



DELTA CALIBRATION WIZARD

Special thanks to Dave Crocker (DC42) for permission to use his code for this calibration wizard. The wizard and code have been modified to work specifically with Repetier Firmware modified for our machines. If you are NOT using our firmware/hardware please visit www.escher3d.com and take a look at the original wizard to see if it will work non-stock SeeMeCNC 3D printer.

THIS IS A WORK IN PROGRESS

This wizard will help you calibrate your **SeeMeCNC** 3D printer using the HE280 accelerometer probe to detect and identify deviations and calculate the corrections needed. The majority of our 3D printer kits have no issues with first layer calibration using just the probe itself. However there can be variations in the assembly of the kits as well as other factors can mean that getting that perfect .1mm or less deviation on the first layer is harder to achieve. That's where this calibration tool will help get your first layer calibration better than ever. **If your machine has a firmware date OLDER than 20161209** you will have to download the firmware from our [Github](#) page then upload the new firmware***. Make sure you edit the configuration.h file and select your printer model and board type. Once you've got the new firmware loaded (if you needed it) you're all set to run through this calibration wizard.

*** IF you have an Eris® we have a quick instructional page for updating firmware easily using a simple program called XLoader. You don't have to download arduino or configure firmware etc... It's much easier especially for beginners. Click [HERE](#) to go to the [Eris Firmware Update Instructions](#)

INSTRUCTIONS

Please read the instructions first then start the calibration process

1. Connect your machine to MatterControl via the USB cable
2. Go to Settings & Controls>Options and click on Show Terminal
3. Make sure the Filter Output and Auto Uppercase boxes are checked at the top of the terminal window
4. Verify your firmware date is 20161209 or later by either turning the LCD control knob to view the printer status screen or in the terminal screen type M115 and look for "FIRMWARE_DATE:xxxxxxx"
5. Home your printer by typing G28 and press Send or hit the enter key
6. Now make sure the nozzle and bed are clean and ready to start the calibration. Remember to always calibrate your machine with the hotend and bed heats turned off and cool
7. Now type and send G29 to the printer. This will run through the on-board calibration process and set initial endstop offsets, horizontal radius and your Z height
8. Once your printer has finished this calibration routine click on CONFIGURE to the right of EEPROM in the MatterControl Options window where you opened the terminal. Don't close the terminal window though as you'll need it open later
9. Make sure you select your correct printer model at the top of the configuration here on this screen
10. Back in the EEPROM window on MatterControl scroll down and find the "Tower X/Y/Z endstop offset" boxes and copy those numbers into the initial boxes below
1. Next scroll up and and copy the Diagonal rod length from your eeprom window to the box below
2. Copy the value in Horizontal rod radius from eeprom to the initial box below

- 3. Copy your z max length from eeprom to the initial box below
- 1. Copy your eeprom Alpha (A/B/C) values to the initial box below.
- 5. Now close the eeprom window
- 3. Now download the GCode for Probing from this wizard screen and load it into MatterControl but don't run it just yet
- 7. Here's where you'll want to have a piece of paper and a pen handy. The gcode file you just loaded will go around to 10 different points on your printer and probe the print surface. You need to have the terminal window open so you can write down the PROBE-ZOFFSET value it sends after each probe point. There is a 5 second delay between each point to

```
<-PROBE-ZOFFSET: -0.14
```

- allow you to read and write this number down.
- 3. Now go ahead and click the run/print button in MatterControl to run the gcode file. It may prompt you to warn you that the file was generated outside of MatterControl. Click Ok/Continue and get ready to write down the PROBE-ZOFFSET numbers. They may be positive (0.12) or ay be a negative (-0.02) so make sure you pay close attention
 - 3. Once it has probed all 10 points and homes out, you're ready to enter these values into the wizard. Starting in order enter the probe offset numbers into the POINT 0/1/2/etc... Probe Offset boxes below
 - 2. After entering all 10 offset points click on the Calculate button. This uses the data from the initial eeprom values you copied as well as the probe offset points to map out and generate the corrections to fine tune your machine. You'll see the green status message and it tells you the accuracy before and after the calibration wizard
 - 1. Now you can either manually enter the new values into your eeprom and save them or you can download a .gcode file and run that file to automatically set and update them.
- If your status screen showed the after calibration deviation of less than .1mm then your machine is set and ready to go. To run the wizard again click the Copy to Initial values button, run the probing gcode you downloaded form this wizard and enter the new probe offset values and re-calculate those values. We've found that as long as your machine is under .1mm there's little to no noticeable gain in running the wizard more than twice.

