

caribou3d

01_Installation of Klipper and Mainsail

This guide explains how to install the Klipper firmware and Mainsail user interface on an Raspberry Pi and Caribou MK3s.

Written By: Caribou3d

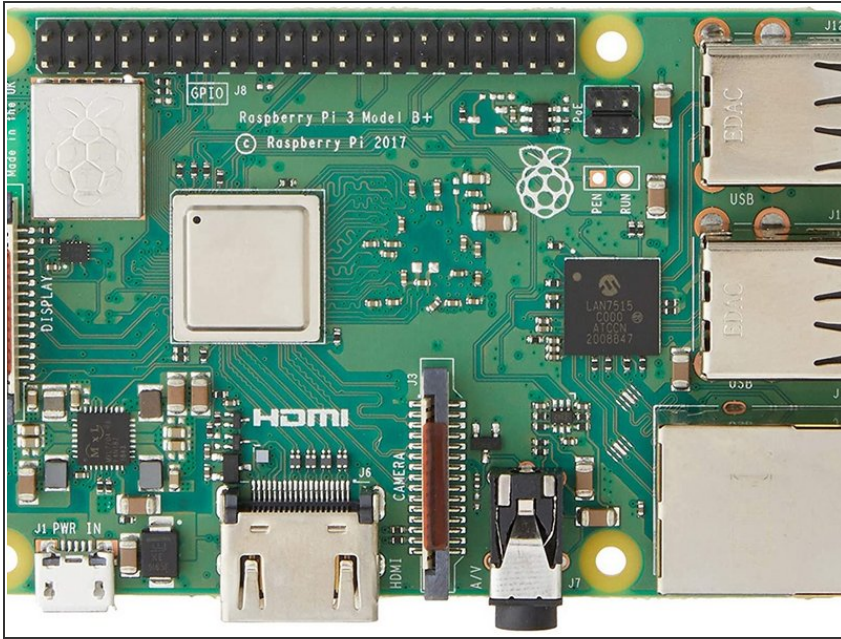


INTRODUCTION

This tutorial describes how to install the Klipper firmware on a Caribou MK3s printer with Bondtech extruder and "SuperPinda". We use a **Mainsail** image adapted to the Caribou printer. **Attention:** The Klipper firmware only works reliably on an original Ultimachine-Einsy (this is installed by default in the Caribou3D printers). With Prusa boards there are problems with the USB/serial bridge under Klipper.

Furthermore the author does not take responsibility for possible damages, which can result from the firmware change!!!

