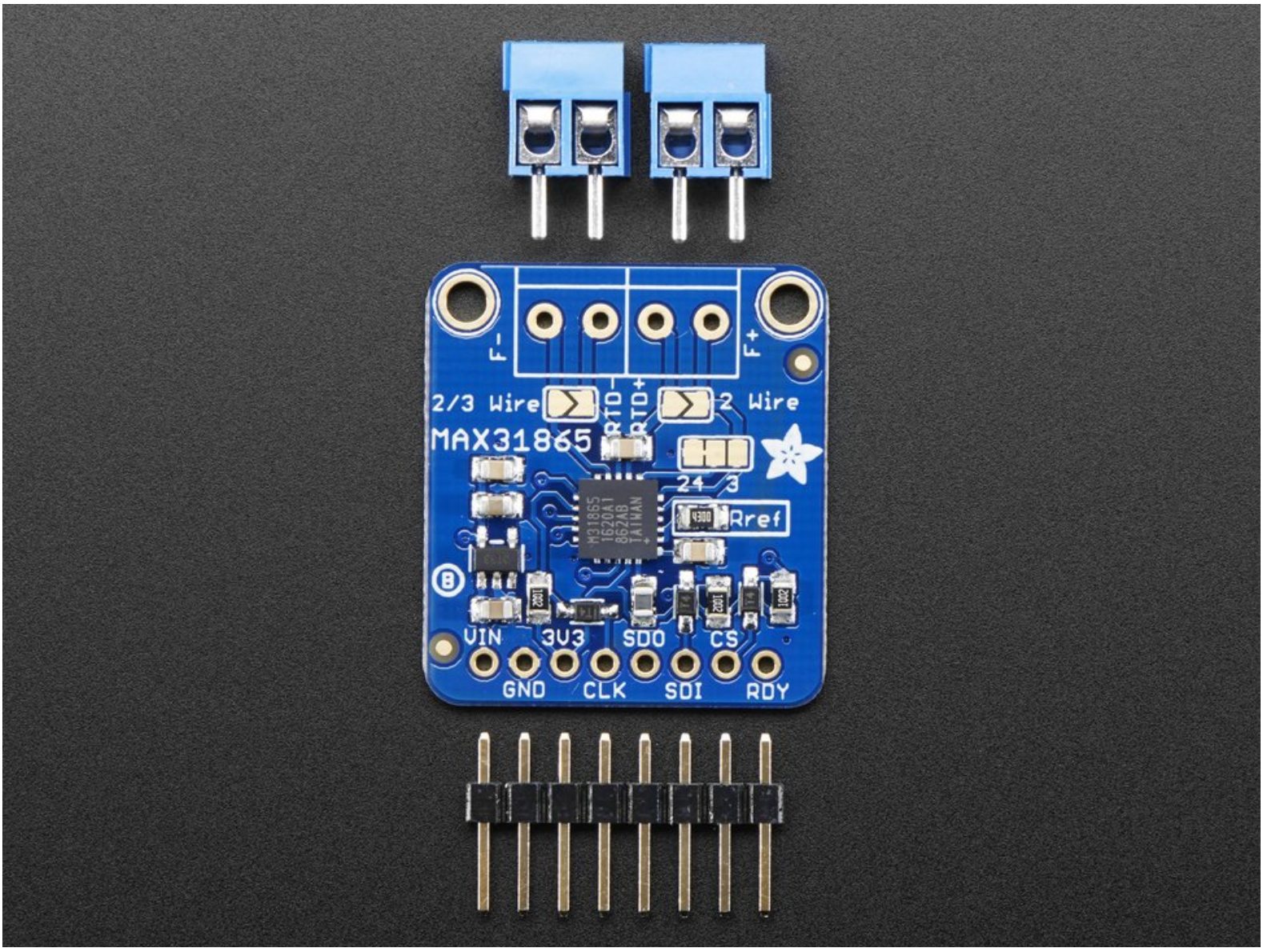
Voron Design

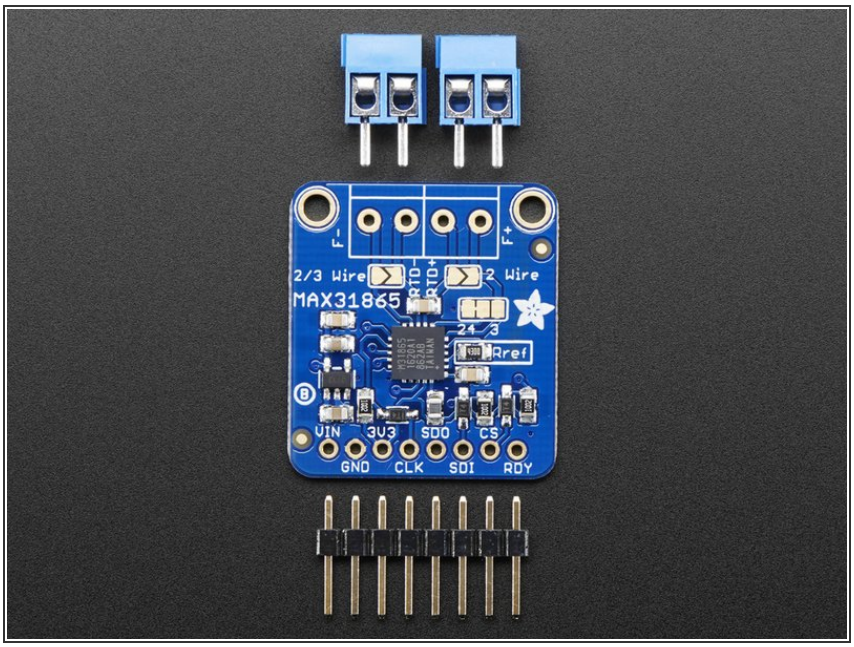
How to Use a Pt100 Thermistor w/ Skr Boards

This guide covers using a PT100 thermistor wired to a MAX31865 adapter board with a SKR based setup.

