

**Fusion3**

# **EDGE 3D Printer**

**REPAIR:**

**REPLACE BED THERMISTOR**

**Revision 4/10/2023**

# REPLACING THE BED'S TEMPERATURE SENSOR

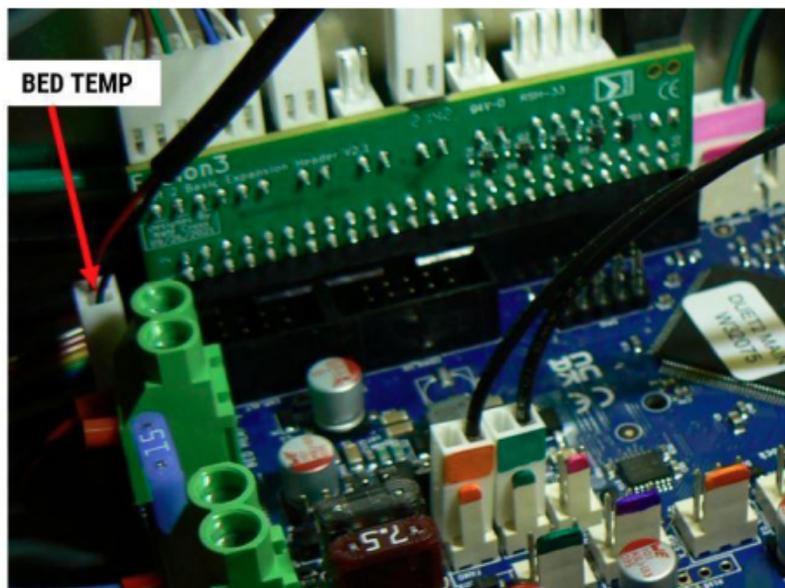
How to replace the bed's temperature sensor if the original gets damaged.

## INTRODUCTION

EDGE's bed heater has an integrated temperature sensor (thermistor). This sensor is what the printer uses to monitor the bed's temperature and control it during operation. If the sensor becomes broken or damaged, it cannot be replaced separately from the heater element because the sensor is bonded to the heater. Likewise, the heater is bonded to the toolplate. Replacing both the heater and the toolplate for a simple sensor issue is a pain. This document shows you how to install a standalone sensor to get your printer functional again without replacing the bed heater or toolplate.

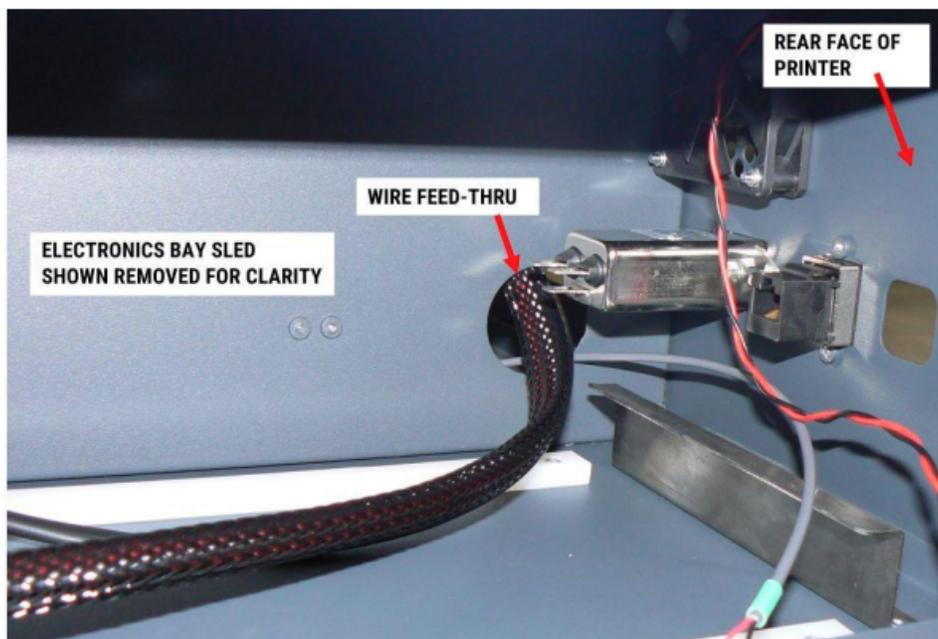
## INSTALLATION

1. EDGE should be powered off and cold, and unplugged from the wall. The Z axis should be towards the bottom.
2. Remove the print surface from the tool plate.
3. Open the electronics bay.
4. Locate the bed sensor input on the control board. Unplug the existing wire.

