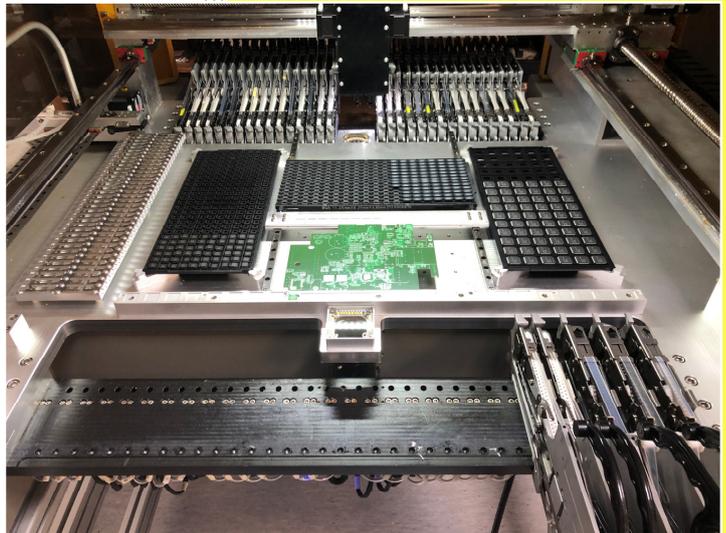


**2019**

# First steps to create a placement job



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17.08.2019

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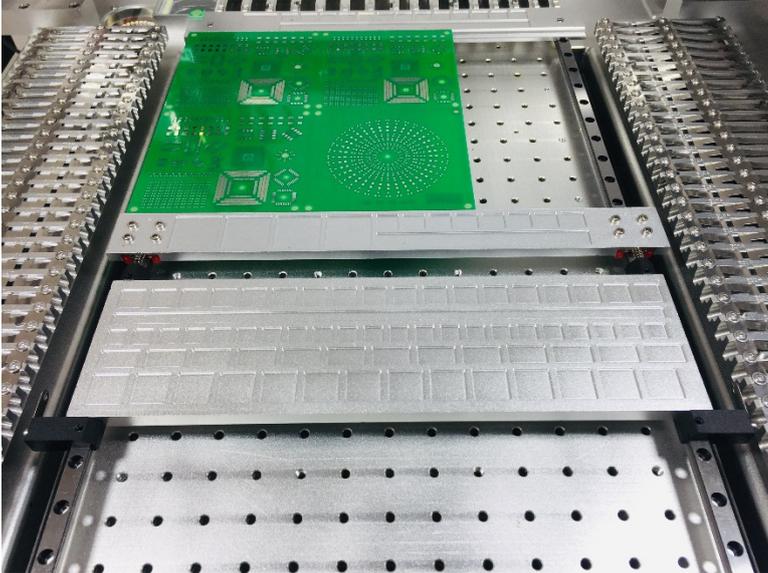
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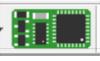
## Step 1 Add PCB to PCB holder

Put a PCB inside the PCB holder. Open the hex screws on the black slider blocks and adjust the PCB holder width to your PCB size. Move the black slider a bit forward to compress the springs half way and fix the screws. Now you're able to release the PCB holder by moving the bottom bar back and insert or remove PCB.



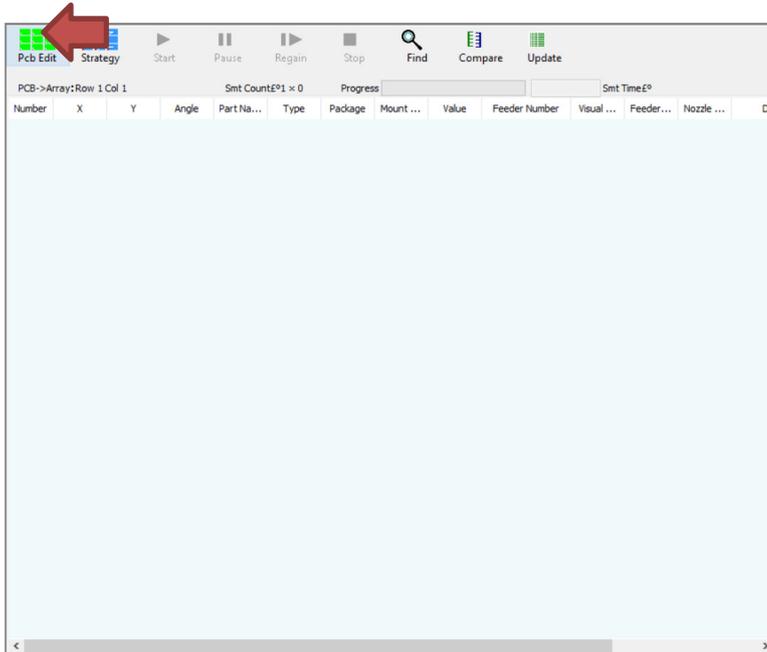
## Step 2 PCB settings

Next steps to create a placement job start in the PCB settings.

