For 12MP IMX477 Motorized Focus Camera

Product

Product Image	SKU	Pin/Connect Type	Sensor	Resolution	Features
	B0272	22/TOP	IMX477	12MP	High Resolution

Hardware
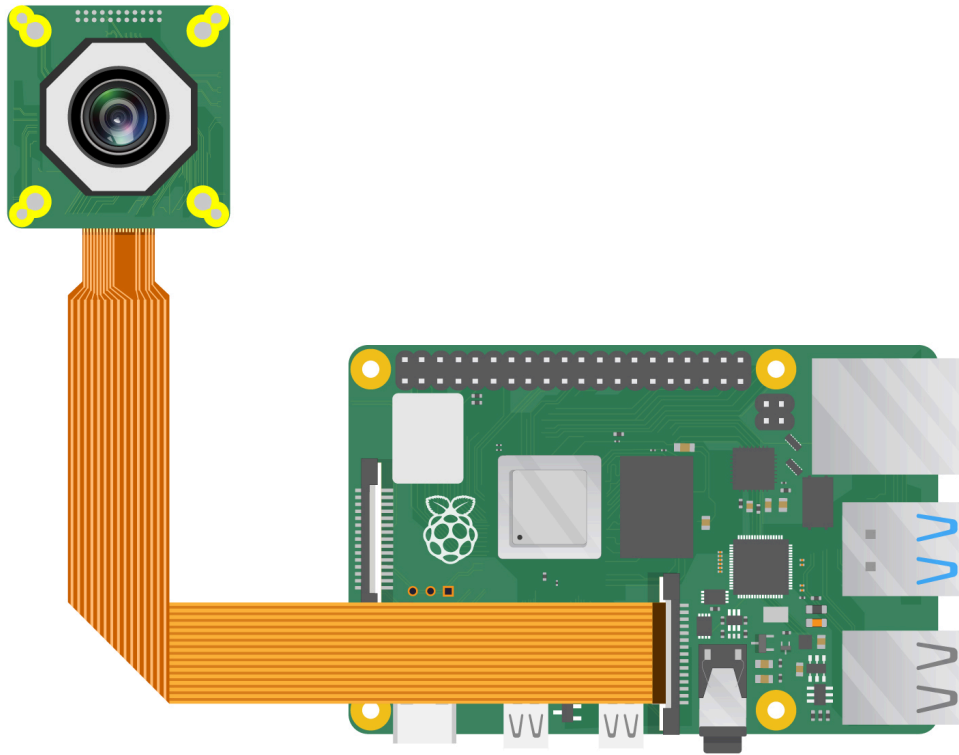
Software

Enable the Focus Driver

1.Download the Archive

```
cd ~
```

```
mkdir imx477_dtb_test
```

```
cd imx477_dtb_test
```

ArduCam

2.Unzip File

```
tar xzvf imx477_rpi_dtoverlay.tar.gz
```


3.Compile and Install

```
cd imx477_rpi_dtoverlay/
```

```
./build_and_install.sh
```

```
sudo reboot
```


4.Configure the Camera

```
sudo nano /boot/config.txt

# Turn off the camera auto-detection
camera_auto_detect=0

# Add following content below [all]
dtoverlay=imx477,vcm
```

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```
#dtparam=i2s=on
dtparam=spi=on

# Uncomment this to enable infrared communication.
#dtoverlay=gpio-ir,gpio_pin=17
#dtoverlay=gpio-ir-tx,gpio_pin=18

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

# Enable audio (loads snd_bcm2835)
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-kms-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
dtoverlay=vc4-kms-v3d,cma-512

[all]
dtoverlay=imx477,vcm
```

5.Reboot

```
sudo reboot
```

Install libcamera from Arducam

- Step 1. Download the bash scripts

ArduCam

```
chmod +x install_pivariety_pkgs.sh
```

- Step 2. Install `libcamera`

```
./install_pivariety_pkgs.sh -p libcamera
```

- Step 3. Install libcamera-apps

```
./install_pivariety_pkgs.sh -p libcamera_apps
```

Focus Control for Pi0~4

```
libcamera-still -t 0 --tuning-file /usr/share/libcamera/ipa/rpi/vc4/imx477_af.json
```

- Continuous Autofocus

```
libcamera-still -t 0 --autofocus-mode continuous --tuning-file
/usr/share/libcamera/ipa/rpi/vc4/imx477_af.json
```

- Single Autofocus

```
libcamera-still -t 0 --autofocus-mode auto --tuning-file
/usr/share/libcamera/ipa/rpi/vc4/imx477_af.json
```

- Manual Focus

```
libcamera-still -t 0 --autofocus-mode manual --tuning-file
/usr/share/libcamera/ipa/rpi/vc4/imx477_af.json
# Use keyboard to control focus
# "f" trigger one-shot autofocus
# "a" add the lens position, "d" decrease the lens position, the minimum unit of
step adjustment is 1
libcamera-still -t 0 --autofocus-mode manual -k --tuning-file
/usr/share/libcamera/ipa/rpi/vc4/imx477_af.json
```

- Adjust Lens Position

ArduCam

- Autofocus Before Capture images

```
libcamera-still -t 0 --autofocus-on-capture --tuning-file
/usr/share/libcamera/ipa/rpi/vc4/imx477_af.json
```

- Set Focus Range

```
# Normal
libcamera-still -t 0 --autofocus-range normal --tuning-file
/usr/share/libcamera/ipa/rpi/vc4/imx477_af.json
# Close Focus
libcamera-still -t 0 --autofocus-range macro --tuning-file
/usr/share/libcamera/ipa/rpi/vc4/imx477_af.json
```

Focus Control for Pi5

```
libcamera-still -t 0 --tuning-file
/usr/share/libcamera/ipa/rpi/pisp/imx477_af.json
```

- Continuous Autofocus

```
libcamera-still -t 0 --autofocus-mode continuous --tuning-file
/usr/share/libcamera/ipa/rpi/pisp/imx477_af.json
```

- Single Autofocus

```
libcamera-still -t 0 --autofocus-mode auto --tuning-file
/usr/share/libcamera/ipa/rpi/pisp/imx477_af.json
```

- Manual Focus

```
libcamera-still -t 0 --autofocus-mode manual --tuning-file
/usr/share/libcamera/ipa/rpi/pisp/imx477_af.json
# Use keyboard to control focus
# "f" trigger one-shot autofocus
# "a" add the lens position, "d" decrease the lens position, the minimum unit of
step adjustment is 1
libcamera-still -t 0 --autofocus-mode manual -k --tuning-file
/usr/share/libcamera/ipa/rpi/pisp/imx477_af.json
```

ArduCam

```
/usr/share/libcamera/ipa/rpi/pisp/imx477_af.json
```

- Autofocus Before Capture images

```
libcamera-still -t 0 --autofocus-on-capture --tuning-file
/usr/share/libcamera/ipa/rpi/pisp/imx477_af.json
```

- Set Focus Range

```
# Normal
libcamera-still -t 0 --autofocus-range normal --tuning-file
/usr/share/libcamera/ipa/rpi/pisp/imx477_af.json
# Close Focus
libcamera-still -t 0 --autofocus-range macro --tuning-file
/usr/share/libcamera/ipa/rpi/pisp/imx477_af.json
```

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