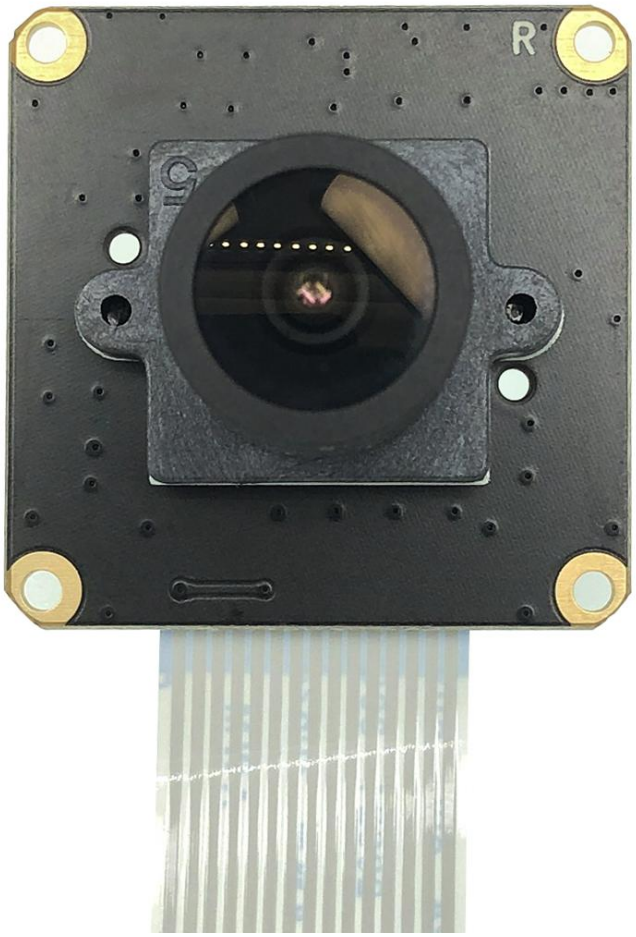
PICAM-IMX219-FOV90 User Manual



Catalog

1. General

PICAM-IMX219-FOV90 is a low-cost 8 megapixel Camera Module with M12 FOV90 Degree

Camera Lens, Sony IMX219 image sensor, Plug And Play,support:

- Pi4/ PI3B+/ PI3/ PI2/ PI B+/ PI A/ PI ZERO/ CM4/ CM3+/ CM3/ Jetson Nano
- M12/M16/CS LENS SEAT
- FOV90/FOV160/FOV75
- Support raspberry pi legacy os(Buster), raspistill, raspivid ,raspiyuv command line
- Support raspberry pi 32/64 bit os(bullseye), libcamera-hello commands.

1. Features

1.1 Sensor:

Sensor type: IMX219PQ[Color CMOS 8-megapixel.
Sensor size: 3.674 x 2.760 mm (1/4" format).
Pixel Count: 3280 x 2464 (active pixels) 3296 x 2512 (total pixels).
Pixel Size: 1.12 x 1.12 um

1.2 Video:

-1080P30 cropped (680 pixels off left/right, 692 pixels off top/bottom), up to 30fps
- 3240x2464 Full 4:3, up to 15fps
- 3240x2464 Full 4:3, up to 15fps (identical to 2)
- 1640x1232 binned 4:3, up 40fps
- 1640x922 2x2 binned 16:9 (310 px crop T/B before binning), up to 40fps
- 720P bin+crop (360 px L/R, 512 px T/B before binning), 40..90fps (OC: 120fps)
- VGA bin+crop (1000 px L/R, 752 px T/B before binning), 40..90fps (OC: 120fps)

