



Installing Klipper on Artillery Sidewinder X2



Website : <https://papy-3d-factory.xyz>

Tiktok : https://www.tiktok.com/@papy_3d_factory

Github : <https://github.com/Papy-3D-Factory?tab=repositories/>

The objective of this tutorial is to allow you to install Klipper on an Artillery Sidewinder X2 printer.



!! Warning !! Please read this before performing any manipulation.

This procedure has been tested and approved, it is functional ONLY for the Artillery Sidewinder X2 associated with a Bigtreetech Pi (Btt Pi v1.2).

(this procedure is NOT valid for a Raspberry pi, Orange Pi or any other Pad!!!)

I would also like to remind you that there is always a potential risk of blocking your motherboard in the event of a power cut or handling error.

I cannot be held responsible for any damage caused, although generally there are rarely any problems.

You are responsible for the manipulations made on your devices.

The objective of this tutorial is not to create a Pad klipper. The administration of Klipper will therefore be done from your computer (or tablet, telephone).

The primary goal is to provide a solution, as economical as possible, in order to be able to control your 3D printer with Klipper.

Without screen, the Btt Pi v1.2 will cost you less than 40 euro...

However, if you later want to add a screen to the Btt Pi, this is quite possible and will therefore transform your Btt Pi into a Pad.

To successfully install Klipper on your Artillery Sidewinder X2 you will need the following items:

- An Artillery Sidewinder X2 printer
- A motherboard **Btt Pi v1.2** <https://biqu.equipment/products/bigtreetech-btt-pi-v1-2>
- The software **Raspberry Pi Imager** <https://www.raspberrypi.com/software/>
- The **image OS** provided by Bigtreetech <https://github.com/bigtreetech/CB1/releases>

CB1_Debian11_Klipper_kernel5.16_202300712.img.sha256	65 Bytes	3 weeks ago
CB1_Debian11_Klipper_kernel5.16_202300712.img.xz	1.24 GB	3 weeks ago
CB1_Debian11_minimal_kernel5.16_20230712.img.sha256	65 Bytes	3 weeks ago
CB1_Debian11_minimal_kernel5.16_20230712.img.xz	327 MB	3 weeks ago
Source code (zip)		May 4
Source code (tar.gz)		May 4

- A good quality **microSD card** (example SanDisk) with a capacity of at least 16GB
- The software **Pronterface** <https://www.pronterface.com/>
- The software **MobaXterm** <https://mobaxterm.mobatek.net/download-home-edition.html>

Step No 1: Installing the OS image on the microSD card

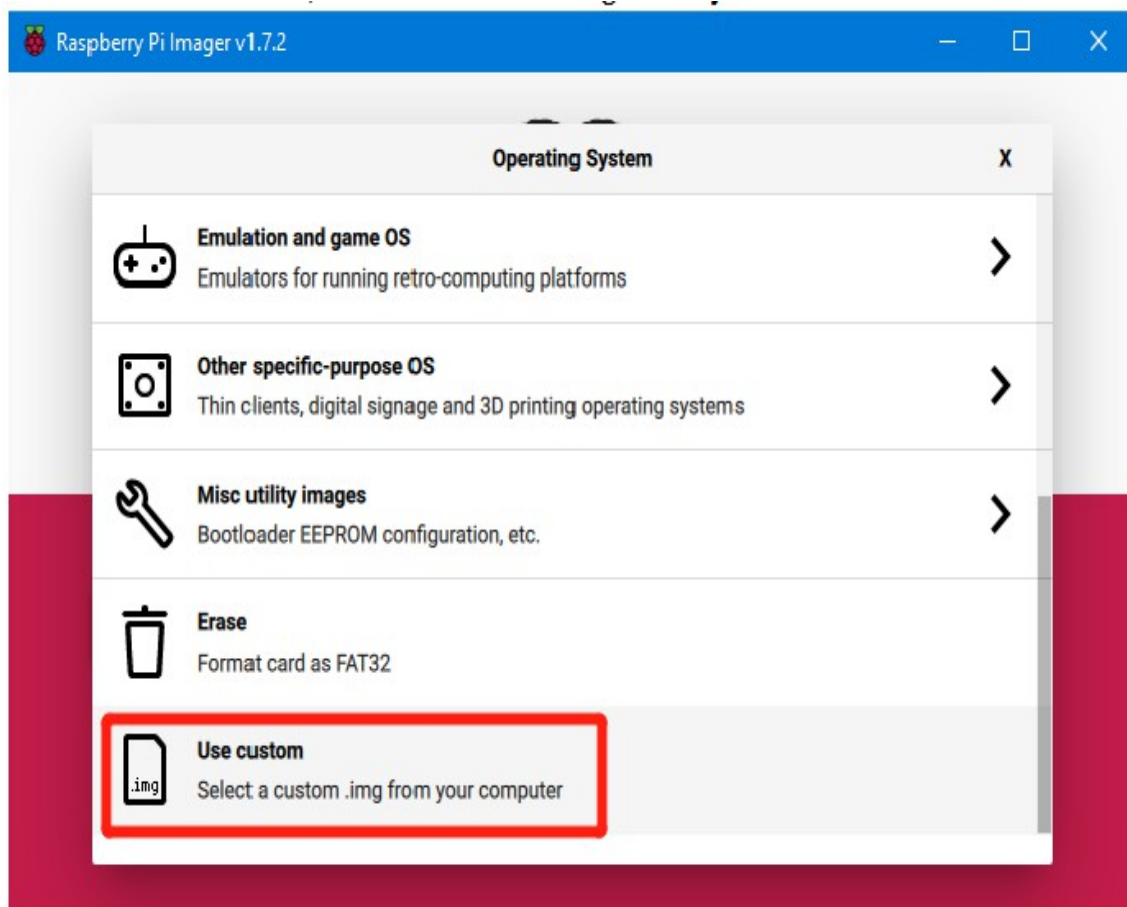
Launch Raspberry Pi Imager

Insert the microSD card into your computer

Click on "CHOOSE OS"



Select "USE CUSTOM" then choose the OS image you downloaded.

