



Raspberry Pi Camera Module

1/4-Inch 8-Megapixel Module Datasheet

Rev C, Aug 2019

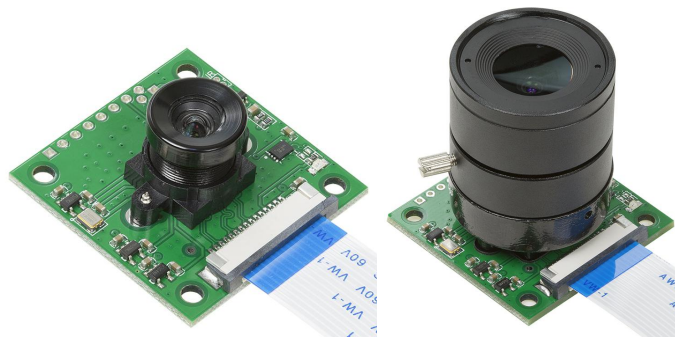


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1 Introduction

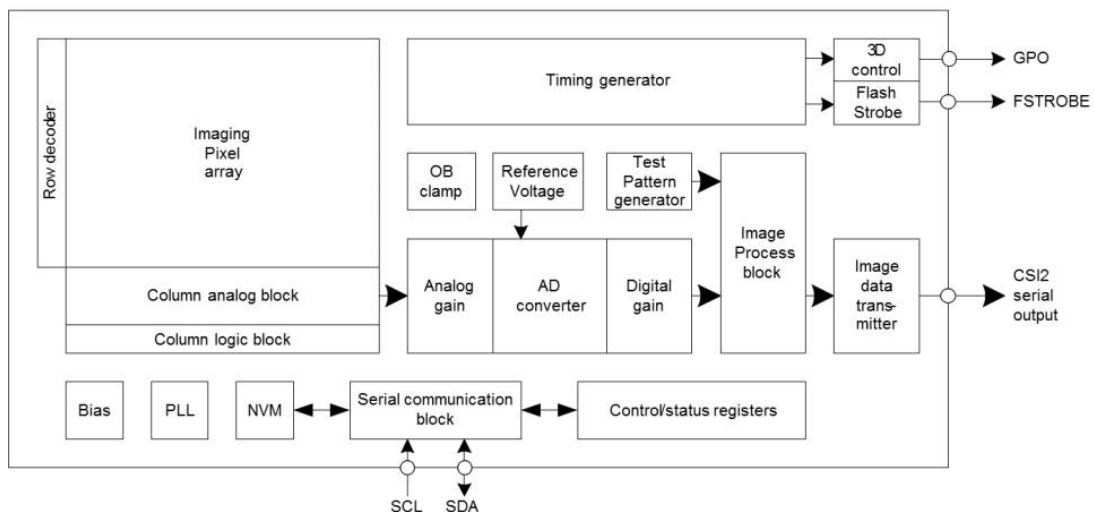
In order to meet the increasing need of Raspberry Pi compatible camera modules. The ArduCAM team now released a IMX219 8MP add-on camera module for Raspberry Pi which is fully compatible with official one. It optimizes the optical performance than the previous Pi cameras, and give user a much clear and sharp image. Also it provides the FSTROBE signals which can be used for multi-camera synchronize capture with proper camera driver firmware, as well as providing motorized IR cut driver circuit onboard for NOIR type 8MP sensor for both day light and night vision.

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 board itself is tiny, at around 36mm x 36mm. The highlight of our module is that the Lens is changeable compared to official one, making 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/BCM2711 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 8 megapixel, and has a fixed focus lens onboard. In terms of still images, the camera is capable of 3296 x 2480 pixel static images. It also supports 1080p30, 720p60 and VGA90 video modes.

2 Block Diagram



3 Features

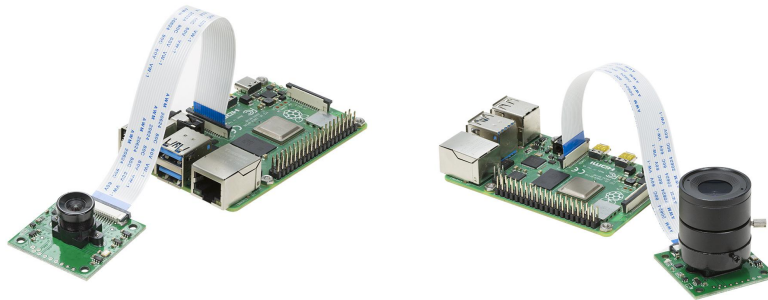
- High-Definition video camera for Raspberry Pi Model A/B/B+ and Raspberry Pi 2/ Pi 3/ Pi 3B+/4B
- Sony IMX219PQ sensor in a fixed-focus module with changeable Lens
- Lens holder: M12x0.5 , CS mount or C mount
- 8MPixel sensor
- Selectable IR or NOIR sensor type and motorized IR cut driver
- Still picture resolution: 3280 x 2464
- Max video resolution: 1080p
- Max frame rate: 30fps
- Export FSTROBE signal
- 15 cm flat ribbon cable to 15-pin MIPI Camera Serial Interface (CSI) connector

4 Key Specifications

- 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
- Video Modes:
 - 1 - 1080P30 cropped (680 pixels off left/right, 692 pixels off top/bottom), up to 30fps
 - 2 - 3240x2464 Full 4:3, up to 15fps
 - 3 - 3240x2464 Full 4:3, up to 15fps (identical to 2)
 - 4 - 1640x1232 binned 4:3, up 40fps
 - 5 - 1640x922 2x2 binned 16:9 (310 px crop T/B before binning), up to 40fps
 - 6 - 720P bin+crop (360 px L/R, 512 px T/B before binning), up to 90fps
 - 7 - VGA bin+crop (1000 px L/R, 752 px T/B before binning), up to 90fps
- Board size: 36 x 36 mm

5 Application

- Home security camera
- Time-lapse, slow-motion, and other video cleverness
- Wildlife camera
- Other battery-powered products
- Can be used in all Raspberry Pi platforms



6 Pin Definition

Table 1 P1 Connector Pin Definition

Pin No.	PIN NAME	TYPE	DESCRIPTION
1	DGND	Ground	Power ground
2	CAM_D0_N	Output	MIPI data lane0 negative output
3	CAM_D0_P	Output	MIPI data lane0 positive output
4	DGND	Ground	Power ground
5	CAM_D1_N	Output	MIPI data lane1 negative output
6	CAM_D1_P	Output	MIPI data lane1 positive output
7	DGND	Ground	Power ground
8	CAM_C_N	Output	MIPI clock negative output
9	CAM_C_P	Output	MIPI clock positive output
10	DGND	Ground	Power ground
11	POWER_EN	Input	Camera module power enable active high
12	LED_EN	Input	Reserved
13	SCL	Input	Two-Wire Serial Interface Clock
14	SDA	Bi-directional	Two-Wire Serial Interface Data I/O
15	+3.3V	POWER	3.3v Power supply

Table 2 P2 Connector Pin Definition

Pin No.	PIN NAME	TYPE	DESCRIPTION
1	+3.3V	POWER	3.3v Power supply
2	DGND	Ground	Power ground
3	GPO	Input/Output	GPIO signal from IMX219
4	FSTROBE	Output	Strobe output
5	SDA	Input/Output	Camera I2C SDA signal
6	SCL	input	Camera I2C SCL signal
7	IR	Input	Motorized IR cut driver switch LVTTTL input
8	GND	Ground	Power ground

Note: The IR signal is also connected to the camera LED GPIO, so user can control the camera LED pin to switch the IR cut ON/OFF.

7 Lens Options

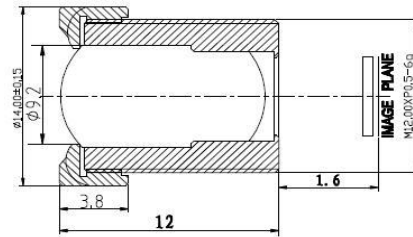
The Raspberry Pi camera shipped with default LS-40136 (M12x0.5 mount) and LS-2718(CS mount), Lenses specification list as follows. Please contact us admin@arducam.com for more lens options or visit <https://www.arducam.com/product-category/lenses/>

LS- 40136 Lens Specification

A. Specification: **LS-40136**

1. sensor size: 1/4"
2. focal length(EFL): **3.2** mm
3. F/NO(infinity): **2.0**
4. back focal length: **1.6** mm
6. Field of view:
 - Diagonal, **85°**;
 - Horzongtal, **63.7°**;
 - Vertical, **70°**;
7. Thread size: **M12*P0.5**
8. Element: **5E+IR**

B. Layout



LS-2718 Lens Specification

技术参数 Technical parameters			
型号 Model No.	LS-2718CS	视场角 Field of View	93 degree for 1/2.5" sensor 58 degree for 1/4" sensor
焦距 Focal Length	4.0MM	外型尺寸 Dimensions	Φ 28* 29.6
通光口径 Aperture(F)	F1.4	近摄距离 M.O.D(m)	0.3
接口 Mount	CS	净重 Weight(g)	41.2g
靶面尺寸 Format	1/ 2.5"	备注 Remarks	Metal

8 Mechanical Dimension