1.3 Size:

Board size: 32 x 32 mm
Mounting Holes: 4xD=2.20 mm

1.4 LENS Features:

FOCAL LENGTH: 2.8
LENS DIAMETER: 12mm
Lens Seat Spacing: 22mm
F/NO ： 2.2

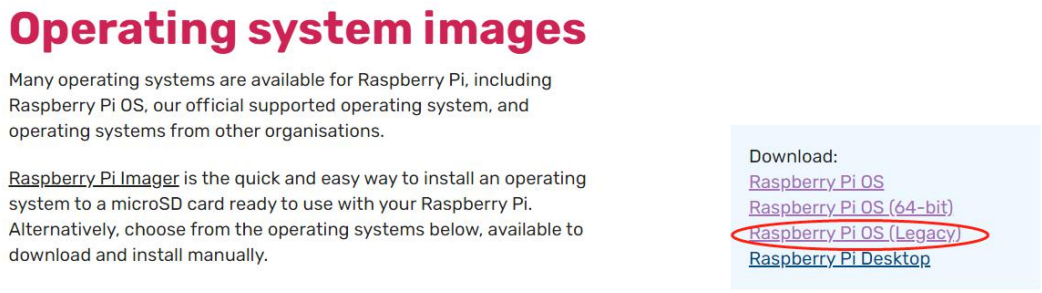
FIELD OF VIEW： 90°
TV DISTORTION: < -17%
Element：4G+IR
CRA: 10°
Relative Illumination:

2.For Raspberry PI OS(Legacy)

2.1Load image

Prepare a capacity of more than 8GB TF card and a card reader. Load the image file on to the SD card, using the instructions provided on the Raspberry Pi website for Linux, Mac or PC:
https://www.raspberrypi.org/documentation/installation/installing-images/README.md

Raspbian Image download:
https://www.raspberrypi.com/software/operating-systems/



If your Rasobian is not the latest version. You can use below command update.

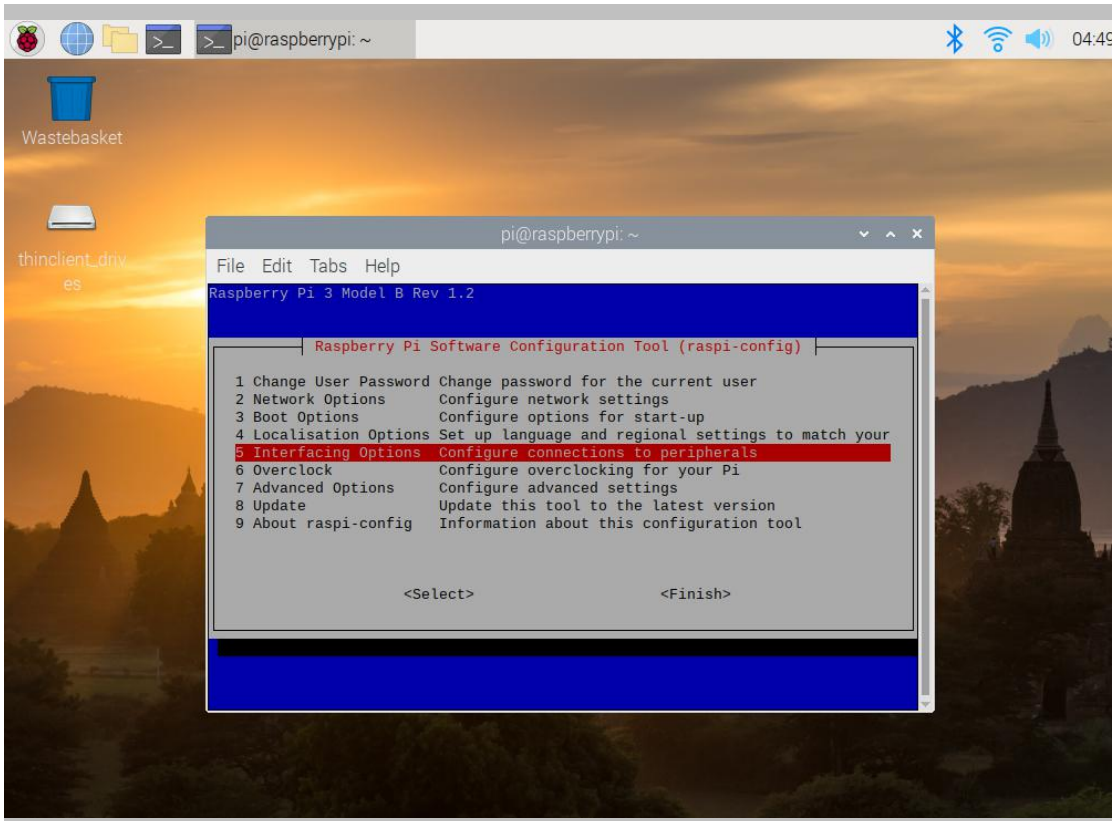
```
sudo apt-get update
sudo apt-get upgrade
```

