

Camera Configuration Methods

1. View Version

Current hardware version



```
Revision          : a03115
SoC               : BCM2711
RAM              : 1GB
Storage          : MicroSD
USB ports        : 4 (of which 2 USB3)
Ethernet ports   : 1 (1000Mbps max. speed)
Wi-fi           : True
Bluetooth       : True
Camera ports (CSI) : 1
Display ports (DSI) : 1

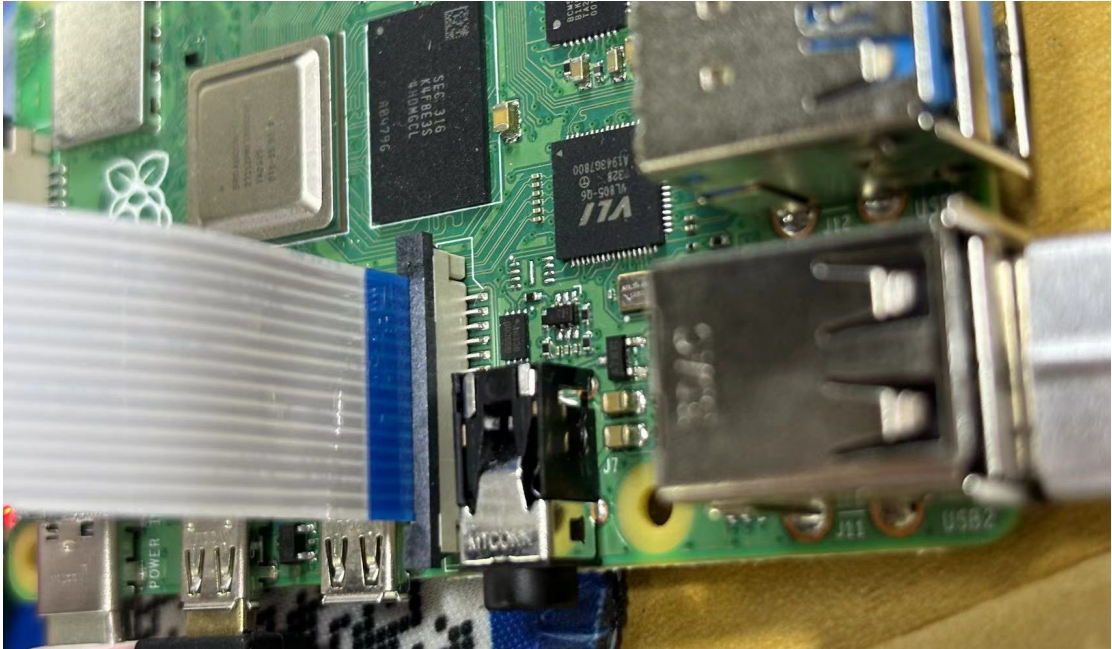
J8:
  3V3 (1) (2) 5V
  GPIO2 (3) (4) 5V
  GPIO3 (5) (6) GND
  GPIO4 (7) (8) GPIO14
  GND (9) (10) GPIO15
  GPIO17 (11) (12) GPIO18
  GPIO27 (13) (14) GND
  GPIO22 (15) (16) GPIO23
  3V3 (17) (18) GPIO24
  GPIO10 (19) (20) GND
  GPIO9 (21) (22) GPIO25
  GPIO11 (23) (24) GPIO8
  GND (25) (26) GPIO7
  GPIO0 (27) (28) GPIO1
  GPIO5 (29) (30) GND
  GPIO6 (31) (32) GPIO12
  GPIO13 (33) (34) GND
  GPIO19 (35) (36) GPIO16
  GPIO26 (37) (38) GPIO20
```

