

Spider Klipper Firmware

笔记本: Klipper

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The firmware installation process for the Fysetc Spider MCU.

Prerequisites

- Klipper must be installed onto the Raspberry Pi
- It is desirable, though not strictly necessary to have a small sdcard available
- Even if you intend to power your Pi with the Spider, during this flashing process, you will find it far more convenient to power your Pi from some other source, such as a regular USB power supply
- Voron Design recommends using USB to control the Spider, which simply requires connecting a USB-A to USB-C cable between the Spider and Pi. If you prefer a UART connection, please consult the fysetc documentation for the necessary configuration adjustments.

Build Firmware Image

- Login to the Raspberry Pi via ssh
- Run the following:

```
sudo apt install make
cd ~/klipper
make clean
make menuconfig
```

- In the menu structure there are a number of items to be selected.
 - Select "Enable extra low-level configuration options"
 - Set the micro-controller architecture is set to [STMicroelectronics STM32](#)
 - Set the Processor model to [STM32F446](#)

- If your Spider was made after 2021/06/23 (this includes every V2.2), set the Bootloader offset to 32KiB bootloader
- If your Spider was made prior to 2021/06/23 , set the Bootloader offset to 64KiB bootloader
- **Many people have been unable to connect to the MCU because of the bootloader problem, so I recommends choosing a mode without a bootloader.**
- Set the Clock Reference to 12 MHz crystal
- Set the Communication interface to USB (on PA11/PA12) (note: see Fysetc documentation if you intend to use UART rather than USB)

```
(Top)
Klipper Firmware Configuration
[*] Enable extra low-level configuration options
  Micro-controller Architecture (STMicroelectronics STM32) --->
  Processor model (STM32F446) --->
  Bootloader offset (No bootloader) --->
  Clock Reference (12 MHz crystal) --->
  Communication interface (USB (on PA11/PA12)) --->
  USB ids --->
  () GPIO pins to set at micro-controller startup

[Space/Enter] Toggle/enter    [?] Help    [/] Search
[Q] Quit (prompts for save)    [ESC] Leave menu
```

- Once the configuration is selected, press `q` to exit, and "Yes" when asked to save the configuration.
- Run the command `make`
- The `make` command, when completed, creates a firmware file **klipper.bin** which is stored in the folder `/home/pi/klipper/out` .

There are multiple options for getting this firmware file installed onto your Spider.

Firmware Installation

Option 1: DFU Firmware Install

- Requires a USB connection
 - Requires the installation of an extra jumper on the Spider
 - Does NOT require a microSD card
1. Power off the Spider
 2. Install a jumper between BT0 and 3.3V
 3. Connect Spider & Pi via USB
 4. Power on Spider
 5. From your ssh session, run `cd ~/klipper` to make sure you are in the correct directory
 6. Run `lsusb` . and find the ID of the DFU device.

7. Run `make flash FLASH_DEVICE=0483:df11` , In general, the DFU mode of STM32 is this ID, if not, replacing 0483:df11 with the ID from the previous step
8. Power off the Spider
- ~~9. Remove the jumper from BT0/3.3V~~
10. Power up the Spider
11. You can confirm that the flash was successful by running `ls /dev/serial/by-id` . If the flash was successful, this should now show a klipper device, similar to:

Move the jumper cap to GND/BT0

```
pi@voron2:~/klipper $ ls /dev/serial/by-id
usb-Klipper_stm32f446xx_460039000650305538333620-if00
pi@voron2:~/klipper $
```

(note: this test is not applicable if the firmware was compiled for UART, rather than USB)

Important: If the Spider is not powered with 12-24V, Klipper will be unable to communicate with the TMC drivers via UART and the Spider will automatically shut down.