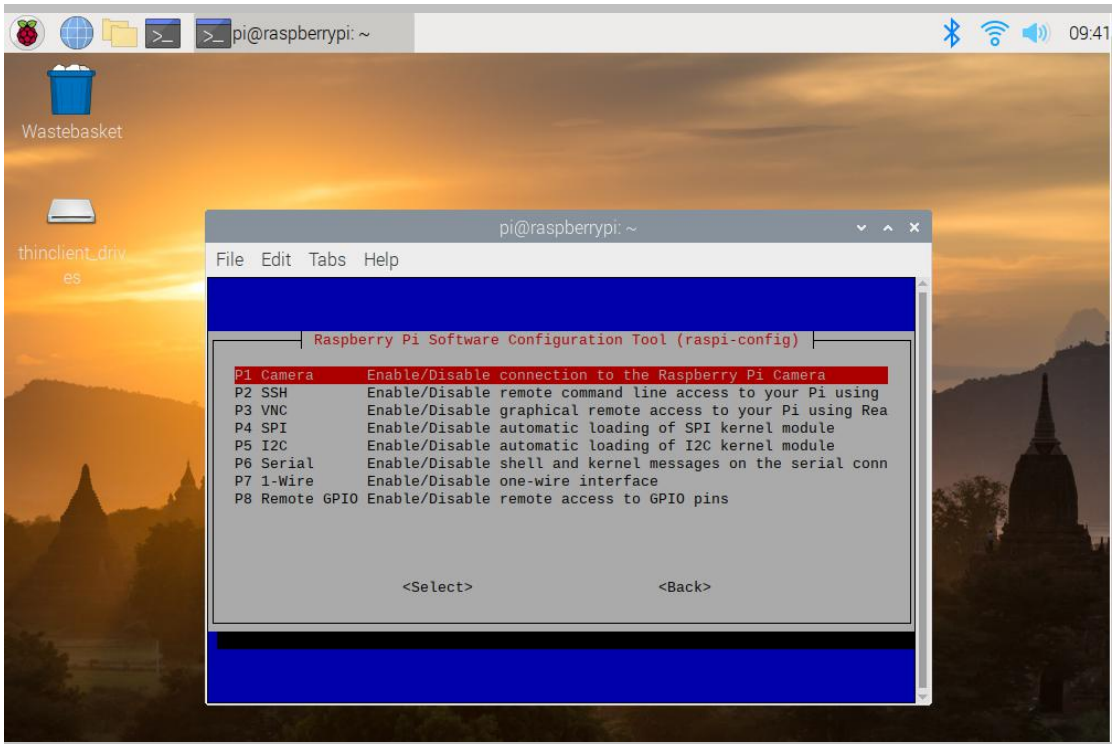
2.2Enable Camera

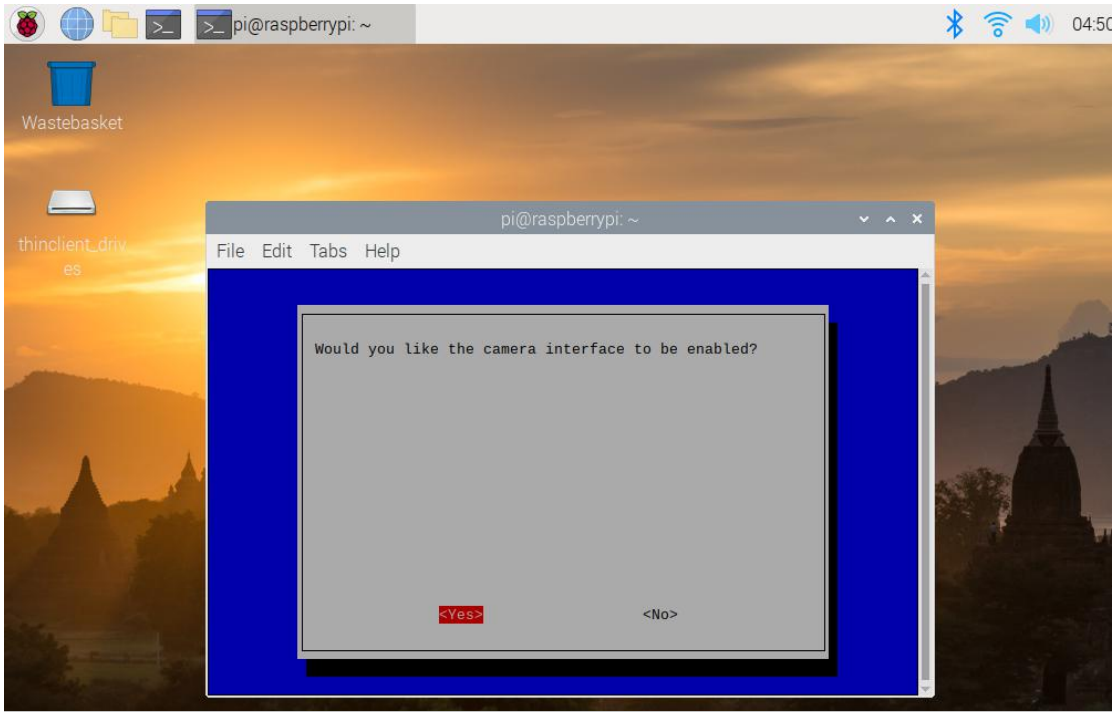
(1) Open the raspi-config tool when you first set up your Raspberry Pi:

```
sudo raspi-config
```

