UserGuide

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FullScale

Analog Solutions

MIPI software pack installation - User Guide

Online documentation :

https://docs.fullscale-labs.com/UG034/v1.0.0/

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1. References

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Related documents:

- `UG026` MIPI-A1 Interface Board UserGuide
- `UG028` MD-MZ-I313 UserGuide
- `UG033` MIPI Viewer UserGuide
- `UG035` DB-MIPI-A1 Driver UserGuide
- `UG032` MD-MZ-I313 Driver UserGuide

2. Abbreviation table

CSI	Camera Serial Interface
DKMS	Dynamic Kernel Module Support
GPU	Graphical Processing Unit
MIPI	Mobile Industry Processor Interface
SSH	Secure Shell Protocol
USB	Universal Serial Bus

3. Introduction

This guide explains how to install the MIPI software pack on a Raspberry Pi 4, a Raspberry Pi 5 or an NVIDIA Jetson Orin Nano developer kit: the Linux driver of your MIPI board, the device tree overlays that declare it to Linux, MIPI Viewer, the application that shows its video, and libmipi, the library MIPI Viewer uses.

The driver is managed by DKMS, so it is rebuilt automatically after each Linux update.

The Debian packages (*.deb) were sent by FullScale at the time of shipment.
If you did not receive the download links, please contact your FullScale sales representative.

Note

Keep the Raspberry Pi or Jetson connected to the internet during the entire installation. The system needs to download dependency packages.

4. Prerequisites

- One of:
  - a Raspberry Pi 4 or Raspberry Pi 5 running Raspberry Pi OS Trixie 64-bit, with desktop
  - an NVIDIA Jetson Orin Nano developer kit running Jetson Linux R39 (Ubuntu 24.04)
- The MIPI boards connected to its CSI connectors, with the Raspberry Pi or Jetson switched off
- Internet connection
- The packages provided by FullScale:

Package	Contents	Needed
`db-mipi-a1-driver-dkms`	Linux driver of the MIPI-A1 Interface Board	With a MIPI-A1 Interface Board
`md-mz-i313-driver-dkms`	Linux driver of the MD-MZ-I313	With an MD-MZ-I313
`fullscale-mipi-overlays-rpi`	Device tree overlays of the MIPI boards, for the Raspberry Pi	On a Raspberry Pi
`fullscale-mipi-overlays-jetson`	Device tree overlays of the MIPI boards, for the Jetson	On a Jetson
`libmipi`	Library used by MIPI Viewer	Always
`mipi-viewer`	MIPI Viewer	Always

5. Packages installation

To install the packages, please follow the steps below:

1. Copy the packages to the Raspberry Pi or Jetson (using SSH or USB stick).
2. Open a terminal in the folder that holds them, and move them to a folder in `/tmp` to prevent apt warnings:

```
$ mkdir /tmp/mipi-packages
$ mv ./*.deb /tmp/mipi-packages/
```

3. Install the packages:

```
$ sudo apt install /tmp/mipi-packages/*.deb
```

The installation will automatically pull in any required dependencies from the internet, and build the drivers.

To update the software pack, install the new packages the same way.

6. Configuration

Linux must be told which MIPI board is on which CSI connector, so that the board's driver loads. This is done once, after the first installation.

6.1. On a Raspberry Pi

1. Edit the configuration file:

```
$ sudo nano /boot/firmware/config.txt
```

2. At the very end of the file, add `[all]` and one line per MIPI board, from the table below. For example, for a MIPI-A1 Interface Board on a Raspberry Pi 4:

```
[all]
dtoverlay=db-mipi-a1
```

Connector	Line
Raspberry Pi 4	`dtoverlay=db-mipi-a1`
Raspberry Pi 5, CAM/DISP 1	`dtoverlay=db-mipi-a1`
Raspberry Pi 5, CAM/DISP 0	`dtoverlay=db-mipi-a1,cam0`

The lines are for the MIPI-A1 Interface Board. For an MD-MZ-I313, write `md-mz-i313` in place of `db-mipi-a1`.

A Raspberry Pi 5 with a MIPI-A1 Interface Board on CAM/DISP 0 and an MD-MZ-I313 on CAM/DISP 1 takes both lines:

```
[all]
dtoverlay=db-mipi-a1,cam0
dtoverlay=md-mz-i313
```

Important

Leave the rest of the file as it is. In particular, `dtoverlay=vc4-kms-v3d` enables the GPU, which MIPI Viewer needs.

3. Save the file (`Ctrl` + `o` , then `Enter` , then `Ctrl` + `x`).
4. Reboot the Raspberry Pi:

```
$ sudo reboot
```

6.2. On a Jetson Orin Nano developer kit

The MIPI boards are selected with Jetson-IO, under its header 2, **Jetson 22pin CSI Connector**. It lists one entry per combination of boards on the two CSI connectors, CAM0 and CAM1:

MIPI boards	Jetson-IO entry
One, on CAM0 or on CAM1	**FullScale DB-MIPI-A1 on CAM0**, **FullScale DB-MIPI-A1 on CAM1**
The same on both connectors	**FullScale DB-MIPI-A1 on CAM0 and CAM1**
A different one on each connector	**FullScale DB-MIPI-A1 on CAM0 and MD-MZ-I313 on CAM1**

The examples are for the MIPI-A1 Interface Board (DB-MIPI-A1). The MD-MZ-I313 has the same entries.

