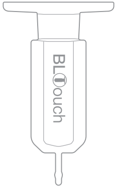
CREALITY

BLTouch Manual

AUTO BED LEVELING SENSOR FOR 3D PRINTER

Apply to 32-bit motherboards



SHENZHEN CREALITY 3D TECHNOLOGY CO.,LTD.

1. Packing List

Note: During BL Touch installation, remember to pull out the Z endstop switch for auto leveling. Otherwise it won't work.

Smart
BLTouch

BL Touch*1Pcs

Connectors*1Pcs

Tie*3Pcs

Application:
Ender-3 | Ender-3s | CR-10
Ender-3Pro | Ender-5/5S/5Pro

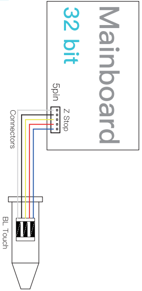
Application:
Ender-3 MAX

Application:
Ender-3 V2

M3*8 2Pcs

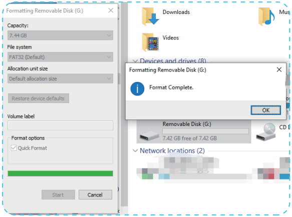
M3*6 2Pcs

2. Circuit Principle


Mainboard
32 bit
5pin
Z Stop
Connectors
BL Touch

Application:
Ender-3 Series | Ender-5/5S/5Pro | CR-10 | Ender-6 (No rack)

3. Update Firmware

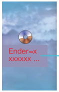

Formatting Removable Disk (G:)
Capacity:
7.44 GB
File system
FAT32 (Default)
Allocation unit size
Default allocation size
Restore device defaults
Volume label
Format options
☑ Quick Format
Start
Cancel
Downloads
Videos
Mus
Devices and drives (8)
Removable Disk (G:)
7.42 GB free of 7.42 GB
CD
Network locations (2)
OK

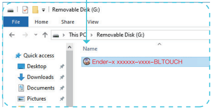
Formatting Removable Disk (G:)

Format Complete.

1. Right–click the mouse to format SD card. (To make surethe firmware can be flashed successfully, please format the SD card before flashing the firmware)

2.Firmware download (before downloading firmware, please confirm your printer model, motherboard version, and hard–ware configuration–whether it comes with filament sensor or not).


Ender–x
xxxxxx ...

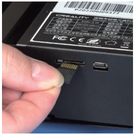

Removable Disk (G:)
File
Home
Share
View
This PC › Removable Disk (G:)
Quick access
Desktop
Downloads
Documents
Pictures
Name

Ender–x xxxxxx–vxxx–BLTOUCH

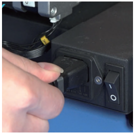
Each printer model corresponds to the BL Touch firmware, please check appendix 1.

Note: Every machine has different firmware files.
File download website:
https: www.creality.com/download/

3. Copy the firmware to the SD card.
Note: the SD card can only hold one firmware file.



4. Insert SD card.

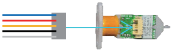


5. Insert the power cord and press the switch.

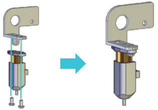
Note: Every machine has its own operation interface.

6. Wait for the firmware to complete upgrade. (about 10 seconds).

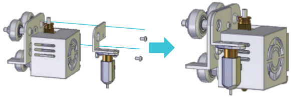
4. Install BL Touch



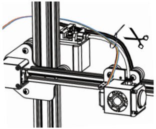
1. Insert connectors into 5 Pin Port.



2. Install BL Touch on the rack with 2 M3*6 screws.

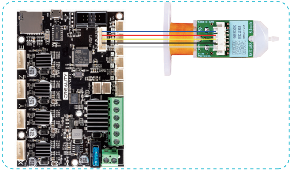


3. Loosen all fan cover screws, install the BL Touch rack on the corresponding position with 2 M3*8 screws.



4. Tie the BL Touch cable together with other printer cables like the above picture shown.

5. Circuit Wiring



Note: Unplug the cable from Z endstop/limit switch.

6. Steps

1. To get the Z offset Value

Operation: Prepare→Auto Home→Move Axis→Move Z→Please stop to move Z axis when the distance between the nozzle and the printer bed is about 0.1mm (the height of a sheet of A4 paper). This value shows Z offset value.

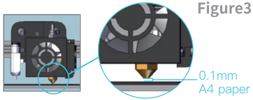

0.1mm
A4 paper

Figure3

MADE IN CHINA

SHENZHEN CREALITY 3D TECHNOLOGY CO., LTD.