(2) Select ‘Interfacing Options’ → ‘Camera’. and then enable camer and reboot.


pi@raspberrypi: ~
04:49
Wastebasket
thinclient_drivers
pi@raspberrypi: ~
File Edit Tabs Help
Raspberry Pi 3 Model B Rev 1.2
Raspberry Pi Software Configuration Tool (raspi-config)
1 Change User Password Change password for the current user
2 Network Options Configure network settings
3 Boot Options Configure options for start-up
4 Localisation Options Set up language and regional settings to match your
5 Interfacing Options Configure connections to peripherals
6 Overclock Configure overclocking for your Pi
7 Advanced Options Configure advanced settings
8 Update Update this tool to the latest version
9 About raspi-config Information about this configuration tool
<Select>
<Finish>


pi@raspberrypi: ~
09:41
Wastebasket
thinclient_drivers
pi@raspberrypi: ~
File Edit Tabs Help
Raspberry Pi Software Configuration Tool (raspi-config)
P1 Camera Enable/Disable connection to the Raspberry Pi Camera
P2 SSH Enable/Disable remote command line access to your Pi using
P3 VNC Enable/Disable graphical remote access to your Pi using Rea
P4 SPI Enable/Disable automatic loading of SPI kernel module
P5 I2C Enable/Disable automatic loading of I2C kernel module
P6 Serial Enable/Disable shell and kernel messages on the serial conn
P7 1-Wire Enable/Disable one-wire interface
P8 Remote GPIO Enable/Disable remote access to GPIO pins
<Select>
<Back>



2.3Take Photos

(1) take a picture name ‘test’.

```
raspistill -o test.jpg
```

(2) take a picture name ‘test’ with resolution 640*480

```
raspistill -o test.jpg -w 640 -h 480
```

(3) take a picture name ‘test’ after 10 seconds(10000ms).

```
raspistill -t 10000 -o test.jpg
```

(4) Take a picture name ‘test’ with PNG format(raw date) . If will take more time to save.

```
raspistill -o test.png -e png
```

2.4Take H.264 Video

(1) take a 10s(10000ms) video name ‘test’.

```
raspivid -o test.h264 -t 10000
```

(2) take a 10s(10000ms) video name 'test' with resolution 1280*720.

```
raspivid -o test.h264 -t 10000 -w 1280 -h 720
```

2.5Reference

PICAM-IMX219-FOV90 can be use same as Pi camera.
For more information, please refer to below link:

https://projects.raspberrypi.org/en/projects/getting-started-with-picamera

https://www.raspberrypi.org/forums/viewforum.php?f=43&sid=7b94c5651e50c2fc2af0a049066cdfda

3.For Raspberry PI OS(Bullseye)

3.1 Load Image.

Prepare a capacity of more than 8GB TF card and a card reader. Load the image file on to the SD card, using the instructions provided on the Raspberry Pi website for Linux, Mac or PC:
https://www.raspberrypi.org/documentation/installation/installing-images/README.md