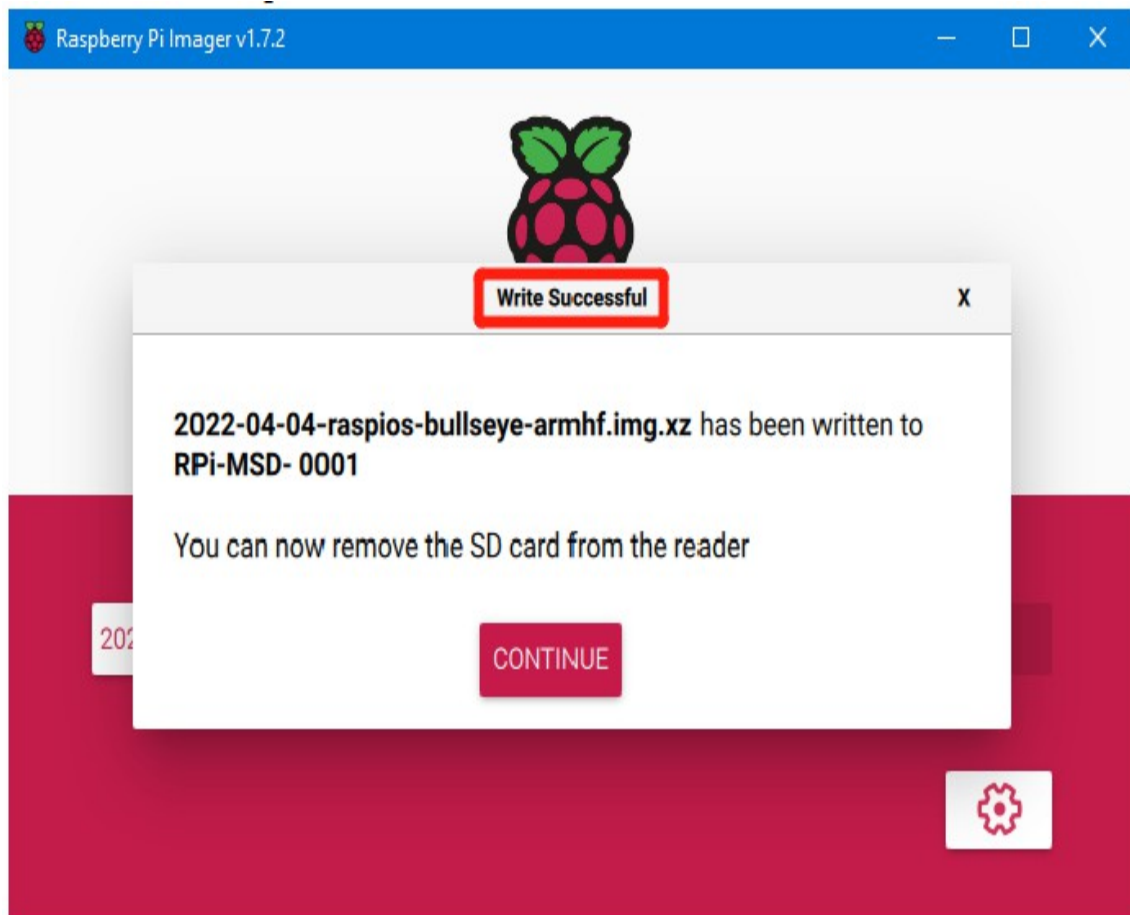


Select the microSD card then click on "WRITE".

Be careful not to touch the additional options, this will have the effect of blocking the OS at startup.



Wait for the end of the writing of the OS on the microSD card



Step 2: Configuring network settings

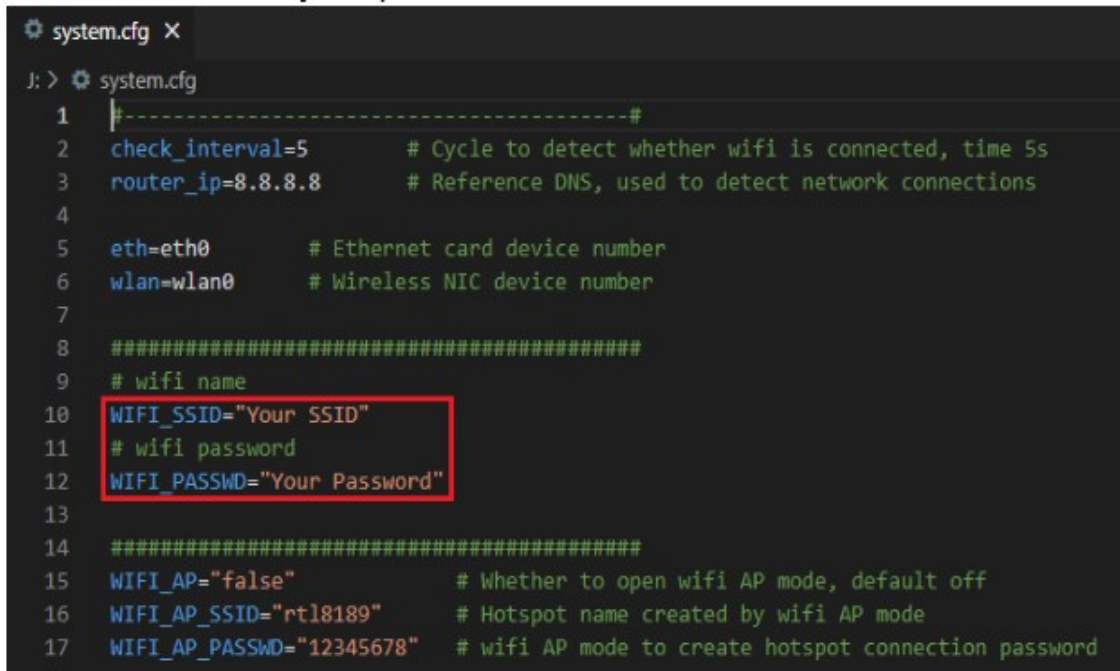
Wi-Fi settings :

Once the writing of the OS to the microSD card is complete, you will find a FAT32 partition recognized by your computer as a "BOOT" disk.

Open the drive (BOOT) then search for the "system.cfg" file

BOOT (J:)					
名称	修改日期	类型	大小		
dtb	2022/11/9 2:50	文件夹			
dtb-5.16.17-sun50iw9	2022/11/9 2:50	文件夹			
gcode	2022/11/9 10:35	文件夹			
.next	2022/11/9 2:50	NEXT 文件	0 KB		
BoardEnv.txt	2022/11/9 2:53	文本文档	1 KB		
boot.bmp	2022/11/9 2:52	BMP 图像	10 KB		
boot.cmd	2022/11/9 2:48	Windows 命令脚本	4 KB		
boot.scr	2022/11/9 2:53	屏幕保护程序	4 KB		
config-5.16.17-sun50iw9	2022/11/9 2:39	17-SUN50IW9 ...	176 KB		
Image	2022/11/9 2:39	文件	20,631 KB		
initrd.img-5.16.17-sun50iw9	2022/11/9 2:54	17-SUN50IW9 ...	9,171 KB		
system.cfg	2022/11/10 17:52	文本文档	1 KB		
System.map-5.16.17-sun50iw9	2022/11/9 2:39	17-SUN50IW9 ...	4,239 KB		
ulnitrd	2022/11/9 2:54	文件	9,171 KB		
vmlinuz-5.16.17-sun50iw9	2022/11/9 2:39	17-SUN50IW9 ...	20,631 KB		

Open the "system.cfg" file with NOTEPAD and replace the WIFI-SSID with the name of your WIFI network, the PASSWORD with your WIFI password, then save the file.



```
system.cfg X
J: > system.cfg
1 |-----#
2 check_interval=5      # Cycle to detect whether wifi is connected, time 5s
3 router_ip=8.8.8.8     # Reference DNS, used to detect network connections
4
5 eth=eth0             # Ethernet card device number
6 wlan=wlan0           # Wireless NIC device number
7
8 #####
9 # wifi name
10 WIFI_SSID="Your SSID"
11 # wifi password
12 WIFI_PASSWD="Your Password"
13
14 #####
15 WIFI_AP="false"      # Whether to open wifi AP mode, default off
16 WIFI_AP_SSID="rtl8189" # Hotspot name created by wifi AP mode
17 WIFI_AP_PASSWD="12345678" # wifi AP mode to create hotspot connection password
```

You can now remove the microSD card from your computer to insert it into the Btt Pi.

Start the Btt pi.

Wait 1-2 minutes for the system to load.

The Btt Pi will automatically be assigned an IP address.

