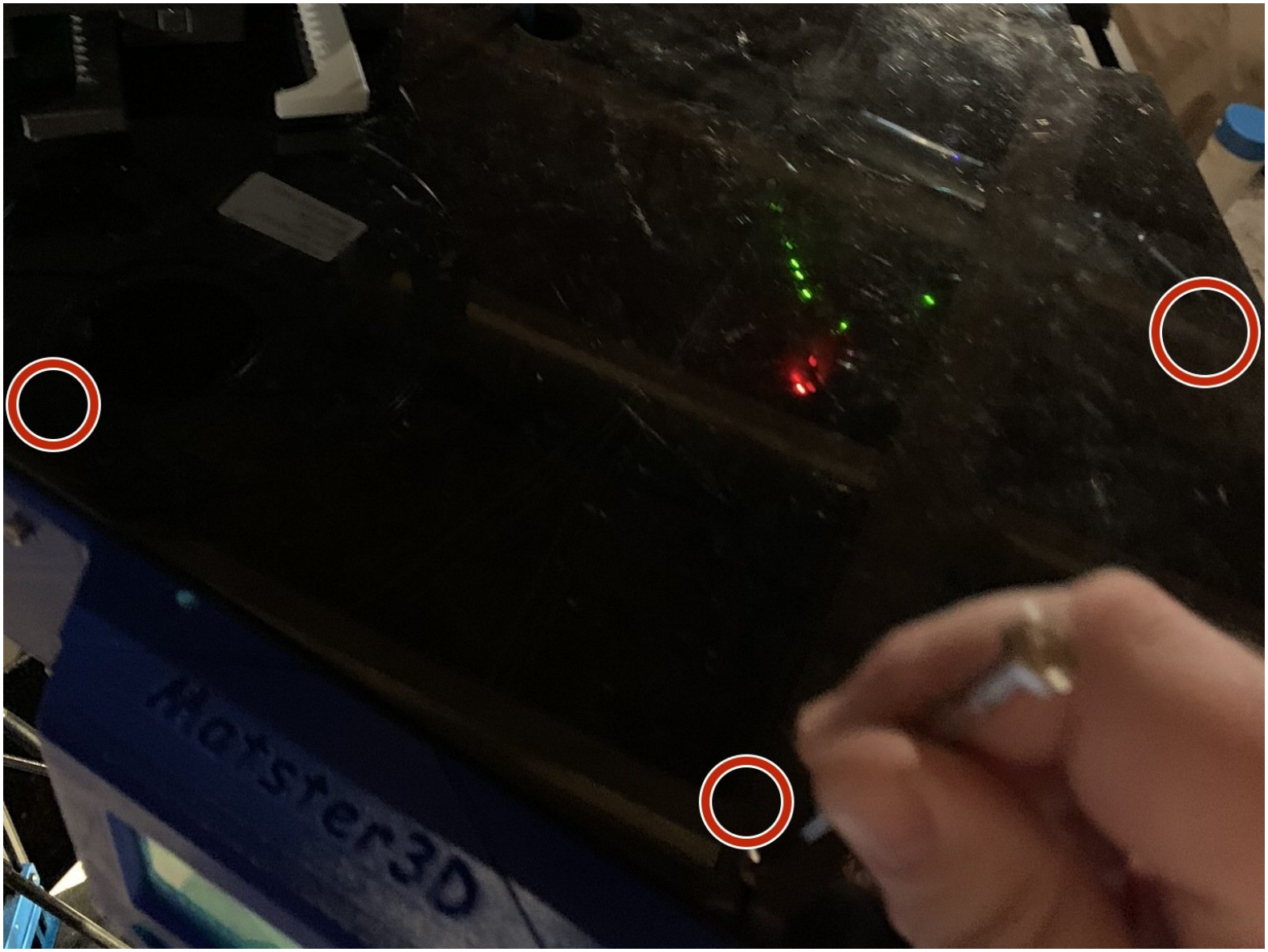
Anycubic Predator BTT SKR 1.4 Motherboard Replacement

Replace the stock Trigorilla Pro motherboard...