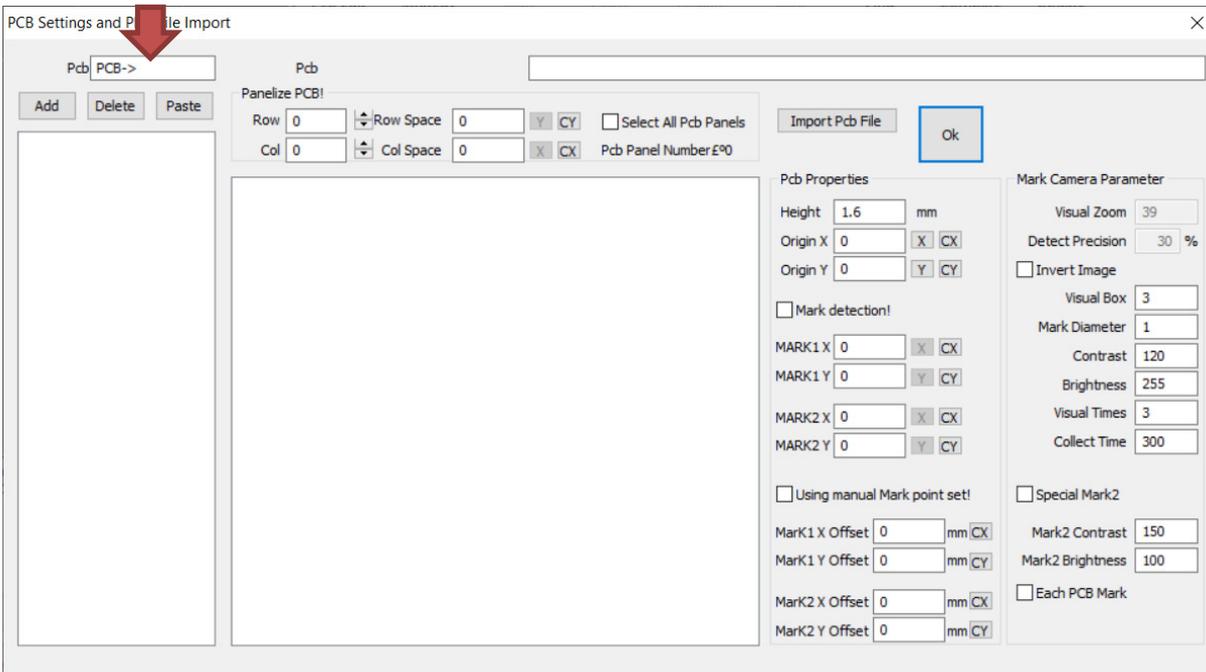


You open the PCB Job Menu using this toolbar button.

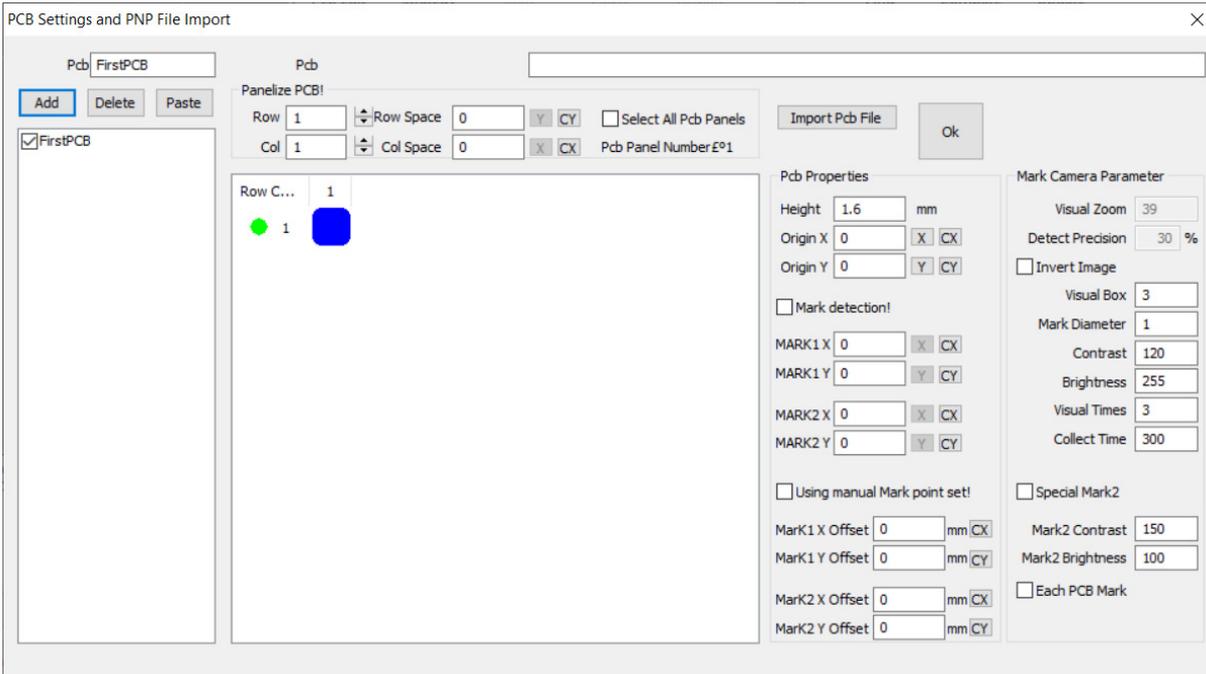
You receive this empty dialog:



Open the PCB settings by clicking the PCB Edit button in toolbar.

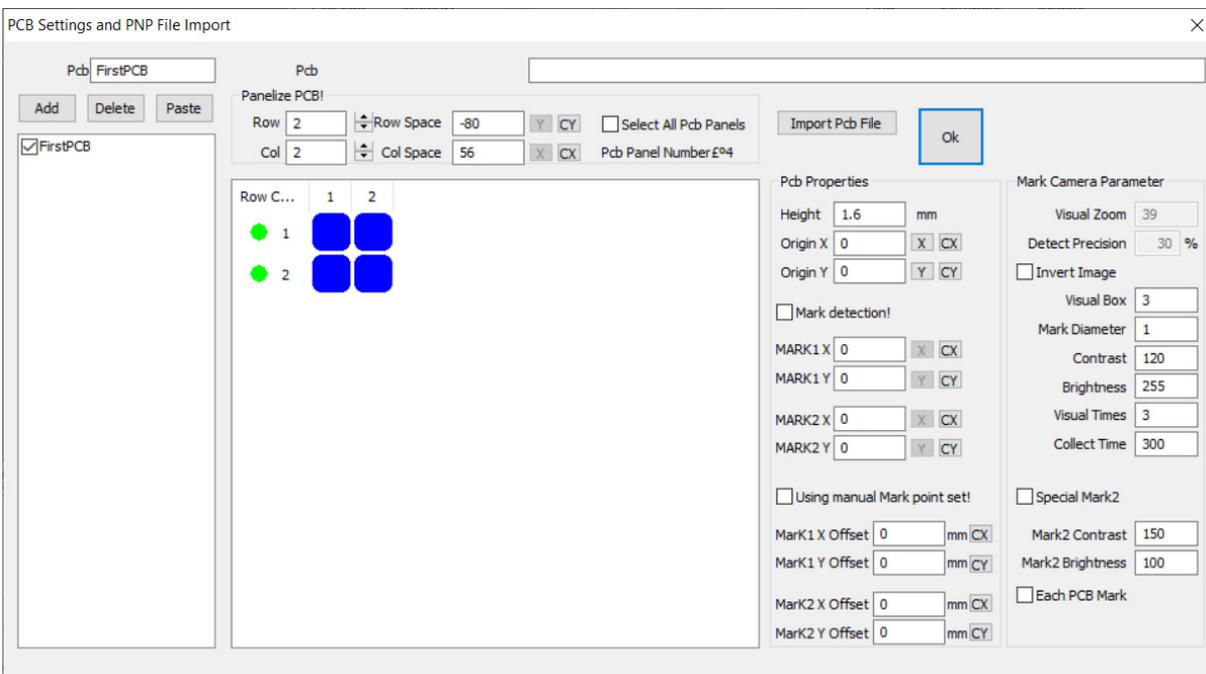


The empty dialog appears. Now we need to type the PCB name in left top text field and press “ADD” button.



Our First PCB is added and row / col count set to one PCB or panel. If you add row or column count now we are able to repeat the placement job on each PCB inside a panel. The distances set by “Row Space” and “Col Space”.

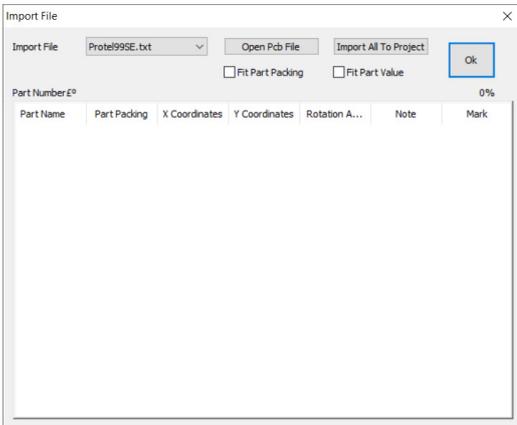
Take care Y axis has always negative values!