To know the ip address assigned to the Btt Pi you can either consult the data of your router or follow the following tutorial:

<https://www.malekal.com/comment-faire-un-scan-ip-reseau-local-lan/>

Your Btt pi will be identified as **BTT-CB1**

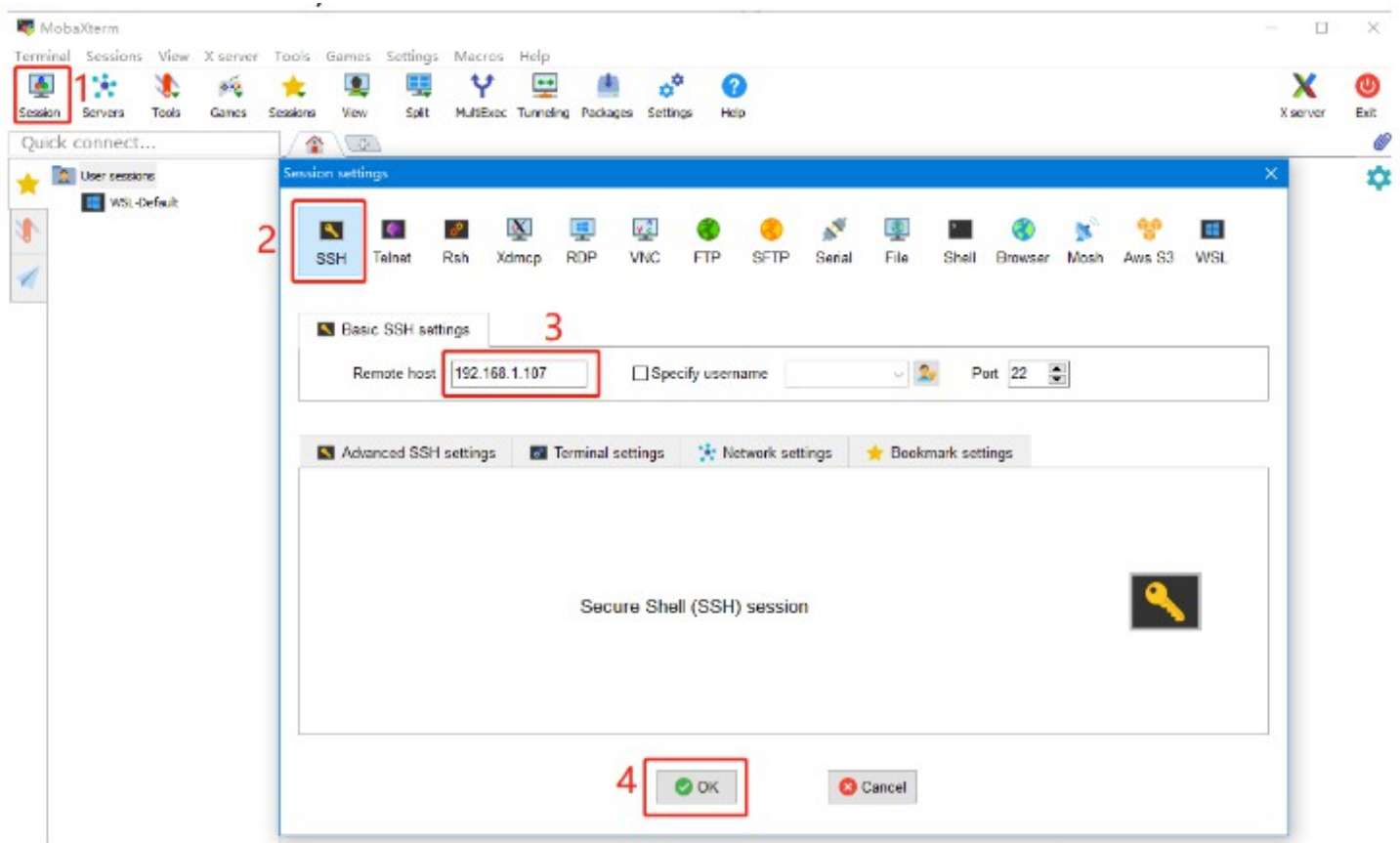
Step No 3: Configuring the Btt Pi

Install the MobaXterm software and launch it

Click on “Session” then on “SSH”

Enter the IP address of the Btt Pi in the “Remote host” box

Click on “OK”

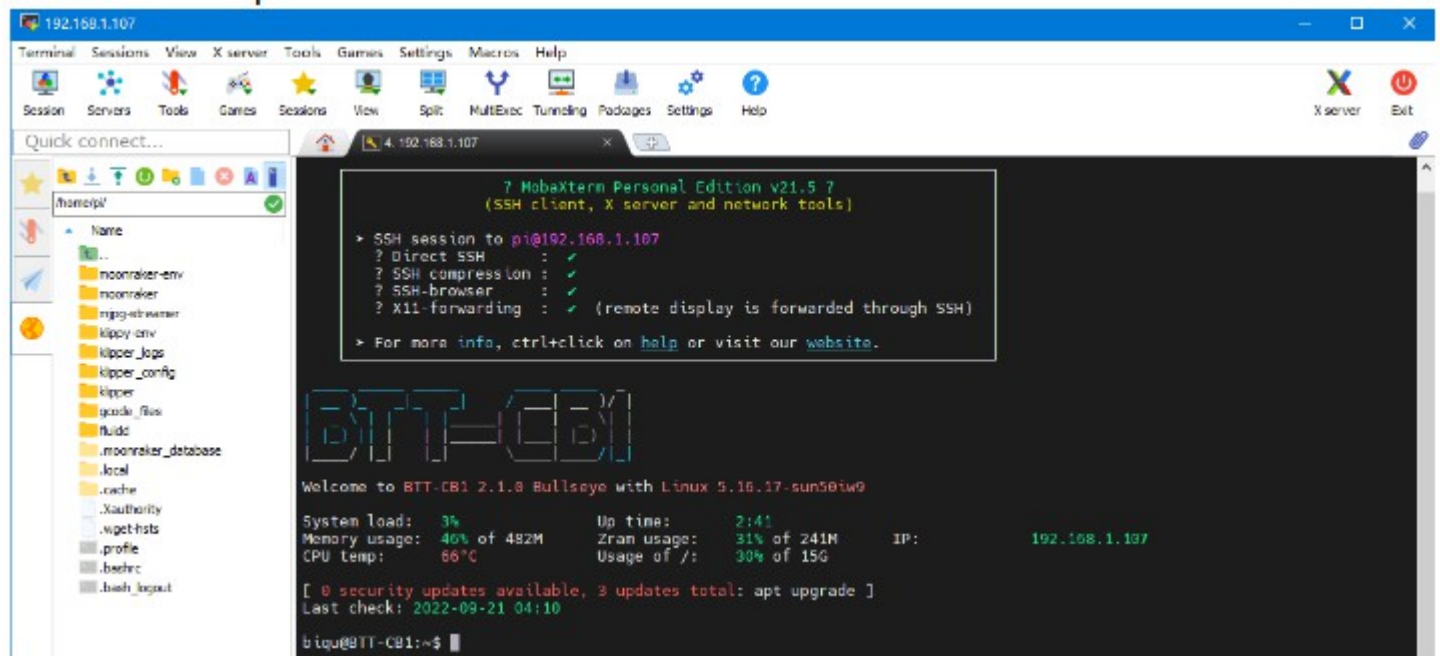


Note: your computer and your Btt Pi must be on the SAME local network.

Once the connection has been established with your Btt Pi, enter the identifiers to log in:

Login : biqu

Password : biqu



Compiling firmware :

Once logged in, type in the terminal :

```
cd klipper
```

```
make menuconfig
```

The following configuration window will be displayed, with the keyboard movement keys reproduce the configuration as shown below :

[*] Enable extra low-level configuration options

Micro-controller Architecture (STMicroelectronics STM32) --->

Processor model (STM32F401) --->

Bootloader offset (No bootloader) --->

Clock Reference (8 MHz crystal) --->

Communication interface (USB (on PA11/PA12)) --->

```
(Top)
Klipper Firmware Configuration
[*] Enable extra low-level configuration options
  Micro-controller Architecture (STMicroelectronics STM32) --->
  Processor model (STM32F401) --->
  Bootloader offset (No bootloader) --->
  Clock Reference (8 MHz crystal) --->
  Communication interface (USB (on PA11/PA12)) --->
  USB ids --->
  () GPIO pins to set at micro-controller startup (NEW)

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

Press 'q' and 'Y' to save the configuration.

