Auto Leveling Sensor User Manual

Introduction

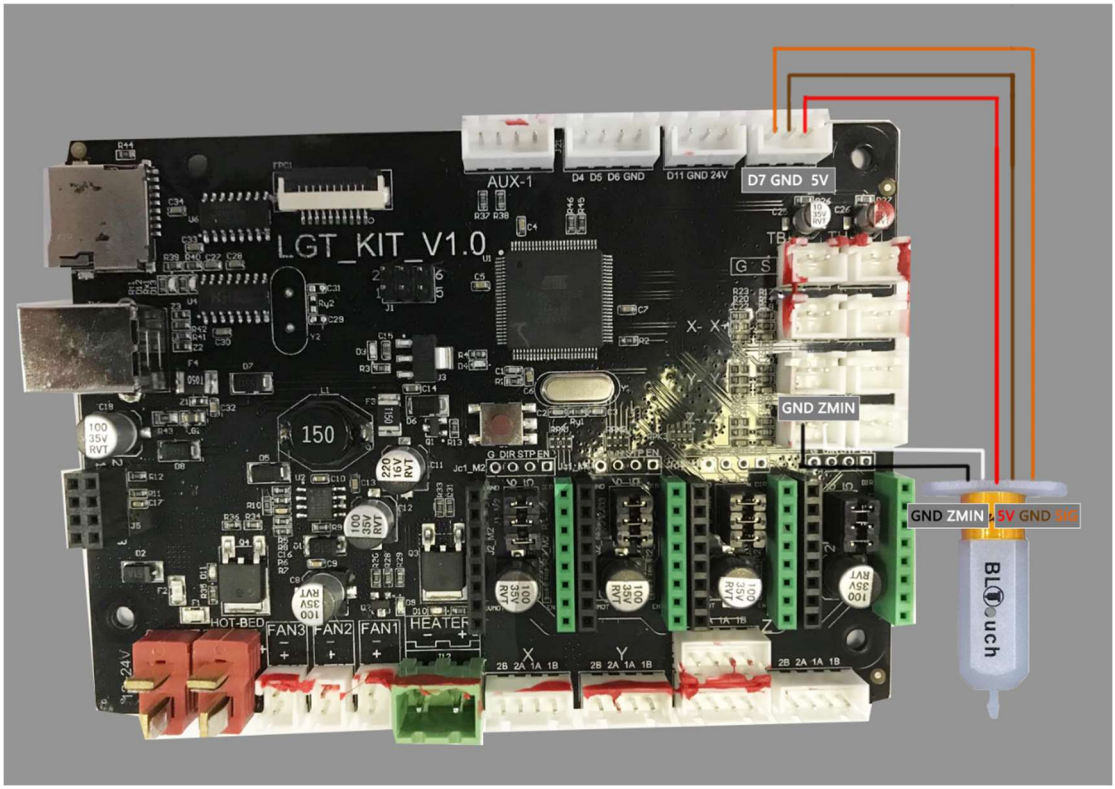
This manual aims to help the LONGER LK and LK Pro series users who want to use auto bed leveling sensor, like BL-TOUCH, 3D-TOUCH, etc. More information about senor please refer to the sensor datasheet.

