Zonestar

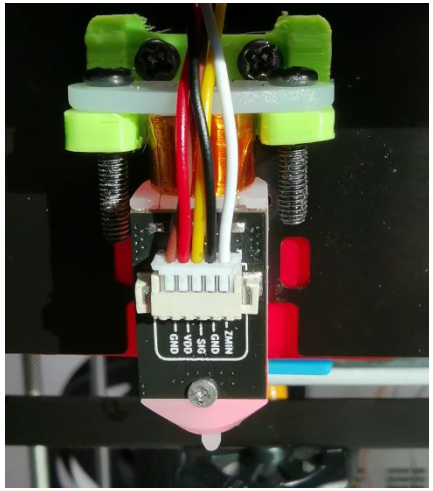
How to connect and debug Bltouch/3D Touch

Ver: 5.0

Control Board: ZRIBV6/ZM3E4/ZM3E2

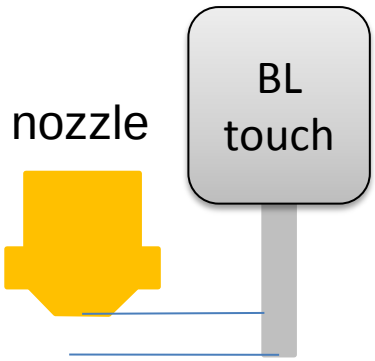
Install the Bltouch to the printer

Install the Bltouch module on the hotend housing, we make a print stl file, please print it and then install the Bltouch on the side of hotend.



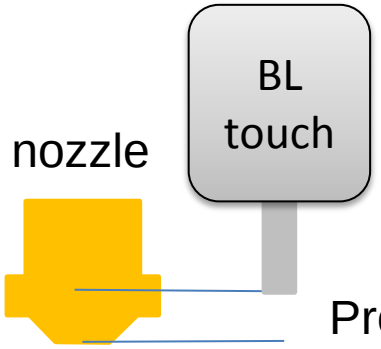
Stl file name: ***BLtouch_Bracket.stl***

Please check the installation position of BLtouch, let its probe is lower than nozzle when it is deploy, and its probe is higher than nozzle when it is stow.



Deploy(DOWN)

Probe is lower than nozzle



Probe is higher than nozzle

Stow(UP)

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Firmware upgrade

If the firmware of the control board supports the BLtouch (3DTouch) sensor, “BLtouch (3DTouch) ” will appear on the display menu. If the display menu of your machine does not have this item, you need to upgrade the control board firmware.

Upload firmware steps(for 8bit control boards ZRIBV6):

1. Unzip the firmware upgrade tool “Firmware Upload tools.zip” to your computer.
2. Copy the firmware “HEX “to the extracted directory.
3. Connect the printer to your PC, making sure the driver is properly installed.
4. Refer to the “AVRUpdateTools userGuide_ZRIB.pdf” instructions in the upgrade tool to upload the firmware to the control board.

Upload firmware steps(for 32bit control boards ZM3E4 and ZM3E2)

1. Download the bin file
2. Unzip the zip file to get a ***firmware.bin*** file
3. Copy firmware.bin to the root directoy of Micro-SD card
4. Power off the printer and plug the Micro-SD card into socket on control board
5. Power on the printer, wait about 30 seconds
6. Do the below step on LCD screen to initialize EEPROM after upload firmware:

MENU>>Configuration>>Advanced setting>>initialize EEPROM

Note: For the download link of the firmware and its tools, please note the instructions in the sales link or documentation. If you find a download link, please contact our sales staff.