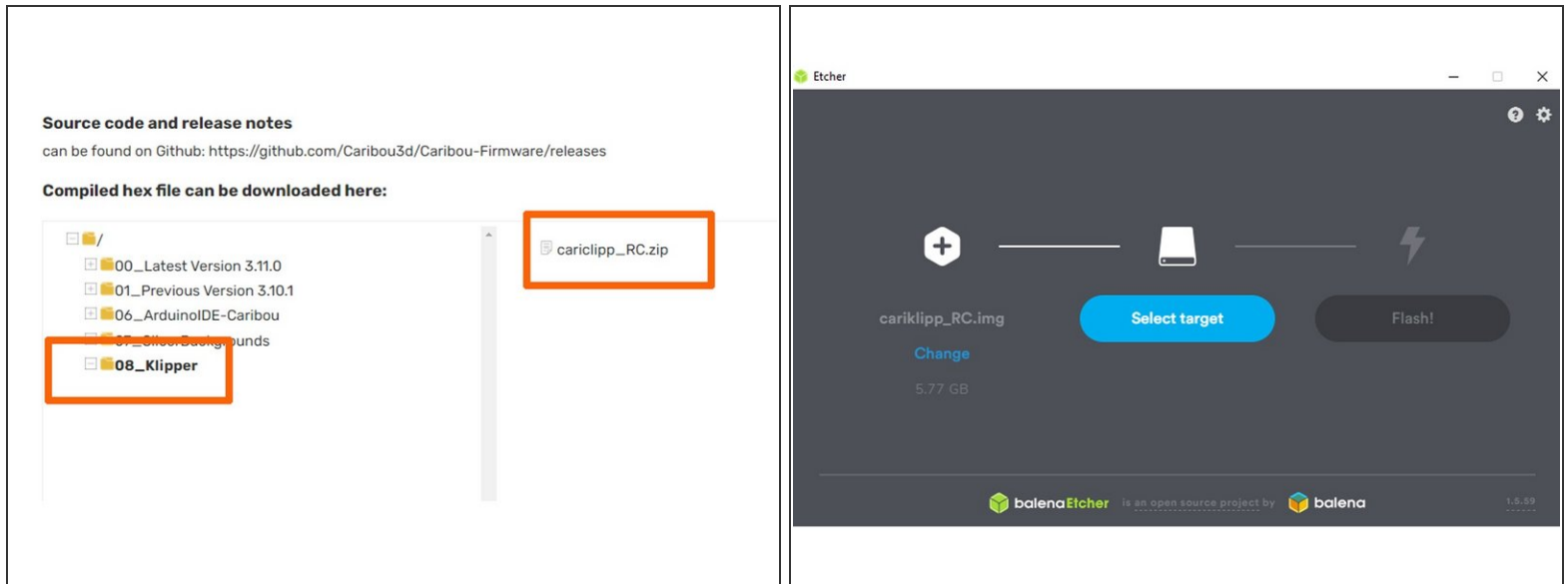
Step 1 — Required Items



- We need a Raspberry Pi 3 or higher. A powerful power supply is required (original Raspberry Pi with 3A/5V).
- A Windows 10 PC/notebook with memory card reader or Mac with at least MacOS Sierra
- A Micro SD card with at least 8 GB memory
- The **Putty** program for SSH access to the Raspberry Pi. Download from [here](#) for MacOS
Cyberduck [here](#)
- Optional: The tool **WinSCP** for easy data exchange. Download from [here](#) for MacOS via Cyberduck
- The tool **balenaEtcher** to write the image file from Mainsail to the SD card. Download from [here](#)
- The editor **Notepad++**. Download from [here](#) - MacOS Boardtool Text Editor

⚠ You should note important settings of the old firmware (Live-Z etc.) before the clipper upgrade.

Step 2 — Installation Mainsail Image



- First we download the zipped image file (approx. 2GB) from the Caribou server:
https://caribou3d.com/Software-MKx/05_Kl...
- We unzip the zipped file and put the MicroSD into a card reader.
- New line. We start the tool **balenaEtcher**, select our file under "select image" and specify the drive with the Micro SD under "Target". With "Flash" the writing process is started.
 - ① If you have already installed the Win32DiskImager, you can of course also use this tool.
- ⚠ **Attention: If there are already data on the SD, they will be deleted!**
- When the process has been completed successfully, we eject the SD and immediately put it back into the reader.

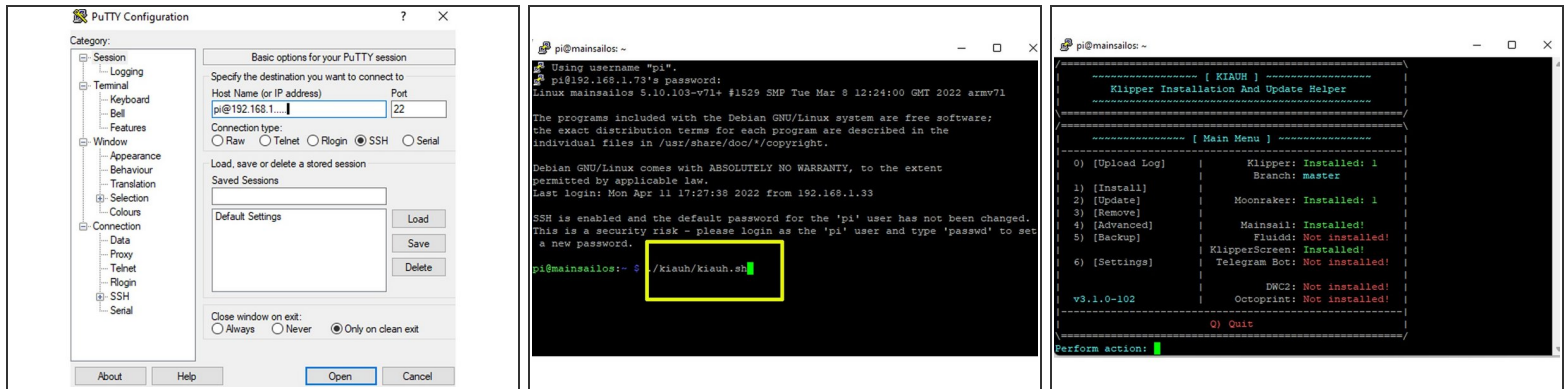
Step 3 — WiFi Configuration

```
19 # !!!!! HEADS-UP MACOSX USERS !!!!!
20 #
21 # If you use Textedit to edit this file make sure to use "plain text format"
22 # and "disable smart quotes" in "Textedit > Preferences", otherwise Textedit
23 # will use none-compatible characters and your network configuration won't
24 # work!
25
26 ## WPA/WPA2 secured
27 network={
28     ssid="mySSID"
29     psk="myPassword"
30 }
31
32 ## Open/unsecured
33 #network={
34 #     ssid="put SSID here"
35 #     key_mgmt=NONE
36 # }
37
38 ## WEP "secured"
39 ##
40 ## WEP can be cracked within minutes. If your network is still relying on this
41 ## encryption scheme you should seriously consider to update your network ASAP.
42 #network={
43 #     ssid="put SSID here"
44 #     key_mgmt=NONE
45 #     wep_key0="put password here"
46 #     wep_tx_keyidx=0
47 # }
```