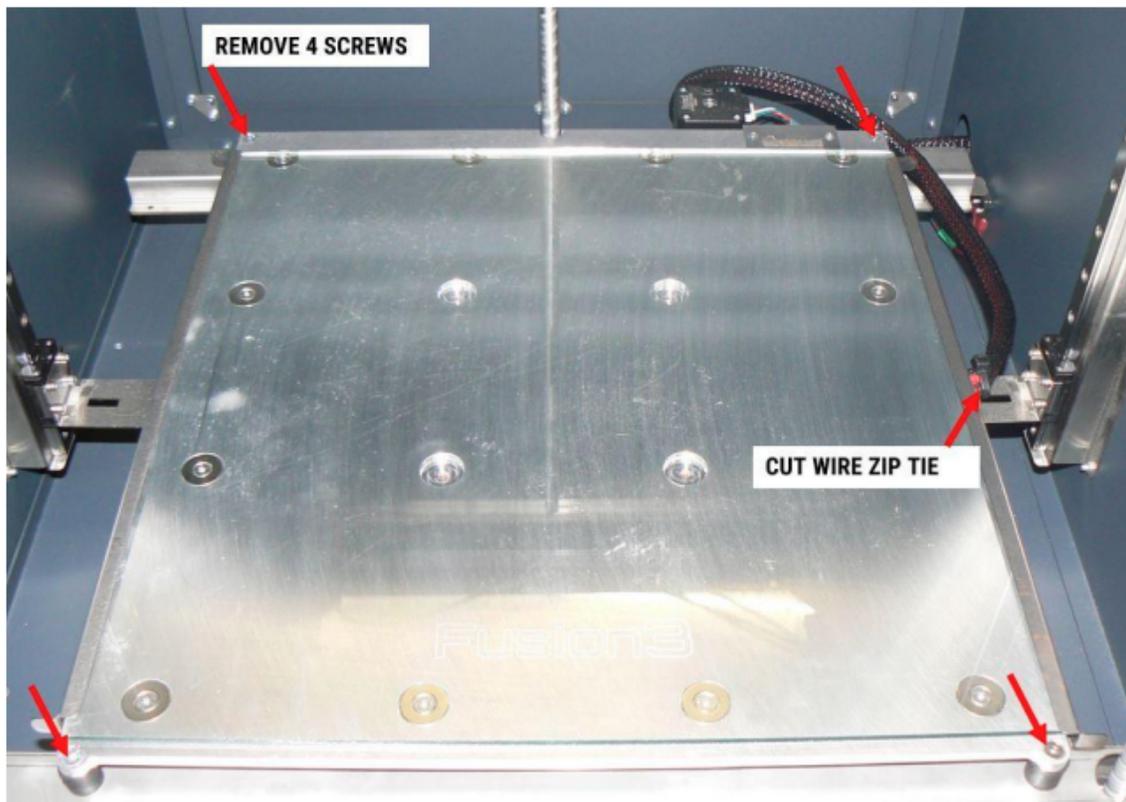


5. Plug in the new sensor. The connector will only fit one way, but the wire polarity/color of the wires doesn't matter.

6. Route the sensor/wire through the lower rear wire feed-thru, where the other bed wires go. It's up to you if you route the new wire through the mesh sleeve, or along the outside of the sleeve.



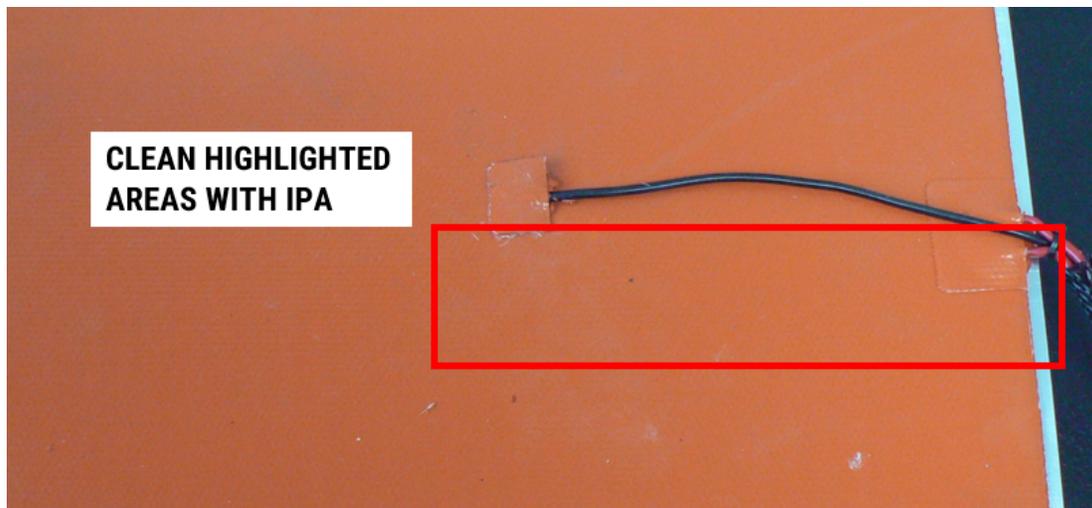
7. Cut the zip tie holding the bed wires to the Z axis arm.
8. Remove the 4 bed bolts at the corners.