1. List the entries:

```
$ sudo /opt/nvidia/jetson-io/config-by-hardware.py -l
```

   The FullScale entries are under header 2, beside the other entries installed:

```
Header 1 [default]: Jetson 40pin Header
  Available hardware modules:
  1. Adafruit SPH0645LM4H
  ...
Header 2: Jetson 22pin CSI Connector
  Available hardware modules:
  1. Camera IMX219 Dual
  ...
  10. FullScale DB-MIPI-A1 on CAM0
  11. FullScale DB-MIPI-A1 on CAM0 and CAM1
  12. FullScale DB-MIPI-A1 on CAM0 and MD-MZ-I313 on CAM1
  13. FullScale DB-MIPI-A1 on CAM1
  14. FullScale MD-MZ-I313 on CAM0
  15. FullScale MD-MZ-I313 on CAM0 and CAM1
  16. FullScale MD-MZ-I313 on CAM0 and DB-MIPI-A1 on CAM1
  17. FullScale MD-MZ-I313 on CAM1
Header 3: Jetson M.2 Key E Slot
  No hardware configurations found!
```

2. Select yours, for example for a MIPI-A1 Interface Board on CAM0:

```
$ sudo /opt/nvidia/jetson-io/config-by-hardware.py -n 2="FullScale DB-MIPI-A1 on CAM0"
```

3. Reboot the Jetson:

```
$ sudo reboot
```

7. Usage

Once the system has rebooted, start MIPI Viewer from the applications menu (**FullScale Tools** on a Raspberry Pi), or with this command:

```
$ mipi-viewer
```

The window of the MIPI board opens. With two boards, the viewer first asks which one to open. If it says **No MIPI board found**, check the configuration above and the board's connection.

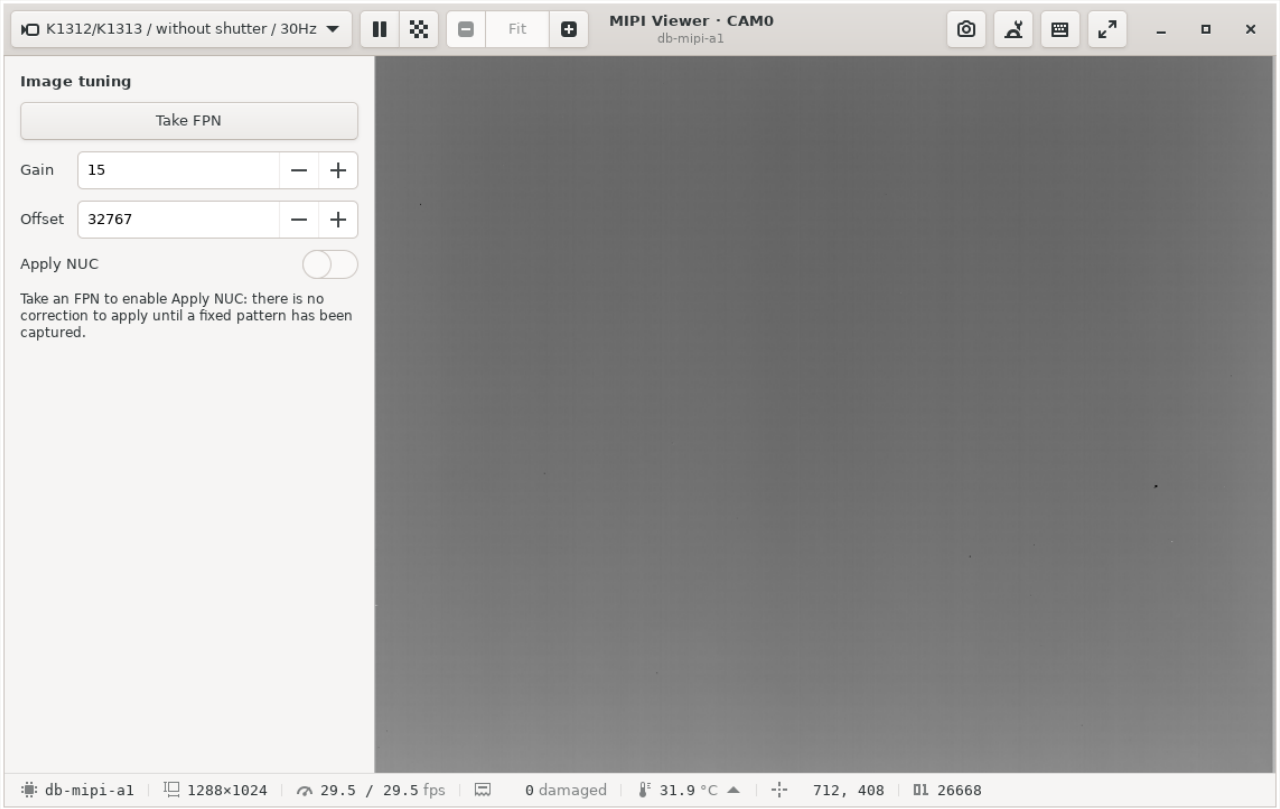


Figure 1: MIPI Viewer showing the video of a setup

Refer to `UG033` for the use of MIPI Viewer.

8. Revision history

Date	Author(s)	Version	Comments
04/2026	F. DESCAMPS	Rev. A	First document release
07/2026	F. DESCAMPS	Rev. B	Add a compatibility warning across Raspberry Pi versions
10/2026	F. DESCAMPS	Rev. C	Raspberry Pi 5 and Jetson Orin Nano developer kit, overlays package, two MIPI boards

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