- Windows will now suggest a repair or formatting if necessary, we click on "Cancel" and open the partition "boot" on the SD in the explorer.
- We now search the file **mainsailos-wpa-supPLICant.txt** and open it with Notepad++. There we have to enter **SSID** and **password** from the home network in the marked area in lines 28 and 29. We save the changes and eject the MicroSD.

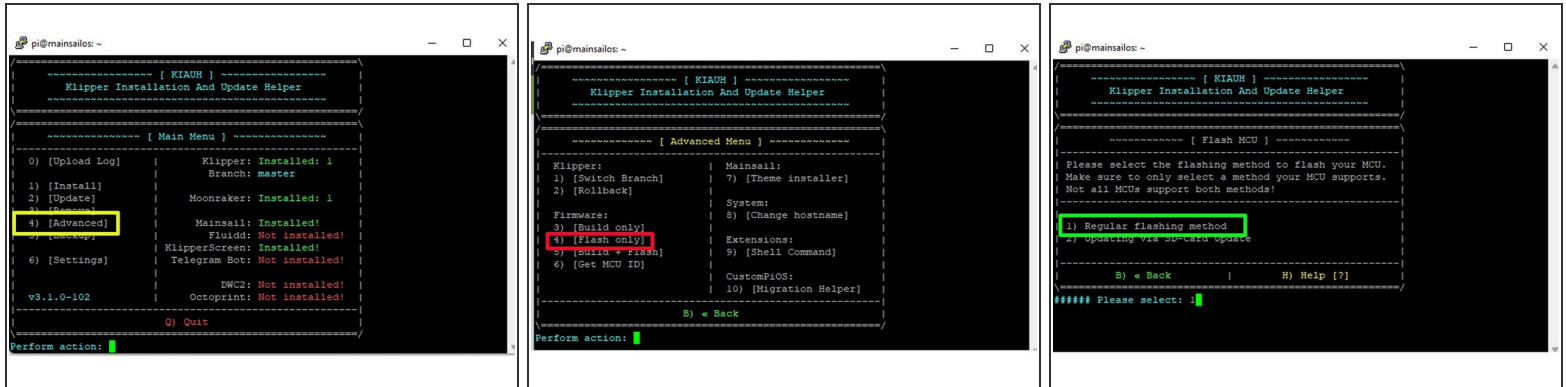
⚠ Please also change the country code in "country=DE" to the country you are in.