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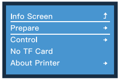
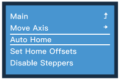
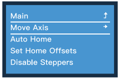
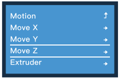
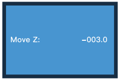
Longhua Dist., Shenzhen, China 518131
Official Website: www.creality.com Tel: +86 755-8523 4565
E-mail: info@creality.com cs@creality.com


Info Screen
Prepare
Control
No TF Card
About Printer


Main
Move Axis
Auto Home
Set Home Offsets
Disable Steppers

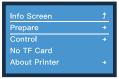

Main
Move Axis
Auto Home
Set Home Offsets
Disable Steppers

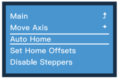

Motion
Move X
Move Y
Move Z
Extruder

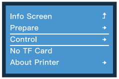


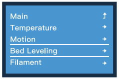
2. Input the Z–axis compensation value(Z offset value)

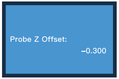
Record the Z offset value, then follow below steps and save settings:
Prepare → Auto home → Control → Bed Leveling→ Probe Z offset → Input the Z offset value → Store Settings

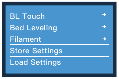

Info Screen
Prepare
Control
No TF Card
About Printer


Main
Move Axis
Auto Home
Set Home Offsets
Disable Steppers


Info Screen
Prepare
Control
No TF Card
About Printer

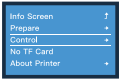

Main
Temperature
Motion
Bed Leveling
Filament

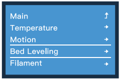

Probe Z Offset:
–0.300

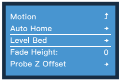

BL Touch
Bed Leveling
Filament
Store Settings
Load Settings

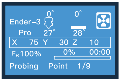
3. Select Bed Leveling, then choose Level Bed.

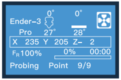
Operation: Control→Bed Leveling→Level Bed. (Different 3D printers may have different numbers of touching points for automatic leveling. The picture here shows that Ender–3 has 9 points for leveling.)

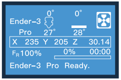

Info Screen
Prepare
Control
No TF Card
About Printer


Main
Temperature
Motion
Bed Leveling
Filament


Motion
Auto Home
Level Bed
Fade Height: 0
Probe Z Offset


Ender–3 Pro 0° 27° 0° 28°
X 75 Y 30 Z 10
FR100% 0% 00:00
Probing Point 1/9


Ender–3 Pro 0° 27° 0° 28°
X 235 Y 205 Z– 2
FR100% 0% 00:00
Probing Point 9/9

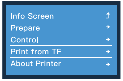

Ender–3 Pro 0° 27° 0° 28°
X 235 Y 205 Z 30.14
FR100% 0% 00:00
Ender–3 Pro Ready.

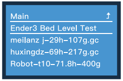
4. Model Printing

After the automatic leveling, user can do a trial print to verify the leveling.

Operation: Print from SD Card→Model Test (Name and file of the testing model shall be prepared by user.)

Example:

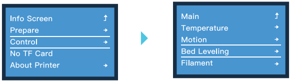

Info Screen
Prepare
Control
Print from TF
About Printer

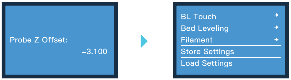

Main
Ender3 Bed Level Test
meilanz j–29h–107g.gc
huxingdz–69h–217g.gc
Robot–t10–71.8h–400g

Test passed: leveling is completed and you can print now;

Test failed: If model printing fails, please fine–tune Probe Z Offset again and save settings until the printing effect is good.

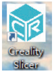
* If leveling fails, please reset Z–offset value as ”0” and restart leveling. Otherwise, the nozzle may hit printing platform.


Info Screen
Prepare
Control
No TF Card
About Printer
Main
Temperature
Motion
Bed Leveling
Filament

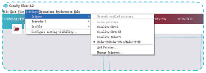

Probe Z Offset: –3.100
BL Touch
Bed Leveling
Filament
Store Settings
Load Settings

Note: Every machine has its own operation interface.

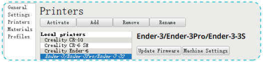
7. Software Settings


Creality
Slicer

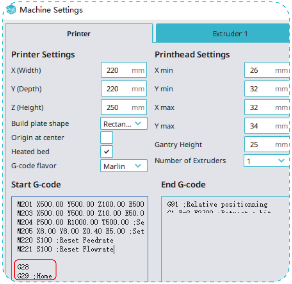
1. Open Slicer.


Creality Slicer 4.2
File Edit View Settings Extensions Preferences Help
CREALITY
PREVIEW
MONITOR
Printer
Extruder 1
Profile
Configure setting visibility...
Network enabled printers
Local printers
Creality CR-10
Creality CR-6 SE
Creality Ender-6
Ender-3/Ender-3Pro/Ender-3-3S
Add Printer...
Manage Printers...