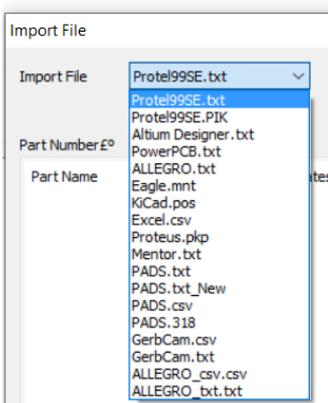
This example shows a panel setup containing 4 PCB in -80mm Y / 56mm X distance and all PCB are selected for placement. By clicking on the blue grid fields the PCB gets disabled for placement. The placement start always on the first selected PCB from left to right and top to bottom.

### Step 3 Import pick and place file

Next step we import the PNP file:



First we need to select the coordinate file type using the dropdown box “Import File”

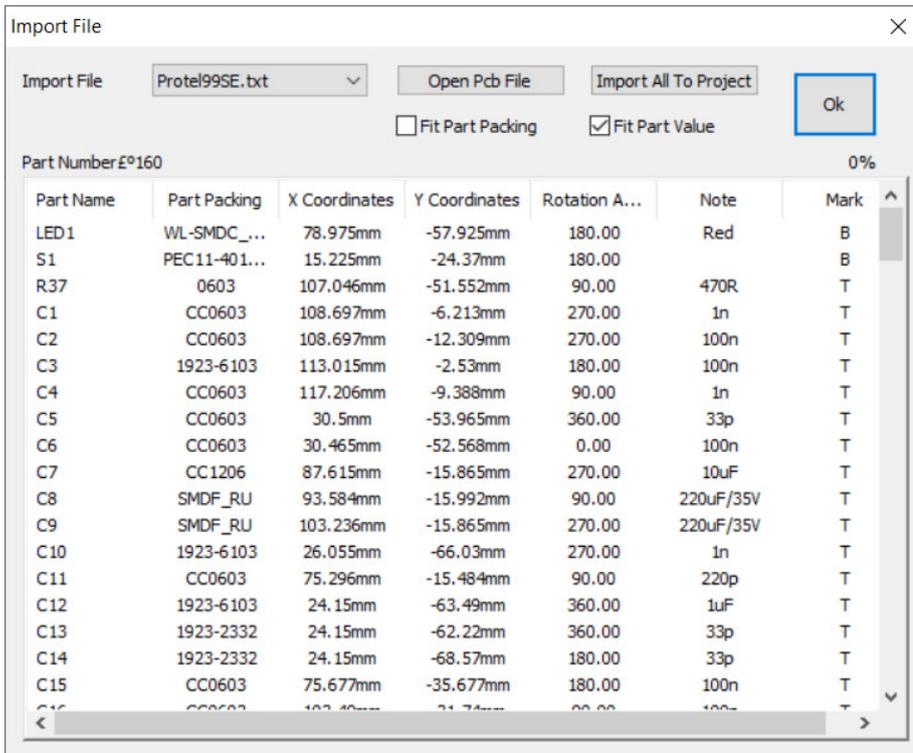


If your CAD system not listed use the CSV file option.

For detailed file format description refer to Visionplacer manual.

Then use the “Open PCB File” button to open the coordinate file.

After opening the pnp import file the coordinates are shown in the dialog.



We are now able to import the coordinates in our PCB project but first need to decide if feeder should get matched by Part Value or Part Packing. The automatic feeder assignment can only match one pair of fields.

The button “Import All To Project” will start the matching process and add each line as placement or dispenser point to the PCB project.

## Step 4 PNP data loaded to new PNP project file

Number	X	Y	Angle	Part Na...	Type	Package	Mount ...	Value	Feeder Number	Visual ...	Feeder...	Nozzle ...
1	78.9750	-57.9250	180	LED1		WL-SM...	No	Red		No		201
2	15.2250	-24.3700	180	S1		PEC11-...	No			No		201
3	107.0460	-51.5520	90	R37		0603	No	470R		No		201
4	108.6970	-6.2130	270	C1		CC0603	No	1n		No		201
5	108.6970	-12.3090	270	C2		CC0603	No	100n		No		201
6	113.0150	-2.5300	180	C3		1923-6...	No	100n		No		201
7	117.2060	-9.3880	90	C4		CC0603	No	1n		No		201
8	30.5000	-53.9650	0	C5		CC0603	No	33p		No		201
9	30.4650	-52.5680	0	C6		CC0603	No	100n		No		201
10	87.6150	-15.8650	270	C7		CC1206	No	10uF		No		201
11	93.5840	-15.9920	90	C8		SMDF_RU	No	220uF/...		No		201
12	103.2360	-15.8650	270	C9		SMDF_RU	No	220uF/...		No		201
13	26.0550	-66.0300	270	C10		1923-6...	No	1n		No		201
14	75.2960	-15.4840	90	C11		CC0603	No	220p		No		201
15	24.1500	-63.4900	0	C12		1923-6...	No	1uF		No		201
16	24.1500	-62.2200	0	C13		1923-2...	No	33p		No		201
17	24.1500	-68.5700	180	C14		1923-2...	No	33p		No		201
18	75.6770	-35.6770	180	C15		CC0603	No	100n		No		201
19	103.4900	-31.7400	90	C16		CC0603	No	100n		No		201
20	104.7600	-31.7400	270	C17		CC0603	No	33p		No		201
21	22.2450	-66.0300	270	C18		1923-6...	No	1n		No		201
22	30.4650	-49.7740	180	C19		1923-2...	No	33p		No		201
23	87.6150	-31.1050	270	C20		CC1206	No	10uF		No		201
24	78.7250	-41.0110	0	C21		SMDF_RU	No	220uF/...		No		201
25	31.7700	-57.1400	270	C22		CC0603	No	100n		No		201
26	93.3300	-29.2000	270	C23		SMDF_RU	No	220uF/...		No		201
27	75.2960	-30.5970	90	C24		1923-3...	No	220p		No		201
28	18.0540	-52.6950	0	C25		CC0603	No	100n		No		201