```
type MAKE to compile the firmware.
```

The “klipper.bin” file will be generated and saved on your Btt Pi.

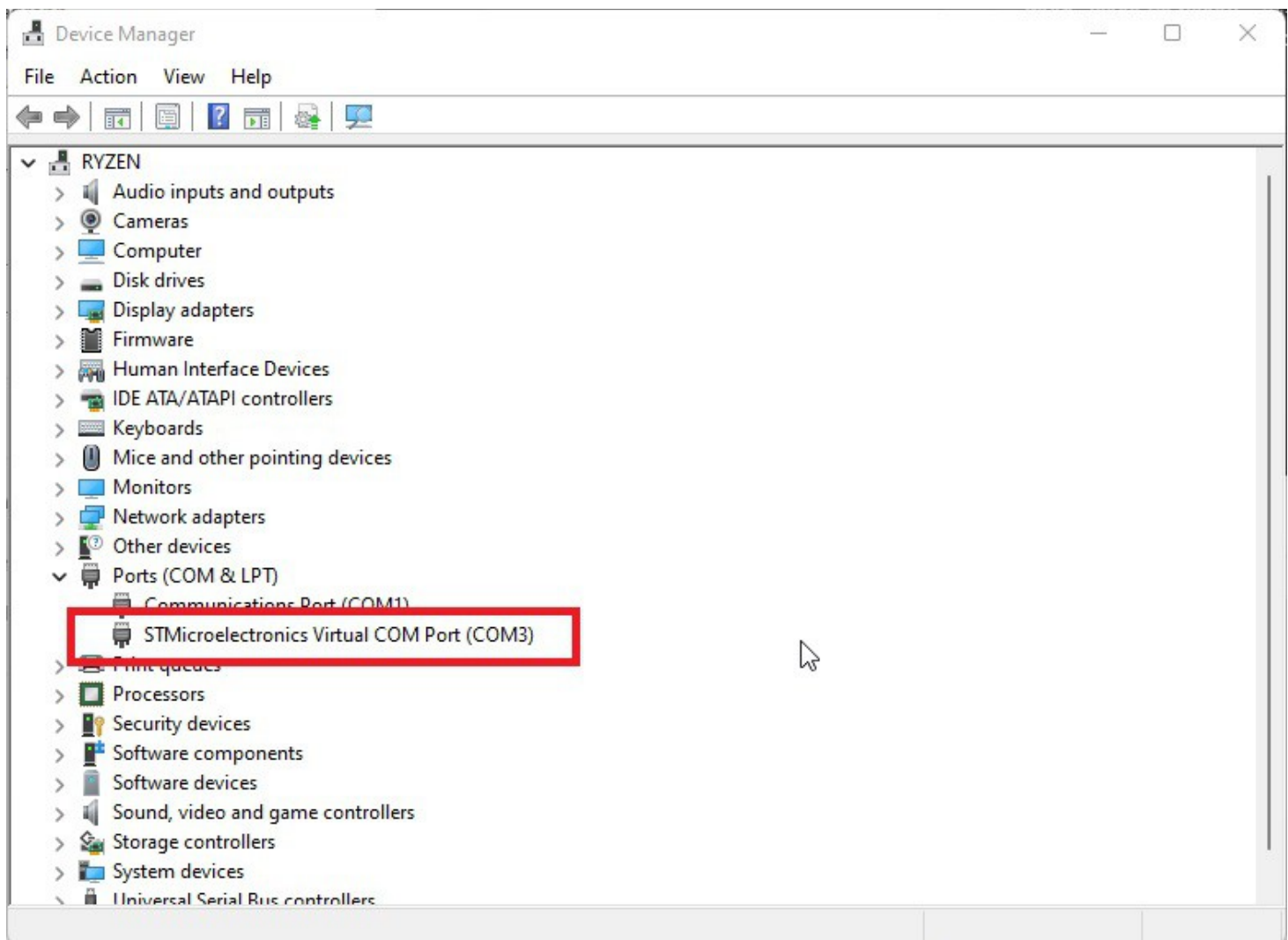
Step No 4: Printer flash

Switch the printer to DFU mode :

The Ruby 1.2 card used by Artillery printers must be put into DFU mode in order to flash the firmware.

This is done using the M997 command from a terminal window.

Connect your printer to the computer via a USB cable and check the COM port in Device Manager. In my case it is COM3



Open Pronterface and connect to printer using COM port and baud rate of 115200.

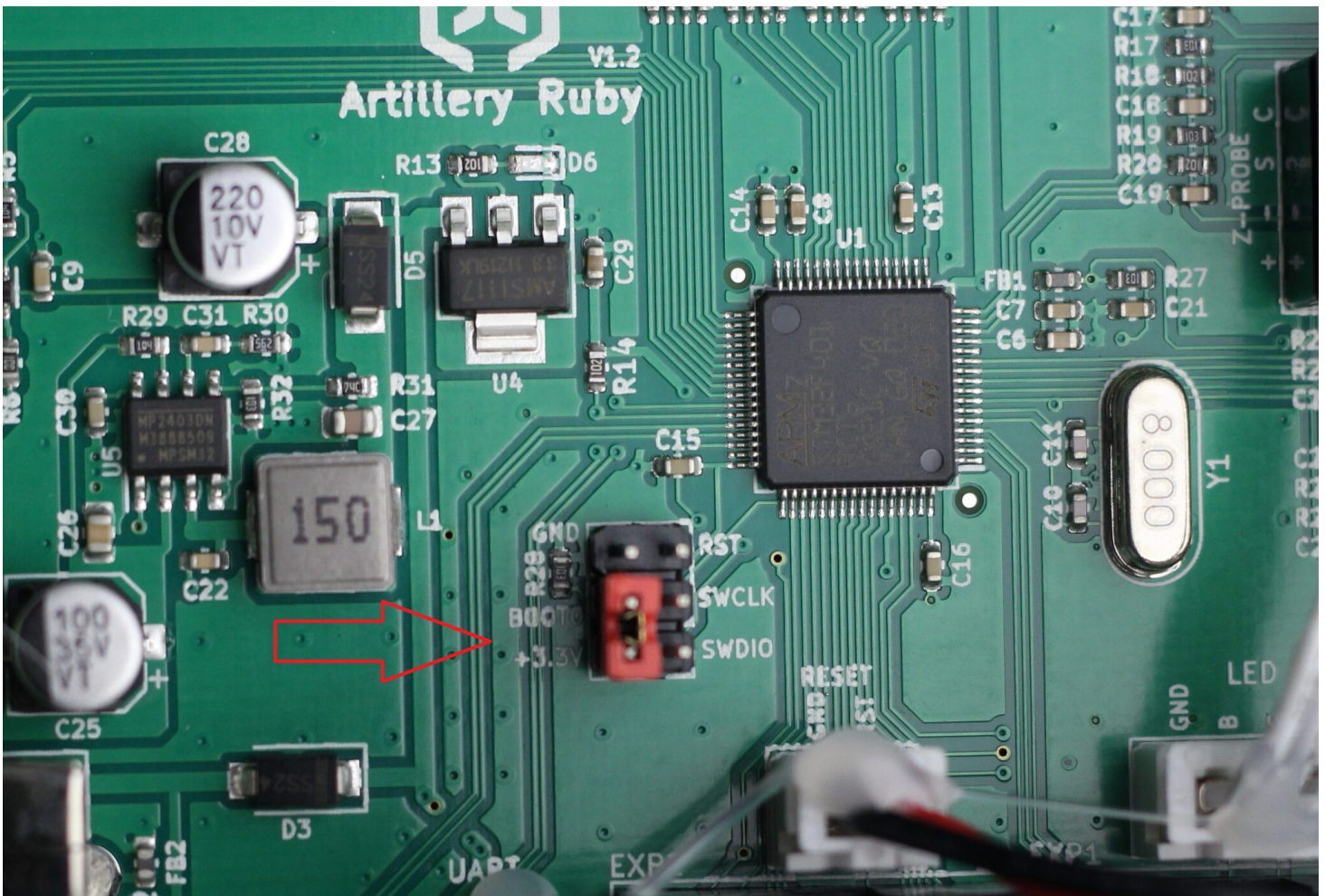
Execute the M997 command then go to the Flashing step.

If this command fails, you must put the machine into DFU mode using the jumper pin on the board.

To do this, you must remove the bottom cover of the printer in order to physically access the Artillery Ruby card.

Then you need to install a jumper to connect the BOOT and the +3.3V pin.

This connection will put the Ruby card into DFU mode and will flash the printer.



When the flashing process is complete, the jumper can be removed.

Flash the firmware into the printer:

Return to the MobaXterm terminal window and connect the USB cable from your printer to the Btt Pi,

Enter the following command to list all USB devices:

```
lsusb
```

A list of USB devices will be returned.

Our printer will be listed under STMicroelectronics STM Device in DFU Mode.

We need to know the USB device ID.

