

Raspberry Pi camera tutorial



Introducing the Raspberry Pi Cameras

All Raspberry Pi cameras are capable of taking high-resolution photographs, along with full HD 1080p video, and can be fully controlled programmatically.

Once installed, there are various ways the cameras can be used. The simplest option is to use one of the provided camera applications, such as [libcamera-still](#) or [raspistill](#). This article describes how to use [raspistill](#).

Reasons to using the raspistill:

- It may perform better on Raspberry Pi 2 and Raspberry Pi Zero devices, as it offloads more to the GPU and is less dependent on the ARM cores.

- libcamera is still missing certain features, most notably Python bindings. Whilst this work is in progress, users who need a Python interface (such as Picamera) will have to stay with the legacy stack for the time being.

If you want to use libcamera or want to know more about raspistill, please refer to the official documentation: <https://www.raspberrypi.com/documentation/accessories/camera.html>

Getting started with the Camera Module

The Python Picamera module is currently not, by default, compatible with the latest version of Raspberry Pi OS (called Bullseye).

To use the Picamera module, you will need to enable legacy support for the camera

Open a terminal window and type the following command:

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

Add following content and **Ctrl+O ->Enter ->Ctrl+X**

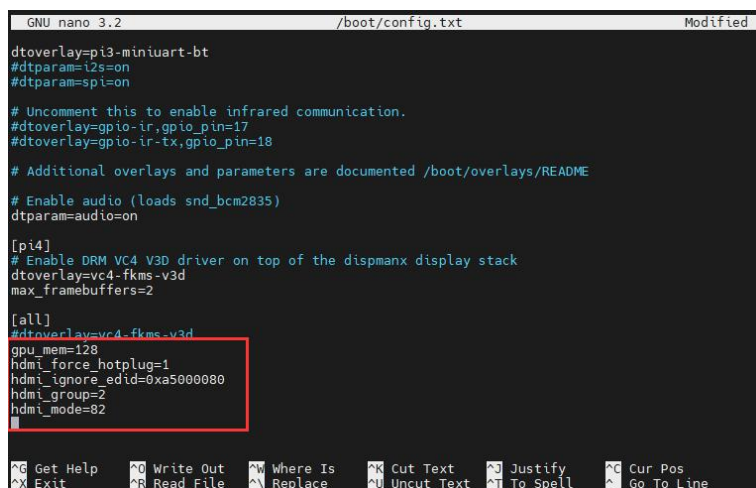
gpu_mem=128

hdmi_force_hotplug=1

hdmi_ignore_edid=0xa5000080

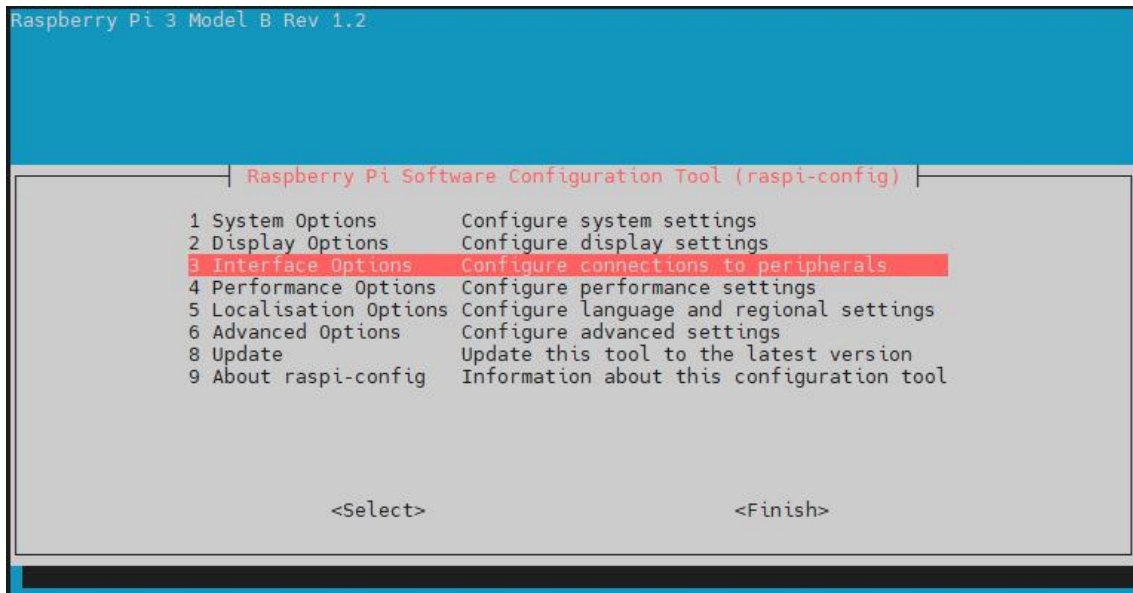
hdmi_group=2

hdmi_mode=82

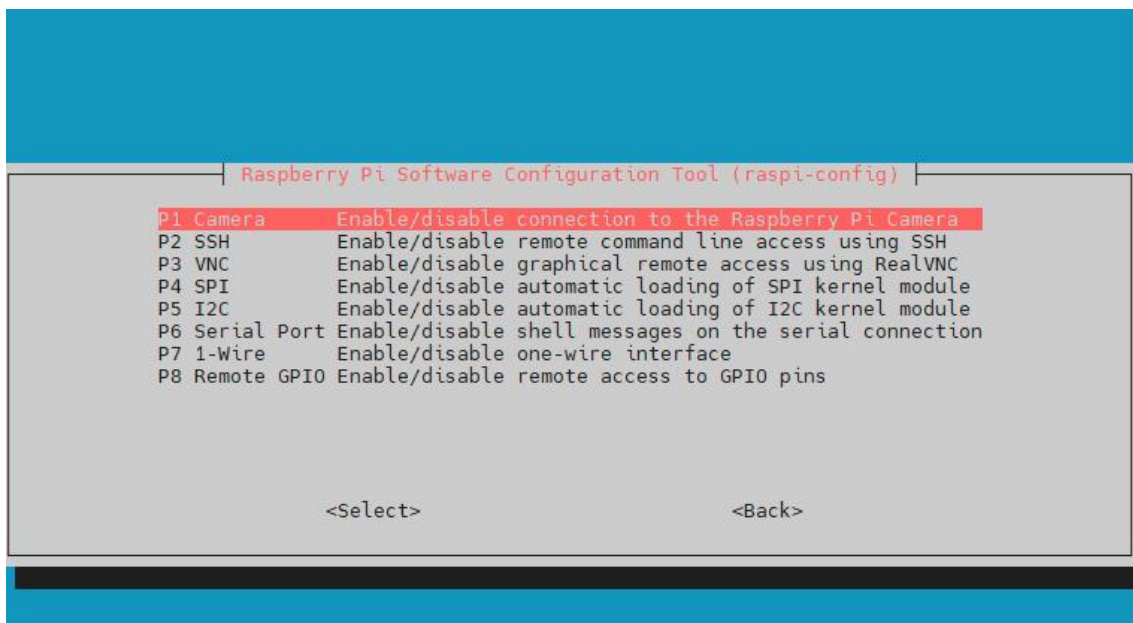


Enter at the command line: **sudo raspi-config**

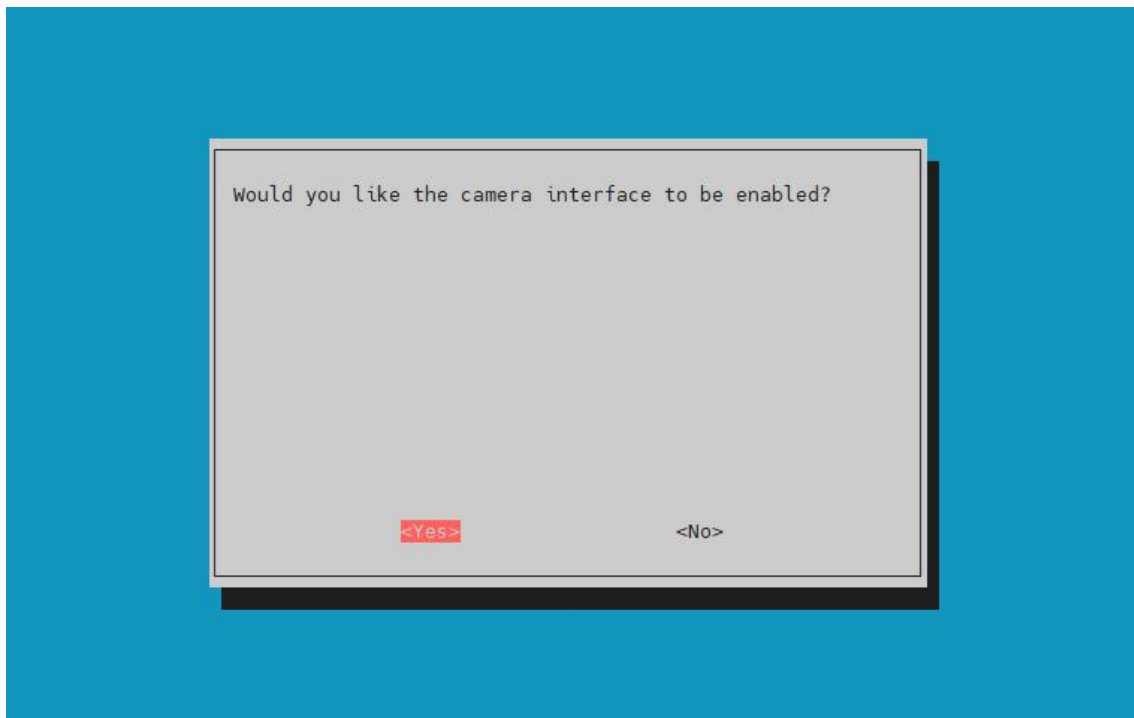
Use the cursor keys to scroll down to **3 Interface Options** and press the 'Enter' key.



