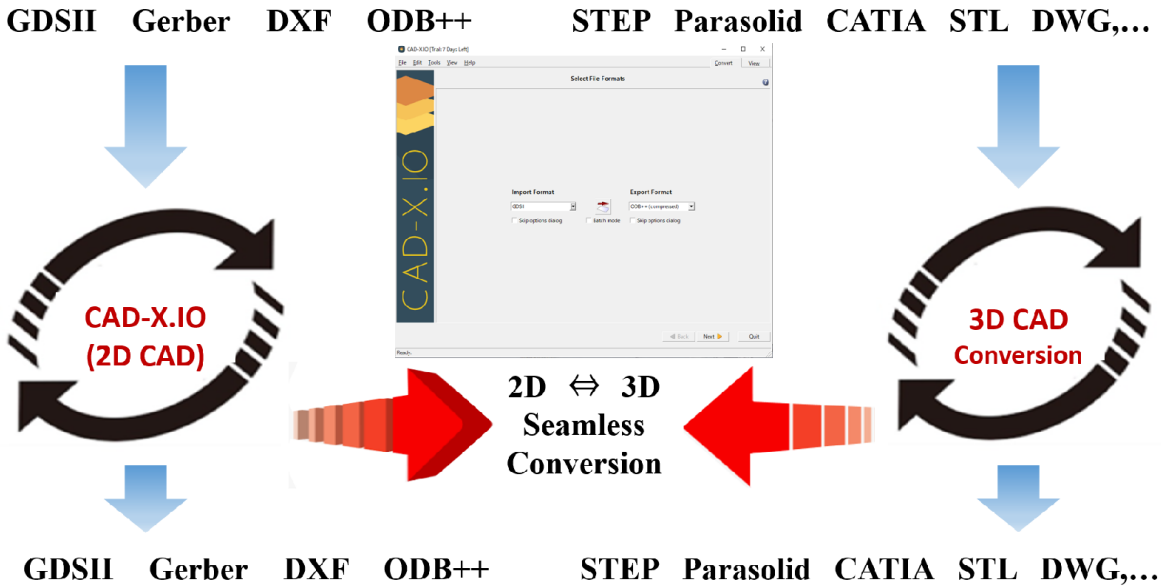# CAD-X.Plus : 2D CAD⇔3D CAD Interconversion Software

CAD-X.Plus is an interconversion software. It can be used not only for interconversion between 2D CAD data, 3D CAD data, but also for seamless interconversion between 2D CAD and 3D CAD data. It provides features for Boolean operation and restoration of figures in an optimal environment for CAD data conversion.

Primary Features

1. Format Conversion

1) Interconversion between 2D CAD data（GDSII, DXF, Gerber, ODB++)
 - When there are open vertices in DXF, those can be restored automatically as much as possible.
- Supports Gerber loading specification outline and hatching description. Supported Gerber's output is only the outline description.
- CAD output layers can be selected: all layers or specified layers.

Layer	💡	Number	Data Type	Color
1	💡	1	0	🟦
2	💡	2	0	🟨
3	💡	3	0	🟪
4	💡	4	0	🟦
5	💡	5	0	🟧

Output all layers

Layer	💡	Number	Data Type	Color
1	💡	1	0	🟦
2	💡	2	0	🟨
3	💡	3	0	🟪
4	💡	4	0	🟦
5	💡	5	0	🟧

Output specified layers(#3 excluded)

2) Interconversion between 3D CAD data (STEP, Parasolid, STL, DWG etc.). In GUI mode, features for modification and restoration of shape are available.

