

V E R S I O N 8

# INTRODUCTION TO ODB++ VERSION 8

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[www.odb-sa.com](http://www.odb-sa.com)

## OVERVIEW

With the release of the version 8 specification, the ODB++ format takes another evolutionary step forward. The additional content in the v8 specification has been included based on input received from the thousands of ODB++ users and solutions-development partners worldwide, either directly or via the technical support channels of CAD/CAM tools vendors.

ODB++ v8 represents evolution, not revolution. It contains significant incremental improvements over the current mainstream version, v7, intended to enable a smooth transition to higher levels of process integration and automation across the design/fabrication/assembly/test PCB flow. The goal of ODB++ is to enable software tools such as DFM analysis and CAM systems to perform their tasks with the minimum dependency on keyboard/mouse input and the maximum level of automation based on the intelligence embedded in the software-model of the PCB product. Through a step-by-step approach to upgrading CAD, DFM and CAM tools to v8 compatibility, designers and manufacturing engineers in the ODB++ value chain will release additional time/cost/quality benefits while avoiding radical changes to business processes. The value of existing investments already made in software tools by the industry is preserved and, in many cases, actually enhanced.

In the following section there is a summary of the new items in v8, with suggestions for the benefits that can be created through implementation in PCB manufacturing software systems. To round off, there are implementation recommendations; such as to implement the new format in reverse-order across the flow, from manufacturing systems back to the design level, so as to enable a smooth and fast transition to the added value as soon as the v8 data starts to be generated.

The ODB++ Solutions Alliance wishes all ODB++ users success with this new version; we welcome all input to enable the further improvement of the format based on real-world needs.

## WHAT'S NEW IN ODB++ V8?

The format specification document (now available for download from <http://www.odb-sa.com/resources/>) lists the new aspects of ODB++, as follows:

1. PCB structure
  - a. Explicit modelling of flexible and flex-rigid PCB structures.

**Value** — by including an exact definition for entities such as covercoats, coverlays, stiffeners, bend radius, etc., DFM analysis functions can be automated to new levels for flex and flex-rigid designs. Following DFM, the manufacturing process can be derived more automatically based on the embedded intelligence.
  - b. Multilayer PCB build-up information stored in the product model.

**Value** — traditional “stackup drawings” can be eliminated from the flow, thus avoiding the step of producing the drawing, reading the drawing, and typing the data back into the CAM system at the manufacturing level. Saves time and reduces the risk of human error. Delivers the multilayer build-up information directly into the fabricator’s material selection and stack-up validation processes.
  - c. Full implementation of metric units.

**Value** — All aspects of the PCB product model, not just the feature coordinates, can be expressed in metric units. ODB++ now has equal value to both metric and inch based engineering processes.

d. Drill span direction

**Value** — DFM analysis can take into account the direction of drilling, for more accurate DFM analysis of buried and blind vias, back-drilled holes and holes drilled with multiple diameters.

e. Creation of profile with holes enabled

**Value** — A more efficient definition of the PCB profile, requiring fewer layers of data for the complete definition.

2. Feature level improvements

a. Better organisation of attributes. Attributes are now fully independent of any software application, and have been categorised according to their primary purpose – whether to support DFM analysis, to define the product-model, or to define the intended manufacturing process (split by fabrication, assembly, test, generic).

**Value** — The categorization supports a wider use of the attributes-intelligence across the design/manufacturing flow, thus enabling higher engineering automation overall.

b. Expanded range of standard symbols, developed particularly for the purpose of designing solder-stencil openings.

**Value** — with the introduction of all standard symbols known to be needed by the solder-stencil process we enable fully automated solder-stencil design based on manufacturing process rules. Avoids the need for users to create and maintain their own libraries of custom-symbols.

c. Net name length enlarged (unlimited length).

**Value** — In all circumstances net-names can be preserved across the design/manufacturing flow thus enabling effective net-related engineering collaboration based on the ODB++ data, even with the most complex PCBs.

3. Assembly and Test improvements

a. Support for structural test probes-definition. Test probe diameter attribute introduced to provide information on the size of test probes.

**Value** — Enables the definition and DFT-validation of physical test-access early in the design stage, thus avoiding the need to redefine at the assembly stage. Explicit transmission of test intentions from design to manufacturing.

b. Support for unlimited number of BOM description attributes

**Value** — No loss of component description data across the flow. Reduces the need for multiple BOM access points in the flow just to recover data lost during the BOM-parsing process.

c. Introduction of package attributes

**Value** — Enables DFM analysis and manufacturing process preparation functions to be based on package type. Allows more efficient processing of the product model.

## GUIDELINES FOR IMPLEMENTATION

The recommended guidelines for implementing v8 ODB++ are:

1. Tools-providers are recommended to continue to support the reading of older formats (v7, v6..) while also implementing the ability to read the latest version. This ensures that customers can continue to work with their archived data.
2. Support the output of v8 with the highest level of content implementation that is enabled by the source-system. For example, if your CAD or CAM database contains an explicit definition for in-circuit test probes, make sure test-probe position and size is populated in the ODB++ when the output is made so your engineering partners in the flow can benefit!
3. Support the output of v7 ODB++ as an alternative to the default output of v8 ODB++. That will support the ODB++ flow for the maximum number of users, as the industry makes the transition between format versions.
4. Prioritize the format implementation for fabrication and assembly as the first priority, with design-level NPI operations as the second priority, and output from PCB CAD systems as the third priority. By such an approach, the maximum number of design/manufacturing supply chains will experience the benefits of v8 as a smooth transition from the current value of v7.

## NEXT STEPS

The v8 ODB++ specification is "hot off the press". What happens next? Our recommendations are as follows, depending on whether you are a tools-user or a solutions-development partner:

### TOOLS-USERS (DESIGNERS, MANUFACTURERS USING CAD, NPI, DFM, CAM)

- Contact your tools providers and ask them for their roadmap for v8 implementation.
- Begin to consider your current workflows and how you can increase efficiencies by making full use of ODB++ v8 and the additional automation offered by your tools-vendors.

### SOLUTIONS-DEVELOPMENT PARTNERS

- Download the full specification (from <http://www.odb-sa.com/resources/>) and begin considering options for delivering more value to your customers based on the data.
- Please contact the ODB++ Solutions Alliance for support with your planning; we will be glad to assist.

### ALL

Look out for new utilities, viewers and v8-related resources, available to ODB++ Solutions Alliance members!

For the latest information, visit: [www.odb-sa.com](http://www.odb-sa.com)