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Wires of Bltouch/3Dtouch

	Bltouch wire color	3D touch wire color	3D touch(V3.1) wire color	Signal
3 PIN connector for driver	Brown	Green	Brown	**GND**
	RED	RED	RED	**+5V**
	Yellow	Yellow	Yellow	**Drive (SERVO)**
2PIN connector for sensor	White	White	White	**Sensor**
	Black	Black	Black	**GND**

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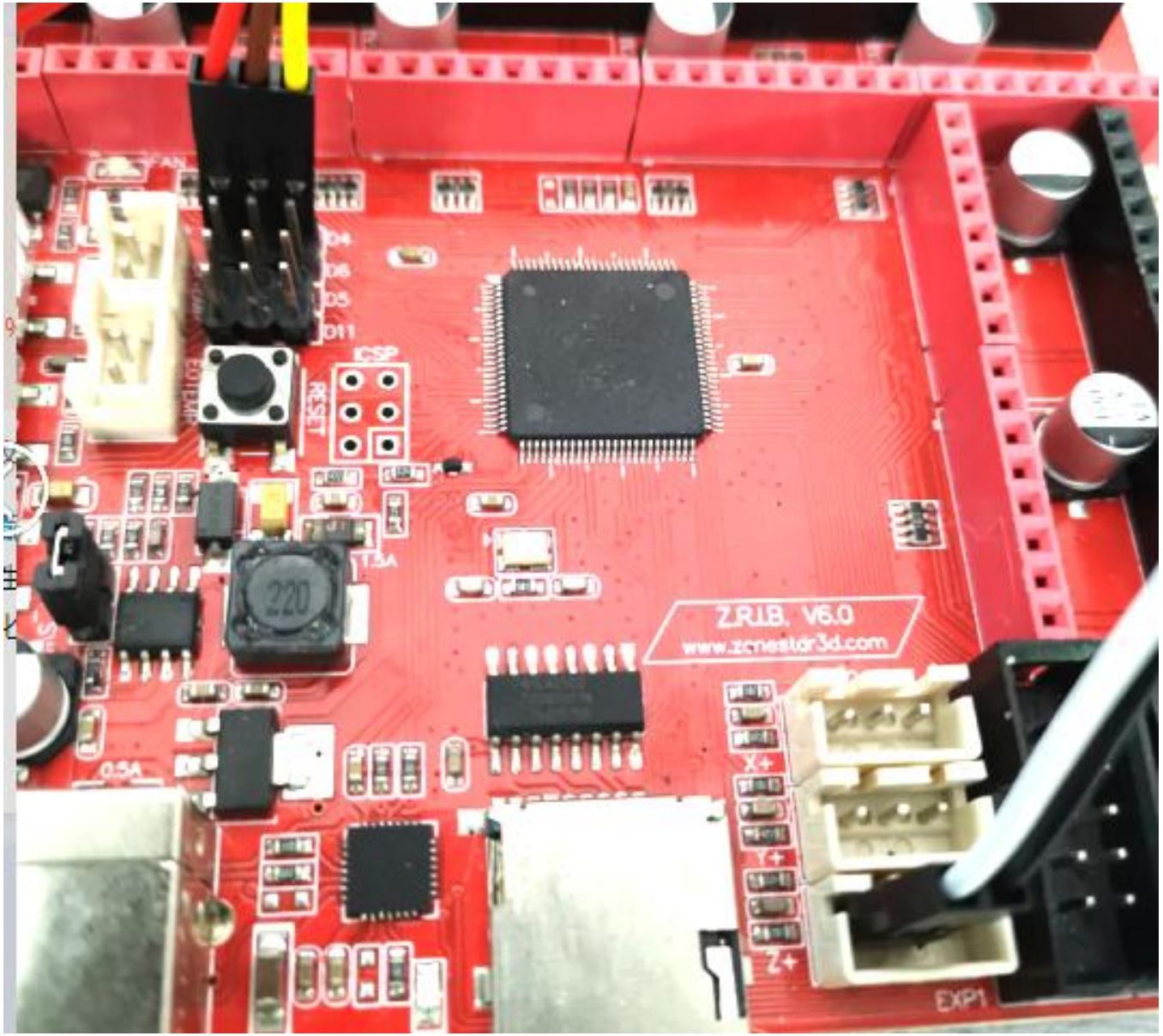
Wiring (ZRIB)