Written By: Kori Francis



INTRODUCTION

Replace the stock Trigorilla Pro motherboard with a BigTreeTech (BTT) SKR 1.4 (and Turbo) motherboard.

Parts of this guide were originally created by Kris Waclawski who has been an amazing resource for other Predator users.

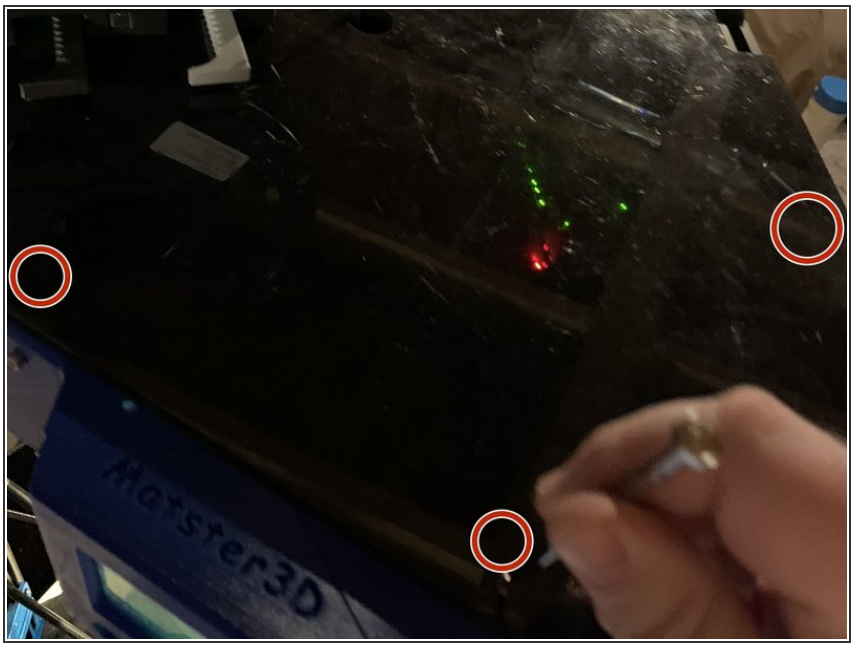
TOOLS:

- Metric Allen Key Set (1)
- Flush Cutter (1)
- Painter's Tape (1)

PARTS:

- SKR 1.4 Turbo (1)

Step 1 — Remove Top

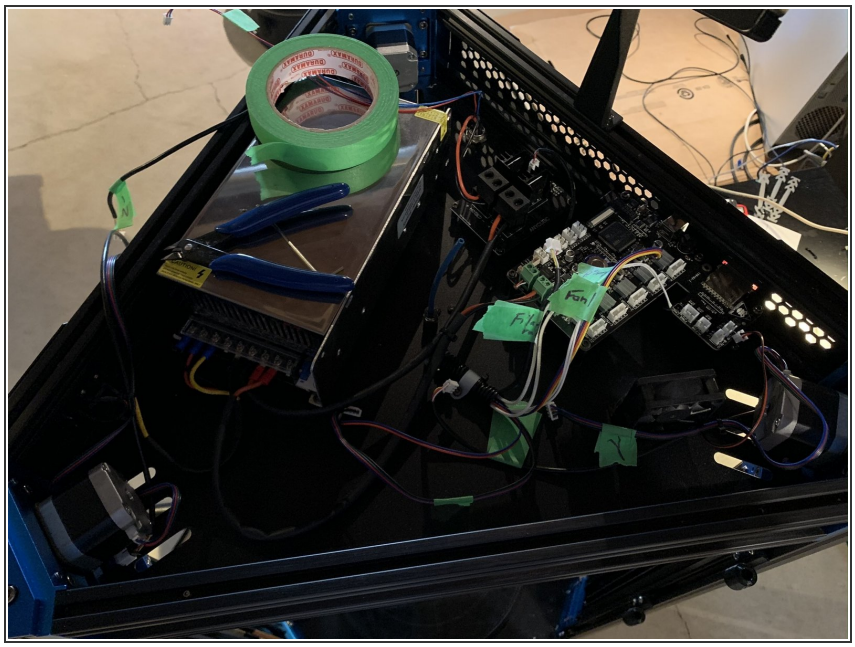


Make sure you have disconnected power from the machine, that the machine is turned off and sufficient time has been given to allow the machine to discharge. AC voltage is no joke and there are large capacitors in this machine. Be safe.