The most important step now is to save the file first before applying next settings!

In this case all PNP lines got imported but no matching feeders assigned.

Feeder assignment need to be done first.

I show mass editing of feeder assignment in the next step.

Manually sort and select a range of lines and edit the assignment using right click menu "Part Edit" function. You can start sorting by clicking on the row headers!

Number	X	Y	Angle	Part Na...	Type	Package	Mount ...	Value	Feeder Number	Visual ...	Feeder...	Nozzle ...
100	78.7250	-35.5500	180	R10		0603	No	0.15R		No		201'
5	108.6970	-12.3000	270	C2		CC0603	No	100n		No		201'
6	113.0000	-12.3000	270	C2		1923-6...	No	100n		No		201'
9	30.4000	-12.3000	270	C2		CC0603	No	100n		No		201'
18	75.6000	-12.3000	270	C2		CC0603	No	100n		No		201'
19	103.4000	-12.3000	270	C2		CC0603	No	100n		No		201'
25	31.7000	-12.3000	270	C2		CC0603	No	100n		No		201'
28	18.0000	-12.3000	270	C2		CC0603	No	100n		No		201'
36	19.3000	-12.3000	270	C2		CC0603	No	100n		No		201'
37	89.3000	-12.3000	270	C2		CC0603	No	100n		No		201'
135	30.4000	-12.3000	270	C2		CC0603	No	100n		No		201'
136	18.0000	-12.3000	270	C2		CC0603	No	100n		No		201'
137	107.1000	-12.3000	270	C2		CC0603	No	100n		No		201'
138	15.2000	-12.3000	270	C2		CC0603	No	100n		No		201'
139	62.2000	-12.3000	270	C2		CC0603	No	100n		No		201'
140	66.7870	-34.4070	180	C49		CC0603	No	100n		No		201'
141	72.1210	-52.1870	0	C51		CC0603	No	100n		No		201'
142	82.2810	-62.8550	0	C52		CC0603	No	100n		No		201'
143	82.6620	-48.1230	180	C53		CC0603	No	100n		No		201'
144	50.7850	-49.1390	0	C56		CC0603	No	100n		No		201'
152	95.7430	-40.5030	180	C41		CC0603	No	100n		No		201'
153	90.6630	-65.0140	270	C55		CC0603	No	100n		No		201'
95	27.9600	-50.2820	90	R4		0603	No	10K		No		201'
99	30.4650	-51.1710	0	R9		0603	No	10K		No		201'
104	103.4900	-24.7550	90	R14		0603	No	10K		No		201'
105	15.5140	-50.2820	90	R15		0603	No	10K		No		201'
111	18.0190	-51.2980	0	R22		0603	No	10K		No		201'
113	43.8000	-55.2350	90	R24		0603	No	10K		No		201'

Part Properties

Part Index:

Part Name:

Part Type:

Part Packing:

X Coordinates:  mm  X  CX Offset X:  mm

Y Coordinates:  mm  Y  CY Offset Y:  mm

Part Angle:

Part Value:

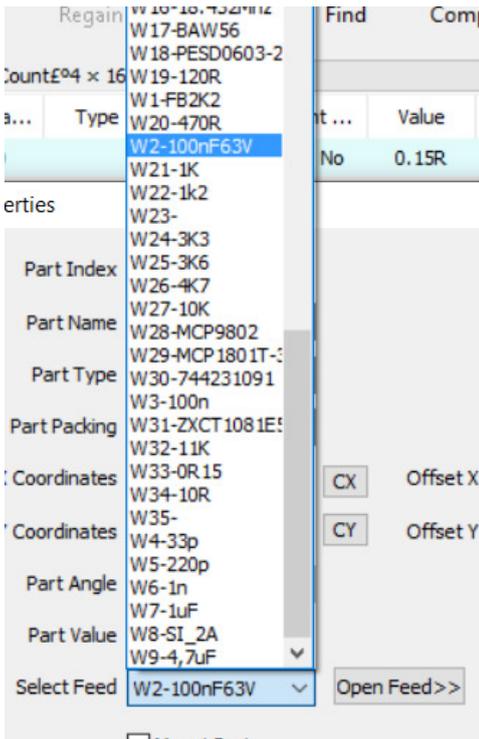
Select Feed:

Mount Part

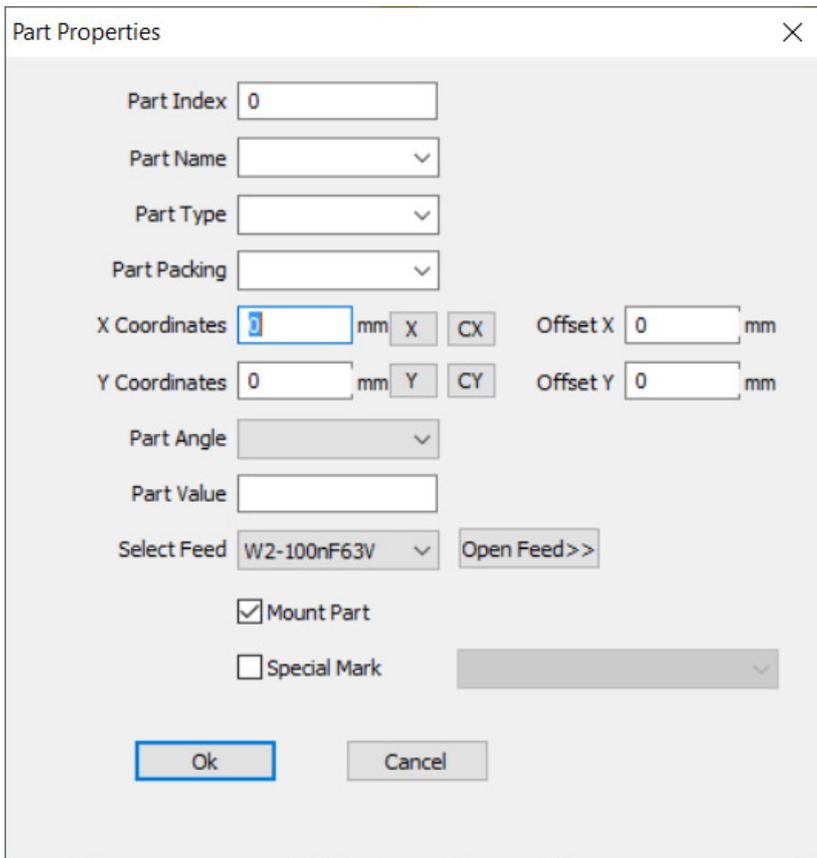
Special Mark:

Be careful change only the fields you want to update because all selected lines get updated and individual data may get overridden if you change coordinates here!

Select the Feeder by opening dropdown box



And select a matching feeder.



Check the mount flag in Part Properties dialog and click ok button.

And receive this result:

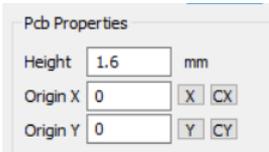
Number	X	Y	Angle	Part No...	Type	Package	Mount ...	Value	Feeder Number	Visual ...	Feeder ...	Nozzle ...
100	78.7250	-35.5500	180	R10		0603	No	0.15R		No		201'
5	108.6970	-12.3090	270	C2		CC0603	Yes	100n	W2	No	100nF63V	2 201'
6	113.0150	-2.5300	180	C3		1923-6...	Yes	100n	W2	No	100nF63V	2 201'
9	30.4650	-52.5680	0	C6		CC0603	Yes	100n	W2	No	100nF63V	2 201'
18	75.6770	-35.6770	180	C15		CC0603	Yes	100n	W2	No	100nF63V	2 201'
19	103.4900	-31.7400	90	C16		CC0603	Yes	100n	W2	No	100nF63V	2 201'
25	31.7700	-57.1400	270	C22		CC0603	Yes	100n	W2	No	100nF63V	2 201'
28	18.0540	-52.6950	0	C25		CC0603	Yes	100n	W2	No	100nF63V	2 201'
36	19.3240	-57.1400	270	C35		CC0603	Yes	100n	W2	No	100nF63V	2 201'
37	89.3930	-42.0270	270	C40		CC0603	Yes	100n	W2	No	100nF63V	2 201'
135	30.4650	-48.3770	180	C29		CC0603	Yes	100n	W2	No	100nF63V	2 201'
136	18.0190	-48.3770	0	C34		CC0603	Yes	100n	W2	No	100nF63V	2 201'
137	107.1730	-28.1840	90	C38		CC0603	Yes	100n	W2	No	100nF63V	2 201'
138	15.2250	-14.5950	0	C39		CC0603	Yes	100n	W2	No	100nF63V	2 201'
139	62.2150	-38.2170	0	C48		CC0603	Yes	100n	W2	No	100nF63V	2 201'
140	66.7870	-34.4070	180	C49		CC0603	Yes	100n	W2	No	100nF63V	2 201'
141	72.1210	-52.1870	0	C51		CC0603	Yes	100n	W2	No	100nF63V	2 201'
142	82.2810	-62.8550	0	C52		CC0603	Yes	100n	W2	No	100nF63V	2 201'
143	82.6620	-48.1230	180	C53		CC0603	Yes	100n	W2	No	100nF63V	2 201'
144	50.7850	-49.1390	0	C56		CC0603	Yes	100n	W2	No	100nF63V	2 201'
152	95.7430	-40.5030	180	C41		CC0603	Yes	100n	W2	No	100nF63V	2 201'
153	90.6630	-65.0140	270	C55		CC0603	Yes	100n	W2	No	100nF63V	2 201'
95	27.9600	-50.2820	90	R4		0603	No	10K		No		201'
99	30.4650	-51.1710	0	R9		0603	No	10K		No		201'
104	103.4900	-24.7550	90	R14		0603	No	10K		No		201'
105	15.5140	-50.2820	90	R15		0603	No	10K		No		201'
111	18.0190	-51.2980	0	R22		0603	No	10K		No		201'
113	43.8000	-55.2350	90	R24		0603	No	10K		No		201'

