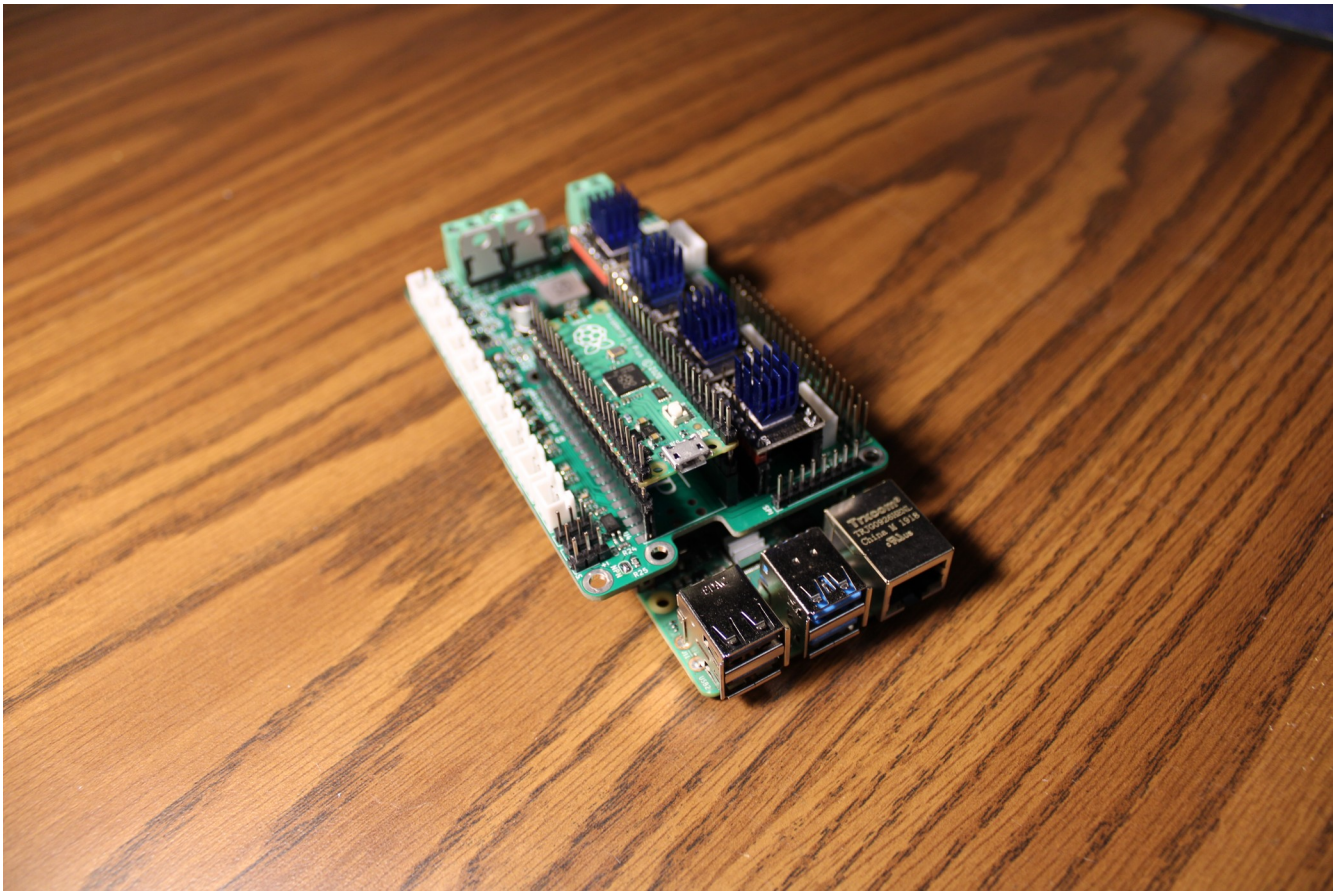
Strawberry Cookie Manual

Introduction

Hello and thank you for choosing the Strawberry Cookie as your next 3D print board! The Strawberry Cookie is a vastly different board than other boards out there. This is a fully Klipper-compatible HAT for the Raspberry Pi, and is meant to be a drop-in replacement for many different types of 3D printers, including popular Cartesian and Delta-style printers. This can also be used as an expansion board for printers, allowing for users to use their existing boards in conjunction with the Strawberry Cookie for a multi-MCU approach to control.