Make sure you have removed the filament from the printer as you'll need access inside and it will be much easier with no filament is in the printer.

- Remove the six M2 screws from the top panel. There are two on each side of the machine running along the outer edge.

Step 2 — Label all existing wires with painters tape

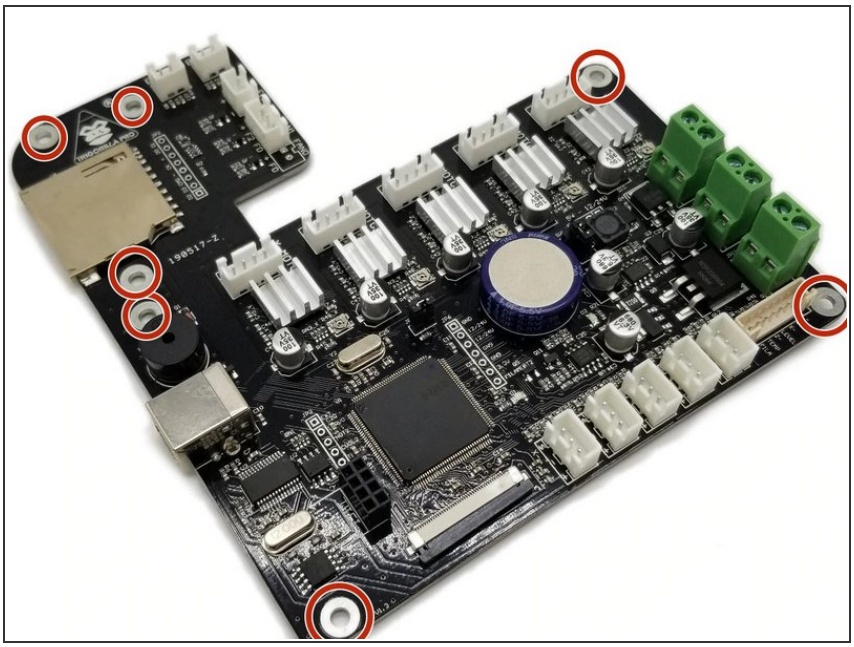


⚠ Remove the power cable and make sure the machine is not powered at all.

- Using the painters tape and a marker, label all the cables within the machine. This is useful when reinstalling the cables into the motherboard later, but it's also good to know what is what.
- You should have the following labels: X, Y, Z, X stop, Y stop, Z stop, Hotend, T0 (Hotend thermistor), Fan 1, Fan 0, and Filament Sensor

ⓘ Fan 1 (as labeled by Anycubic) is actually multiple fans. We're going to need to modify this later on to plug into the new motherboard.