Current software version

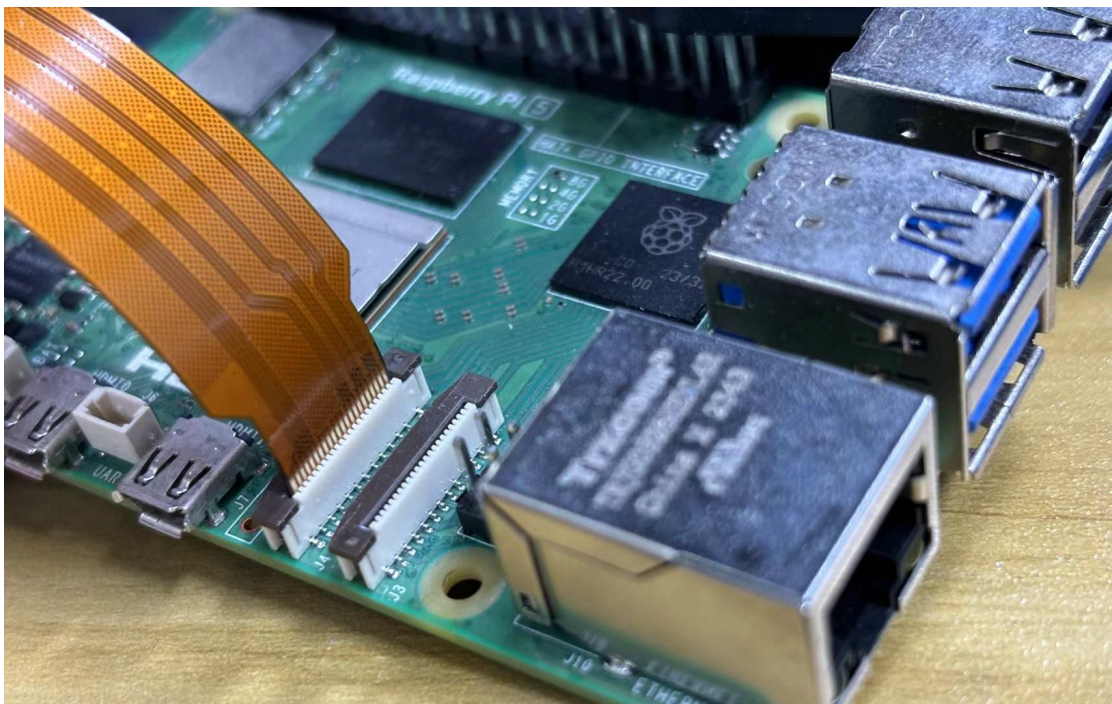
```
For further information, please refer to https://pinout.xyz/
pi@raspberrypi:~ $ uname -a
Linux raspberrypi 5.15.84-v7l+ #1613 SMP Thu Jan 5 12:01:26 GMT 2023 armv7l GNU/Linux
pi@raspberrypi:~ $
```

2. Connecting the cable to the Raspberry Pi

Gently lift up the black retaining tab and plug in the cable, noting that the blue end is towards the USB (if Raspberry Pi 3B, 4B)



(If it's a Raspberry Pi 5B, the gold finger end is facing the network port.)



3、 Adding Configuration Files

If it's a Raspberry Pi **4B**, **3B**, **Zero**, etc. motherboard

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

Find the camera-auto-detect=1 statement, change it to camera_
auto_detect=0 add dtoverlay=imx219

```
dtparam=audio=on

# Automatically load overlays for detected cameras
camera_auto_detect=0

# Automatically load overlays for detected DSI displays
display_auto_detect=1

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

# Disable compensation for displays with overscan
disable_overscan=1

[cm4]
# 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]

[pi4]
# Run as fast as firmware / board allows
arm_boost=1

[all]
#dtoverlay=vc4-kms-v3d
max_usb_current=1
hdm_i_force_hotplug=1
config_hdmi_boost=7
hdm_i_group=2
hdm_i_mode=87
hdm_i_drive=1
display_rotate=0
hdm_i_cvt 1024 600 60 5 0 0 0

dtoverlay=imx219
```

Ctrl+x Press y to enter, save and exit

to reboot the Raspberry Pi

```
sudo reboot
```

If it's a Raspberry Pi Gen 5 motherboard

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

Find camera-auto-detect=1 statement, change it to camera_auto_detect=0

If users need to access two camera calls at the same time, they can specify the camera by adding cam0 and cam1 after the corresponding camera configuration statement..