All selected lines now have feeder assigned and enabled for mounting.

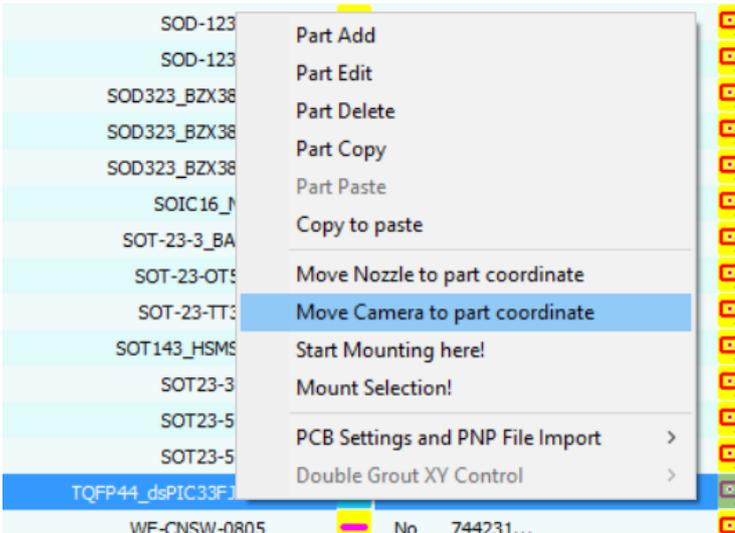
You should repeat this procedure until all feeders got assigned.

## Step 5 Assigning PCB origin and check coordinates

Now we need to setup the PCB origin. Move the machine top camera to PCB placement data origin and take over the position using CX and CY button in PCB settings.



Save your PCB job and check if PCB origin is well adjusted by using an IC to test for center position.



Measure the deviation and adjust the PCB origin. Save PCB file and check component position again until everything matches. On some PCB maybe you find deviation in produced PCB and can't adjust the placement position well. Try to set the PNP data origin to the middle of the PCB to compensate.

For the first placement test we should use a double-sided scotch tape to keep the parts in position after placement. We prefer X-Film because it's transparent and easy to remove.

Next step we need to adjust the PCB thickness to (PCB height -0.1mm).

Pcb Properties

Height	1.5	mm
Origin X	15.7	X CX
Origin Y	-13.5	Y CY

Use simple parts for your first placement test like resistors.