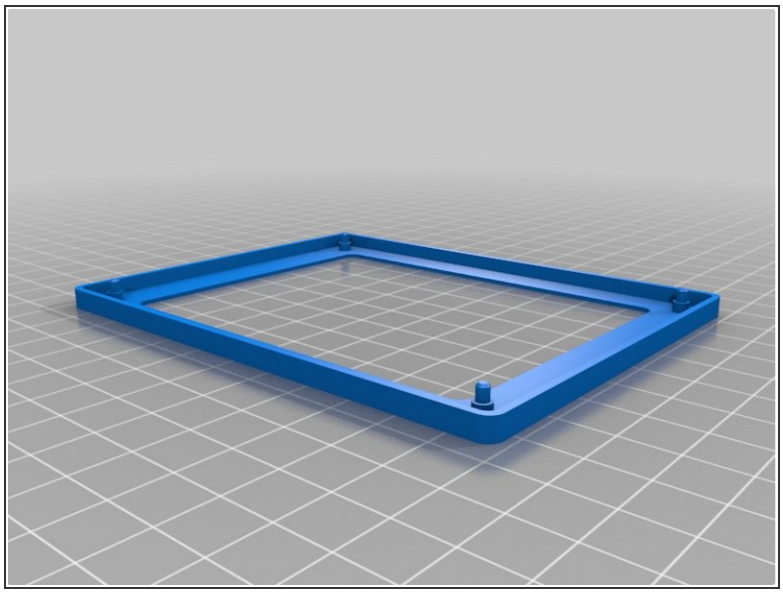
Step 3 — Remove the motherboard

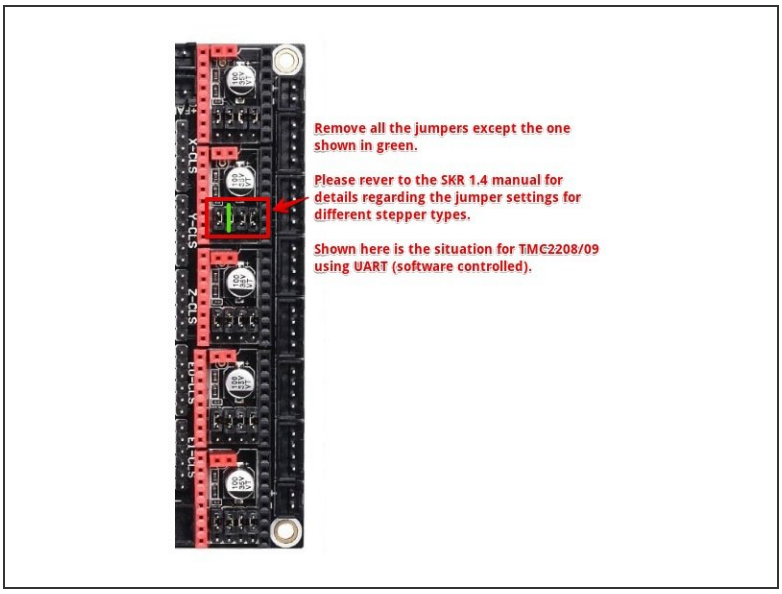


- Remove the seven screws that attach the motherboard to the case.
- Unplug all the (now labeled) wires from the board.
- Remove the motherboard and place in a safe place (ESD).

ⓘ This is the Trigorilla Pro motherboard, which is the stock motherboard that comes with the Predator. It's an ok board, but it's nice to use quieter stepper motor drivers and that isn't possible on this motherboard.

Step 4 — Install steppers onto SKR





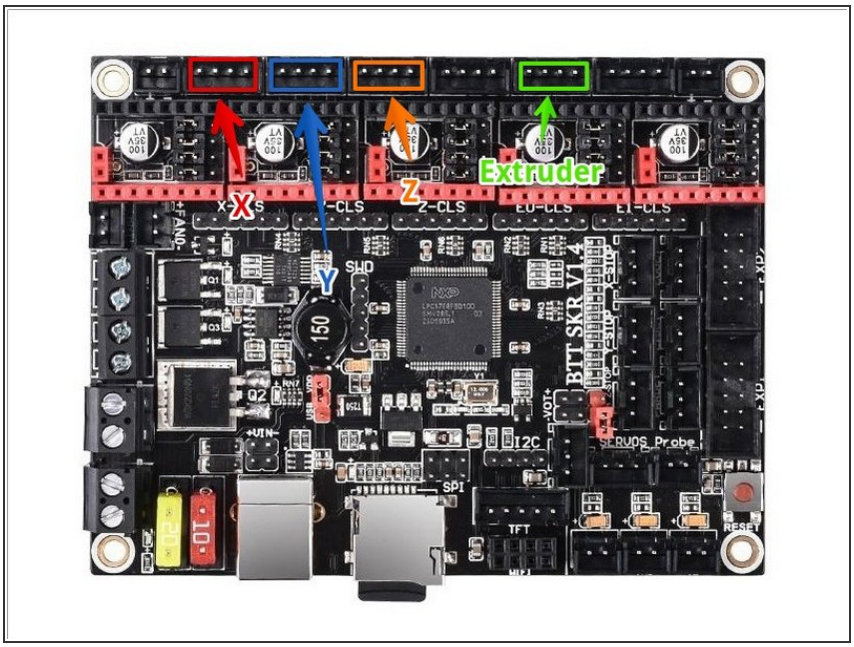
- There's many options for stepper motor drivers. I've installed TMC2209s that were purchased with the board.

