

ArduCam

IMX135 MIPI Camera Module

13MP Color Camera Datasheet

Rev 2.0, Jun 2019

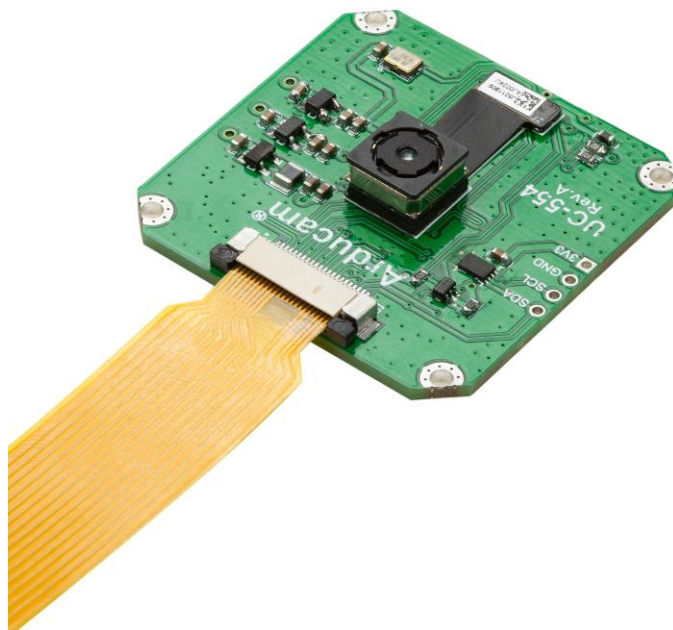


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1 Introduction

The Arducam 13MP MIPI camera module is mainly designed for Raspberry Pi boards, and it can be connected directly to RPi's CSI-2 camera interface without additional hardware. This camera is based on 1/3 inch Sony IMX135 image sensor which adopts Exmor-R technology to achieve high-speed image capturing with high sensitivity and low noise performance. "RGBW coding" color filter is employed, and RGB primary color mosaic is reproduced on the chip. High sensitivity, low dark current, and smear-free features are achieved. It equips an electronic shutter with variable integration time.

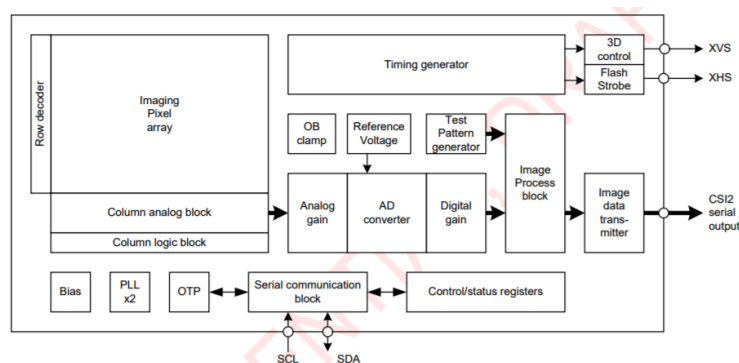
For Raspberry Pi platform Arducam developed a proprietary user-land camera driver SDK and examples which supports RAW/JPEG/H.264 format, and manual or software auto exposure/gain/white balance, mirror/flip controls, and even the low-level sensor register access controls. Although the RPI camera driver is not V4L2 compliance, it is still good for advanced users who need high frame rate unprocessed RAW video for machine vision and is capable of doing image processing using OpenCV.

This MIPI camera module can be used on other ARM, FPGA, DSP, or Nvidia Jetson TX1/TX2/Nano hardware platform as well

2 Features

- 1/3 inch Back-illuminated Sony Exmor-R sensor IMX135
- Support 13MP/1080p/720p resolution, RAW8/RAW10 output
- CSI-2 serial data output (MIPI 2Lane/4Lane selectable)
- 2-wire I2C communication for sensor register settings
- High sensitivity, low dark current, no smear, excellent anti-blooming characteristics
- Image compensation processing functions (defect correction, noise reduction)
- RGBW coding (R,G,B, and "White"(achromatic)) color filter and RGB primary color mosaic reproduction on chip
- Programmable motorized focus lens, FOV 60 degrees
- Support all series Raspberry pi boards

3 Block Diagram



4 Application

- Cellular phones
- PDAs
- Toys
- Other battery-powered products
- ARM/FPGA/DSP based platforms

5 Pin Definition

The IMX135 MIPI camera module connector and pinout is the same as the Raspberry pi ZERO which uses 22pin 0.5mm pitch flex cable connector. The pin definition can be found in Table 1. If you connect the camera to RPI 3B/3B+ etc. boards, please use 15pin to 22pin adapter cable.



Table 1 22 Pin FPC Connector Pin Definition

Pin No.	PIN NAME	TYPE	DESCRIPTION
1	GND	Ground	Power ground
2	MDN0	Input	Pixel Data Lane0 Negative
3	MDP0	Input	Pixel Data Lane0 Positive
4	GND	Ground	Power ground
5	MDN1	Input	Pixel Data Lane1 Negative
6	MDP1	Output	Pixel Data Lane1 Positive
7	GND	Ground	Power ground
8	MCN	Input	Pixel Clock Output Form Sensor Negative
9	MCP	Input	Pixel Clock Output Form Sensor Positive
10	GND	Ground	Power ground
11	MDN2	Input	Pixel Data Lane2 Negative
12	MDP2	Input	Pixel Data Lane2 Positive
13	GND	Ground	Power ground
14	MDN3	Input	Pixel Data Lane3 Negative
15	MDP3	Input	Pixel Data Lane3 Positive
16	GND	Ground	Power ground
17	POWER_EN	Output	Power Enable
18	VCC_3.3V	POWER	3.3v Power supply
19	GND	Ground	Power ground
20	SCL	Input	Two-Wire Serial Interface Clock
21	SDATA	Bi-directional	Two-Wire Serial Interface Data I/O
22	VCC_3.3V	POWER	3.3v Power supply

6 Mechanical Dimension