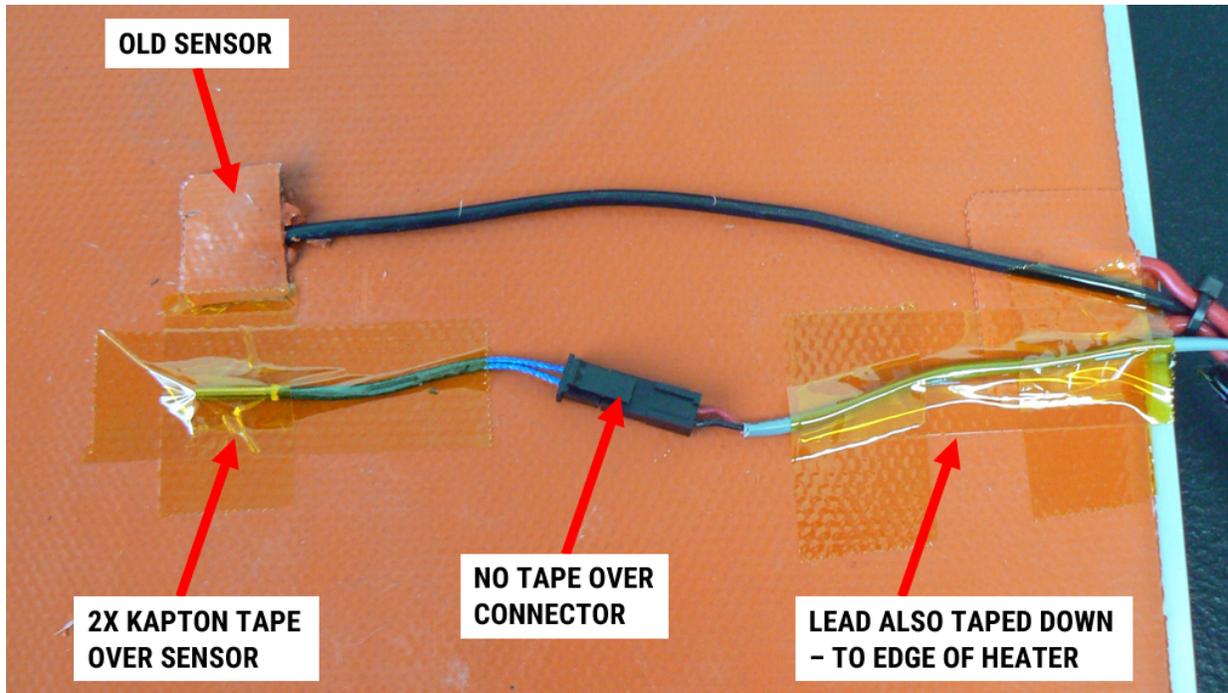
9. Lift the bed up so that it's vertical, but keep it sitting on the Z axis substrate.



10. Use rubbing alcohol to clean an area on the heater next to the existing sensor, and where the wire will lay. Wait for it to dry.



11. Position the new sensor as shown and secure with kapton tape. Secure both the sensor itself and the wiring leading to the edge of the tool plate. Route the wires off the tool plate close to the other wires as shown.