Make sure you print a support to hold the new motherboard. I haven't yet found a mount that takes the standoffs into account, but there are many options.

- If you are installing the TMC2208/2209 drivers, then remove all the black jumpers located under the stepper driver sockets EXCEPT the one indicated in the diagram.

The pictured mount is: https://www.thingiverse.com/thing:431169...

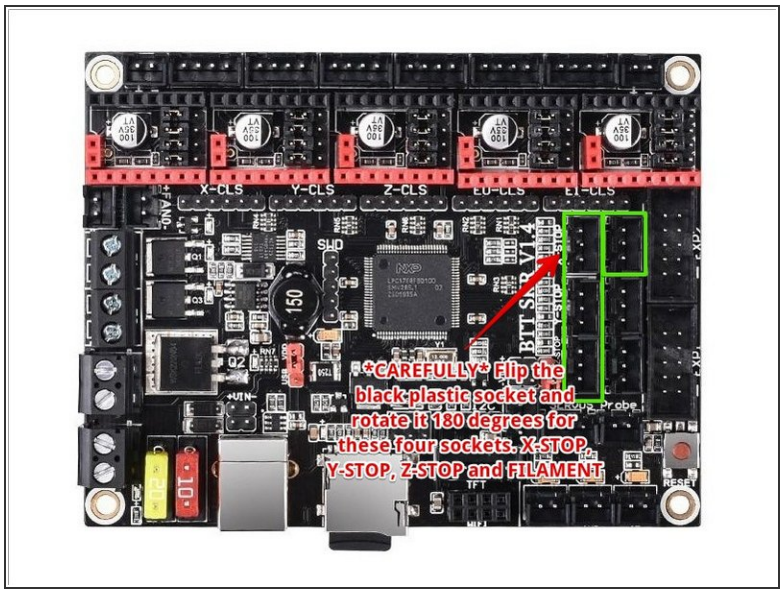
Step 5 — Wire the motors onto the SKR

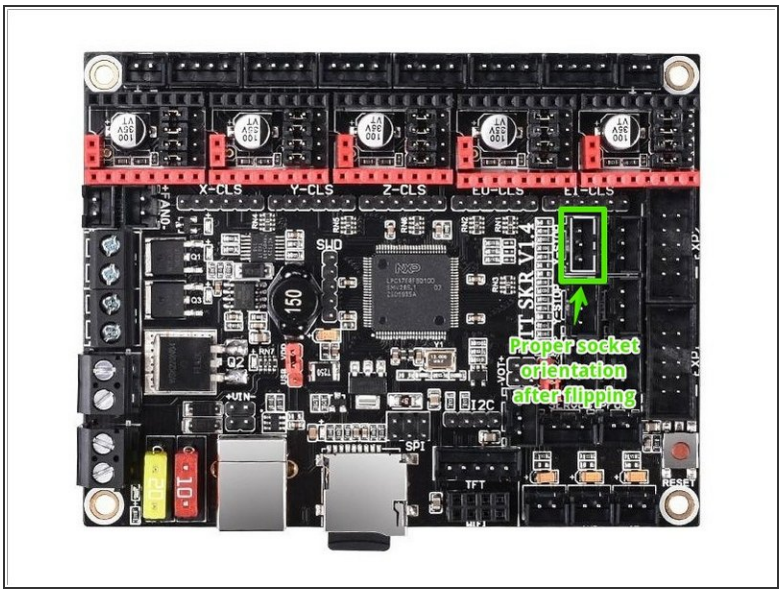


- Insert the four wire stepper motor cables into the motherboard.

ⓘ The motherboard can take six motors in total, but we're only going to be using the four stock motors here.

