# Release GC-PowerPlace v10.4

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## **New Features**

## **Overhauled CAD XY Import**

The Load CAD-XY function has received a total overhaul with a re-design from the ground up. The function now has auto-field recognition and the ability to modify the Component Placement file without exiting the function.

col1	col2	col3	col4	col5	col6	col7	± 800		Ref Des	×	Y	Part Id	Packa
	_								col1 💌	col2 🔹	col3 •	005 💌	004
Ref	des	X		P/N	Pattern	10t	side		01	3.625	4	SMD-1206HPC	1841512
C1	3.625	4	1841512	SMD-12	190	TOP			C2	4.05	4	SMD-12064PC	1841512
C2	4.05	4	1841512	SMD-12	0	TOP			C3	4.55	4	SMD-1206-IPC	1841512
C3	4.55	4	1841512	SMD-12	0	TOP			C4	3.625	3.825	SMD-12064PC	1841512
C4	3.625	3.825	1841512	SMD-12	0	TOP			C5	4.05	3.825	SMD-1206-IPC	1841512
CS	4.05	3.825	1841512	SMD-12	180	TOP			C6	4.65	3.825	SMD-1206-IPC	1841512
C6	4.55	3.825	1841512	SMD-12	0	TOP			07	0.7	2.65	SMD-1206-IPC	1841500
C7	0.7	2.65	1841500	SMD-12	0	TOP			C8	0.7	25	SMD-1206-IPC	1841500
C8	0.7	2.5	1841500	SMD-12	0	TOP			C9	0.7	2.375	SMD-1206-IPC	1841500
C9	0.7	2.375	1841500	SMD-12	0	TOP			C10	1.125	1.9	SMD-CAP-EL-31	8001246
C10	1.125	1.9	8001246	SMD-DA	180	TOP			011	4.975	4	SMD-1206-IPC	1841512
C11	4.975	4	1841512	SMD-12	190	TOP			C12	4.975	3.825	SMD-1206-IPC	1841512
C12	4.975	3.825	1841512	SMD-12	180	TOP			013	5.025	0.55	SMD-CAP-EL-31	8001246
C13	5.025	0.55	8001246	SMD-DA	90	TOP			J1	1.3	4	CON-6P-HDR	2408282
11	1.3	4	2400202	CON-6P	90	TOP			J2	0.675	3.8	CON-10P-HDR-3M	2400123
12	0.675	3.8	2400123	CON-10	90	TOP			J3	0.396	2.657	CON-13P-COMBO	8001197
13	0.386	2.657	8001197	CON-13	270	TOP			J4	0.48	1.695	CON-2P	2400138
14	0.48	1.695	2400138	CON-2P	270	TOP			J5	0.4	0.898	CON-15P-DF-NC	8001335
15	0.4	0.898	8001335	CON-15	270	TOP			J6	3.163	0.198	CONFCI CONFCI	CON-PCI
16	3.163	0.198	CON-PCI	CON-PCI	0	TOP			J7	6.55	4.025	CON-34P-HDBA	2400033
17	6.55	4.025	2400033	CON-34	0	TOP			JP1	1.025	3.325	CON-2P-BERG	2400264
JP1	1.025	3.325	2400264	CON-2P	180	TOP			JP2	0.575	2.025	CON-2P-BERG	2400264
JP2	0.575	2.025	2400264	CON-2P	270	TOP			JP3	0.725	2.025	CON-2P-BERG	2400264
JP3	0.725	2.025	2400264	CON-2P	270	TOP			JP4	0.875	2.025	CON-2P-BERG	2400264
JP4	0.875	2.025	2400264	CON-2P	270	TOP			JP5	5.05	1.3	CON-2P-8ERG	2400264
JP5	5.05	1.3	2400264	CON-2P	90	TOP	-	•	.IPS	6.176	1.35	MN-3PAERG	2400265
De	simiter												

The function is also significantly more flexible than the existing function; handling sections within the file that do not contain valid data, adding or deleting dummy fields, and not being restricted by file size.