3 PIN
VDD ⇔ +
GND ⇔ -
SIG ⇔ D4

2 PIN
GND ⇔ -
MIN ⇔ S

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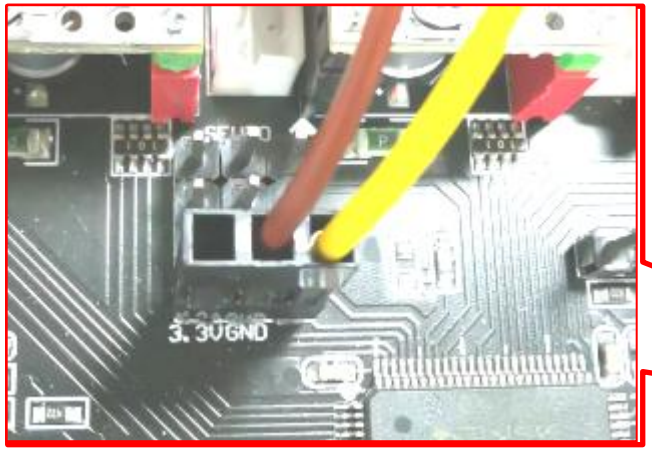
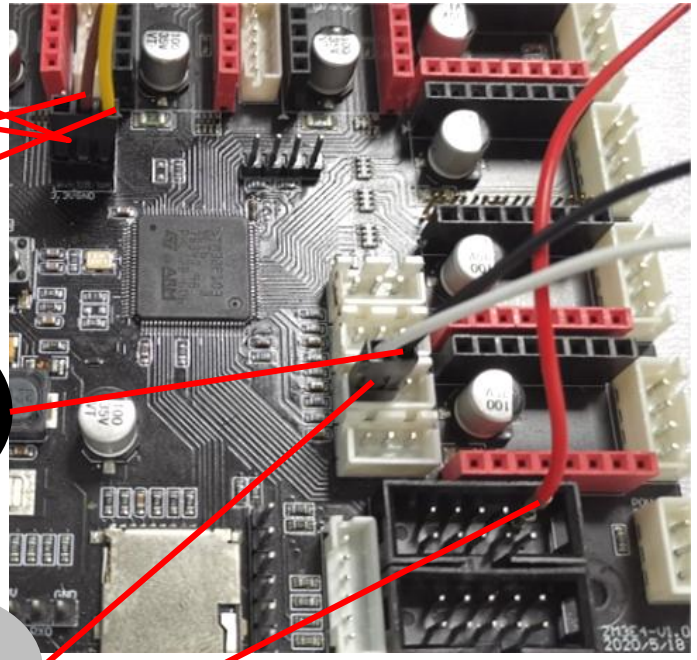
Wiring (ZM3E4V1)





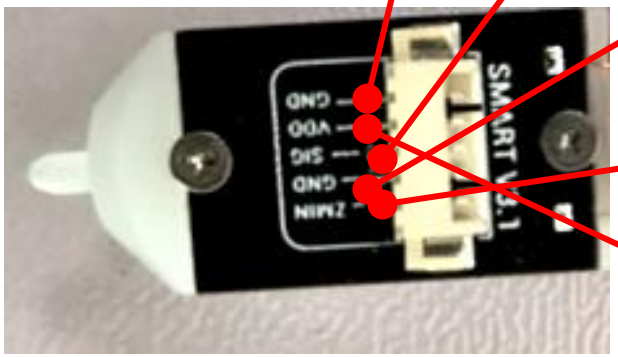
GND

SIG

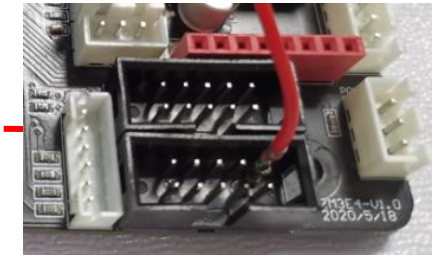
GND

ZMIN

VDD
(+5V)