Step 4 — Connection with SSH



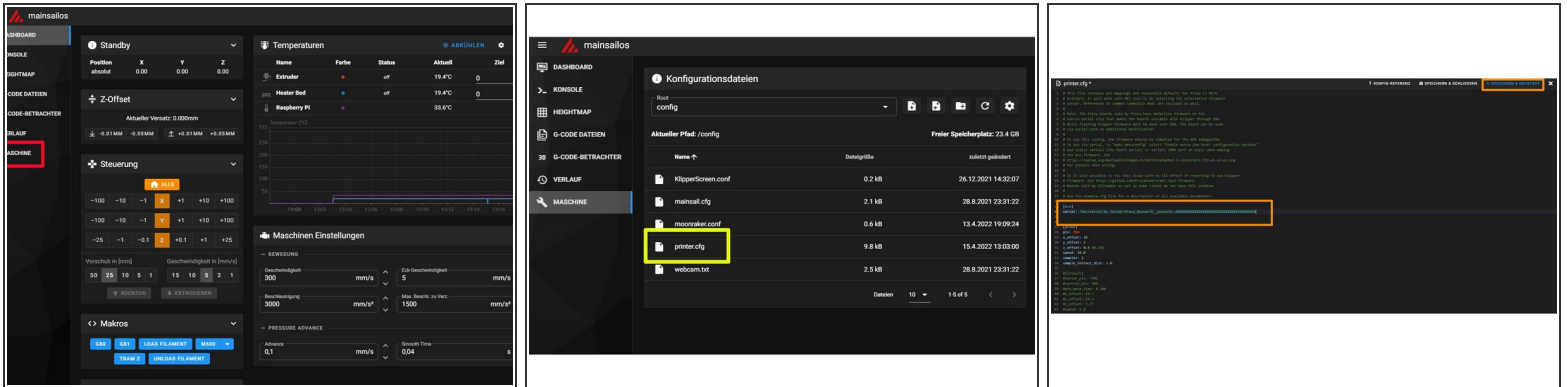
- We now insert the SD into the Raspberry Pi and connect the Pi via USB cable to the Einsy. Now the printer and the Pi are booted.
- We wait a few minutes until the system has booted. Now we can query the IP of our new system via the GUI of our router or by typing **ping mainsailos.local -4** in the Windows command prompt. - MacOS via the BoardTool Terminal.
- ① Alternatively you can use a tool like "**Angry IPScanner**". Download from [here](#)
- We now start the tool Putty and establish a SSH connection to the system. Username is "pi" and the password is "raspberrry" - MacOS via the tool Cyberduck - New connection - SFTP (SSH connection) the determined IP address and BN and PW as described above
- ① The first time you start a new connection, Putty will normally issue a security warning. This can be confirmed.
- In the terminal we now enter the command **./kiauh/kiauh.sh** and confirm with Enter. After a few seconds the KIAUH window should open (**Klipper Installation And Update Helper**).

Step 5 — Firmware-Flash with KIAUH



- In KIAUH we open the **ADVANCED** section by entering **4** and Enter.
- We now select point 4 (Flash only), confirm with Enter and select point 1 (Regular flashing method) in the following window.
- As connection we select type **1** (USB) and confirm with Enter. KIAUH now determines our MCU ID. We select **1** again and confirm the security question with **y** (continue). Now the firmware is flashed to the Einsy board.

Step 6 — Enter MCU ID



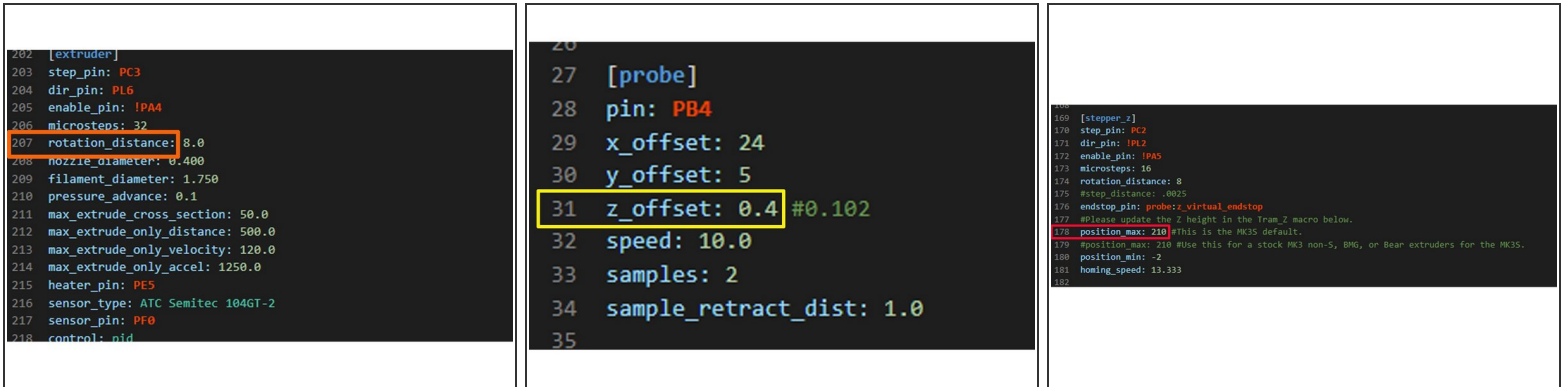
- We leave the Putty window open and start a browser. We enter our IP as the address. The Mainsail GUI should now open.
- We open the machine section and there the configuration file **printer .cfg**.
- We go back to our Putty terminal and now go to point no. **6** (Get MCU ID). As connection method we choose again **1** (USB).
- KIAUH will now get our MCU ID (we have already seen it briefly in step no.5). We mark the ID and copy it to the clipboard.
- We go back to Mainsail/printer.cfg and paste the ID in line 24. (**after** serial: please leave a space). Via **Save and Restart** in the upper right corner we leave the menu.