## New GCSendKeys replaces SendKeys in GC-Basic

In order to provide compatibility with Windows7 and its security settings, the old GC-Basic method of SendKeys has been replace with GCSendKeys that allows GC-Basic to send keystrokes to the application.

## Items fixed since v10.3.2

This list is customer reported issues fixed for this release.

#4485 Fixed issue where the act of Querying an entity within the Query List changed the aperture or tool number. The new tool had all the attributes of the original and so did not affect images in any way.
#4484 Filter Selection of non-zero Fiducial group numbers did not work. This issue has been corrected.
#4481 Cleaned up the Import results to remove the reporting of a critical error that did not exist. Issue was caused by poor clearing of variables when importing the next layer.

#4480 Fixed an issue that caused a crash when running No Pad for Via on Power / Ground layers. Function was expecting both outer and inner layer variables.

#4479 Netlist Browsing shifted the net number reported when net zero was present by one so that the net number and netname from the ODB++ file were on incorrect lines in the list.

#4475 Updated the original GC-Basic SendKeys function to GCSendKeys to provide compatibility with Windows7.

#4474 Now drawing Octagon apertures that are used to draw a trace as a round aperture. The modification is then reported in the Import Results tab.

#4473 Fixed bug that triggered the conversion of a custom aperture to a rounded rectangle.

#4468 Overhaul of CAD XY import complete.#4466 Updates to the AutoCAD® method of describing mirrored and rotated text caused interpretation

problems upon import. This issue is now resolved. #3861 Fixed load CAD centroids problem. File was

previously unloadable due to file size.

#2016 Overhaul of Load CAD centroids removed this usability issue.

# Load CAD Centroids overview

**Load CAD Centroids** allows the user to import ASCII formatted CAD XY data. CAD XY files typically contain component X and Y coordinates, reference designators, and rotations, but can also include other valuable bits of information such as: package types, part numbers, feeder numbers and board-side information.

Once the CAD XY data is imported and recognized, information from the CAD XY file (Reference Designator and Part Number) can be incorporated during Automatic Centroid Extraction or can be compared against an already existing parts layer (Gerber to CAD accuracy checks). The user can select specific CAD XY items to be merged into the parts layer, which is the preferred method for assigning part centroids with reference designators.

To run Load CAD Centroids, follow these instructions:

1. Run File > Load CAD Centroids. You will be prompted with a file picker to select the ASCII CAD XY file to be imported.



2. Once the file has been selected the ASCII data is analyzed and the results are reported. The result of the analysis is shown below