If EXP1 used



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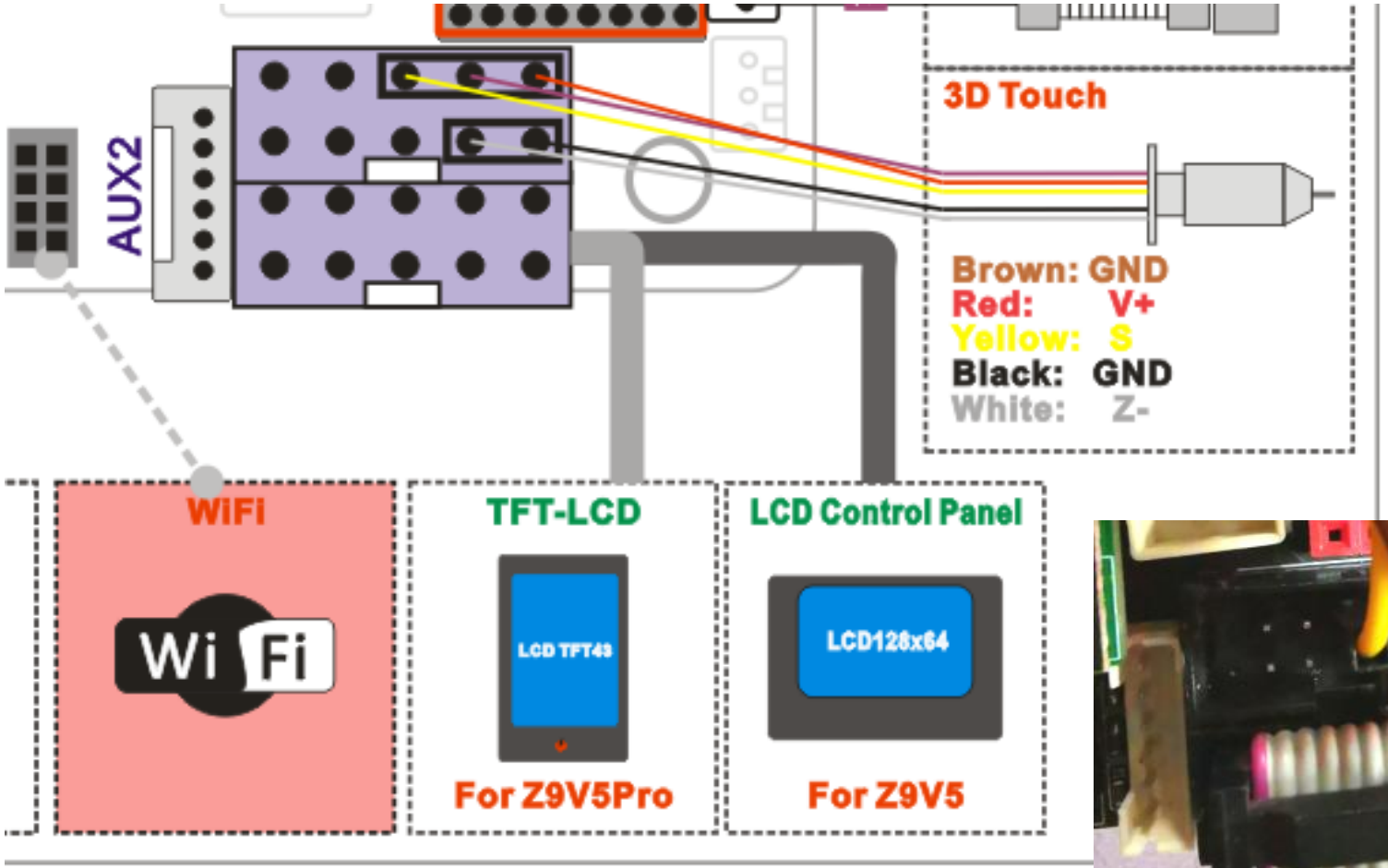
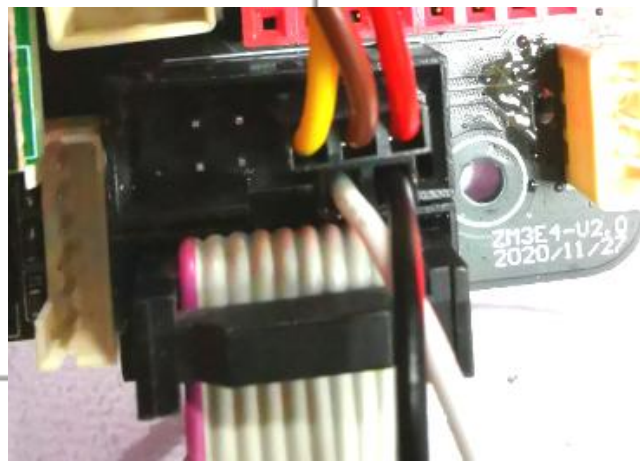
Wiring (Z9V5Pro)