Written By: xbst_

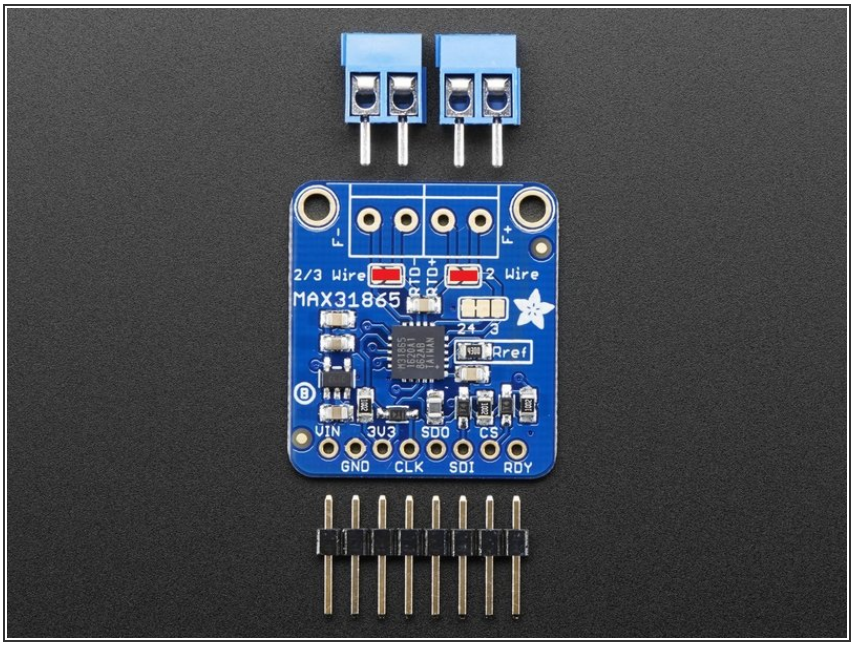


Step 1 — Sourcing



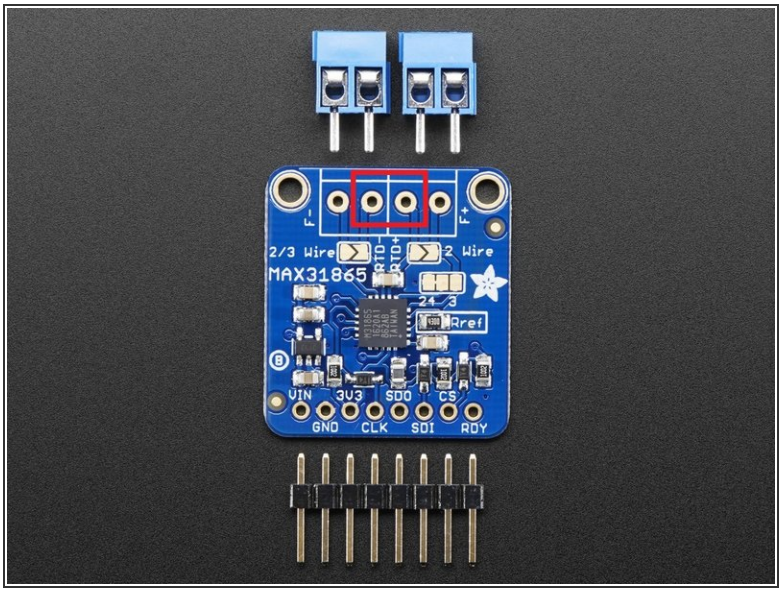
- Pt100: Any two wire pt100 thermistor will do, including ones from e3d and Trianglelab
- MAX31865 Board: You will need a Adafruit (or clone) MAX31865 amp board. You can buy the original here, or just search for a cheaper clone.
- Dupont Jumper Cables: We will need 6 of them

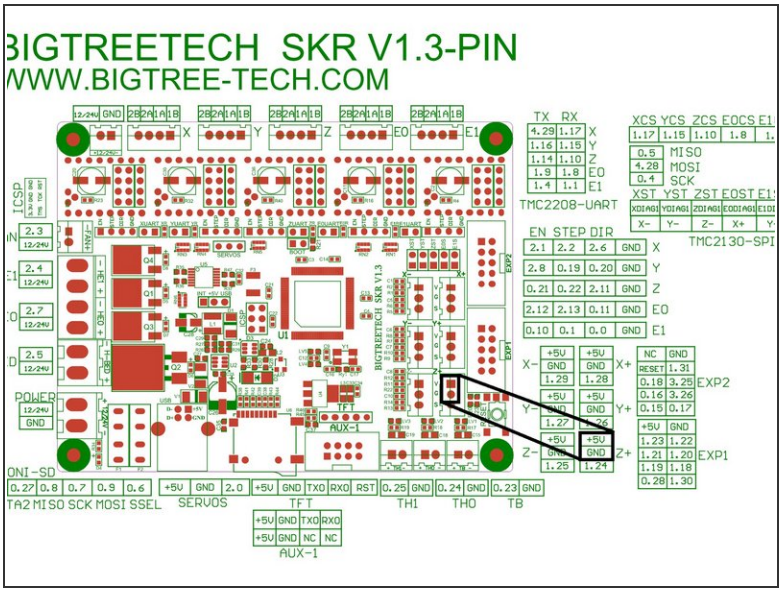
Step 2 — Prepare the MAX31865 Board



- Solder the pin header & the terminal blocks (obvious enough)
- Bridge the pads marked with 2 wire (shown in picture) with solder.