Step 6 — Flip the SKR sockets

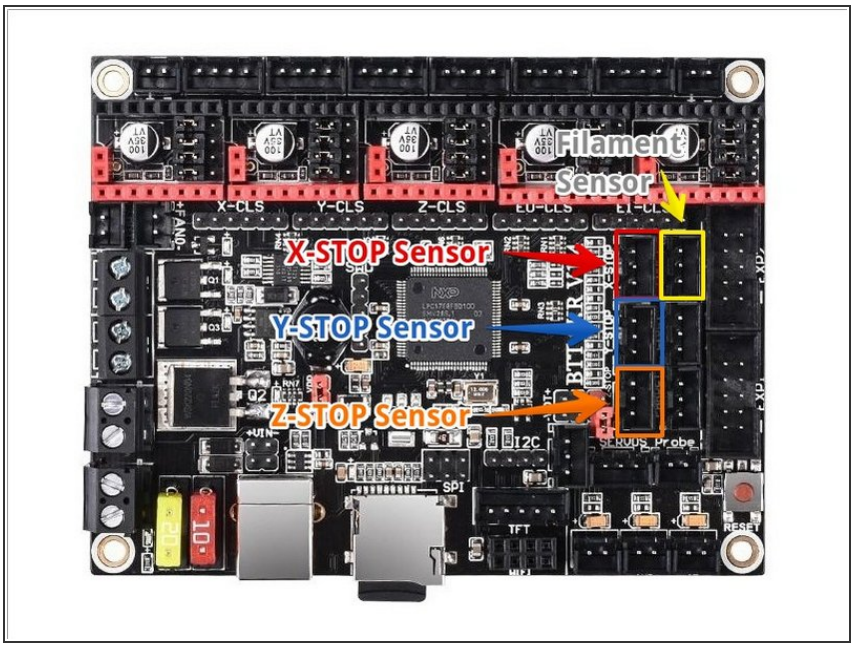




⚠ This step requires flipping the plastic socket around sets of pins. Be very careful and do this step slowly so that you don't break pins or break the sockets.

- Take your needlenose pliers and slowly rock each socket back and forth, removing the socket from the board. The SKR has them installed the reverse that we need them, so we need to flip them 180 degrees from the stock installed direction.
- Here is a gif of me flipping a socket on another board for reference: https://media.giphy.com/media/JonU7I9DJx...

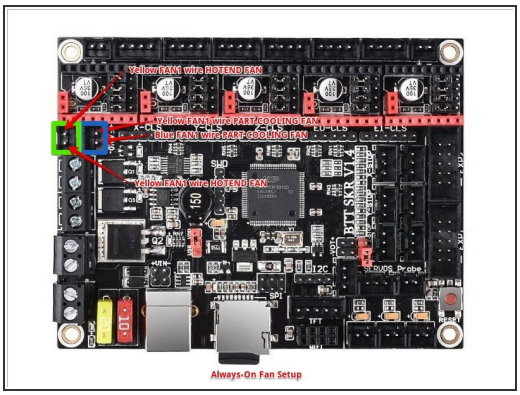
Step 7 — Install the sensor wiring

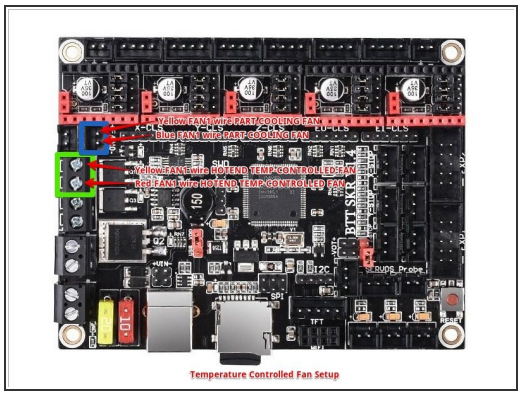


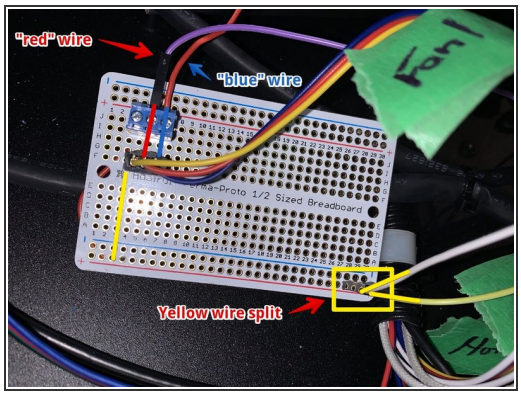
⚠ The picture does not show the flipped sockets from the previous step. Make sure you've flipped them before continuing.