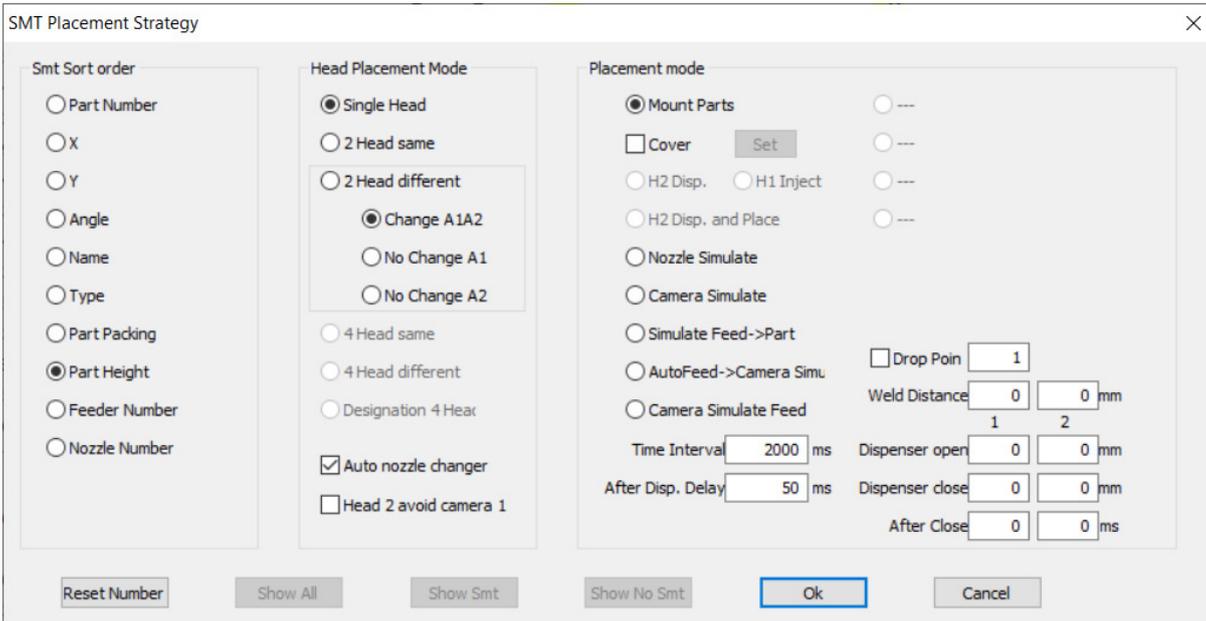
## Step 6 Placement Strategy settings

Adjust the placement strategy settings like this if you use a 4 head machine:

SMT Placement Strategy

<b>Smt Sort order</b> <ul style="list-style-type: none"><li><input type="radio"/> Part Number</li><li><input type="radio"/> X</li><li><input type="radio"/> Y</li><li><input type="radio"/> Angle</li><li><input type="radio"/> Name</li><li><input type="radio"/> Type</li><li><input type="radio"/> Part Pading</li><li><input checked="" type="radio"/> Part Height</li><li><input type="radio"/> Feeder Number</li><li><input type="radio"/> Nozzle Number</li></ul>	<b>Head Placement Mode</b> <ul style="list-style-type: none"><li><input checked="" type="radio"/> Single Head</li><li><input type="radio"/> 2 Head same</li><li><input type="radio"/> 2 Head different<ul style="list-style-type: none"><li><input checked="" type="radio"/> Change A1A2</li><li><input type="radio"/> No Change A1</li><li><input type="radio"/> No Change A2</li></ul></li><li><input type="radio"/> 4 Head same</li><li><input type="radio"/> 4 Head different</li><li><input type="radio"/> Designation 4 Hear</li><li><input type="checkbox"/> Auto nozzle changer</li><li><input type="checkbox"/> Head 2 avoid camera 1</li></ul>	<b>Placement mode</b> <ul style="list-style-type: none"><li><input checked="" type="radio"/> Mount Parts</li><li><input type="radio"/> ---</li><li><input type="checkbox"/> Cover <input type="button" value="Set"/></li><li><input type="radio"/> H2 Disp.</li><li><input type="radio"/> H1 Inject</li><li><input type="radio"/> ---</li><li><input type="radio"/> H2 Disp. and Place</li><li><input type="radio"/> ---</li><li><input type="radio"/> Nozzle Simulate</li><li><input type="radio"/> Camera Simulate</li><li><input type="radio"/> Simulate Feed-&gt;Part</li><li><input type="radio"/> AutoFeed-&gt;Camera Simu</li><li><input type="checkbox"/> Drop Poin <input type="text" value="1"/></li><li><input type="radio"/> Camera Simulate Feed</li><li>Time Interval <input type="text" value="2000"/> ms</li><li>After Disp. Delay <input type="text" value="50"/> ms</li><li>Weld Distance <input type="text" value="0"/> <input type="text" value="0"/> mm</li><li>Dispenser open <input type="text" value="0"/> <input type="text" value="0"/> mm</li><li>Dispenser close <input type="text" value="0"/> <input type="text" value="0"/> mm</li><li>After Close <input type="text" value="0"/> <input type="text" value="0"/> ms</li></ul>
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And like this if you use nozzle changer.

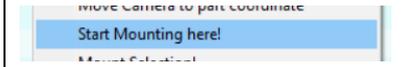


If you only want to check the placement positions by top camera switch the placement mode to “Camera Simulate” and the machine will move to each placement position and wait for time interval.

Click ok button and save the settings.

If no nozzle changer enabled, you need to install nozzles in your placement heads.

You have three options to start the placement job:

<p>1. </p> <p>Use the toolbar start button. If this button is greyed out use reset function to initialize the machine again.</p>	<p>2. </p> <p>Select placement line and use right click function to start placement from line X.</p>	<p>3. </p> <p>Select some lines and use right click function to start placement of selection.</p>
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If placed parts not in position check the following things:

- Check if PCB origin is ok and top camera on part center. If not adjust the PCB origin.
- Move nozzle to bottom camera center and check if it's in the middle.
- Check part height settings if parts placed randomly wrong.
- Adjust the PCB height setting if all parts placed wrong.
- Use lower speed setting especially for Z axis.
- Check the brightness and contrast settings for part alignment.