Raspbian Image download:
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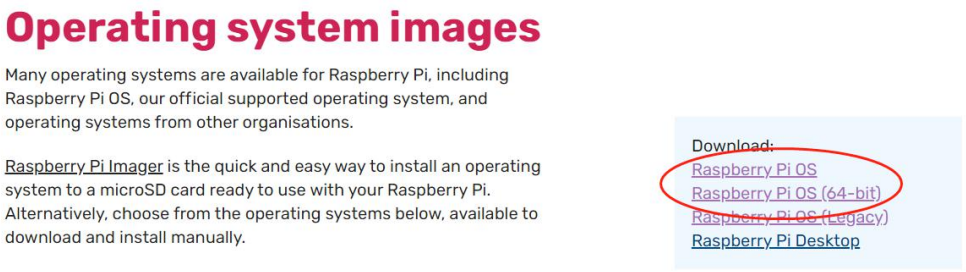


3.2 Preview

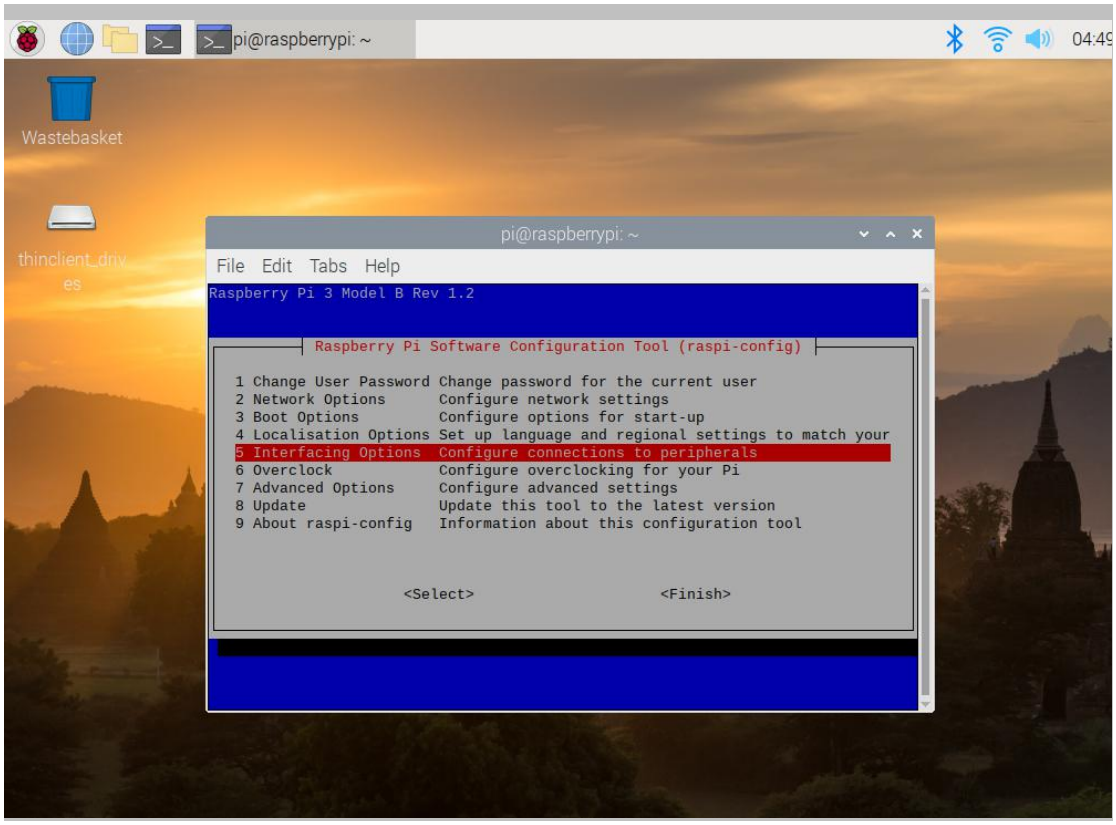
```
libcamera-hello -t 0
```

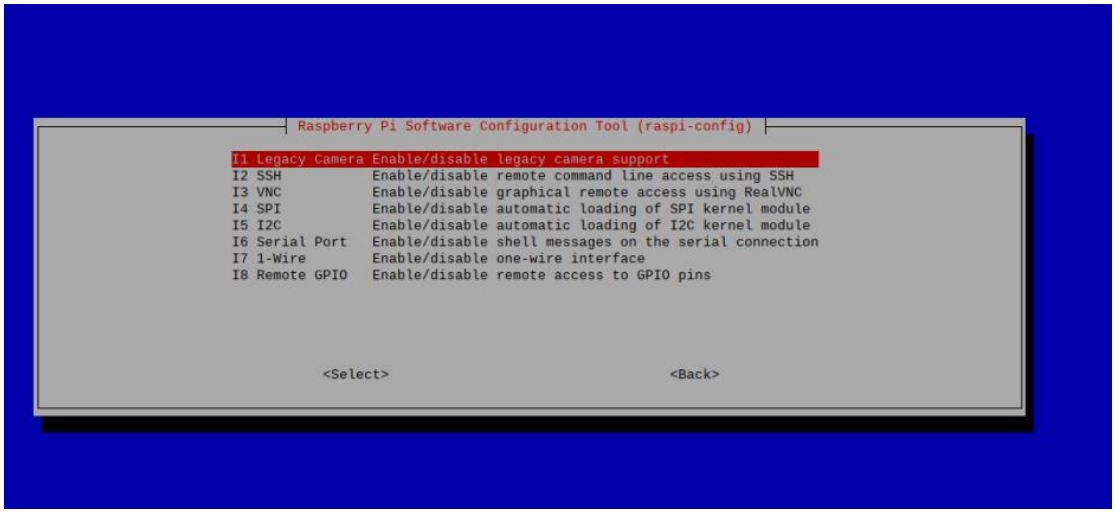
