

# 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.

## 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](https://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](http://wiki.ipfire.org)!

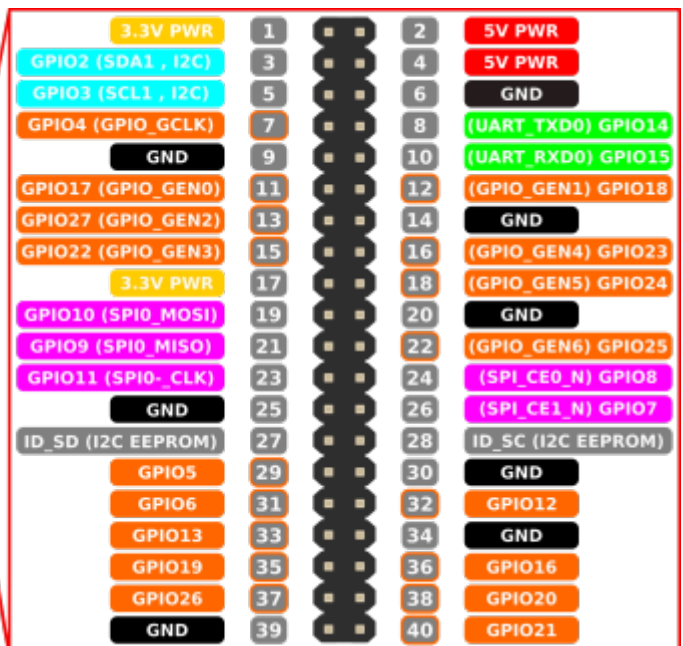
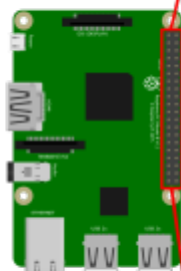
Before ejecting the SD-Card perform the following changes:

→ 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

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.)

Image sourced from [siocours.lycees.nouvelle-aquitaine.pro](https://siocours.lycees.nouvelle-aquitaine.pro)

## 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.

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](https://cyberciti.biz/linux/serial-console/), [scribles.net - uart communication between to Raspberry Pis](https://scribles.net/uart-communication-between-to-raspberry-pis/) and [wiki.ipfire.org - Raspberry Pi 4 Model B](https://wiki.ipfire.org/Raspberry-Pi-4-Model-B)

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