🖳 Impo	Import CAD-XY File: C:Vocuments and Settings/paulwWy Documents/Demo_data/CENTROID.TXT													_ 🗆 🛛		
Tabulate	ed File Origin	nal File							Extract	ed CAD_XY						
	col1 col2 col3 col4 col5 col6 col7 col							col 🔺	RefDes X Y PartId							
•										col1 👻	col2 👻	col3 👻	col5 💌	col4 👻		
	Ref	des	X	Y	P/N	Pattern	rot	side		C1	3.625	4	SMD-1206-IPC	1841512		
	C1	3.625	4	1841512	SMD-12	180	TOP			C2	4.05	4	SMD-1206-IPC	1841512		
	C2	4.05	4	1841512	SMD-12	0	TOP			C3	4.55	4	SMD-1206-IPC	1841512		
	C3	4.55	4	1841512	SMD-12	0	TOP			C4	3.625	3.825	SMD-1206-IPC	1841512		
	C4	3.625	3.825	1841512	SMD-12	0	TOP			C5	4.05	3.825	SMD-1206-IPC	1841512		
	C5	4.05	3.825	1841512	SMD-12	180	TOP			C6	4.55	3.825	SMD-1206-IPC	1841512		
	C6	4.55	3.825	1841512	SMD-12	0	TOP			C7	0.7	2.65	SMD-1206-IPC	1841500		
	C7	0.7	2.65	1841500	SMD-12	0	TOP			C8	0.7	2.5	SMD-1206-IPC	1841500		
	C8	0.7	2.5	1841500	SMD-12	0	TOP			C9	0.7	2.375	SMD-1206-IPC	1841500		
	C9	0.7	2.375	1841500	SMD-12	0	TOP			C10	1.125	1.9	SMD-CAP-EL-31	8001246		
	C10	1.125	1.9	8001246	SMD-CA	180	TOP			C11	4.975	4	SMD-1206-IPC	1841512		
	C11	4.975	4	1841512	SMD-12	180	TOP			C12	4.975	3.825	SMD-1206-IPC	1841512		
	C12	4.975	3.825	1841512	SMD-12	180	TOP			C13	5.025	0.55	SMD-CAP-EL-31	8001246		
	C13	5.025	0.55	8001246	SMD-CA	90	TOP			J1	1.3	4	CON-6P-HDR	2400202		
	J1	1.3	4	2400202	CON-6P	90	TOP			J2	0.675	3.8	CON-10P-HDR-3M	2400123		
	J2	0.675	3.8	2400123	CON-10	90	TOP			J3	0.386	2.657	CON-13P-COMBO	8001197		
	13	0.386	2.657	8001197	CON-13	270	TOP			J4	0.48	1.695	CON-2P	2400138		
	J4	0.48	1.695	2400138	CON-2P	270	TOP			J5	0.4	0.898	CON-15P-DF-NC	8001335		
	J5	0.4	0.898	8001335	CON-15	270	TOP			J6	3.163	0.198	CON-PCI_CON-PCI	CON-PCI		
	J6	3.163	0.198	CON-PCI	CON-PCI	0	TOP			J7	6.55	4.025	CON-34P-HDR-A	2400033		
	J7	6.55	4.025	2400033	CON-34	0	TOP			JP1	1.025	3.325	CON-2P-BERG	2400264		
	JP1	1.025	3.325	2400264	CON-2P	180	TOP			JP2	0.575	2.025	CON-2P-BERG	2400264		
	JP2	0.575	2.025	2400264	CON-2P	270	TOP			JP3	0.725	2.025	CON-2P-BERG	2400264		
	JP3	0.725	2.025	2400264	CON-2P	270	TOP			JP4	0.875	2.025	CON-2P-BERG	2400264		
	JP4	0.875	2.025	2400264	CON-2P	270	TOP			JP5	5.05	1.3	CON-2P-BERG	2400264		
	JP5	5.05	1.3	2400264	CON-2P	90	TOP			JP6	5 175	1 35	CON-3P-RERG	2400265		
<u> </u>																
Load	Delim	iter Whitespa	ce 🔻 <<	1/1	>>			date	Recor	ds: 190 Unit	inch 💌 Scale	1.0	Import <u>C</u> .	ancel		

There are a number of point to note

P [	lmp Fabulat	ort CAD-XY File: C:\Documents ar Tab for displaying Original data				CENTROID.TXT Extracted CAD_XY						
s	1	col1	col2	col3	со		10	Ref Des	X			
s	•				-	Pad Paus and astronomical		col1	▼ col2	- col3		
		Ref	des	X	Juni	Red Rows are notrecognized	•	C1	3.625	4		
<u> </u>		C1	3.625	4	184			C2	4.05	4		
В		C2	4.05	4	184		5	C3 🔪	4.55	4		
Р		C3	4.55	4 ┥	( 10.	These are recognized rows	-	C4	3.625	3.82		
		C4	3.625	3.825	18/	The results are shown here		C5	4.05	3.82		
		C5	4.05	3.825	184							

User validation is required to ensure that the correct fields have been recognized by the software. In the Right Hand area the column being used is shown at the top of each column. These columns can be changed from the Drop-Down list. Fields that can be specified are Reference Designator, X, Y, Part Number, Package Style, Rotation and Side.

The number of recognized entries, the units used for the X and Y co-ordinates and any additional scale are displayed below the results

Records:	190	Unit	inch	•	Scale	1.0

User validation is also required to verify that all required rows have been correctly recognized.

Each unrecognized row is displayed in Red. Each Red section can be checked by using the buttons to cycle through the Unrecognized sections



Click on the Right Arrow to go to Red Section number 2 (of 2 total).