3.3 Legacy Mode Under Bullseye

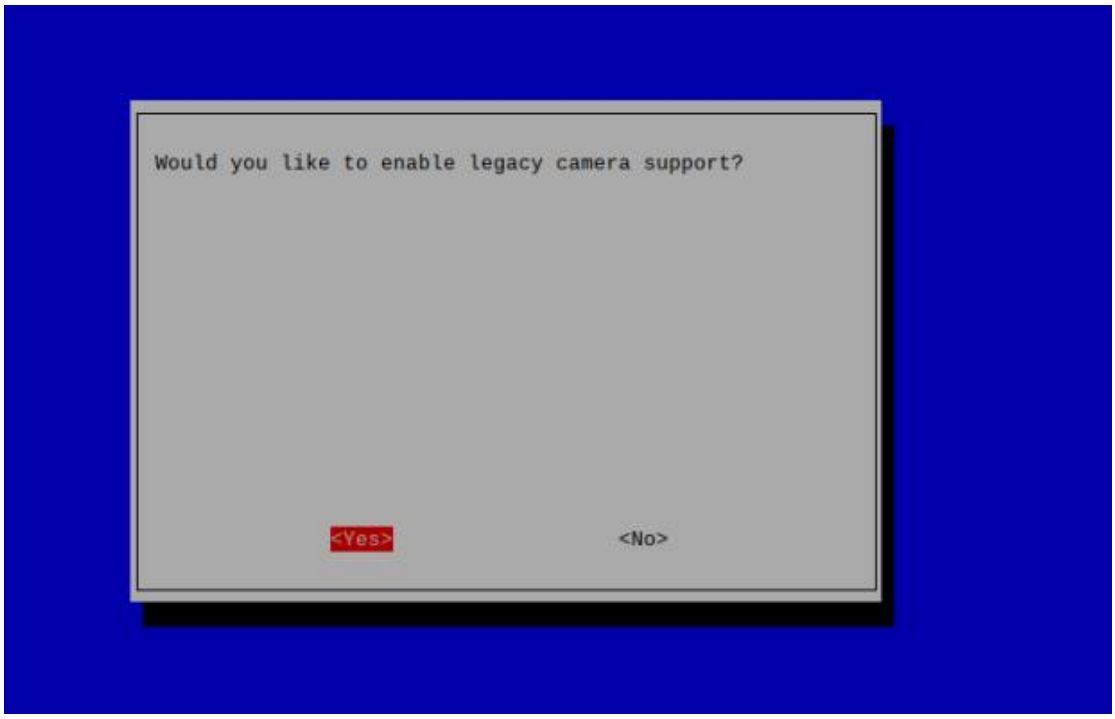
Note: Raspberry Pi Bullseye Not support Legacy Mode and command raspistill, raspivid, If you use Legacy Mode, need to enable Legacy camera mode.

