item	Description	Reference
PLC Type	The FX3G has been added.	—
Transfer setup	The FX series (FX3U, FX3UCCPU) on another station in CC-Link connection can be accessed from personal computer via the QCPU (Q mode).	Section 16.1.2
Label program	Label programs for the QCPU (Q mode) can be written online.	Section 5.1.9
View	An item that displays the lines of currently monitored values only during monitoring has been added.	Section 3.12
Options	An option that hides notes during an edit of the coil instruction has been added.	Section 15.13

The following functions, which were not available for GX Developer Version 8.74C (SW8D5C-GPPW-E), are added to GX Developer Version 8.78G (SW8D5C-GPPW-E).

Item	Description	Reference
PLC Type	Q00UJ, Q00U, Q01U, Q10UDH, Q10UDEH, Q20UDH, Q20UDEH are added.	―
Instruction input	Rising pulse close contact and falling pulse close contact are added.	Section 6.2.1
Transfer setup	The GOT transparent function is supported for connecting a programmable controller and a GOT via Ethernet.	Section 16.2.5
Parameter	For QCPU, the switch setting of intelligent function module is changed to a selectable format.	Section 13.1.3
	The same network number can be set for CC IE Control network number.	―
	For Universal model QCPU, the PLC module change function using a memory card is added.	Section 16.13
	For Universal model QCPU, index registers can be specified as local devices.	―
	For Universal model QCPU, the Compatible with A-PLC setting is available.	Section 13.1.2
	CC IE Control parameters of Basic model QCPU are changed when PLC type is changed.	Appendix 4
	For MELSECNET/H, twist bus compatible module is supported.	―
	For QnUDE(H)CPU, the socket communication via Ethernet is supported.	―
IC memory card	A folder can be selected when data are read from/written to the IC memory card.	Section 15.6.1 Section 15.6.2
Cross reference	The cross reference window can be used as a docking window.	Section 3.18
Ladder	The function to set all open programs in the read/write mode is added.	Chapter 6
Replace	When replacing devices to labels, multiple points can be replaced in a batch.	Section 6.4.9
Verify	Only the mismatches can be detected for the verification result of the program.	―
Diagnostics	The logging result can be displayed for the CC IE Control diagnostics when other station is specified.	―

The following functions, which were not available for GX Developer Version 8.80J (SW8D5C-GPPW-E), are added to GX Developer Version 8.82L (SW8D5C-GPPW-E).

Item	Description	Reference
Parameter	The Universal model QCPU supports the "Module error log (Intelligent function module)" function.	Section 13.1.2
Diagnostics	The button for the module error log collection function is added to the PLC diagnostics (QCPU (Q mode) screen.	Section 21.1.3
Safety function block	The Version 2 of safety function block is supported.	(Safety Programmable Controller)

Appendix 14 The strings which can not be used in label programming

Here is the list of strings which can not be used in the label programming as labels.
The string of device name, sequence instruction, SFC instruction, application instruction can not be used as label.
An error may occurred during registering or at compile time when any of the following strings are used