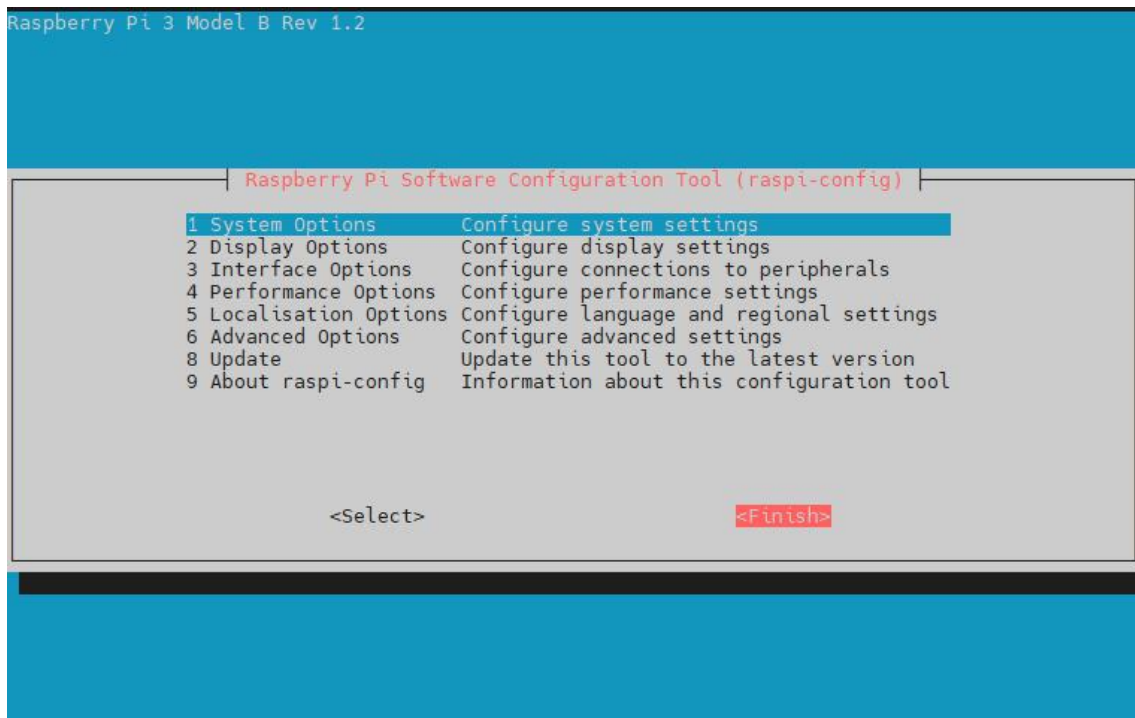
Make sure 'P1 camera' is selected and press the 'Enter' key.



Use the cursor keys to select <Yes> and press the 'Enter' key. Press 'Enter' again to confirm.



Use the cursor keys to select **<Finish>**.



Press 'Enter' to reboot.