Open the raspi-config tool when you first set up your Raspberry Pi:

```
sudo raspi-config
```



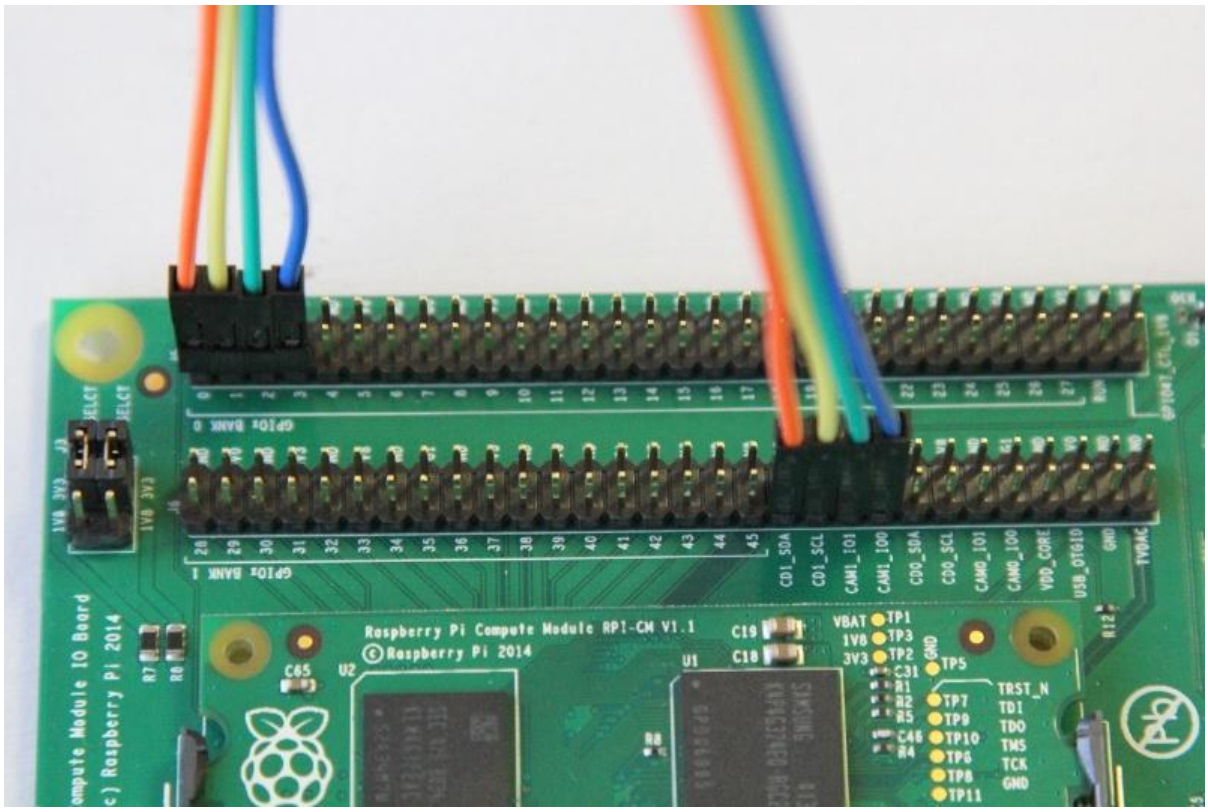




Note: if you wish to use bullseye mode again, disable the legacy mode

4.For Raspberry PI Computer Module

4.1.1 Wiring use cam1 only

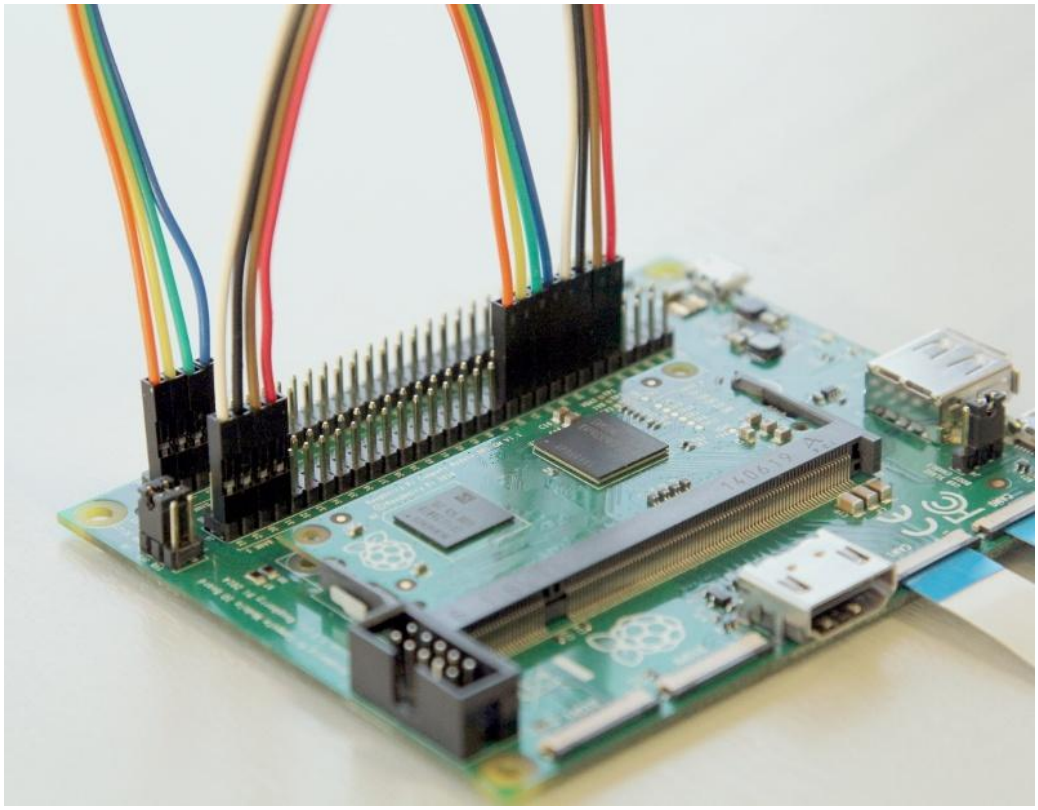


1. **Attach CD1_SDA (J6 pin 37) to GPIO0 (J5 pin 1).**
2. **Attach CD1_SCL (J6 pin 39) to GPIO1 (J5 pin 3).**
3. **Attach CAM1_IO1 (J6 pin 41) to GPIO2 (J5 pin 5).**
4. **Attach CAM1_IO0 (J6 pin 43) to GPIO3 (J5 pin 7).**

enable cam1 only

- $sudo dtc -I dts -O dtb -o /boot/dt-blob.bin dt-blob-cam1.dts
- $sudo reboot

4.1.2use cam0 and cam1 dual camera



1. **Attach CD0_SDA (J6 pin 45) to GPIO28 (J6 pin 1).**
2. **Attach CD0_SCL (J6 pin 47) to GPIO29 (J6 pin 3).**
3. **Attach CAM0_IO1 (J6 pin 49) to GPIO30 (J6 pin 5).**
4. **Attach CAM0_IO0 (J6 pin 51) to GPIO31 (J6 pin 7).**

enable dual cam