	The strings which can not be used in label programming
A	A,ACJ,ADD,ANB,AND,ANDF,ANDN,ANDP,ANI,ANY,ANY_BIT,ANY_DATE,ANY_DERIVED, ANY_ELEMENTARY,ANY_INT,ANY_MAGNITUDE,ANY_NUM,ANY_REAL,ANY_SIMPLE,ANY_STRING, ARRAY
B	B,BCD(P),BEND,BIN(P),BKBCD(P),BKBIN(P),BL,BLOCK,BMOV(P),BOOL, BOOL_TO_BYTE(DINT,DWORD,INT,REAL,SINT,UDINT,UINT,USINT,WORD), BYTE(DINT,DWORD,INT,REAL,SINT,TIME,UDINT,UINT,USINT,WORD)_TO_STRING, BYTE_TO_BOOL(DINT,DWORD,INT,REAL,SINT,UDINT,UINT,USINT,WORD), B_BCD_TO_DINT(INT,SINT),BXCH(P),BYTE
C	C,CAL,CALC,CALCN,CJ,CML(P)
D	D,DBCD(P),DBIN(P),DBL(P),DCML(P),DDEC(P),DEC(P),DELTA(P),DFLT(P),DGBIN(P),DGRY(P),DI, DINC(P),DINT,DINT(P),DINT_TO_BCD(BOOL,BYTE,DWORD,INT,REAL,SINT,TIME,UDINT,UINT,USINT, WORD),DIV,DMOD,DMOV(P),DNEG(P),DWORD,DWORD_TO_BOOL(BYTE,DINT,INT,REAL,SINT, UDINT,UINT,USINT,WORD),DX,DXCH(P),DY,D_BCD_TO_DINT(INT,SINT)
E	E,EGF,EGP,EI,EMOV(P),END,ENEG(P),EQ,EQ(GE,GT,LE,LIMIT,LT,MAX,MIN,NE,SEL)_STRING
F	F,FD,FEND,FF,FLT(P),FMOV(P),FX,FY
G	G,GBIN(P),GE,GOEND,GRY(P),GT
H	H
I	I,IMASK,INC(P),INT,INT(P),INT_TO_BOOL(BYTE,DINT,DWORD,REAL,SINT,UDINT,UINT,USINT,WORD), INV,IRET
J	J,JMP,JMPC,JMPCN
K	K
L	L,LD,LDF,LDI,LDN,LDP,LE,LED,LEDA,LEDB,LEDC,LEDR,LINT,LREAL,LT,LWORD
M	M,MC,MCR,MEF,MEP,MOD,MOV(P),MPP,MPS,MRD,MTR,MUL
N	N,NE,NEG(P),NOP,NOPLF,NOT
O	OR,ORB,ORF,ORI,ORN,ORP,OUT(H)
P	P,PAGE,PCHK,PLF,PLS,PLSY,PWM
Q	Q
R	R,RAMP,RCJ,READ,REAL,REAL_TO_BOOL(BYTE,DINT,DWORD,INT,SINT,UDINT,UINT,USINT,WORD), RECV,REQ,RET,RETC,RETCN,RFRP,RFS,ROTC,RST,RTOP
S	S,SB,SCJ,SD,SEND,SET,SFCP,SFCPEND,SFT(P),SG,SINT,SINT_TO_BOOL(BYTE,DINT, DWORD,INT,REAL,UDINT,UINT,USINT,WORD),SM,SPD,SREAD,ST,STEPC,STEPD,STEPG,STEPI, STEPID,STEPIR,STEPISC,STEPISE,STEPIST,STEPN,STEPR,STEPSC,STEPSE,STEPST,STMR,STN, STOP,STRING,STRING_TO_BYTE(DINT,DWORD,INT,REAL,SINT,TIME,UDINT,UINT,USINT,WORD), SUB,SW,SWAP(P),SWRITE,SZ
T	T,TIME,TR,TRANA,TRANC,TRANCA,TRANCO,TRANCOC,TRANJ,TRANL,TRANO,TRANOA,TRANOC, TRANOCA,TRANOCJ,TRANOJ,TRUNC_DINT(INT,SINT),TTMR
U	U,UDCNT1(P),UDCNT2(P),UDINT,UDINT_TO_BOOL(BYTE,DINT,DWORD,INT,REAL,SINT,UINT,USINT, WORD),UINT,UINT_TO_BOOL(BYTE,DINT,DWORD,INT,REAL,SINT,UDINT,USINT,WORD),ULINT, USINT,USINT_TO_BOOL(BYTE,DINT,DWORD,INT,REAL,SINT,UDINT,UINT,WORD)
V	V,VAR,VAR_CONSTANT,VAR_EXT,VAR_EXTERNAL,VAR_EXTERNAL_CONSTANT, VAR_EXTERNAL_FB,VAR_EXTERNAL_PG,VAR_GLOBAL,VAR_GLOBAL_CONSTANT, VAR_GLOBAL_FB,VAR_GLOBAL_PG,VAR_IN_OUT,VAR_INPUT,VAR_OUTPUT,VAR_TEMP,VD,VOID

	The strings which can not be used in label programming
W	W,WORD,WORD(P),WORD_TO_BOOL(BYTE,DINT,DWORD,INT,REAL,SINT,UDINT,UINT,USINT), WRITE,WSTRING, W_BCD_TO_DINT(INT,SINT)
X	X,XCH(P),XOR,XORN
Y	Y
Z	Z,ZCOM,ZNRD,ZNRF,ZNTO,ZNWR,ZR
Function group	MELSEC function group, IEC function group

Precaution on label name

1. Can not use the space character.

2. Can not use the numerals as the starting character.

3. Can not use the following:
   (,),*,/,+,-,<,>,=,&,!,",#,$,%,', ^,|,@,[,],{,},;,:,,,,.?,\,_
   But, in case of underscore character, an error may occurred when it is present at the end or two or more underscore characters are used consecutively

4. A device name followed by any of 0 to F also results in an error.
   Examples: XFFF, M100

5. Do not use "EnDm" as a label name (Example: E001D9).
   (n and m are any values.)
   If such a label name is used, it may be recognized as a real number value and unavailable as a label name.

Appendix 15 Index Modification using "ZZ"

A	Q/QnA	QS	FX
×	○＊	×	×

＊: Universal model QCPU only

This section explains precautions for changing parameter setting, searching/replacing a device in a program by index modification using "ZZ".
For index modification using "ZZ", refer to the following manual.
QCPU Programming Manual(Common Instructions)

(1) Find device, Cross reference list, Cross reference, and List of used devices
ZZn cannot be specified at "Device" field by itself. Specify Zn for searching ZZn.
For example, ZZ0 can be searched by specifying Z0.

(2) Replace device
ZZn cannot be specified to "Earlier device" and "New device" by itself.
Specify Zn to replace ZZn. When Z0 is replaced with Z2, ZZ0 is also replaced with ZZ2.

(3) Operation when changing "32 bit indexing" at PLC parameter
When changing the setting from "Use ZZ" to "Use Z" at "32 bit indexing", ZZn used in the program is converted into Zn.
In the following cases, analogous circuit may not be created. Therefore, check the program.

   1) A number is not specified at "Use Z".
   Index modification is made to all devices by 16 bits.

   2) A number specified at "Use Z" is greater than a number used for ZZ
   Index modification is made by 16 bits for devices smaller than the specified number.
   Index modification is made by 32 bits for devices greater than the specified number.

MEMO

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Operating Manual

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