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Wiring (ZM3E2)

3 PIN	2 PIN
VDD ⇔ +	MIN⇔ SEN
GND ⇔ G	GND ⇔ -
SIG ⇔ PWM	

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Verify installation and wiring

For LCD12864 screen

1. Power on the printer, and watch the LED on the Bltouch, LED will light if wires is connected well and Power on. Red LED will light if the probe is triggered.
2. Operate the control panel, *Configuration>>Bltouch>>Reset*.
3. Operate the control panel, *Configuration >>Bltouch>>Self-test*, Bltouch will deploy and stow automatically, you can check if the installation height of BLtouch is OK by using this function.
4. Operate the control panel, *Configuration >>Bltouch>>Reset*.
5. Operate the control panel, *Configuration >>Bltouch>>Deploy*, the probe will up;
6. Operate the control panel, *Configuration >>Bltouch>>Stow*, the probe will down;

For LCD-DWIN screen

1. Power on the printer, and watch the LED on the Bltouch, LED will light if wires is connected well and Power on. Red LED will light if the probe is triggered.
2. Operate the control panel, *Control >>Bltouch>>Reset*.
3. Operate the control panel, *Control >>Bltouch>>Self-test*, Bltouch will deploy and stow automatically, you can check if the installation height of BLtouch is OK by using this function.
4. Operate the control panel, *Control >>Bltouch>>Reset*.
5. Operate the control panel, *Control >>Bltouch>>Deploy*, the probe will up;
6. Operate the control panel, *Control >>Bltouch>>Stow*, the probe will down;

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Level Corners

1. Make sure the hotbed and nozzle are cool, clean the filament on the nozzle.
2. Clean the hotbed
3. Turn on the 3d printer.

For LCD12864 screen

4. Do *Montion>> Bed Leveling>> Auto HOME(Fig1).* Then do *Montion>> Bed Leveling>> Level Corners(Fig2)..*

For LCD-DWIN screen

4. Do *Prepare>> Bed Leveling>> Point1~4 (Fig3).*
5. Adjust the screws under the hotend, let the nozzle almost to touch the hotend in the four corners (following the wizard) (Fig4).

Fig1

Fig2

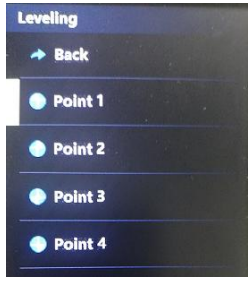


Fig3

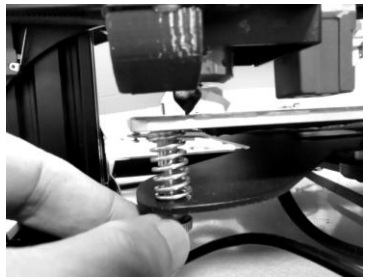


Fig4

NOTE: **If you moved the position the nozzle or Z ENDSTOP, you need to do this step again.**

Catch Z offset

For LCD12864 screen

1. Do *Montion>> Bed Leveling>> Auto HOME.*
2. Do *Montion>> Bed Leveling>> Catch Z Offset.*
3. Wait for the end of the test to see the Z offset value.
   Do *Montion>> Bed Leveling>> Probe Z Offset.*
4. Do *Montion>> Bed Leveling>> Store Settings.* Save the Z offset value.

