

Install IPFire on a Raspberry Pi CM4 on DFRobot Carrier Board over Serial Console

This tutorial covers how to install a IPFire Firewall on to a [Raspberry Pi Compute Module 4](#) that is carried on [DFRobot's Router Carrier Board Mini](#) using a [serial console](#).



*Disclaimer: all provided links in this article **aren't** sponsored!*

Tutorial tested against a Raspberry Pi Compute Module 4 (4GB, rev. 1.2) and IPFire Core Update 179. During the setup a second Raspberry Pi 4 with local attached keyboard and monitor was used.

→ IPFire's wiki can be found [here](#).

→ And the DFRobot's wiki [here](#).

Preparation / Requirements

- SD-Card (32 GB) + SD-Card-Reader
- Raspberry Pi Compute Module 4 (4GB RAM recommended)
- Jumper Wires (Female to Female)
- Official Raspberry Pi USB-C Powersupply (CM4 requires 5V **3A!**)
- Configured and running Raspberry Pi (either with SSH-access or working display output)

Depending on your Setup:

- *HDMI-Cable*
- *Keyboard*

Download and flash the Image to the SD-Card

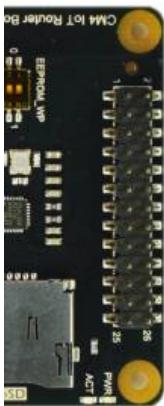
Download the aarch64 Flash Image from IPFire's webpage: ipfire.org/download. Then flash the Image on another computer to the SD-Card. Therefore you can use [Win32DiskImager](#) (Windows), the official [Raspberry Pi Imager](#) (Linux, Windows and MacOS) or [BalenaEtcher](#) (Web, Linux and Windows).

- **The compressed IMG is required, the ISO image will not work!**
- If experiencing boot issues when using newer hardware revisions have a look at the official IPFire wiki: wiki.ipfire.org!

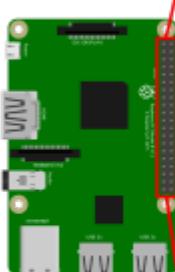
Before ejecting the SD-Card perform the following changes:

- Enable the serial console: add (if not present) enable_uart=1 to config.txt.
- Check if SERIAL-CONSOLE in uENV.txt is SERIAL-CONSOLE=ON.

Connect both Pi's with jumper cables



GPIO#	2nd func.	Pin#	Pin#	2nd func.	GPIO#
	+3.3 V	4	5	+5 V	
2	SDA1 (I2C)	3	6	GND	
3	SCL1 (I2C)	5	4		
4	GCLK	9	10	TXDO (UART)	14
GND		15	16	RXDO (UART)	15
17	GEN0	14	18	GEN1	
27	GEN2	11	12	GND	
22	GEN3	13	14	GEN4	23
+3.3 V		24	25	GEN5	24
10	MOSI (SPI)	17	20	GND	
9	MISO (SPI)	18	19	GEN6	25
11	SCLK (SPI)	21	22	CE0_N (SPI)	8
GND		23	24	CE1_N (SPI)	7
		25	26		



3.3V PWR	1	2	5V PWR
GPIO2 (SDA1 , I2C)	3	4	5V PWR
GPIO3 (SCL1 , I2C)	5	6	GND
GPIO4 (GPIO_GCLK)	7	8	(UART_RXD0) GPIO14
GND	9	10	(UART_RXD0) GPIO15
GPIO17 (GPIO_GEN0)	11	12	(GPIO_GEN1) GPIO18
GPIO27 (GPIO_GEN2)	13	14	GND
GPIO22 (GPIO_GEN3)	15	16	(GPIO_GEN4) GPIO23
3.3V PWR	17	18	(GPIO_GEN5) GPIO24
GPIO10 (SPI0_MOSI)	19	20	GND
GPIO9 (SPI0_MISO)	21	22	(GPIO_GEN6) GPIO25
GPIO11 (SPI0_CLK)	23	24	(SPI_CE0_N) GPIO8
GND	25	26	(SPI_CE1_N) GPIO7
ID_SD (I2C EEPROM)	27	28	ID_SC (I2C EEPROM)
GPIO5	29	30	GND
GPIO6	31	32	GPIO12
GPIO13	33	34	GND
GPIO19	35	36	GPIO16
GPIO26	37	38	GPIO20
GND	39	40	GPIO21

Now connect the following pins on your carrier board's GPIO and your second Pi's GPIO with three jumper wires (female to female):

Carrier Board (CM4)	2nd Raspberry Pi	Use
6	6	Ground
10	8	Receive and send
8	10	Send and receive

When connected properly you can power up the carrier board.

(It is recommended to first power up the second Pi and start the serial console before powering up the carrier board.)

Images sourced from siocours.lycees.nouvelle-aquitaine.pro and wiki.dfrobot.com - CM4 DFRobot Carrier Board

Open serial console with screen

Before you can open a serial connection: serial console must also be enabled on the Pi from which you wish to connect. Therefore check if your /boot/config.txt contains enable_uart=1. If not, add it at **top (!)** and reboot.

When using a Raspberry Pi 4B also add the following lines to your config.txt to get a human-readable console:

```
dtoverlay=pi3-disable-bt  
dtoverlay=pi3-miniuart-bt
```

Then you can execute the following command from the second Pi to connect to your serial console. It doesn't matter if you're using an attached keyboard and monitor or a SSH-connection.

```
screen /dev/ttys0 115200
```

→ you might install screen before by running the following command:

```
sudo apt install screen
```

Finally perform the setup of IPFire as usual!

With Ctrl+A and D you can quit the screen-session.

Resources used: cyberciti.biz - linux serial console, scribbles.net - uart communication between to Raspberry Pis and wiki.ipfire.org - Raspberry Pi 4 Model B

From:

<http://fixes.brecht-schule.hamburg/> - Fixes | Public BIT Wiki

Permanent link:

<http://fixes.brecht-schule.hamburg/raspberry-pi/ipfire-on-rpicm4?rev=1702765273>

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