For example, if the imx219 is connected to the cam0 interface and the ov5647 camera interface is connected to the cam1 interface at the same time, the imx219 will be connected to the cam1 interface.

```
dtoverlay=imx219,cam0
```

```
dtoverlay=ov5647,cam1
```

If only one camera is connected, connect to the camera0 port (the one near the network port is camera0)

```
dtoverlay=imx219,cam0
```

Ctrl+x Press y to enter, save and exit to reboot the Raspberry Pi

```
sudo reboot
```

4、Calling the camera

Test ls /dev again, the video0 port is recognized, which means the camera is recognized..

```
pi@raspberrypi:~$ ls /dev
autofs          drx          i2c-0          loop3          media3         ppp          ram15          rfdkill        tty10          tty2          tty29          tty38          tty47          tty56          tty8          vc10          vcsa          vcsu1          video1         video20
block           fb0          i2c-10         loop4          media4         ptmx         ram2           serial1        tty11          tty20          tty3            tty39          tty48          tty57          tty9          vc-mem        vcsa1         vcsu2          video10        video21
btrfs-control  fd           i2c-22         loop5          mem            pts          ram3           sbr            tty12          tty21          tty30           tty4           tty49          tty58          ttyAMA0       vcs            vcsa2         vcsu3          video11        video22
bus             full         initctl        loop6          mcbk0          ram0         ram4           smi            tty13          tty22          tty31           tty40          tty50          tty59          ttyprintk     vcs1          vcsa3         vcsu4          video12        video23
cachefiles     fuse         input          loop7          mmcblk0p1     ram1         ram5           stderr         tty14          tty23          tty32           tty41          tty50          tty6          uhd            vcs2          vcsa4         vcsu5          video13        video31
char            gpiochip0   kmsg          loop-control  mmcblk0p2     ram10        ram6           stdin          tty15          tty24          tty33           tty42          tty51          tty60          uninput       vcs3          vcsa5         vcsu6          video14        watchdog
console         gpiochip1   log           mappe         net           ram1         ram7           stdout         tty16          tty25          tty34           tty43          tty52          tty61          urandom       vcs4          vcsa6         vcsu7          video15        watchdogs
cuse            gpionem     loop0         media0        net           ram12        ram8           tty            tty17          tty26          tty35           tty44          tty53          tty62          v4l            vcs5          vcsa7         vcsu8          video16        zero
disk            hidraw0     loop1         media1        null          ram13        ram9           tty0           tty18          tty27          tty36           tty45          tty54          tty63          v4l-subdev0  vcs6          vcsm-cma     vhc1           video18        zero
dma_heap        hwrng       loop2         media2        port          ram14        random         tty1           tty19          tty28          tty37           tty46          tty55          tty7          vchiq         vcs7          vcsu          video0         video19
```