For LCD-DWIN screen

1. Set the **HOME Z OFFSET** to 0

Do **Control>>Configure>>HOME Z Offset: 0.0**

Do **Control>>Store settings**

2. Do *Control>> Configure>> Auto Leveling(From OFF to ON) to* turn on "Auto leveling" menu

3. Do *Prepare>> Bed Leveling>>Catch Z-Offset.*

NOTE: Due to the deformation of the hot bed under heating and unheated conditions, we suggest heating the hot bed to about 60 ° for this test.

Auto Leveling >>> Leveling measure

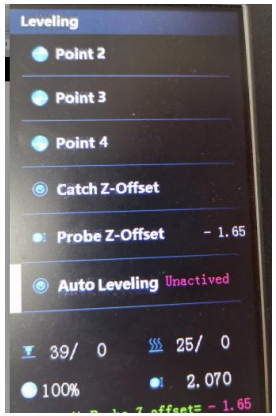
For LCD12864 screen

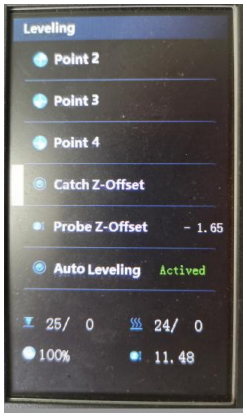
1. Do *Montion>> Bed Leveling>> Auto HOME.*
2. Do *Montion>> Bed Leveling>> Level Bed*
3. Wait for the end of the test.Operate Auto Home again, the auto leveling will change from off to on. It indicates that the automatic leveling feature is actived .

For LCD-DWIN screen

Do *Prepare>> Bed Leveling>>Auto Leveling.*

After measure done, the state of Auto leveling on Leveling menu will change from Unactived to Actived.





NOTE: Some mechines may use 25 or 36 probing points

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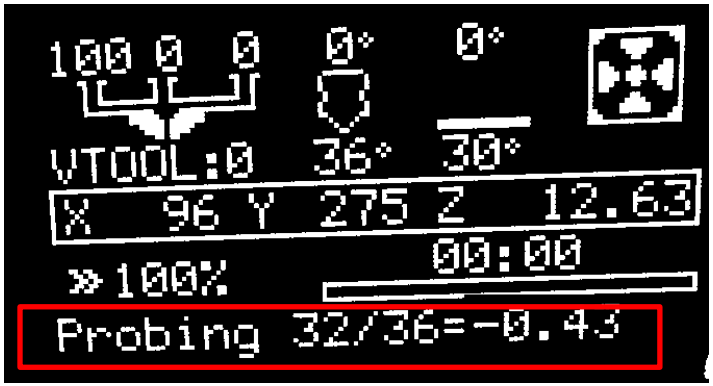
Check the measuing data

For LCD12864 screen: the measuring data will show on the bottom of screen when probing

For LCD-DWIN screen: the measuring data will show on the LCD screen when probing



NOTE:

1. The measurement result should be between -1.0 to 1.0 mm. If it exceeds, it is recommended that you try to fine tune the printer or improve the flatness of the hotbed, because it may affect the printing quality.
2. If you found that there is a large deviation in data arrangement between the Left/Right sides or the Front/Back sides, please adjust the bottom screw of the hotbed (when the data is + turn down the hotbed, when the data is - turn up the hotbed).

Apply auto leveling feature

Auto leveling feature will be disable automatically when the printer reset, you can turn it on manually or let it do automatically every time when printing from SD card.

- **Appling auto leveling by manually:**

For LCD12864 screen

1. *Motion>> Bed Leveling>> Level Bed >>Auto Home*
2. *Motion>> Bed Leveling>> Level Bed >>bed leveling: OFF* →Change to *ON*

For LCD-DWIN screen

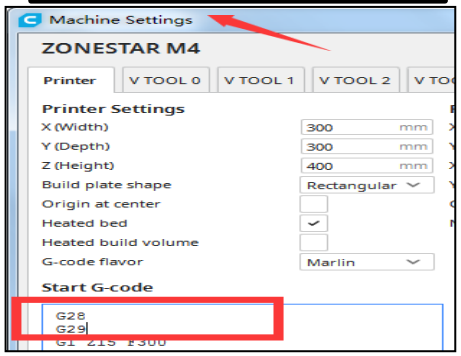
1. *Prepare>> HOME>> Home All*
2. *Control>> Configure>> Active Autolevel: OFF* →Change to *ON*

NOTE: After do these 2 steps, the printer will apply stored leveling correction parameters in the last "bed leveling".

