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ArduCam 2MP OG02B10 Pivariety Color Global Shutter Camera Module for Raspberry Pi User Guide
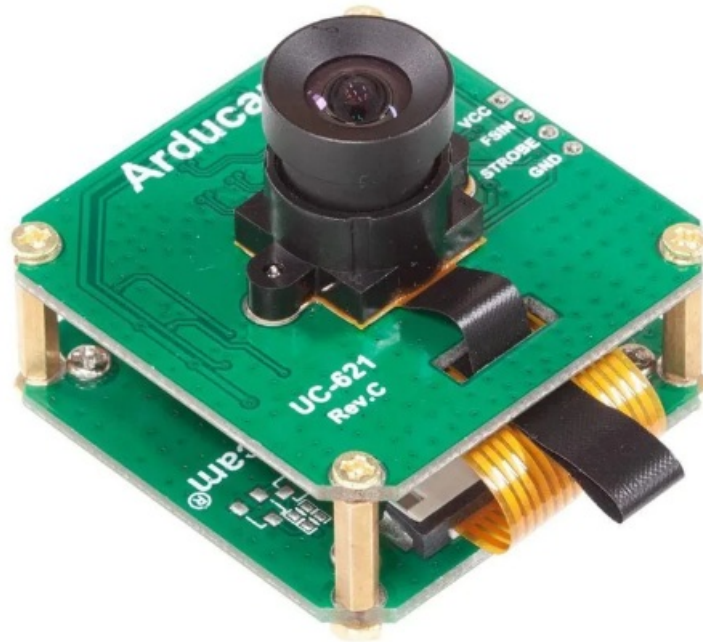
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INTRODUCTION

About Arducam

Arducam has been a professional designer and manufacturer of SPI, MIPI, DVP, and USB cameras since 2012. We also offer customized turnkey design and manufacturing solution services for customers who want their products to be unique.

About This Pivariety Camera

Arducam Pivariety is a Raspberry Pi camera solution to take the advantage of using its hardware ISP functions. Pivariety camera modules make users get better performance and a wider variety of camera, lens options. In other words, Pivariety break-through the limitations of the closed-source officially supported camera driver and camera modules (V1/V2/HQ). Pivariety camera modules made it possible to be a well-tuned ISP with Auto Exposure, Auto White Balance, Auto Gain Control, Lens Shading Correction, etc. This series of cameras use the libcamera framework, they can't be supported by Raspistill, and the way to access the camera is libcamera SDK(for C++)/libcamera still/libcamera-vid/Gstreamer. This Pivariety OG02B10 Color Global Shutter Cam-era is migrated Raspberry Pi Cameras, which eliminate rolling shutter artifacts to shoot high-speed moving objects in color sharp images.

SPECS

Image Sensor	2MP OG02B10
Max. Resolution	1600Hx1300V
Pixel Size	3um x 3um
Optical Format	1/2.9"
Lens Spec	Mount: M12
	Focal length: 2.8mm±5%
	F.NO: 2.8
	FOV: 110deg (H)
IR Sensitivity	Integral IR filter, visible light only
Frame Rate	1600×1300@60fps; 1600×1080@80fps; 1280×720@120fps
Sensor Output Format	RAW10, RAW8
ISP Output Format	The output image format of JPG, YUV420, RAW, DNG The output video format of MJPEG, H.264
Interface Type	2-Lane MIPI
Board Size	40mm×40mm

SOFTWARE

Driver Installation

wget -O install_pivariety_pkgs.sh **https://github.com/ArduCAM/Arducam-Pivariety-V4L2-Driver/releases/download/install_script/install_pivariety_pkgs.sh**

- chmod +x install_pivariety_pkgs.sh
- nstall_pivariety_pkgs.sh -p kernel_driver

press y to reboot

NOTE: The kernel driver installation is only supported by the latest version 5.10. For other kernel versions, please go to our Doc page: **https://www.arducam.com/docs/cameras-for-raspberry-pi/pivariety/how-to-install-kernel-driver-for-variety-camera/#2-how-to-build-raspberry-pi-kernel-driver-for-arducam-pivariety-camera**

You can also visit this doc page to refer to the hardware connection: **https://www.arducam.com/docs/cameras-for-raspberry-pi/pivariety/pivariety-og02b10-2mp-color-global-shutter-camera-module/**

Test the Driver and Camera
After you've finished the hardware assembly and driver installation, you can test whether the camera is detected and working.