2. Settings → Printer → Manage Printers.


General
Settings
Printers
Materials
Profiles
Printers
Activate
Add
Remove
Rename
Local printers
Creality CR-10
Creality CR-6 SE
Creality Ender-6
Ender-3/Ender-3Pro/Ender-3-3S
Ender-3/Ender-3Pro/Ender-3-3S
Update Firmware
Machine Settings

3. Machine Settings.


Machine Settings
Printer
Extruder 1
Printer Settings
Printhead Settings
Start G-code
End G-code

X (Width) 220 mm
Y (Depth) 220 mm
Z (Height) 250 mm
Build plate shape Rectan...
Origin at center ☐
Heated bed ☑
G-code flavor Marlin

X min 26 mm
Y min 32 mm
X max 32 mm
Y max 34 mm
Gantry Height 25 mm
Number of Extruders 1

```
M201 X500.00 Y500.00 Z100.00 E500
M203 X500.00 Y500.00 Z10.00 E50.0
M204 P500.00 R1000.00 T500.00 ;Se
M205 X8.00 Y8.00 Z0.40 E5.00 ;Set
M220 S100 ;Reset Feedrate
M221 S100 ;Reset Flowrate

G28
G29 ;Home
```

```
G91 ;Relative positionning
```

4. Change “G28” to “G28G29”

Appendix 1:

Model	Condition 1	Condition 2	Firmware Version
Ender–3	4.2.2 32–bit Motherboard Firmware	BLTouch without Adapter Board	Ender–3–Marlin2.0.1–V1.1.2–BLTouch
		BLTouch with Adapter Board	Ender–3–Marlin2.0.1–V1.3.1–BLTouch
		BLTouch with Adapter Board + Filament Sensor	Ender–3–Marlin2.0.1–V1.4.1–BLTouch–Filament
	4.2.7 32–bit Motherboard Firmware	BLTouch without Adapter Board	Ender–3–Marlin2.0.1–V1.1.2–BLTouch–TMC2225
		BLTouch with Adapter Board	Ender–3–Marlin2.0.1–V1.3.1–BLTouch–TMC2225
		BLTouch with Adapter Board + Filament Sensor	Ender–3–Marlin2.0.1–V1.4.1–BLTouch–Filament–TMC2225
Ender–3MAX	BLTouch Firmware	BLTouch Firmware	Ender–3 Max–V1.0.1.6–BLTouch
Ender–3Pro	4.2.2 32–bit Motherboard Firmware	BLTouch without Adapter Board	Ender–3 Pro–Marlin2.0.1–V1.1.2–BLTouch
		BLTouch with Adapter Board	Ender–3 Pro–Marlin2.0.1–V1.3.1–BLTouch
		BLTouch with Adapter Board + Filament Sensor	Ender–3 Pro–Marlin2.0.1–V1.4.1–BLTouch–Filament
	4.2.7 32–bit Motherboard Firmware	BLTouch without Adapter Board	Ender–3 Pro–Marlin2.0.1–V1.1.2–BLTouch–TMC2225
		BLTouch with Adapter Board	Ender–3 Pro–Marlin2.0.1–V1.3.1–BLTouch–TMC2225
		BLTouch with Adapter Board + Filament Sensor	Ender–3 Pro–Marlin2.0.1–V1.4.1–BLTouch–Filament–TMC2225
Ender–3 V2	4.2.2 32–bit Motherboard Firmware	BLTouch without Adapter Board	Ender–3 V2–Marlin–2.0.1–V1.1.1–BLTouch(1)
		BLTouch with Adapter Board	Ender–3 V2–Marlin–2.0.1–V1.3.1–BLTouch
		BLTouch with Adapter Board + Filament Sensor	Ender–3 V2–Marlin–2.0.1–HW–4.2.2–mainboard–V1.1.2–Compatible with BLTouch and filament detection
	4.2.7 32–bit Motherboard Firmware	BLTouch without Adapter Board	Ender–3 V2–Marlin–2.0.1–V1.1.1–LTouch–TMC2225
		BLTouch with Adapter Board	Ender–3 V2–Marlin–2.0.1–V1.3.1–BLTouch–TMC2225
		BLTouch + Filament Sensor	Ender–3 V2–Marlin–2.0.1–HW–4.2.7–mainboard–V1.1.2–compatible with BLTouch and filament detection
Ender–5、5S	4.2.2 32–bit Motherboard Firmware	BLTouch without Adapter Board	Ender–5–Marlin2.0.1–V1.1.1–BLTouch
		BLTouch with Adapter Board	Ender–5–Marlin2.0.1–V1.3.1–BLTouch
		BLTouch with Adapter Board + Filament Sensor	Ender–5–Marlin2.0.1–V1.4.1–BLTouch–Filament
	4.2.7 32–bit Motherboard Firmware	BLTouch without Adapter Board	Ender–5–Marlin2.0.1–V1.1.1–BLTouch–TMC2225
		BLTouch with Adapter Board	Ender–5–Marlin2.0.1–V1.3.–BLTouch–TMC2225
		BLTouch with Adapter Board + Filament Sensor	Ender–5–Marlin2.0.1–V1.4.1–BLTouch–Filament–TMC2225
Ender–5 Pro	4.2.2 32–bit Motherboard Firmware	BLTouch without Adapter Board	Ender–5 Pro–Marlin2.0.1–V1.1.1–BLTouch
		BLTouch with Adapter Board	Ender–5 Pro–Marlin2.0.1–V1.3.1–BLTouch
		BLTouch with Adapter Board + Filament Sensor	Ender–5 Pro–Marlin2.0.1–V1.4.1–BLTouch–Filament
	4.2.7 32–bit Motherboard Firmware	BLTouch without Adapter Board	Ender–5 Pro–Marlin2.0.1–V1.1.1–BLTouch–TMC2235
		BLTouch with Adapter Board	Ender–5 Pro–Marlin2.0.1–V1.3.1–BLTouch–TMC2225
		BLTouch + Filament Sensor	Ender–5 Pro–Marlin2.0.1–V1.4.1–BLTouch–Filament–TMC2225
CR–10	4.2.7（32–bit Silent Motherboard)	BLTouch without Adapter Board Firmware	CR–10–Marlin2.0.1–20201207–HW–V4.2.7–SW–V1.1.1 BL touch–English
Ender–5plus	BLTouch Firmware	BLTouch Firmware	Ender–5PlusBLTouch_0904_V1.70.2 BL.hex
Ender–6	BLTouch Firmware	BLTouch Firmware	Ender–6–V1.0.4.9–BLTouch