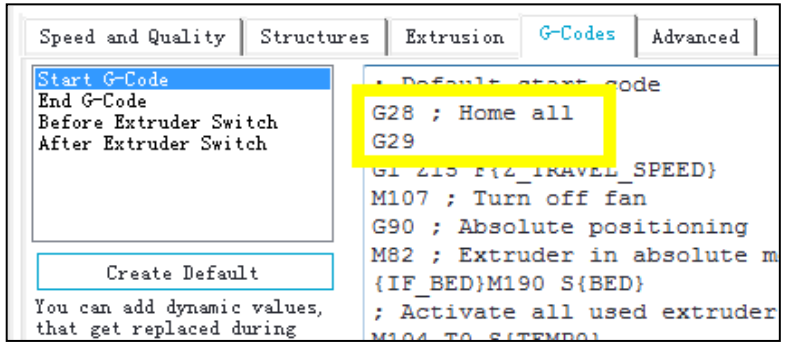
- ***Leveling the hotbed at each printing from SD card:***

Add a G29 command to the start gcode of slicing software, so it will do bed auto leveling before printing.

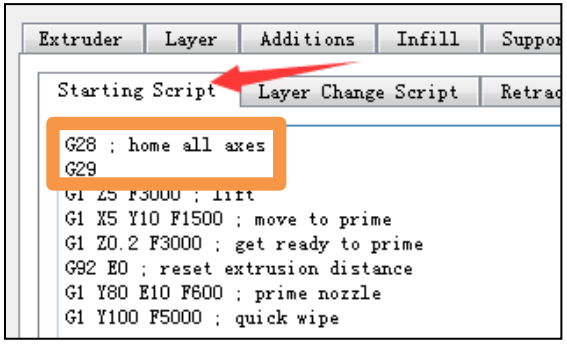
@ Cura



@ Repetier-host Cura Engine



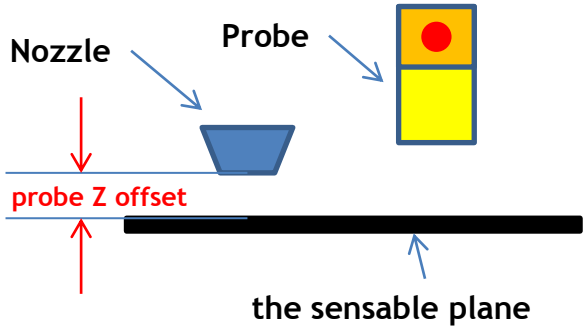
@ Simplify3d



Supplement

- **What is “Probe Z offset ”and “HOME Z offset”**

“probe Z offset”: it means the distance from the nozzle to the **the sensing plane** while the probe is triggered. **“Catch Z Offset”** function will get an average of **“probe Z offset”** automatically. **We MUST** manual level the bed before doing **“Catch Z Offset”**, otherwise the printer can’t get **“probe Z offset”** correctly.



- **How to correct “Probe Z offset ” and “HOME Z offset”**

For various reasons, the settings of **“home Z offset”** and **“probe Z offset”** may not be accurate, so you can manually adjust them to be more accurate.

1. When **doing > > bed leveling > > auto leveling**,

- if most of the obtained data showed in the table are shifted to the **Positive**, you can **decrease** the **“Probe Z offset”** and do **"auto leveling"** again ,
- if most of the obtained data showed in the table are shifted to the **Negative**, you can **increase** the **“probe Z offset”** and do **auto leveling** again.

PS: Ignore the datas at the 4 corners, it will be optimized in the firmware.

2. If you find that the nozzle is too **close** / **far** away from the printing plane when printing the first layer, you can **incease** / **decrease** home Z offset then print it again.