Hardware

All necessary hard-ware related information can be found on the GitHub: https://github.com/LRFPV2/Strawberry_Cookie

Your Strawberry Cookie comes with the following features:

4x replaceable TMC 2209 support
4x fan ports (2 PWM channels)
3x temperature sensors
2x heaters
X, Y, Z min endstops
Dual Z-axis motor support
High quality 200W MOSFETs
BlTouch support
PL08 probe support (NPN/PNP)

LED strip support
SPI breakout
24V compatible
5V, 3A regulator

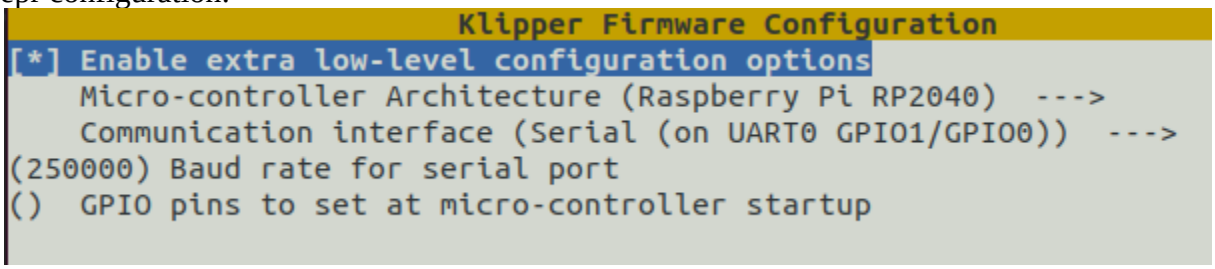
Assembly Notes

1) Solder 20A SMD Fuse. This should be labeled as “F2”, and is located at the edge of the board, between the power connector and heat bed power output. Make sure to use plenty of solder to ensure a high quality connection.
2) Solder terminal block connections. At this point, it would be a good idea to do a power-on test. Simply provide up to 24V to the power input (polarity should be labeled). If the red LED, labeled “PWR” in the upper left-hand corner turns on, that means that you are good to move on.
3) Solder in stepper driver headers, Pi headers servo, probe, and LED connectors. Add in JST-XH connections. SPI connection optional.
4) Solder MOSFETs. Be sure to check that orientation is correct. The metal side of the MOSFET should be pointing *away* from the terminal block connectors.
5) The Raspberry Pi Pico can be mounted in a number of ways. I prefer directly soldering it to the board. This yields a very slim profile. However, some people may want to remove the Pico from time to time. The use of additional female headers will work as well.

Software Setup

Please refer to the sample printer.cfg file as well and the schematic PDF printout for the most accurate wiring information.