```
pi@mainsailos:~/klipper $ lsusb
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 006: ID 0483:df11 STMicroelectronics STM Device in DFU Mode
Bus 001 Device 002: ID 2109:3431 VIA Labs, Inc. Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
pi@mainsailos:~/klipper $
```

Start the flashing process with the following command:

```
make flash FLASH_DEVICE=0483:df11
```

(**FLASH_DEVICE=XXXX:XXXX** ou **XXXX:XXXX** is the id value found with the command **lsusb**)

The flashing process begins and lasts a few seconds.

```
pi@mainsailos: ~/klipper
pi@mainsailos:~/klipper $ lsusb
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 006: ID 0483:df11 STMicroelectronics STM Device in DFU Mode
Bus 001 Device 002: ID 2109:3431 VIA Labs, Inc. Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
pi@mainsailos:~/klipper $ make flash FLASH_DEVICE=0483:df11
Flashing out/klipper.bin to 0483:df11
sudo dfu-util -d ,0483:df11 -R -a 0 -s 0x8000000:leave -D out/klipper.bin

dfu-util 0.9

Copyright 2005-2009 Weston Schmidt, Harald Welte and OpenMoko Inc.
Copyright 2010-2016 Tormod Volden and Stefan Schmidt
This program is Free Software and has ABSOLUTELY NO WARRANTY
Please report bugs to http://sourceforge.net/p/dfu-util/tickets/