View the Status of the Driver and Camera
It will display arducam-pivariety if the driver is installed successfully and the firmware version if the camera can be detected. The display should be probe failed if the camera can't be detected, you might have to check the ribbon connection, then reboot the Raspberry Pi.

View the Video Node
The Pivariety camera modules are emulated as the stand-ard video device under /dev/video* node, so you can use the ls command for listing the contents in the /dev folder.
Since the camera module is V4L2 compliant, you can use the V4l2 controls to list the supported color space, resolutions, and frame rates.
NOTE: Although the V4L2 interface is supported, only RAW format images can be obtained, without ISP support.

Official Libcamera App Installation

dmesg | grep arducam v4l2-CTL –list-formats-ext ls /dev/video* -l

- install_pivariety_pkgs.sh -p libcamera_dev
- install_pivariety_pkgs.sh -p libcamera_apps

Capture Images and Record Video

Capture image
For example, preview for 5s and save the image named test.jpg

- libcamera-still -t 5000 -o test.jpg

Record video
For example, record a H.264 10s video with the frame size 1920W × 1080H

- libcamera-vid -t 10000 –width 1920 –height 1080 -o test.h264

NOTE: H.264 format only supports 1920×1080 and below resolution.

Plugin gstreamer installation

- sudo apt update
- sudo apt install -y gstreamer1.0-tools

Preview

- gst-launch-1.0 libcamerasrc ! 'video/x-raw,width=1920,height=1080' ! video convert! autohide-sink

TROUBLESHOOT

1. **Cannot Allocate Memory**
   Edit /boot/cmdline.txt and add cma=400M at the end More details:
   https://lists.libcamera.org/pipermail/libcamera-devel/2020-December/015838.html
2. **The Image Displays Color** Dots Add code –denoise cdn_off at the end of the command
   More details: **https://github.com/raspberrypi/libcamera-apps/issues/19**
3. **Failed to Install the Driver** Please check the kernel version, we only provide the driver for the latest official
   kernel version image when this Pivarie-ty camera released. **Note:** If you want to compile the kernel driver by
   yourself, please refer to the Doc page: **https://www.arducam.com/docs/cameras-for-raspberry-pi/pivariety/how-to-install-kernel-driver-for-pivariety-camera/.**
4. **Failed to import fd 18**
   If you find the same error, you may make the wrong selection of the graphics driver. Please follow Ar-ducal Doc
   page to select the correct graphics driver.
5. **Switch to the native camera(raspistill etc.)**
   Edit the file of /boot/config.txt, make over-lay=arducam change to # dtoverlay=arducam After the modification is
   completed, you need to reboot the Raspberry Pi.

NOTE: This camera module support trigger via an external signal, please refer to the Doc page to get the
instruction **https://www.arducam.com/docs/cameras-for-raspberry-pi/pivariety/how-to-access-pivariety-og02b10-2mp-color-global-shutter-camera-using-external-trigger-snapshot-mode/**

If you need our help or want to customize other models of Pi cameras, feel free to contact us via

- **support@arducam.com**

Documents / Resources

	ArduCam 2MP OG02B10 Pivariety Color Global Shutter Camera Module for Raspberry Pi [pdf] User Guide 2MP OG02B10 Pivariety Color Global Shutter Camera Module for Raspberry Pi, 2MP OG02B10, Pivariety Color Global Shutter Camera Module for Raspberry Pi, Pivariety Color Global Shutter Camera, Global Shutter Camera, Shutter Camera, Camera

References

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- ⬡ **GitHub: Let's build from here · GitHub**
- ⬡ **Color dot problem · Issue #19 · raspberrypi/libcamera-apps · GitHub**
- ⊙ **Index of /pipermail**
- ⊙ **Simplifying embedded vision for all. - Arducam**
- ⊙ **Arducam Wiki**

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