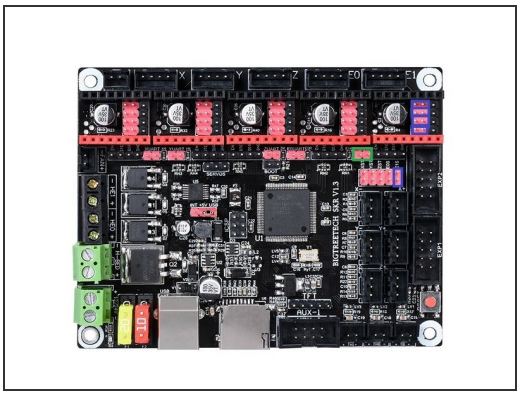
Step 3 — Wiring to Power & to PT100

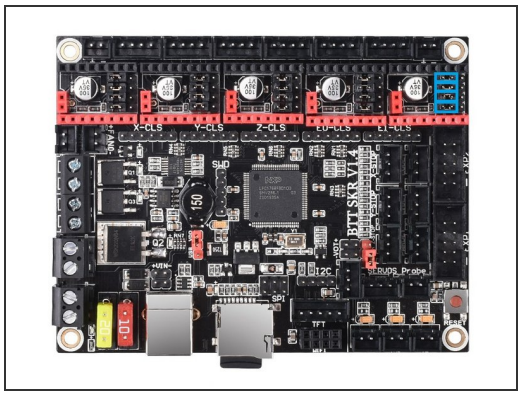


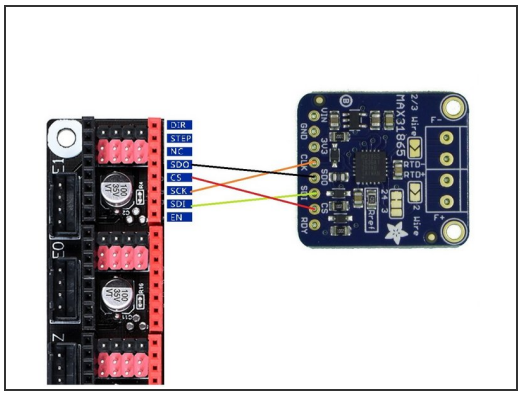


- Wire the PT100 wires into the center terminals (Picture 1)
- Wire VIN to 5V and GND to Ground. Any free 5V and Gnd will do but I used Z+ limit switch outputs from the non-Z MCU. (Picture 2)

Step 4 — Wiring to the SPI Bus

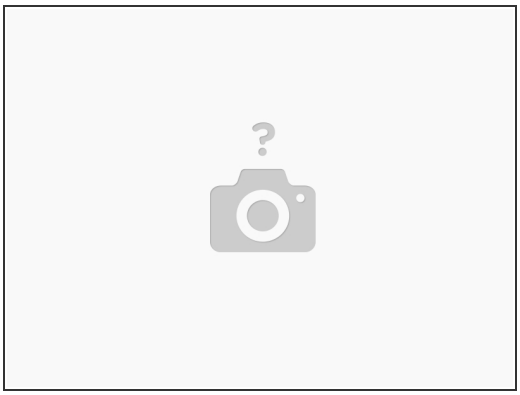






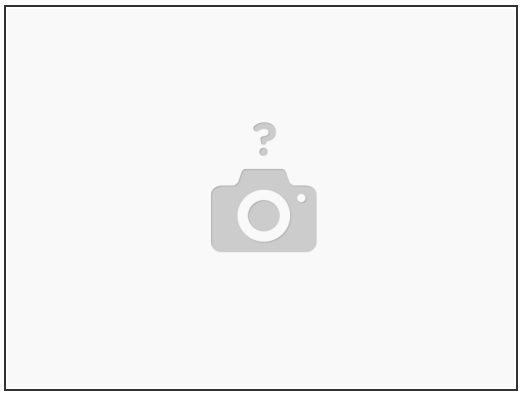
- This is probably the most confusing step. We will wire into the SPI bus originally meant for the stepper drivers. Before we do that, we need to reconfigure the jumpers on the SKR board.
- For SKR V1.3: Remove the green jumper and add jumpers between the blue pins (5 pairs) in picture 1 on the non-Z MCU.
- For SKR V1.4: Add the 4 blue jumpers in picture 2 on the non-z MCU.
- Wire according to third picture. (From E1 driver mount) **Make sure pins match up correctly!** On some clone MAX31865 boards, SPI pins are ordered differently.

Step 5 — Configuring Klipper



- Edit your printer.cfg file. You can SSH into your RPi and use nano to edit (tutorial)