3) Interconversion between 2D and 3D CAD data
Supports STEP output from 2D CAD, or interconversion between APD (Allegro Package Designer) and SOLIDWORK. However, this feature is aimed for LSI, LSI packages, PCB board which has CAD data with stacked structure description.
4) Supported 3D CAD data input / output formats

CAD	Extension	Input	Output
ACS	.sat, .sab, .asf, .asat, .asab.	○	○
CATIA (V4 - V6)	.CATpart, .CATProduct	○	○
Creo	.prt, .asm	×	○
DXF	.dxf	○	○
DWG	.dwg	○	○
IGES	.igs	○	○
JT	.jt, .jt	○	○
OBJ	.obj	○	○
Parasolid	.x_t	○	○
Pro/E	.prt, .asm	×	○
STEP	.stp	○	○
STL	.stl	○	○

2. Format Editing

1) Editing Polygon
Features like converting Polygon figures, solving polygon open vertex, circle polygon conversion, arc to circle polygon conversion, arc polygon conversion, removing redundant polygon, automatic solving of self-intersecting polygon are supported
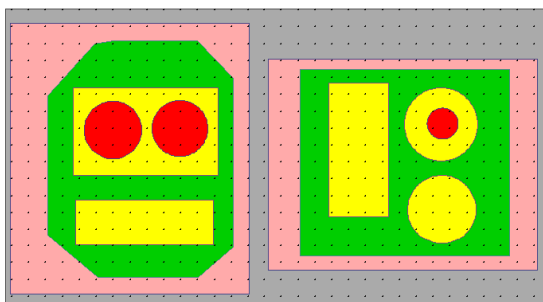2) Boolean operation
Operation on figures using AND, OR, Minus, and XOR commands. Results can be saved to existing layers or new layers.
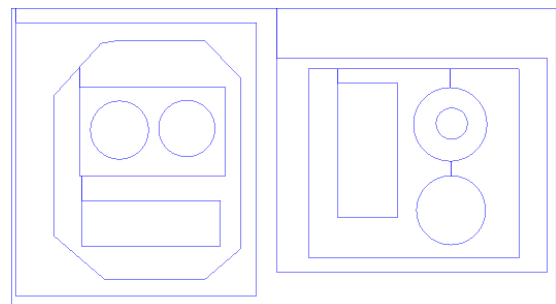3) Converting polygon to one stroke or slice figures.
4) Merging redundant polygons, flattening hierarchy and merging figures.
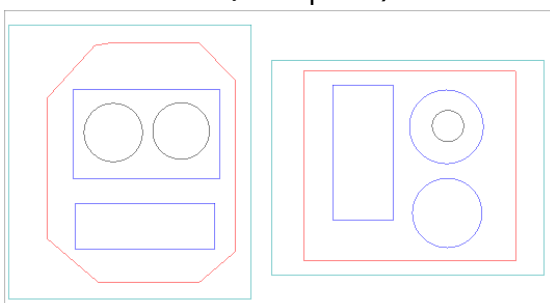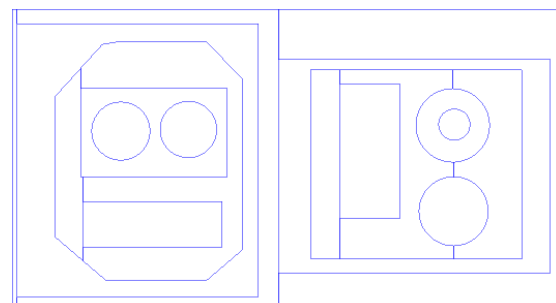5) Supports hole in nest, one stroke or slice descriptions.
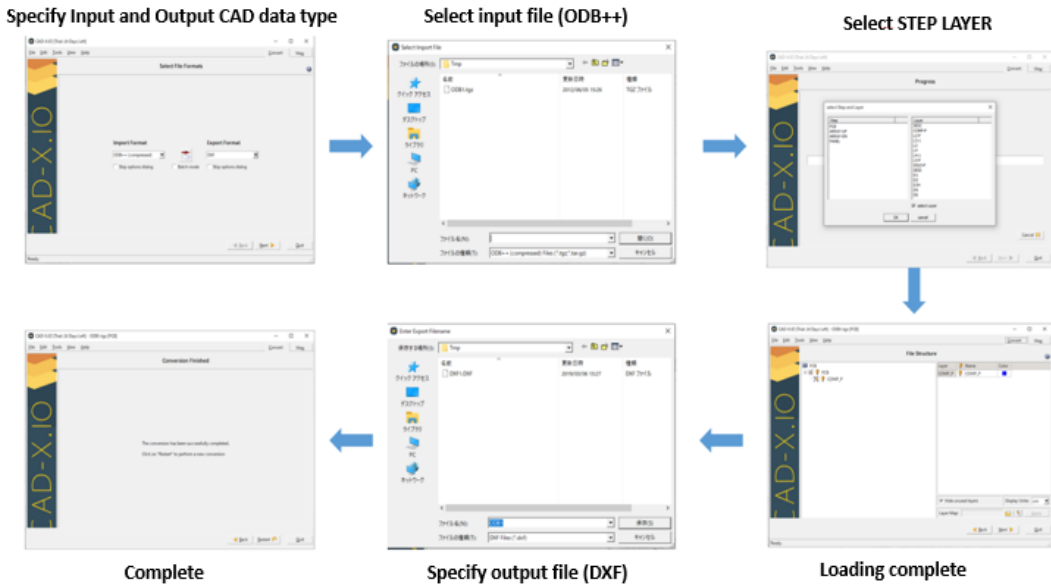