Note: Creality will launch the newest firmware version on www.creality.com/download. Please download the corresponding firmware on official website.

Appendix 2:

No.	Frequently Asked Questions	Resolution
1	Red LED(Red Led Duty 100%)is on, but I can’t see the Blue LED.	A Signal line(orange) is unconnected. Please check the Orange one.
2	BLTouch is working, but the Red Led flashes at Duty 80%.	1).Message indicating poor wiring on the power line (red). Please check the wiring status. You may need to repair or reinstall the cable; 2).It’s doesn’t affect the output that you’re working on, but solve the problem as soon as possible; 3).You can release to s60 or s160.
3	The Blue LED lights up without Alarm (Red Led Duty 50%), But it doesn’t deploy and stow.	A signal line is connected, but your control board is not generating a normal signal. Please check the control board firmware.
4	BLTouch is works, but as soon as the 3D printer is powered on, the Red LED flashes three times and stabilizing.	The BLTouch is set to 5V logic mode.Please change to OD mode, the OD mode works safety and accurately.And more, select the 5V logic mode if the control board is very rare control board that only operates in 5V logic mode(but we don’t recommend). But it can still work as OD mode, so you need to check. CAUTION : The 5V logic mode can damage the control board operating at 3.3V power.
5	About Alarm (Red Led Duty 50%).	1).Probe sometimes doesn’t deploy and stow:A Signal line(orange) is unconnected. Please check the Orange one; 2).Probe doesn’t deploy:Clean the area where the hexagonal wrench bolt and probe meet each other with an alcohol cotton and reassemble.
6	Probe bent or broken.	1).Straighten the bent part of the probe or replace to the new one; 2).Probes are designed to bent and break easily to prevent damage to the 3D printer.
7	Bltouch probe retracts automatically.	It will automatically retract before being touched, because the BLTouch itself is not magnetic enough.
8	The probe pops out, but the Z axis does not move.	Wiring error, BLTouch black and white wire Z–position wiring error, swap black and white wires.
9	There is no self–check during Auto home, and the red light is always flashing.	1).When printer turning on, the BLTouch is too close to the hot bed, which affects the probe self–check. Raise the Z axis then power on and try again; 2).BLTouch itself is bad, self–test failed.
10	BLTouch failure, the probe stretches out and triggers the limit soon, but it rises and does not fall.	Wiring error, BLTouch black and white wire Z–position wiring error, please exchange black and white wires.