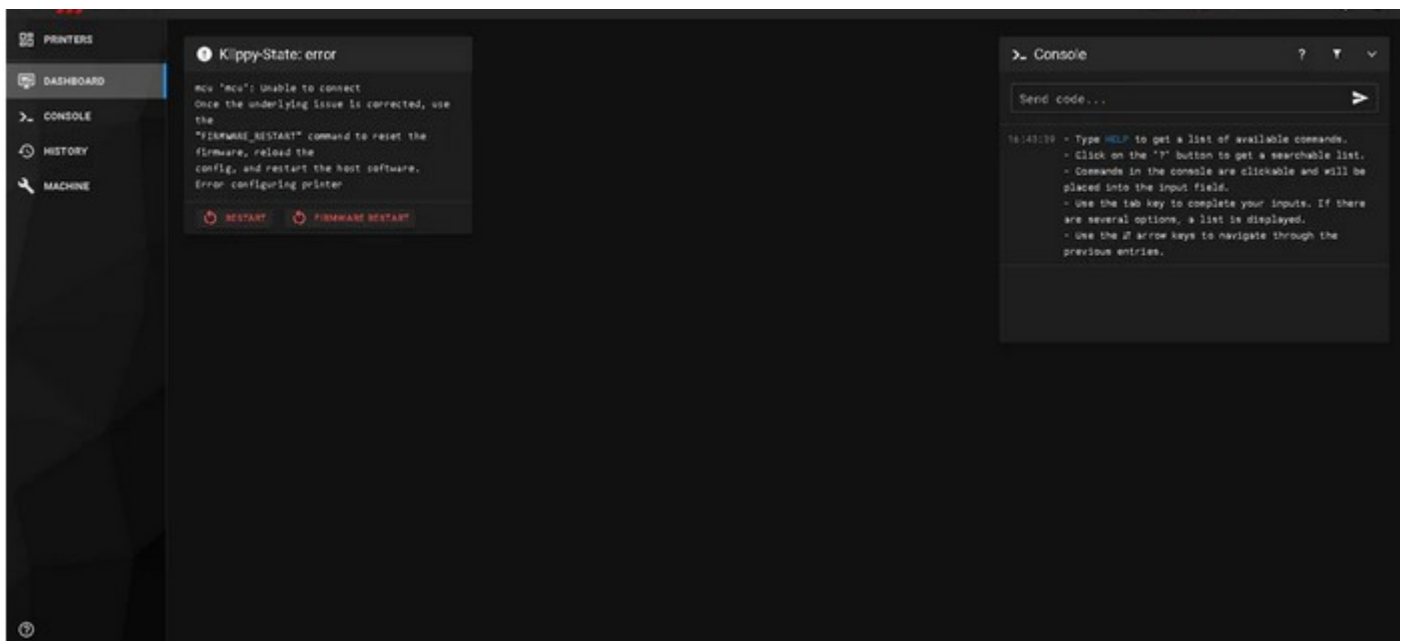
dfu-util: Invalid DFU suffix signature
dfu-util: A valid DFU suffix will be required in a future dfu-util release!!!
Opening DFU capable USB device...
ID 0483:df11
Run-time device DFU version 011a
Claiming USB DFU Interface...
Setting Alternate Setting #0 ...
Determining device status: state = dfuERROR, status = 10
dfuERROR, clearing status
Determining device status: state = dfuIDLE, status = 0
dfuIDLE, continuing
DFU mode device DFU version 011a
Device returned transfer size 2048
DfuSe interface name: "Internal Flash  "
Downloading to address = 0x08000000, size = 23540
Download      [=====] 60% 14336 bytes
```


Step 5: Configuring Klipper

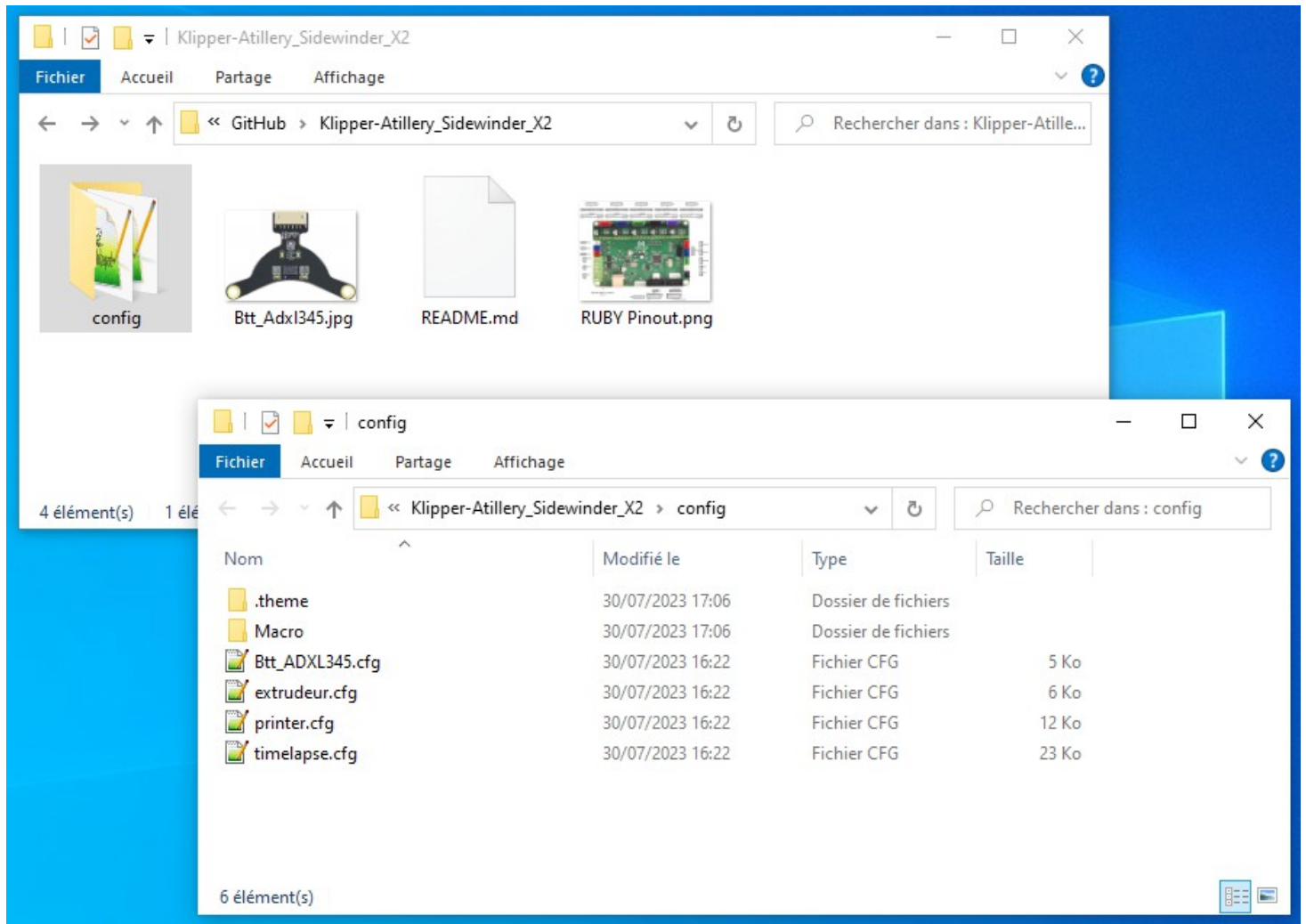
You can now connect to your interface from a web browser with the `http://IP` address of the BTT Pi

If everything went well you should arrive on this page with an error message.

It's normal don't panic, we are now going to configure Klipper so that it can recognize and communicate with your newly flashed printer.



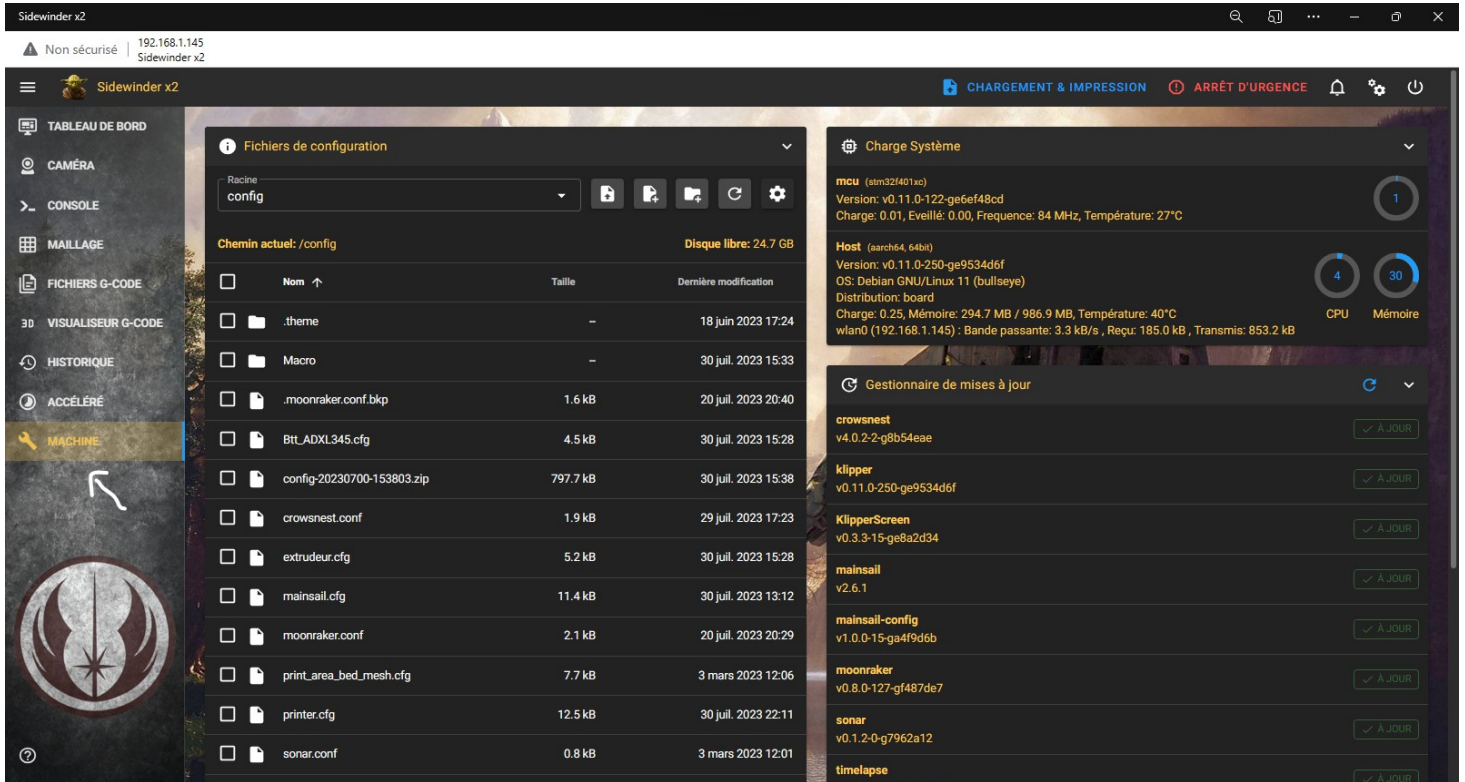
We will now load the configuration files provided with this tutorial (also available in my github).



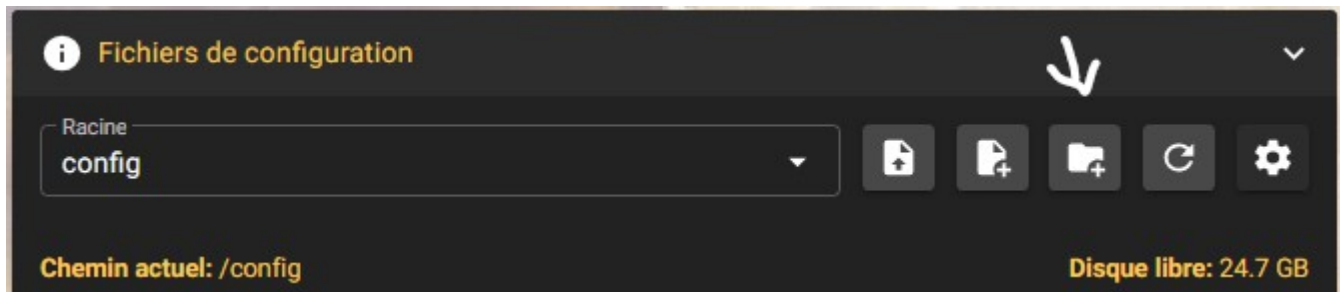
We are going to use all the files that are in the config directory.

Attention the files present in the zip can be different from the photo if above according to the evolution and the development of these files. It will be necessary to use ALL the files present in the config directory.

From the web interface, click on Machine in the left menu.

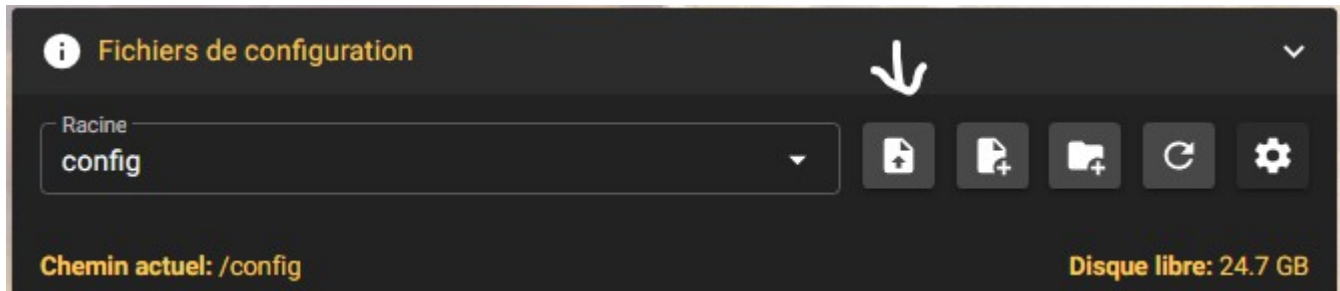


Click on the Folder icon and create the .theme and Macro folders



Chemin actuel: /config		Disque libre: 24.7 GB	
<input type="checkbox"/>	Nom ↑	Taille	Dernière modification
<input type="checkbox"/>	.theme	—	18 juin 2023 17:24
<input type="checkbox"/>	Macro	—	30 juil. 2023 15:33

Then click on the Upload icon



Select all the configuration files and load them keeping their original directory.

<input type="checkbox"/>	Nom ↑	Taille	Dernière modification
<input type="checkbox"/>	.theme	–	18 juin 2023 17:24
<input type="checkbox"/>	Macro	–	30 juil. 2023 15:33
<input type="checkbox"/>	.moonraker.conf.bkp	1.6 kB	20 juil. 2023 20:40
<input type="checkbox"/>	Btt_ADXL345.cfg ←	4.5 kB	30 juil. 2023 15:28
<input type="checkbox"/>	config-20230700-153803.zip	797.7 kB	30 juil. 2023 15:38
<input type="checkbox"/>	crowsnest.conf	1.9 kB	29 juil. 2023 17:23
<input type="checkbox"/>	extrudeur.cfg ↩	5.2 kB	30 juil. 2023 15:28
<input type="checkbox"/>	mainsail.cfg	11.4 kB	30 juil. 2023 13:12
<input type="checkbox"/>	moonraker.conf	2.1 kB	20 juil. 2023 20:29
<input type="checkbox"/>	print_area_bed_mesh.cfg	7.7 kB	3 mars 2023 12:06
<input type="checkbox"/>	printer.cfg ←	12.5 kB	30 juil. 2023 22:11
<input type="checkbox"/>	sonar.conf	0.8 kB	3 mars 2023 12:01
<input type="checkbox"/>	timelapse.cfg	21.8 kB	3 mars 2023 12:01

Racine
config



Chemin actuel: /config/Macro

Disque libre: 24.7 GB

<input type="checkbox"/>	Nom ↑	Taille	Dernière modification
<input type="checkbox"/>	..		
<input type="checkbox"/>	End_Print.cfg	4.7 kB	30 juil. 2023 15:36
<input type="checkbox"/>	Filament_Change_M600.cfg	4.9 kB	30 juil. 2023 15:36
<input type="checkbox"/>	Input_Shaper.cfg	4.9 kB	30 juil. 2023 15:36
<input type="checkbox"/>	Led_Extrudeur_On_Off.cfg	4.5 kB	30 juil. 2023 15:31
<input type="checkbox"/>	Load_UnLoad_filament.cfg	4.9 kB	30 juil. 2023 15:32
<input type="checkbox"/>	Macro_Systeme.cfg	6.3 kB	30 juil. 2023 15:32
<input type="checkbox"/>	Material_Pressure_Advance.cfg	4.7 kB	30 juil. 2023 15:34
<input type="checkbox"/>	Pid.cfg	4.7 kB	30 juil. 2023 15:34
<input type="checkbox"/>	Position_Neutre.cfg	4.4 kB	30 juil. 2023 15:34
<input type="checkbox"/>	Reglage_Bed.cfg	4.9 kB	30 juil. 2023 15:35
<input type="checkbox"/>	Start_Print.cfg	5.5 kB	30 juil. 2023 15:35
<input type="checkbox"/>	Z_offset.cfg	4.8 kB	30 juil. 2023 15:36

Fichiers

25 ▼

1-12 of 12



Racine
config



Chemin actuel: /config/.theme

Disque libre: 24.7 GB



Nom ↑

Taille

Dernière modification



..



custom.css

0.5 kB

18 juin 2023 17:24



main-background.jpg

261.3 kB

18 juin 2023 17:24



sidebar-background.png

329.6 kB

18 juin 2023 17:24



sidebar-logo.png

181.3 kB

18 juin 2023 17:24

Fichiers

25 ▼

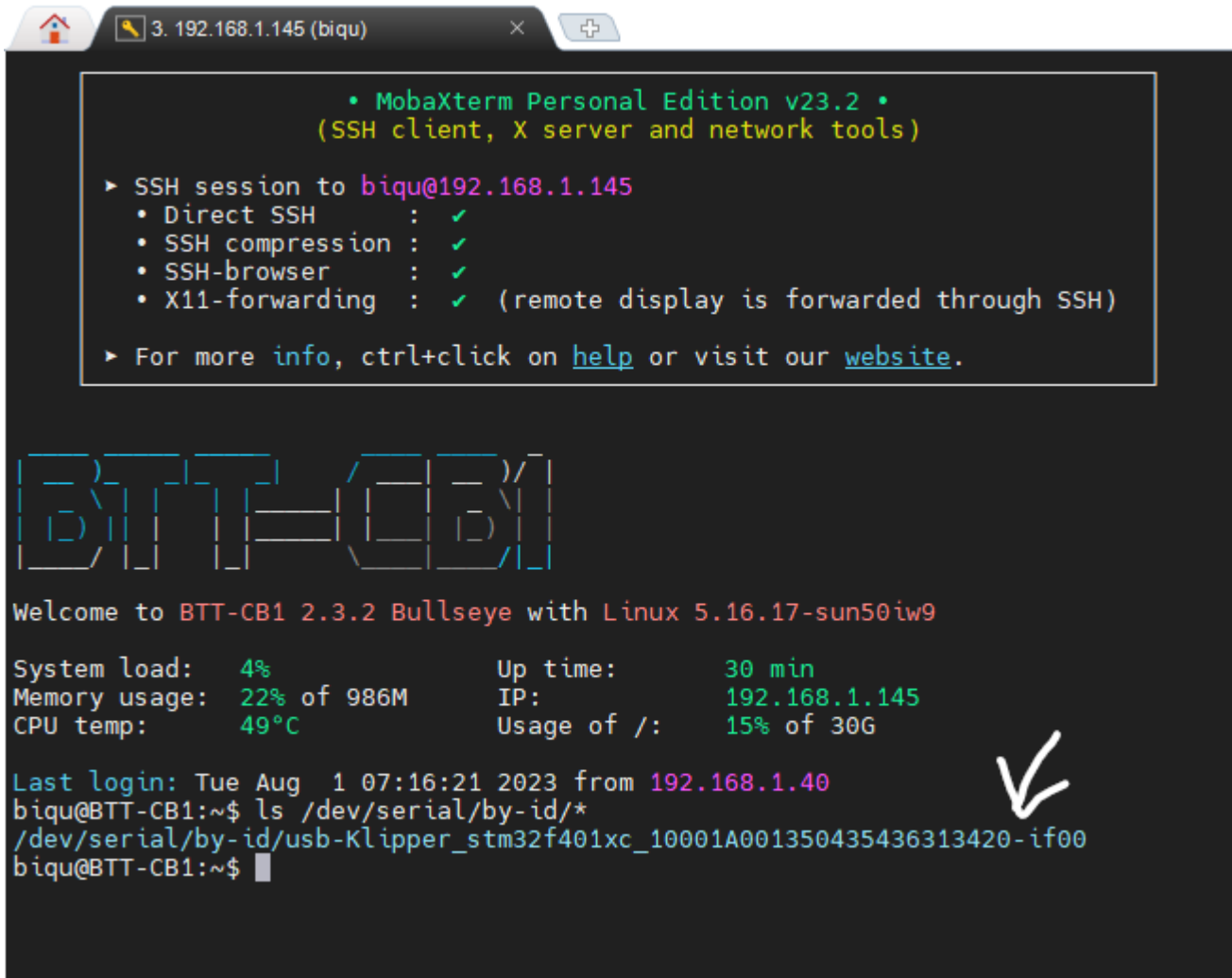
1-4 of 4



Connect the printer to your Btt Pi with a USB cable.

In MobaXterm type the following command:

```
ls /dev/serial/by-id/*
```

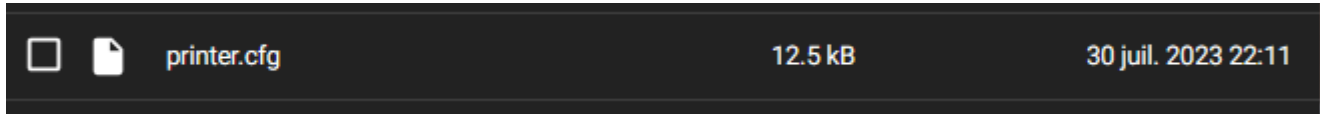


The screenshot shows a MobaXterm window titled "3. 192.168.1.145 (biqu)". The terminal displays the MobaXterm logo and version information: "MobaXterm Personal Edition v23.2 (SSH client, X server and network tools)". It then shows the SSH session details for "biqu@192.168.1.145", including "Direct SSH", "SSH compression", "SSH-browser", and "X11-forwarding" (remote display is forwarded through SSH). Below this, it says "For more info, ctrl+click on help or visit our website." The terminal then displays the BTT logo and the welcome message: "Welcome to BTT-CB1 2.3.2 Bullseye with Linux 5.16.17-sun50iw9". System statistics are shown: "System load: 4%", "Memory usage: 22% of 986M", "CPU temp: 49°C", "Up time: 30 min", "IP: 192.168.1.145", and "Usage of /: 15% of 30G". The last login is "Tue Aug 1 07:16:21 2023 from 192.168.1.40". The command "ls /dev/serial/by-id/*" is executed, and the output is "/dev/serial/by-id/usb-Klipper_stm32f401xc_10001A001350435436313420-if00". A white checkmark is drawn next to the output line.

