

# ***The most intelligent data format for the PCB Industry providing optimized data exchange between Design and Manufacture***

ODB++, originally developed by Valor Computerized systems, is a fully expandable ASCII that format offers the following advantages:

- All needed data is in one file. No risk of missing files or information.
- Graphical data is described better than in any other format: polygons are kept as polygons, arcs as arcs, pads as pads. No unnecessary filling of data (which needs to be substituted by the PCB manufacturer afterwards. Odd shapes such as targets and thermal pads are accurately described within the data package.
- A mechanism of attributes which allows any feature (line , pad , arc , surface) to have as many attributes as needed to describe its purpose: smd, fiducial , tooling hole , test point, via or component hole, component and pin names , net number , etc ...
- ODB++ contains CAD netlist description, which allows the manufacturer to verify electrical connectivity to the original designed netlist at all, times during production.
- ODB++ contains a full layer build-up schema, which defines original layer names, layer types and their order in the buildup.
- For drill and rout layers, ODB++ contains the plating definition and the span (from-to layer information – e.g. for blind and buried drills)
- A Layer stackup, defining the bill of materials and complete buildup of the board.
- Graphic annotation, using a Post-it notes approach, which explains unclear or misleading phenomena
- Mechanical drawing information, including dimensioning and construction lines
- Fabrication analysis results (for users of Valor's Enterprise 3000) including full manufacturability information. If a good designer fabricator relationship is built boards can be tooled for production immediately.

ODB++ is the most intelligent CAD/CAM format for the Printed Circuit Board Industry available today, capturing all required information, necessary to produce the board in an optimum way, in a single file.

Some formats , such as Gerber RS274D, RS274X and Excellon are too simplistic by nature to define all required information needed to produce the board you have designed and require the PCB manufacturer to reverse-engineer the data in order to add all the intelligence that was already there in the first place in the CAD system.

# ODB++

Data Exchange Format



 **Frontline**

**PCB SOLUTIONS**  
An Orbotech Valor Company

## The most intelligent data format for the PCB Industry

### Major Benefits

The immediate benefits of using ODB++ to transfer data between design and manufacturing are :

- **Reliable data transfer - No risk of data transfer errors.** ODB++ is well defined and not open for different interpretations, unlike other formats like RS274X which every CAD and CAM vendor implemented in his own way, resulting in different dialects of RS274X. One RS274X file can lead to different results when read into different CAM systems. ODB++ interfaces are controlled through the Valor Open System alliance, which certifies all ODB++ interfaces, both on output (CAD) and input (CAM).
- **Faster output from CAD system.** ODB++ does an almost one-to-one translation of the data, no need for lengthy filling algorithms in order to fill polygons with vector fills.
- **PCB manufacturer can treat the data faster and more reliable** – no need to do reverse-engineering on the data, layer matrix exists defining layer types and drill spans, CAD netlist available for checking of electrical connectivity.
- **Improved Communication between Designer and Manufacturer** – ODB allows the addition of annotations to the Data. Thanks to the Free Valor ODB Viewer (see below for details), the manufacturer can add notes to the data and send the file back to you for queries. Both his CAM system and the ODB viewer view the same data which allows easier communication in case of manufacturing problems. The communication can be improved further if Valor's Enterprise 3000 is used and manufacturability analysis results are a part of the exchanged ODB++.

### How do I Output ODB++ from my CAM system?

You can download a manual defining how to generate ODB++ from the following CAD systems:

**Cadence:** Allegro; Orcad

**Mentor:** Board Station; PowerPCB; Expedition

**Zuken:** Visula; Cadstar; Board Designer (CR5000); PWS (CR3000)

**Altium:** P-CAD; Protel

**Pulsonix:** Pulsonix PCB

**Number One Systems:** Easy-PC

This manual can be found on the following location :

[www.valor.com/odbDataExchange.htm](http://www.valor.com/odbDataExchange.htm)

### Free ODB++ Viewer

Valor Computerized Systems have developed an ODB++ viewer , allowing you to view ODB++ files, either generated from your CAD system, or ODB++ files coming from your manufacturer. To download this free ODB++ viewer, go to the following location :

[www.valor.com/SolutionVUV.jsp](http://www.valor.com/SolutionVUV.jsp)

### More questions on ODB++ format?

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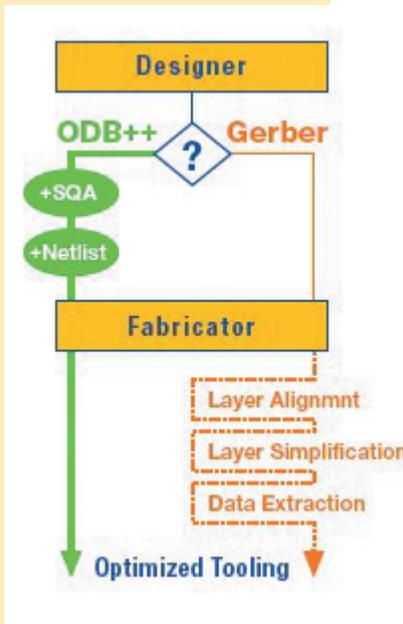
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