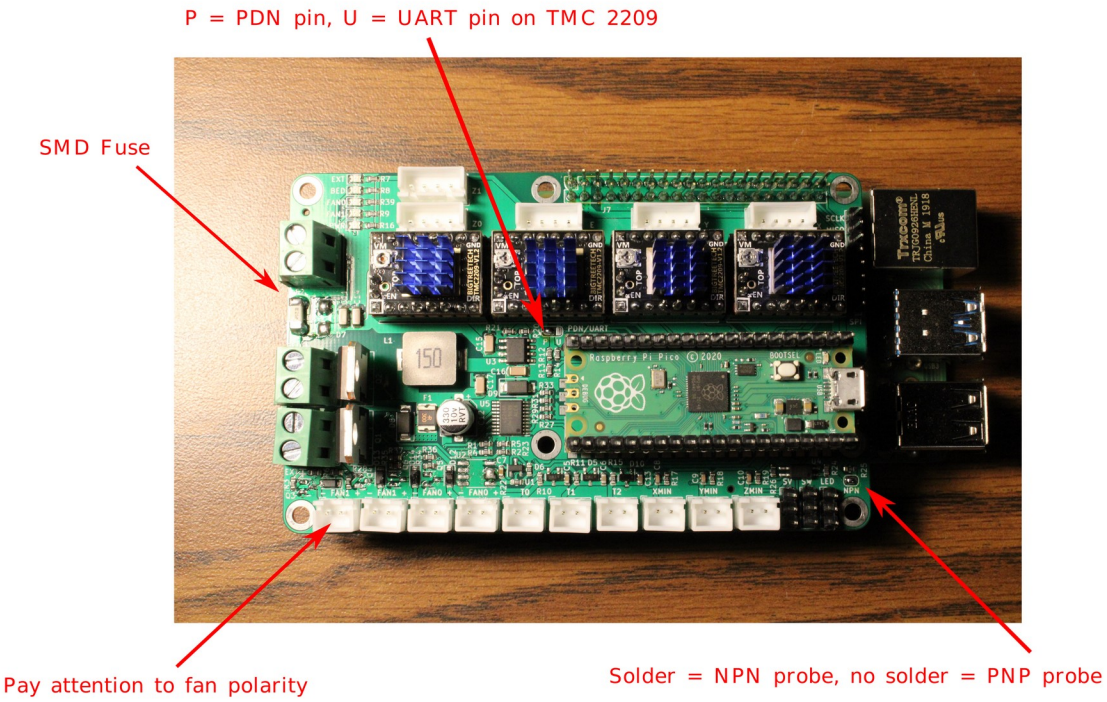
The Strawberry Cookie has a built-in UART interface between the Pico and Raspberry Pi. Before you will be able to communicate to the Pico, you will need to flash it via USB for UART communication. With the shield unplugged from the Raspberry Pi, flash your Pico with the following Klipepr configuration:



This will output a klipper.uf2 file. Copy this to the Pico as it appears as a mass storage device. If you are not seeing the Pico as an option, make sure that you first hold the white button while plugging the Pico via USB.
Next, here is basic setup for UART communication in Klipper.
https://www.youtube.com/watch?v=AtW3GqkKUz8
Here are the condensed instructions:
1)
sudo raspi-config
Interface options → Serial port → would you like a login shell to be accessible over serial port → No
Interface options → Serial port → would you like the serial hardware port to be enabled → Yes
Reboot
2)
sudo vim /boot/config.txt
Add this to the bottom of the file:
dtoverlay=disable-bt

3)
sudo vim /boot/cmdline.txt
Remove the following from the string of text: “console=serial0,115200”
Reboot
4) Serial port for Klipepr communication should be “/dev/ttyAMA0” (in sample printer.cfg)

Usage Notes



LEDs
5 LEDs in the corner are for status:
Extruder active
Bed active
Fan 0 channel active
Fan 1 channel active
5V power OK

Stepper Drivers
Stepper drivers can be configured to have UART communication through the PDN pin, or the UART pin. Refer to your stepper driver’s pin-out for more information. But this means that you don’t have to do any micro soldering of PDN/UART selection pads anymore!

BLTo
BlTouch probes should use Z-min endstop and Servo pin (pinout labeled in silkscreen for Servo connector) for probing. An example is in the printer.cfg file.

PL08 Probe
Simply plug in your PL08 probe to the SW header. Pinout is consistent with Servo and LED header, in silkscreen. Voltage is supplied directly from Power input. Optocoupler used, so no need for diode soldering “weirdness”. Solder pad if using NPN switch (PL082N).

Fans
There are two fan channels. Optimally, one would be used for cooling the hotend, while the other for print cooling. There are 2 outputs per channel, so you can mix and match fans to get things working that way you want them to. Please be aware that some machines may have the fan connector backwards. In this case, simply switch around the wires in the fan’s connector and you should be good to go.

Heaters
There should be silkscreen indicators for polarity. MOSFETs will not usually get very hot, even during heating. As always, ensure proper airflow while printing.

If you have any further question or comments, please reach out to me at vitapartz0@gmail.com
Thank you, and Happy Printing!
Lawrence
VitaPartz