

Use MIPI camera

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Raspberry Pi 5 combines the previous CSI and DSI interfaces into two dual-purpose CSI/DSI (MIPI) ports.

Configure the camera

To use the Raspberry Pi camera or a third-party camera, you can modify the camera configuration according to the table below:

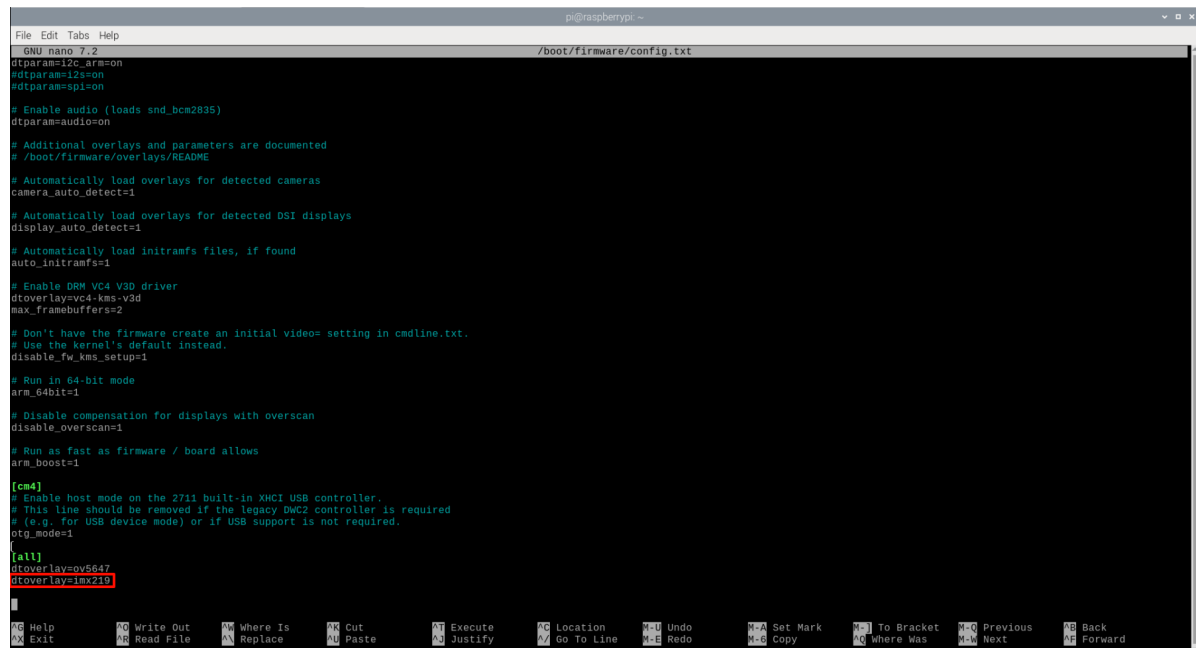
Camera module	File located at: <code>/boot/firmware/config.txt</code>
V1 camera (OV5647)	<code>dtoverlay=ov5647</code>
V2 camera (IMX219)	<code>dtoverlay=imx219</code>
HQ camera (IMX477)	<code>dtoverlay=imx477</code>
GS camera (IMX296)	<code>dtoverlay=imx296</code>
Camera module 3 (IMX708)	<code>dtoverlay=imx708</code>
IMX290 and IMX327	<code>dtoverlay=imx290,clock-frequency=74250000</code> or (both modules share IMX290 kernel driver; for the correct frequency, refer to the module vendor's instructions) <code>dtoverlay=imx290,clock-frequency=37125000</code>
IMX378 type	<code>dtoverlay=imx378</code>
OV9281 series	<code>dtoverlay=ov9281</code>

If you are not using the official Raspberry Pi camera, you can modify the `config.txt` file according to the content above the table and add the `dtoverlay` content to the `/boot/firmware/config.txt` file.

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

```
pi@raspberrypi:~ $ sudo nano /boot/firmware/config.txt
```

For example: Raspberry Pi uses IMX219 camera, connect the camera to the J4 interface of Raspberry Pi, and then modify the `/boot/firmware/config.txt` file:



```
File Edit Tabs Help
GNU nano 7.2 /boot/firmware/config.txt
dtparam=i2c_arm=on
dtparam=i2s=on
dtparam=spi=on

# Enable audio (loads snd_bcm2835)
dtparam=audio=on

# Additional overlays and parameters are documented
# /boot/firmware/overlays/README

# Automatically load overlays for detected cameras
camera_auto_detect=1

# Automatically load overlays for detected DSI displays
display_auto_detect=1

# Automatically load initramfs files, if found
auto_initramfs=1

# Enable DRM VC4 V3D driver
dtoverlay=vc4-kms-v3d
max_framebuffers=2

# Don't have the firmware create an initial video= setting in cmdline.txt.
# Use the kernel's default instead.
disable_fw_kms_setup=1

# Run in 64-bit mode
arm_64bit=1

# Disable compensation for displays with overscan
disable_overscan=1

# Run as fast as firmware / board allows
arm_boost=1

[cam]
# Enable host mode on the 2711 built-in XHCI USB controller.
# This line should be removed if the legacy DWC2 controller is required
# (e.g. for USB device mode) or if USB support is not required.
otg_mode=1

[all]
dtoverlay=ov5647
dtoverlay=imx219

[
```

The IMX219 camera needs to be connected to the J4 interface of Raspberry Pi 5 to be recognized!
dtoverlay=ov5647 and dtoverlay=imx219 refer to the Raspberry Pi wide-angle camera and IMX219 camera respectively!

Modify the configuration file and restart to take effect!

Use the camera

Preview the camera

- `rpicam-hello`

Type this command in the terminal to display the preview window for about 5 seconds

- `rpicam-hello -t 0`

Running this command in the terminal will keep the preview window displayed. You can exit it by using the window close button and Ctrl+C keys!

Take a photo

- `rpicam-jpeg -o test.jpg`

Display a 5-second preview, then capture the image and save it as a test.jpg file

- `rpicam-jpeg -o test.jpg -t 2000 --width 640 --height 480`

Display a 2-second preview, then capture the image and save it as a test.jpg file. The image is 640 pixels wide and 480 pixels high.

rpicam-still

This command can be used to save files in different formats:

```
rpicam-still -e png -o test.png  
rpicam-still -e bmp -o test.bmp  
rpicam-still -e rgb -o test.data  
rpicam-still -e yuv420 -o test.data
```

- Raw image capture

```
rpicam-still -r -o test.jpg
```

- Time-lapse

Capture images continuously at 2 second intervals for a total capture time of 30 seconds and save each image with a file name format like image0001.jpg:

```
rpicam-still -t 30000 --timelapse 2000 -o image%04d.jpg
```

Video recording

rpicam-vid

Command for video recording using the camera module on the Raspberry Pi.

Example: Record 10 seconds of video and write it to the test.h264 file

```
rpicam-vid -t 10000 -o test.h264
```

Play video

```
vlc test.h264
```

Note: If the test.h264 file cannot be played and an error occurs, please try the following method to solve it.

Error solution

Modify the frame rate of H264 playback per second