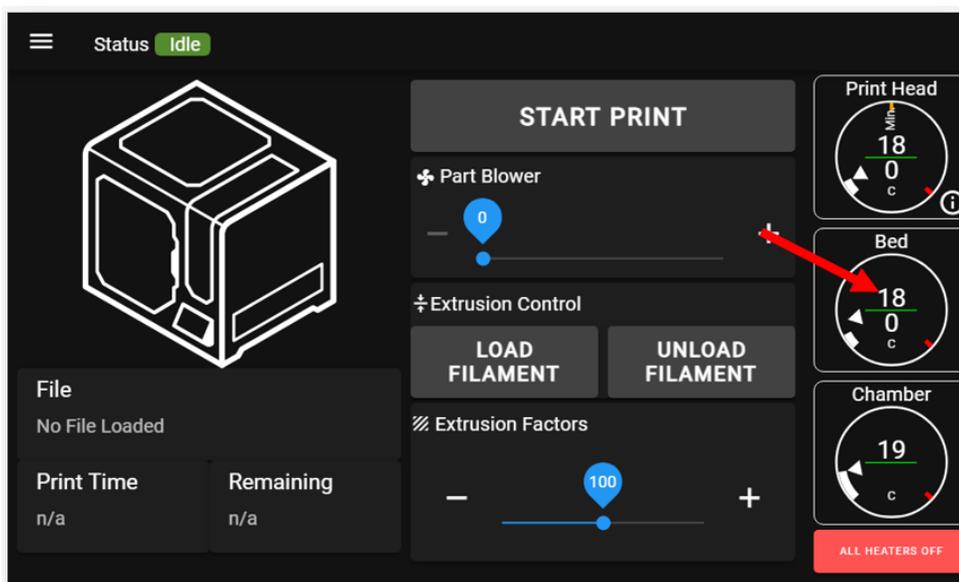


12. Lay the tool plate down and re-secure it with the corner screws.

13. Secure the bed wires back on the Z arm with a zip tie.

14. Route the wiring from the new sensor along or in the mesh sleeve. If on the outside, secure with zip ties and manage slack so that it won't get caught on anything.

15. Power the printer on and make sure you see a temperature readout on the screen for the bed.



16. Manually heat the bed to 115C. Make sure it is able to heat without errors. If you encounter a heater fault, see the next section.

17. Button up the electronics bay. You're ready to print.

## RETUNING THE HEATER MODEL

If you encounter heater faults on the bed after replacing the sensor, follow these steps. Since we have replaced the sensor with one in a different location, the heater model may need to be changed slightly. Fortunately the printer can do the hard work for us.

1. Make sure the bed is less than 45C at the start of every tuning run.
2. Power cycle the printer (off, wait 10 sec, power on).
3. Go to *Utilities > Console*.
4. Type "**M303 H0 P1 S115**". Press ENTER or SEND.
5. This will start the heater tuning process. Since the bed takes a while to heat, and the tuning process will heat it up and cool it down several times, this may take over an hour. It's very important that you not interrupt this process and let it finish.
6. After the tuning process finishes, it will give you a response that looks like "*Auto tuning heater 1 completed after 4 idle and 5 tuning cycles in ### seconds. This heater needs the following M307 command: M307 H0 R# K#.##.# D# E# S# B0 V#*".
7. Copy the entire M307 line.
8. Go to *[your printer's IP address]/files/system* in your web browser.
9. Open "config.g".

10. Locate the line that begins "M307 H0" in the "; Bed Heater" section. Paste over the existing M307 line with what you copied from the console.

```
← → ↻ ⚠ Not secure | 192.168.1.149/files/system
0:/sys/config.g
M402 ; retract the probe which homes it

;Heater and Fan Configuration

;Bed Heater
M308 S0 P"bedtemp" Y"thermistor" T100000 B4036 A"Bed" ; configure sensor 0 as thermistor on pin bedtemp
M950 H0 C"bedheat" T0 ; create bed heater output on bedheat and map it to sensor 0
M307 H0 R0.234 K0.173:0.000 D3.667 E1.35 S1.00 B0 ; configure bed heater model b7+ firmware
M140 H0 ; map heated bed to heater 0
M143 H0 S150 ; set temperature limit for heater 0 (bed)
M570 H0 P15 T20 S999 ; configure heater safety parameters for bed

;Print Head Heater
M308 S1 P"e0temp" Y"pt1000" A"Print Head" ; print head sensor
M950 H1 C"e0heat" T1 ; create nozzle heater output on e0heat and map it to sensor 1
M307 H1 R3.408 K0.430:0 D3.103 E1.35 S1.00 B0 V23.9 ; ANVIL head 65W pt1k
M143 H1 S320 ; set temperature limit for print head to 320C
M570 H1 P5 T15 S999 ; configure heater safety parameters for head
```

**NOTE: There is a nearly identical M307 command in config.g for the print head that begins "M307 H1" instead of "H0". Make VERY SURE you are not overwriting the wrong line!**

11. Save the file. When the printer prompts you for a reboot, select "reboot".

12. After the printer reboots, manually heat the bed heater again and make sure it heats without errors.