- Under [extruder] insert these lines:
  - For SKR V1.3: sensor_type: MAX31865 sensor_pin: P1.1 spi_speed: 4000000 spi_software_sclk_pin: P0.4 spi_software_mosi_pin: P4.28 spi_software_miso_pin: P0.5 rtd_nominal_r: 100 rtd_reference_r: 430 rtd_num_of_wires: 2
  - For SKR V1.4: sensor_type: MAX31865 sensor_pin: P1.1 spi_speed: 4000000 spi_software_sclk_pin: P0.4 spi_software_mosi_pin: P1.17 spi_software_miso_pin: P0.5 rtd_nominal_r: 100 rtd_reference_r: 430 rtd_num_of_wires: 2
- If you are in EU or other 50hz country, add this line: rtd_use_50Hz_filter: True
- Save your changes by typing CTRL+X, Y, [ENTER]. Send FIRMWARE_RESTART from the console in Octoprint and test! It should work.

Step 6 — Configuring Marlin firmware



- If you are a Marlin user and you are looking for information on how to connect the MAX31865 to the SKR series of boards please use the following GUIDES to help you on your journey:
- For the SKR V1.3 board see: https://github.com/GadgetAngel/MAX31865-...
- For the SKR V1.4 board see: https://github.com/GadgetAngel/MAX31865-...
- For the SKR V1.4 TURBO board see: https://github.com/GadgetAngel/MAX31865-...