Preparation

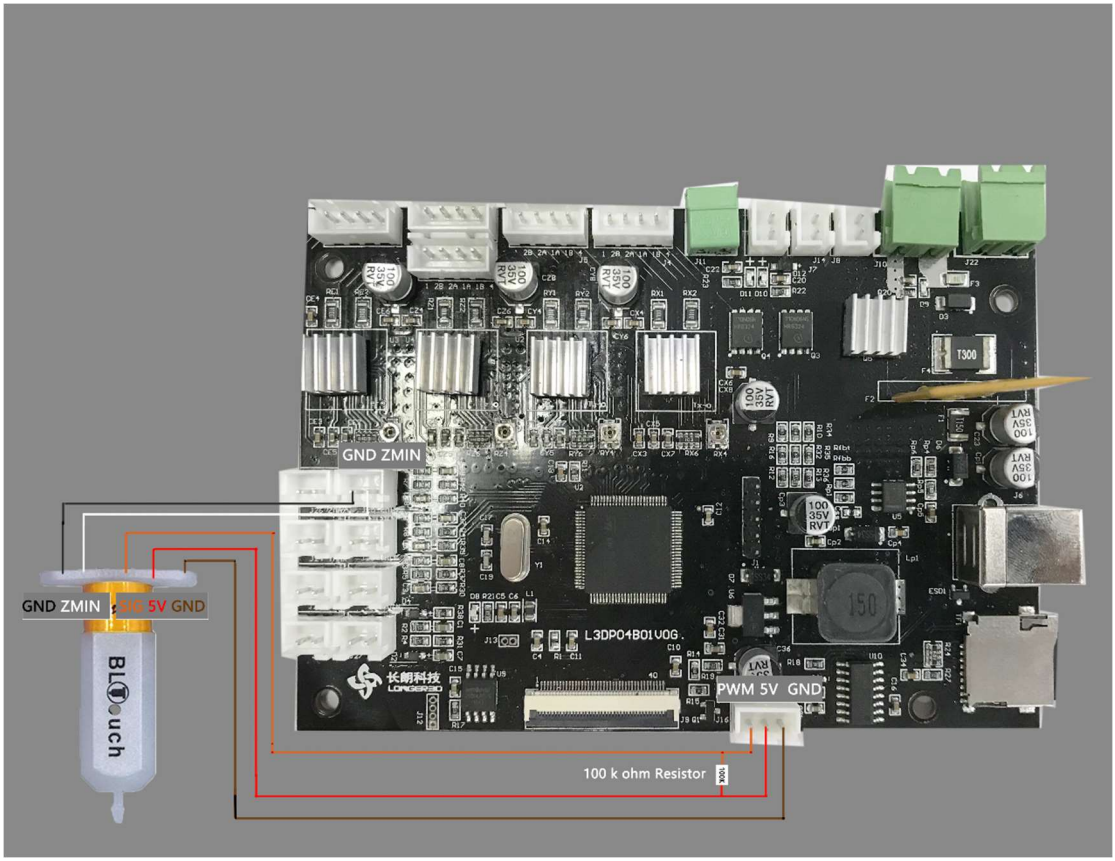
- LONGER FDM Printer LK or LK Pro series
- BL-TOUCH, 3D-TOUCH or other similar sensor
- Sensor attached wires(5 pin)
- Sensor attached screws and nuts(2 pairs)
- Sensor mount(printed .stl model)
- USB cable
- Pronterface or other serial port communication software
- 50k ohm or 100k ohm resistor(LKx series users only)

Wiring

1. Switch-off the printer power
2. Find the position of motherboard, then screw down the mother board cover.
3. Unplug the Z-MIN wire(2 pin) in board
4. Hook up the sensor and the motherboard. LKx series users need parallel a 50 or 100 k ohm resistor between 5V pin and PWM pin as the picture showing below
5. Screw up the mother board cover