Printer Model:			
<input type="radio"/> Rostock MAX	<input checked="" type="radio"/> Orion	<input type="radio"/> Eris	<input type="radio"/> Hacker H2

Enter these values FROM your EEPROM						
Steps/mm:		<input type="text" value="80.0"/>				
Initial Tower Endstop Offsets	X:	<input type="text" value="129"/>	Y:	<input type="text" value="0"/>	Z:	<input type="text" value="118"/>
Initial Diagonal Rod Length:		<input type="text" value="178"/>				
Initial Horizontal		<input type="text" value="88.834"/>				

Rod Radius:						
Initial Z Max Length:		225.713				
Initial Tower Alpha Angles:	Alpha A:	210	Alpha B:	330	Alpha C:	90

Click to download the gcode file for your machine

[PROBE GCODE FOR ROSTOCK MAX](#)
[PROBE GCODE FOR ORION](#)
[PROBE GCODE FOR ERIS](#)
[PROBE GCODE FOR HACKER H2](#)

Point 0	X:	0	Y:	85	Probe Offset:	5.497
Point 1	X:	73.61	Y:	42.5	Probe Offset:	12.458
Point 2	X:	73.61	Y:	-42.5	Probe Offset:	19.348
Point 3	X:	0	Y:	-85	Probe Offset:	26.246
Point 4	X:	-73.61	Y:	-42.5	Probe Offset:	33.127
Point 5	X:	-73.61	Y:	42.5	Probe Offset:	40.009
Point 6	X:	0	Y:	42.5	Probe Offset:	46.756
Point 7	X:	36.81	Y:	-21.25	Probe Offset:	53.494
Point 8	X:	-36.81	Y:	-21.25	Probe Offset:	60.216
Point 9	X:	0	Y:	0	Probe Offset:	66.655

Calculate New Values

Error! At least one probe point is not reachable. Please correct your delta radius, diagonal rod length, or probe coordniates.

Enter these NEW values TO your EEPROM						
New Tower Endstop Offsets:	X:	<input type="text"/>	Y:	<input type="text"/>	Z:	<input type="text"/>
New Diagonal Rod Length:		<input type="text"/>				
New Horizontal Rod Radius:		<input type="text"/>				
New Z Max Length:		<input type="text"/>				
New Tower Alpha Angles:	Alpha A:	<input type="text"/>	Alpha B:	<input type="text"/>	Alpha C:	<input type="text"/>

You can either manually enter these NEW values into your EEPROM or download the gcode generated below and send that file to automatically update them

Click here to download your Gcode file and run this to automatically update your eeprom settings

Use this button to set the INITIAL values at the top of this wizard to these new caluclated values. This makes it easy to run the wizard again without having to type the values.

Copy to initial parameters

//cdn.shopify.com/s/files/1/0276/2543/t/57/assets/deltacalibrationwizard.js?13134580170095168852

QUICK LINKS

[Contact Us](#)

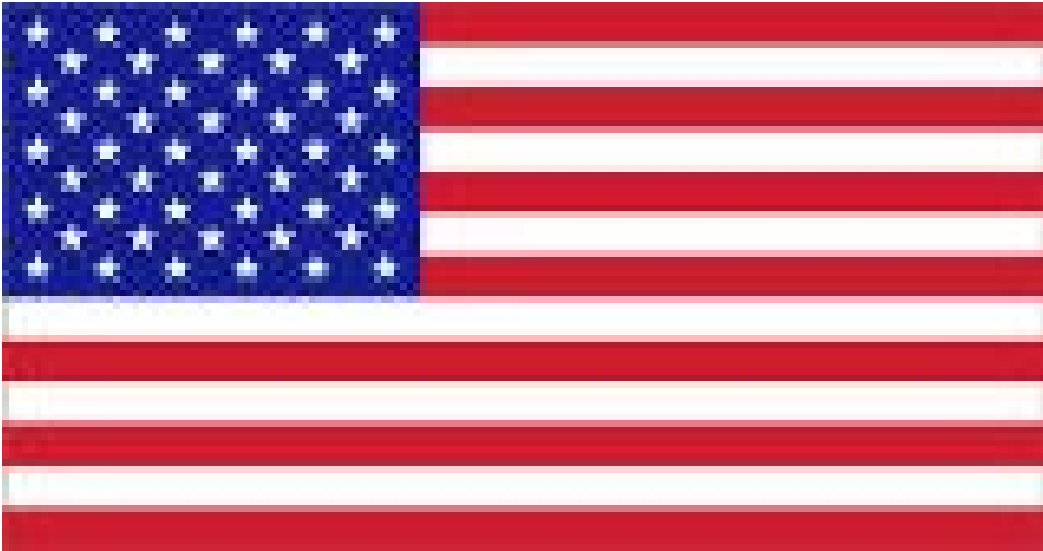
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