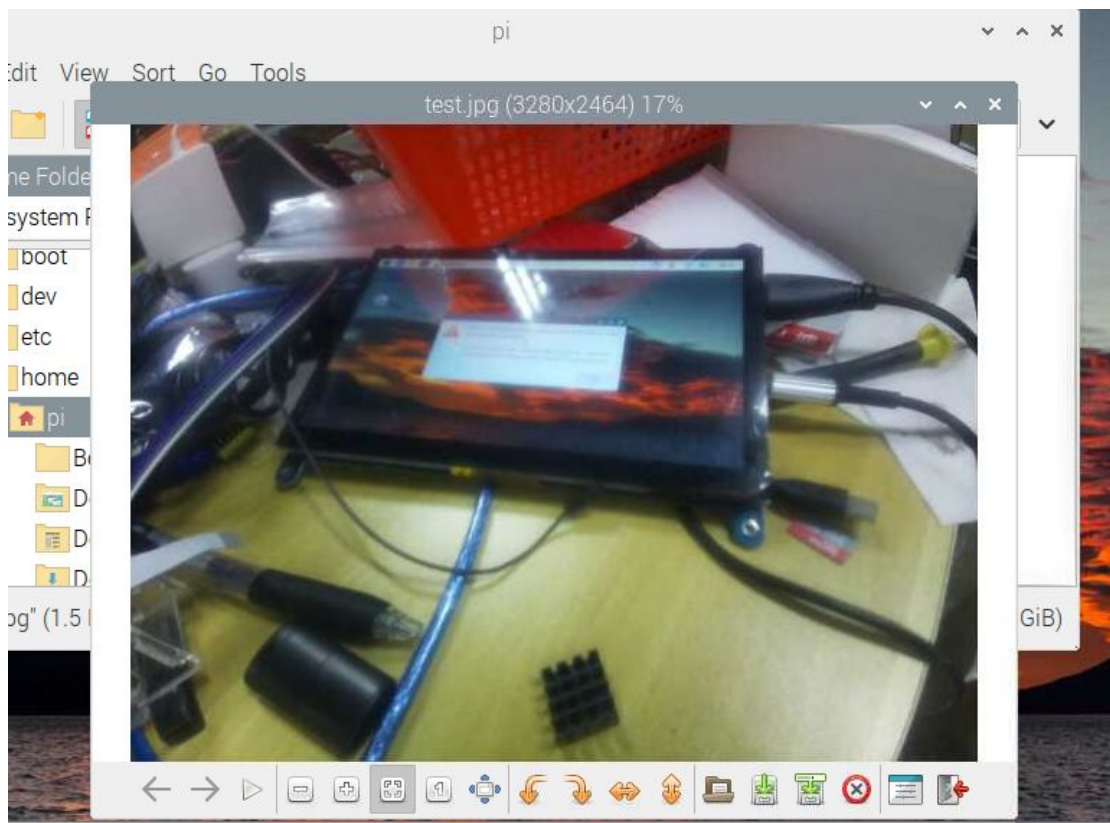
预览测试

libcamera-hello --qt-preview

```
pi@raspberrypi:~$ libcamera-hello --qt-preview
Made QT preview window
[0:04:49.955492869] [1288] INFO Camera camera_manager.cpp:299 libcamera v0.3+40-9b860a66
[0:04:49.984770607] [1304] WARN RPI raspberrypi.cpp:1308 Mismatch between Unicom and CamHelper for embedded data usage!
[0:04:49.995630947] [1304] INFO RPI raspberrypi.cpp:1425 Registered camera /base/soc/i2c0mux/i2c01/uxm219@10 to unicom device /dev/media4 and ISP device /dev/media0
[0:04:49.996173807] [1288] INFO Camera camera.cpp:1028 configuring streams: (0) 640x480-YUV420
[0:04:49.995362877] [1304] INFO RPI raspberrypi.cpp:805 Sensor: /base/soc/i2c0mux/i2c01/uxm219@10 - Selected sensor format: 1640x1232-SBGGR10_1X10 - Selected unicom format: 1640x1232-pBAA
pi@raspberrypi:~$
```

Photo test

libcamera-jpeg -o test.jpg --qt-preview



Video testing

libcamera-vid -t 10000 -o test.h264 --qt-preview

```
pi@raspberrypi:~$ libcamera-vid -t 10000 -o test.h264 --qt-preview
Made QT preview window
[0:08:04.939848956] [1409] INFO Camera camera_manager.cpp:299 libcamera v0.3+40-9b860a66
[0:08:04.978869311] [1425] WARN RPI raspberrypi.cpp:1308 Mismatch between Unicom and CamHelper for embedded data usage!
[0:08:04.979980827] [1425] INFO RPI raspberrypi.cpp:1425 Registered camera /base/soc/i2c0mux/i2c01/uxm219@10 to unicom device /dev/media4 and ISP device /dev/media0
[0:08:04.980637256] [1409] INFO Camera camera.cpp:1028 configuring streams: (0) 640x480-YUV420
[0:08:04.981052927] [1425] INFO RPI raspberrypi.cpp:805 Sensor: /base/soc/i2c0mux/i2c01/uxm219@10 - Selected sensor format: 640x480-SBGGR10_1X10 - Selected unicom format: 640x480-pBAA
Halting: reached timeout of 10000 milliseconds.
pi@raspberrypi:~$
```