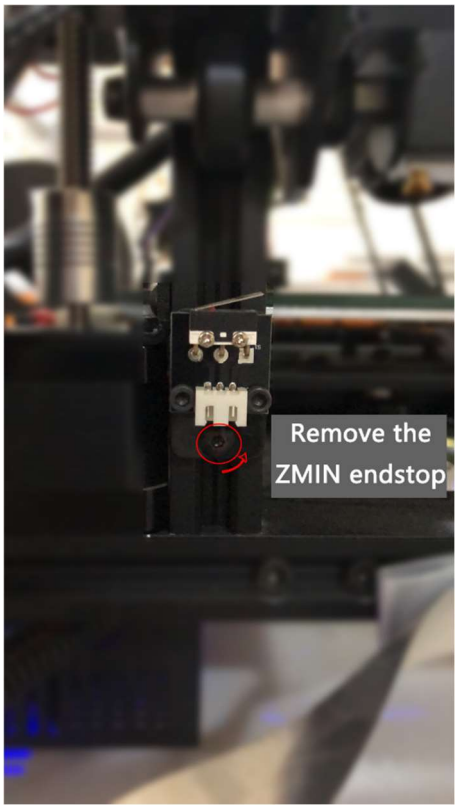
LKx Pro series board wiring



LKx series board wiring need extra resistor

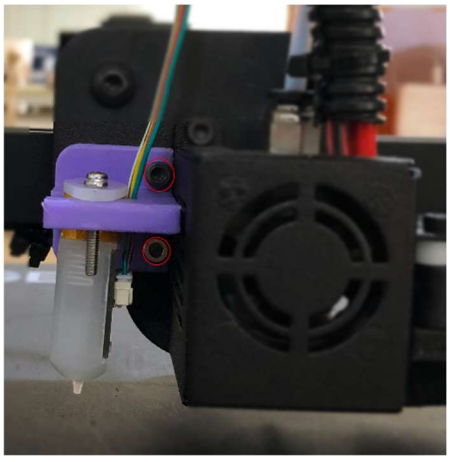
Mounting

1. Remove the Z axis end stop switch as picture showing below



Remove the z min end stop switch

2. Screw down left 2 screws of head module
3. Mount BL-TOUCH as picture showing below



Mount sensor

Power on

1. Confirm BL-TOUCH wiring and mounting is complete
2. Switch on the printer power
3. Connect PC and printer with USB-cable
4. Flash BL-TOUCH dedicated firmware. check the firmware update manual if you need.
5. Open pronterface software, select serial port(115200 baudrate). and connect to printer

Adjusting z-offset

1. Clean up bed and nozzle, and ensure no materials stick on them.
2. Send M851 Z0 to reset Z offset value
3. Send G28 to homing XYZ axis
4. Send G1 F60 Z0 to lower Z axis to the software origin
5. Send M211 S0 to inactivate software endstop function
6. Place a sheet of paper (or other block of 0.10mm approximately) on the bed and use the pronterface to lower the nozzle 1mm by 1mm then 0.1mm by 0.1mm until you feel a friction on the sheet of paper (the paper is not to be jammed but not too free either). Then remove the sheet.
7. Send M114 to get current Z height value(usually negative). the value is the z-offset we need.
8. Send M851 Z x.x to set z-offset(x.x is the value of previous value)
9. Send M500 to save current settings.
10. Send M211 S1 to re-activate software endstop function
11. Send G28 Z0 to home Z axis
12. Send G1 F60 Z0 to test if Z axis could back to the actual Z origin by checking the clearance between bed and nozzle if is about 0.1 mm (thickness of a sheet of paper). If not, please repeat step 1 to 11.

Activating auto leveling

1. Send G28 to home XYZ axis
2. Send G29, and waiting for bed tilt measurement to complete
3. Send M500 to save measurement values of previous step.
4. Send M420 S1 to activate auto leveling function

Replace GCODE

1. Replace with new START GCODE(in appendix section) in your slicer software(Cura, Slic3r, Simplify3D, etc.)
2. Have fun! :)

Appendix

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; -- BL-TOUCH START GCODE --
G21 ; metric values
G90 ; absolute positioning
M82 ; set extruder to absolute mode
M107 ; start with the fan off

; confirm BL-touch safety
M280 P0 S160 ; BL-Touch Alarm release
G4 P100 ; Delay for BL-Touch

; homing
G28 X0 Y0 ; move X/Y to min endstops
G28 Z0 ; move Z to min endstops

; reconfirm BL-touch safety
M280 P0 S160 ; BL-Touch Alarm realease
G4 P100 ; Delay for BL-Touch

; bed leveling
G29; Auto leveling
M420 Z5 ; set LEVELING_FADE_HEIGHT
M500 ; save data of G29 and M420
M420 S1 ; enable bed leveling

; prepare hot-end
G92 E0 ; zero the extruded length
G1 F200 E3 ; extrude 3mm of feed stock
G92 E0 ; zero the extruded length again
G1 F4200
M117 Printing...
; -- end of BL-TOUCH START GCODE --
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Document Information

Version	Date	Author	Remark
1.0	02/02/2021	LONGER.freejoe	first version