- Install the X-stop, Y-stop, Z-stop and Filament sensors onto the board in the marked spots.

Step 8 — Wire Cooling Fans



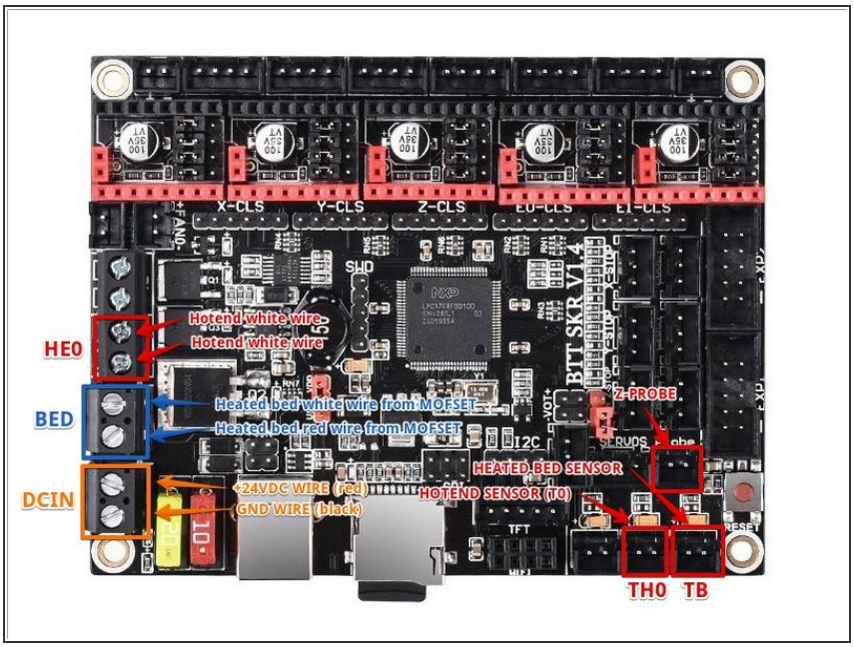




- You have two options here. You can either let the software control the hotend fan, or leave it always on. There are benefits to both, and you can switch later on if you need to.
- You will need to split the yellow wire coming from the FAN1 connector. I have done that using a small protoboard, but you can do that any number of ways.
- To connect the part cooling fan you need to connect one line coming from the yellow FAN1 to the SKR FAN0 connector where marked. The blue FAN1 wire gets connected to the second SKR FAN0 pin. If possible, crimp them into a dupont/JST-SM connector to save yourself later.
- If you are using the temperature-controlled hotend fan option (my recommendation using the stock hotends), then you connect one yellow FAN1 wire) to the HE1 connector where marked, and the red FAN1 wire to the other HE1 connector where marked.
- If you are using the always-on hotend fan option (recommended if you're using all-metal heat break and upgraded hotends) then you connect one yellow FAN1 wire to the SKR FAN1 marked area, and connect the red FAN1 wire to the SKR FAN1 marked area.

⚠ The Anycubic fan system uses a single +24VDC common line (yellow wire on the original FAN1 connector). The GND is not a common GND on the fan plugs, so **do not short the GNC lines on the fan plug**. Only a single +24VDC is needed to power the fans as it is a common line for all fans.

Step 9 — Wire the remainder of the SKR



- Connect the white hotend wires from the predator to HE0.
- Connect the hotbed wires coming from the MOFSET inside the machine to the BED screw terminals. White wire on top, red wire on the bottom as seen in the picture. Polarity matters.
- Connect the 24V DC power from the power supply to the DCIN screw terminals. Be mindful of the polarity.
- Connect the thermistors to TH0 (hot end thermistor) and TB (hotbed thermistor).
- Connect the z-probe (marked LEVEL on the predator cable) to the PROBE connector. There's no polarity here, either way works as it's just a simple microswitch.

To reassemble your device, follow these instructions in reverse order.