3. If everything looks correct then the file can be imported into application.

## **Troubleshooting:**

#### Some rows have additional fields

In the example below the FTR5 entry has the X co-ordinate in field 6 but the FTR3 entry has it in field 4.

 FTR3
 DFC25R80P150LHA
 CER58\_2P
 3119.4
 2870.5
 270.000 N

 FTR5
 PRINTED\_FILTER PRINTED FILTER
 PRINTED\_FILTER
 2059.0
 5472.5
 0.000 N

The results is displayed as follows where the FTR3 entry gives better results throughout the file.

FTR3	DFC25R	CER58	3119.4	2870.5	270.000
FTR5	PRINTE	PRINTED	FILTER	PRINTE	2059.0

In order to correctly handle the FTR5 entry, we can delete the two extra fields (without affecting the original file) by highlighting each field, right clicking and choosing Move Cell Left. This action Shifts deletes the highlighted cell shifts all remaining cells one cell to the left.

FTR3	DFC25R	CER58	3119.4	2870.5	270.000	
FTR5	PRINTE	PRINTED	 2059.0			
HYB1	HYBRID	Move (	6585.0			
HYB2	HYBRID	Move (	5532.5			
J1	SKT2	Extract	4299.5			
		Accien	Top Side			

You can also add cells by highlighting a cell, right clicking and choosing Move Cell Right.

Once changes have been made, then the Update Button can be pressed to re-process the file accounting for the changes.

## Some fields merged together

In the example below the X and Y co-ordinate fields include the units also

D17 SMB 1340.351mil 1149.713mil 1340mil 1150mil 1340.351mil 1239.713mil T 270.00 SMAJ18A

Highlight the fields (or columns) that have this problem and then right click and choose Extract Number. This strips out and retains only the number portion of the field.

1	1340mil	1150mil	134	40.35	123						
il	1575mil	1055mil		Cell R	ell Right						
7mil	4965mil	740mil	Move Cell Left								
il	1480mil	1220mil	Extract Number								
il	3950mil	1540mil		Assign	Top :	Side	Э				
1mil	665mil	190mil		Assign	Bot S	5ide					
8	5820mil	1780mil		Force	Accep	otar	nce				

Once again, once the changes / edits have been completed select the Update button to re-process.

## Side is not defined with a field

Some ASCII CAD XY files have the components separated by side of board but without the side being specified on each row.

A field can be added to each row by highlighting a cell in each row and then right clicking and choosing Assign Top Side (or Assign Bottom Side). The highlighted cell is then filled with either the word Top or Bottom and the data can be interpreted correctly

 Top Components

 D17
 SMB
 1340.351
 1149.713

 Bottom Components
 D18
 SMB
 2840.305
 1529.538

Becomes

Top ComponentsD17SMB1340.3511149.713TopBottom ComponentsD18SMB2840.3051529.538BottomUnrecognized Reference Designators

Reference designators are considered to be Alpha – Numeric in form. There are some cases where a Reference Designator varies from this format. Below is an example

S11	2559	-27606	0	NOBYZ	ARCS12	
S10	3189	-24771	0	NOBYZ	ARCS12	
.02	10315	-20716	0	NOBYZ	ARCS12	
S9	6889	-38118	0	NOBYZ	ARCS12	
S8	6889	-34732	0	NOBYZ	ARCS12	

The row with the Reference Designator field reading .02 is not recognized because it does not fit the form of the other Reference Designators in the file. If this entry is valid and is required to be included in the CAD XY layer then highlighting any cell in the row, right clicking and choosing Force Acceptance will add this entry to the data to be imported.

After import, the CAD XY layers will be loaded into the Unassigned Layers Category within the GC-Explorer as U.n:



CAD XY Centroids are represented as squares that contain directional arrows. The arrows depict the part rotation:



Information can be gleaned from the CAD Centroids by hovering over one of the CAD Centroids and viewing the information displayed in the status bar:



It is also possible to select individual or multiple CAD Centroids and run Tools > Query on the selected items to glean more information:

