



OV5647 Mini Camera Module for Raspberry Pi

Rev 3.0, Feb 2017

INTRODUCTION

- In order to meet the increasing need of Raspberry Pi compatible camera modules, the Arducam team now released ultra low cost add-on mini camera module for Raspberry Pi series boards which is fully compatible with official one.
- The board itself is tiny, at around 25mm x 24.5mm, which makes it perfect for mobile or other applications where size and image quality are important. It connects to Raspberry Pi by way of a short ribbon cable. The camera is connected to the BCM2835/BCM2836/BCM2837 processor on the Pi via the CSI bus, a higher bandwidth link which carries pixel data from the camera back to the processor. This bus travels along the ribbon cable that attaches the camera board to the Pi.
- The sensor itself has a native resolution of 5 megapixels, and has a fixed focus lens onboard. In terms of still images, the camera is capable of 2592 x 1944 pixel static images, and also supports 1080p30, 720p60 and 640x480p60/90 video.
- It attaches to Raspberry Pi by way of one of the two small sockets on the board upper surface. This interface uses the dedicated CSI interface, which was designed especially for interfacing to cameras. The CSI bus is capable of extremely high data rates, and it exclusively carries pixel data. The camera is supported in the latest version of Raspbian, Raspberry Pi's preferred operating system.
- The Arducam camera module is capable of taking full HD 1080p photo and video and can be controlled programmatically.

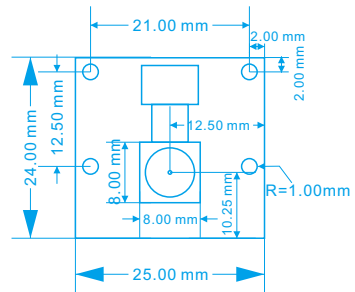
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MECHANICAL DIMENSION



FEATURES

- High-Definition video camera for Raspberry Pi Model A/B/B+ and Raspberry Pi 2/3
- 5MPixel sensor with OmniVision OV5647 sensor in a fixed-focus lens
- Integral IR filter
- Angle of View: 54 x 41degrees
- Field of View: 2.0 x 1.33m at 2m
- Fixed Focus: 1m to infinity
- Full-frame SLR lens equivalent: 35mm
- Still picture resolution: 2592 x 1944
- Max video resolution: 1080p
- Max frame rate: 30fps
- Size: 25 x 24mm
- 15cm flat ribbon cable to 15-pin MIPI Camera Serial Interface(CSI) connector

CONNECTING THE CAMERA

- The flex cable inserts into the connector situated between the Ethernet and HDMI ports, with the silver connectors facing the HDMI port. The flex cable connector should be opened by pulling the tabs on the top of the connector upwards then towards the Ethernet port. The flex cable should be inserted firmly into the connector, with care taken not to bend the flex at too acute an angle. The top part of the connector should then be pushed towards the HDMI connector and down, while the flex cable is held in place.
- Watch the following picture to see a demonstration of the camera being connected:(as shown in figure 1)

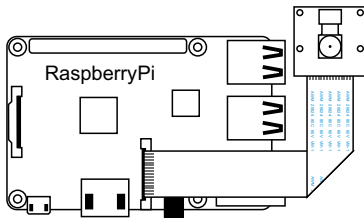


Figure 1 Connecting the camera

- The camera may come with a small piece of translucent blue plastic film covering the lens.
- This is only present to protect the lens while it is being mailed to you, and needs to be removed by gently peeling it off.

ENABLING THE CAMERA

- Open the `raspi-config` tool from the Terminal:
 - `sudo raspi-config`
 - Select `Enable camera` and hit `Enter`, then go to `Finish` and you'll be prompted to reboot.

USING THE CAMERA

- Libraries for using the camera are available in:
 - Shell (Linux command line):

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

- Python:
<https://www.raspberrypi.org/documentation/usage/camera/python/README.md>

TROUBLE SHOOTING

If the camera module isn't working correctly, there are a number of things to try:

- You could use the output of `vcgencmd get_camera` command to check if the camera is connected, the output should be `supported=1 detected=1` if camera is connected, or else is `detected = 0`.
- Is the ribbon cable attached to the Camera Serial Interface (CSI), not the Display Serial Interface (DSI)? The ribbon connector will fit into either port. The Camera port is located near the HDMI connector.
- Are the ribbon connectors all firmly seated, and are they the right way round? They must be straight in their sockets.
- Is the Camera Module connector, between the smaller black Camera Module itself and the PCB, firmly attached? Sometimes this connection can come loose during transit or when putting the Camera Module in a case. Using a fingernail, flip up the connector on the PCB, then reconnect it with gentle pressure. It engages with a very slight click. Don't force it; if it doesn't engage, it's probably slightly misaligned.
- Have `sudo apt-get update` and `sudo apt-get upgrade` been run?
- Has `raspi-config` been run and the Camera Module enabled?
- Is your power supply sufficient? The Camera Module adds about 200-250mA to the power requirements of your Raspberry Pi.
- If you get with mmal error shown below: mmal: **No data received from sensor**. Please check all connections, including the Sunny one on the camera board, this error usually appears because of a faulty connection with the camera.