Step 7 — First Start under Klipper



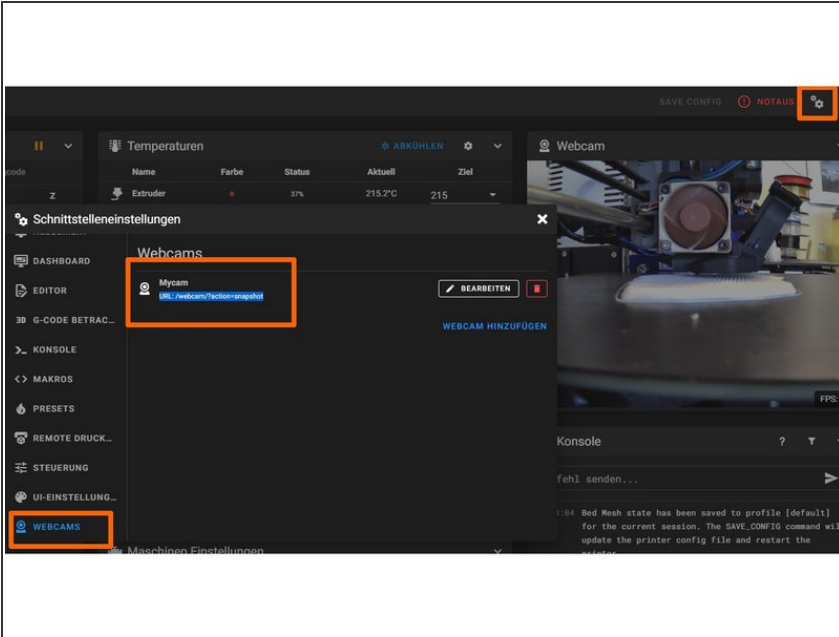
- After restarting, the printer display should show the temperature of the heatbed and the hotend.
 - ① If you use a Slice **HT** thermistor, you have to set the sensor_type: SliceEngineering 450 in the **printer.cfg** file in line 216. The new thermistor from Slice (white wire) should work without adjustment.
 - ① The display functions are limited to a few basic elements. The printer is controlled almost exclusively via the GUI or via **KlipperScreen** (already included in the image).

Step 8 — ToDo-List before first Print



- Check the axis directions incl. extruder. If a direction is wrong, either an exclamation mark must be prefixed to `dir_pin` in `printer.cfg` under "stepper" or deleted.
- Checking the fans and temperatures
- Setting the Esteps. The default is for a LGX with 1.8 motor. The steps are entered in `printer.cfg` under `rotation_distance` according to the following formula: $\text{rotation_distance} = \text{full_steps_per_rotation} * \text{microsteps} / \text{steps_per_mm}$
- Set Z-Offset
 - ⚠ For the Z-Offset there is a separate HowTo. You should start with a "safe" value first, so that the Nozzle does not move into the print bed. The setting is done in line 31 of the `printer.cfg` file. The value on the photo has to be adjusted individually.
- PID tuning. There is also a separate HowTo on this topic .
- Change of Zmax for 220/320/420 in line 178 **printer.cfg**
- Possibly optimization of the values for current/currents (run current, hold current)

Step 9 — Activate USB Camera



- An mjpg stream is already implemented in Mainsail. Common USB cams like a Logitech C270 should work "out of the box".
- We go to Settings (gear icon on the top right) > Webcams. The default: **URL: /webcam/?action=snapshot** can normally be used.

Step 10 — Troubleshooting



- It is usually no problem to reload the old firmware via Prusaslicer if the Klipper system does not work.

Step 11 — Credits



- Thanks go to Sven Kratzmeier for providing his configuration files, and to Bernd Brinkert for providing the German manual and the image cariclipp.img