- $sudo dtc -I dts -O dtb -o /boot/dt-blob.bin dt-blob-dualcam.dts
- $sudo reboot

5.For Jetson Nano

5.1Connection

Check video status

$ ls /dev/video* #You'll see video0 and video1 as below picture

5.2 Download Config file

Get and install setting files

- $ sudo git clone https://gitee.com/inno-maker/PICAM-IMX219-FOV90.git
- $ cd PICAM-IMX219-FOV90
- $ sudo cp camera_overrides.isp /var/nvidia/nvcam/settings/
- $ sudo chmod 664 /var/nvidia/nvcam/settings/camera_overrides.isp
- $ sudo chown root:root /var/nvidia/nvcam/settings/camera_overrides.isp

Get video0 working

$ DISPLAY=:0.0 gst-launch-1.0 nvarguscamerasrc
sensor-id=0 ! 'video/x-raw(memory:NVMM), width=3280, height=2464,
format=(string)NV12, framerate=(fraction)20/1' ! nvoverlaysink -e

Get video1 working

$ DISPLAY=:0.0 gst-launch-1.0 nvarguscamerasrc
sensor-id=1 ! 'video/x-raw(memory:NVMM), width=3280, height=2464,
format=(string)NV12, framerate=(fraction)20/1' ! nvoverlaysink -e