Design Rules

In order to be correctly processed by the conversion software, designs must fulfill certain rules. Some of them apply to all design formats likewise, while others concern only special features of one specific design type.

GENERAL

1. **Naming**

   • **Do not use 'main' as name for a layer, cell or any structure.**

   • **Do not use special characters or spaces in names.**

2. **Polylines**

   • **Polylines must be closed**
   Areas surrounded by a polyline are filled. Therefore, if polylines are not closed, the complete design area is filled. Some data formats allow automatic closing of polylines. Always use this option if available, or make manually sure all polylines are closed.

   • **Do not cross polylines**
   Crossed polylines create ambiguities that can lead to data errors.

   • **Do not create double vertices**
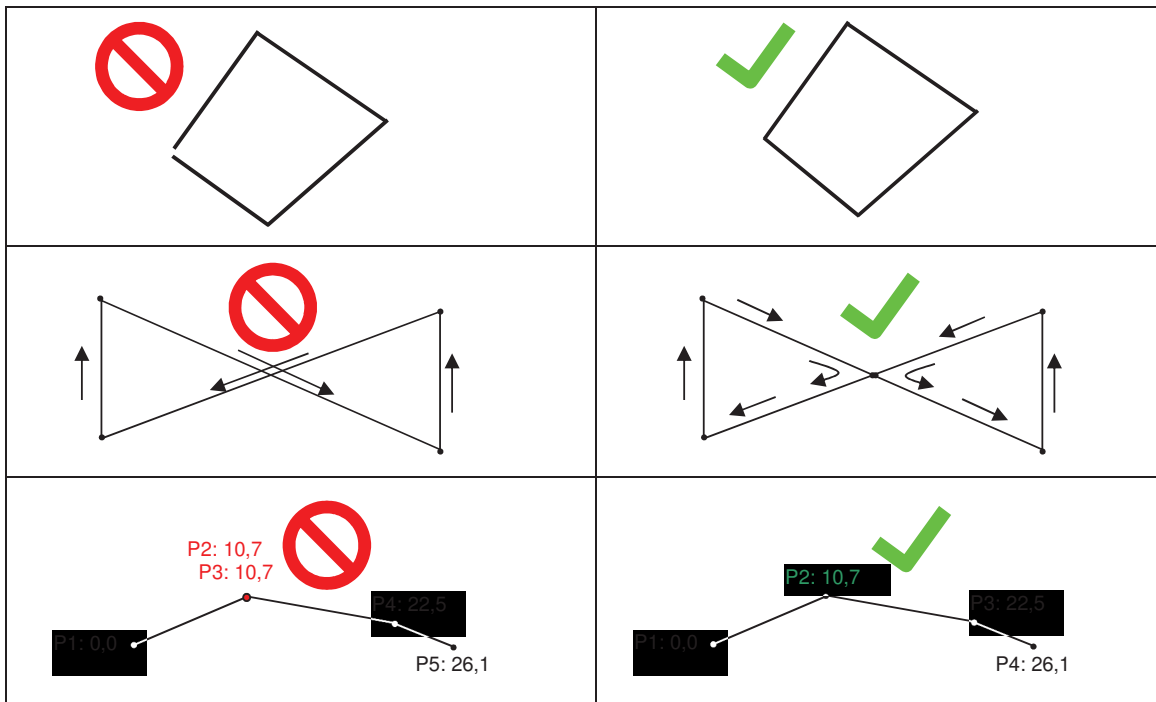   Double vertices are successive points with identical coordinates. These lead to data errors.

Figure 1: Polyline drawing rules

3. **Do not put structures into polygons / polylines**

   When using a polygon or polyline to e.g., define a frame for inverted exposure, the filling will cover any structures inside. Loss of structures as a result of putting a polygon / polyline around them can only be avoided by using the XOR- mode feature. See instructions below regarding XOR-mode if structures should be put within a frame.

4. **Single lines without width are ignored.**

5. **Polygons must show no more than 1,000,000 vertices.**

6. **Definition or reference depth can be at maximum 16.**

7. **The number of definitions or references can be at maximum 100,000.**

8. **Text is not supported (except for DXF).**

9. **Designs must not exceed the limits of 2000mm from (0,0) in either axis.**

GDSII

1. **The inclusion of other gdsii files or text libraries are ignored.**

2. **Node statements in gdsii are ignored.**

Also see the information on available design format options for GDSII in Chapter 3 for more information on the GDSII format.

DXF

1. **Use a 100% AutoCAD compatible editor**

2. **Avoid placing structures in layer 0**

3. **Use the metric system when designing**
   - Recommended is the use of Millimeters as basic unit

4. **Try to use only the following entities: CIRCLE, POLYLINE / LWPOLYLINE (with or without width), and TEXT.**

5. **Be especially cautious about correct closing of polylines, when using arcs within a polyline**

6. **Polylines with widths must not have a change in its widths (tapered lines).**

7. **Only one font is provided with the dxf conversion package.**
   - The dxf standard font will replace any font selected in the DXF-design.

8. **Only the following attributes assigned to a text are supported: ROTATION, MIRRORING, SCALING.**

9. **Different scaling in x and y when inserting a block is not supported.**

10. **External blocks are not supported.**

11. **Although our dxf translator supports newer dxf releases, we recommend to use Release 12.**

Also see the information on available design format options for DXF in Chapter 3 for more information on the DXF format.

GERBER

1. **Do not use incremental, but rather absolute coordinates.**

2. **Avoid using circular interpolation along with polylines and width.**

3. **Avoid using apertures without dimensions, e.g., circle with a zero diameter.**

4. **Flashmode (D3) remains until another drawing mode is chosen (sometimes called modally).**

5. **To create area-filled polygons, use G36/G37 commands.**

Also see the information on available design format options for Gerber in Chapter 3 for more information on the Gerber format.

CIF

1. **Definition or reference depth can be at maximum 50.**

Also see the information on available design format options for CIF in Chapter 3 for more information on the CIF format.