```
• MobaXterm Personal Edition v23.2 •  
(SSH client, X server and network tools)  
  
► SSH session to biqu@192.168.1.145  
• Direct SSH : ✓  
• SSH compression : ✓  
• SSH-browser : ✓  
• X11-forwarding : ✓ (remote display is forwarded through SSH)  
  
► For more info, ctrl+click on help or visit our website.  
  
BTT  
Welcome to BTT-CB1 2.3.2 Bullseye with Linux 5.16.17-sun50iw9  
  
System load: 4% Up time: 30 min  
Memory usage: 22% of 986M IP: 192.168.1.145  
CPU temp: 49°C Usage of /: 15% of 30G  
  
Last login: Tue Aug 1 07:16:21 2023 from 192.168.1.40  
biqu@BTT-CB1:~$ ls /dev/serial/by-id/*  
/dev/serial/by-id/usb-Klipper_stm32f401xc_10001A001350435436313420-if00  
biqu@BTT-CB1:~$
```

Note the result

In the Klipper web interface, open the printer.cfg file

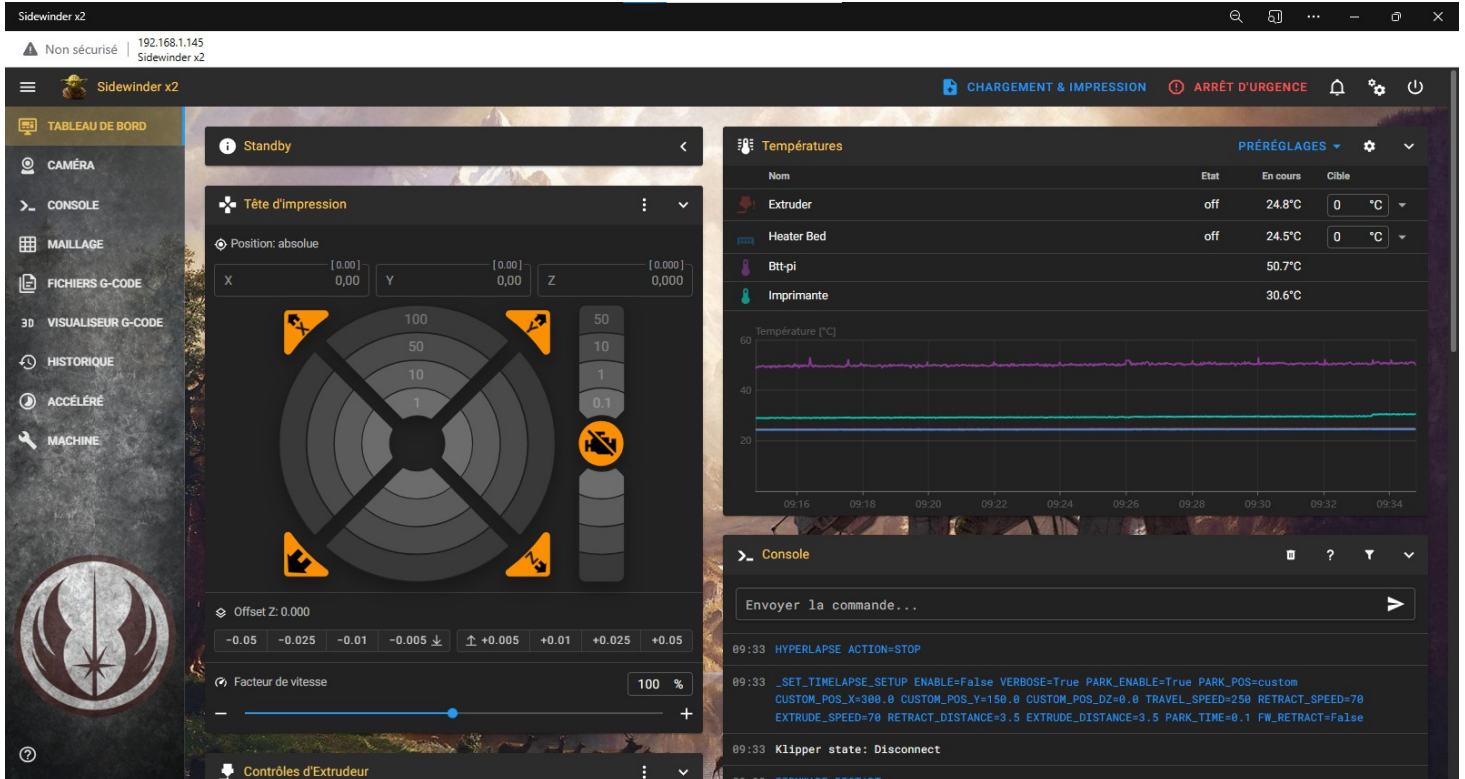


Find and modify the serial line with the serial number obtained previously

```
41
42 #####
43 # Définition du port COM #
44 #####
45
46 [mcu]
47 serial /dev/serial/by-id/usb-Klipper_stm32f401xc_10001A001350435436313420-if00
48 restart_method: command
49
50
```

Click on 'Save and restart'

If all went well you should have this screen:



Congratulation!!!

Your Artillery Sidewinder X2 printer is now connected to Klipper.

You will be able to move on to the second tutorial which will explain how to adjust your printer settings with Klipper and how to adjust your slicer for Klipper.

Hoping that this tutorial will have helped you and allowed you to switch to Klipper without too much difficulty.

In case of difficulties or problems, you can contact me on my social networks, I will do my best to try to answer you within the limits of my knowledge of course.



Website : <https://papy-3d-factory.xyz>

Tiktok : https://www.tiktok.com/@papy_3d_factory

Github : <https://github.com/Papy-3D-Factory?tab=repositories/>