Nest (with paint)

One stroke

Nest (without paint)

Slice

1. GUI Mode (Interactive mode)

Select the format of input and output CAD data type. Follow the instructions in the dialog box to convert format. Below example shows steps for conversion from ODB++ to DXF.

Specify Input and Output CAD data type

Select input file (ODB++)

Select STEP LAYER

Complete

Specify output file (DXF)

Loading complete

2. Batch Mode (Running from command line)

Below example shows the command line for conversion from ODB++ to DXF and GDSII to STEP. Write the command in a script file and run.

Example batch command :
```
"%ProgramFiles%¥CAD-X.IO¥cadxio.exe" ^
-LcLoadDefaults=true
-LcShowSplash=false
-LcSkipSteps=all ^
-LcImportFile="C:¥ in.gds" ^
-LcExportFile="C:¥out.step" ^
-LcImportFormat="GDSII" ^
-LcExportFormat="STEP" ^
-LcApplyLayerMap=true ^
-LcLayerMap="C:¥ map.csv"
```

STEP data generated by the batch command
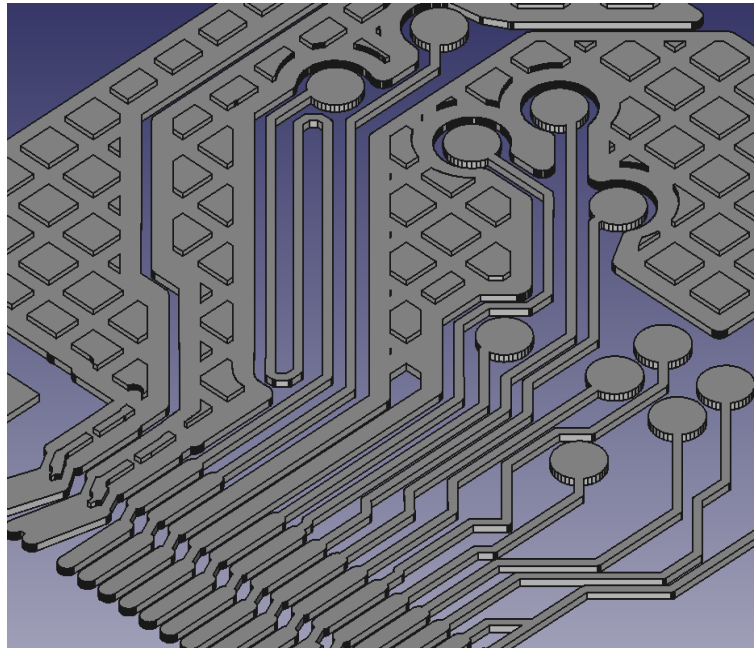
・OS   Windows8.1 or later(64-bit version)
・Memory   8GB or more. Require 12GB or more when using 3D CAD.

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