How to control the Camera Module

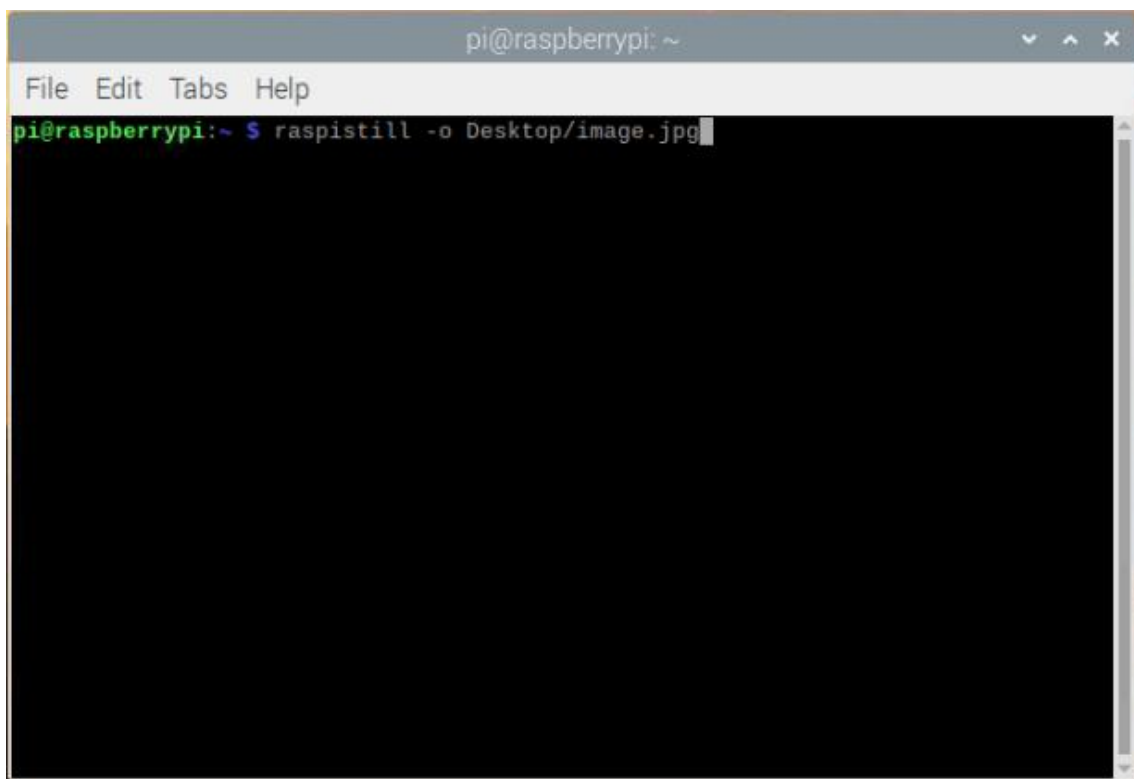
Now your Camera Module is connected and the software is enabled, try out the command line tools.

raspistill

raspistill is the command line tool for capturing still photographs with a Raspberry Pi camera module.

- Open a terminal window by clicking the black monitor icon in the taskbar.
- Type in the following command to take a still picture and save it to the Desktop:

raspistill -o Desktop/image.jpg



- Press Enter to run the command.

When the command runs, you can see the camera preview open for five seconds before a still picture is taken.

Note: the camera preview only works when a monitor is connected to your Raspberry Pi. If you are using remote access (such as SSH or VNC), you won't see the camera preview.

- Look for the picture file icon on the Desktop, and double-click the file icon to open the picture.



By adding different options, you can set the size and look of the image the raspistill command takes.

- For example, add -h and -w to change the height and width of the image:

```
raspistill -o Desktop/image-small.jpg -w 640 -h 480
```

raspivid

raspivid is the command line tool for capturing video with a Raspberry Pi camera module.

- Now record a video with the Camera Module by using the following raspivid command:

```
raspivid -o Desktop/video.h264
```

- In order to play the video file, double-click the video.h264 file icon on the Desktop to open it in VLC Media Player.

For more information and other options you can use with these commands, read the documentation for raspistill:

<https://www.raspberrypi.org/documentation/usage/camera/raspicam/raspistill.md>

And the documentation for raspivid :

<https://www.raspberrypi.org/documentation/usage/camera/raspicam/raspivid.md>