**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**
  Pivariety Pi 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 breakthrough the limitations of the closed-source official supported camera and driver modules (V1/V2/ HQ).

Pivariety camera modules made it possible to be well-tuned ISP with Auto Exposure, Auto White Balance, Auto Gain Control, Lens Shading Correction. Please, test these 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 AR0234 Color Global Shutter Camera is migrated Raspberry Pi Cameras, which eliminate rolling shutter artifacts to shoot high-speed moving objects in color sharp images.

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**SPECs**

<table>
<thead>
<tr>
<th>Image Sensor</th>
<th>2.3MP AR0234</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Resolution</td>
<td>1920x1200</td>
</tr>
<tr>
<td>Pixel Size</td>
<td>3um x 3um</td>
</tr>
<tr>
<td>Optical Format</td>
<td>1/2.7&quot;</td>
</tr>
<tr>
<td>Lens Spec</td>
<td>Default Mount: M12</td>
</tr>
<tr>
<td></td>
<td>Focal length: 3.6mm</td>
</tr>
<tr>
<td></td>
<td>F:No: 3.0</td>
</tr>
<tr>
<td>FOV:</td>
<td>120°(D)/90°(H)/75°(V)</td>
</tr>
<tr>
<td>IR Sensitivity</td>
<td>Integral 650nm IR filter</td>
</tr>
<tr>
<td></td>
<td>visible light only</td>
</tr>
<tr>
<td>Maximum Frame Rate</td>
<td>1920x1200, 1080x600, 1290x1700x600, 1280x720, 1080x1920, 1080x1280, 960x1280</td>
</tr>
<tr>
<td>Sensor Output Format</td>
<td>RAW10</td>
</tr>
<tr>
<td>ISP Output Format</td>
<td>The output image format of JPEG, YUV420, RAW, DNG</td>
</tr>
<tr>
<td>Interface Type</td>
<td>2-Lane MIPI</td>
</tr>
<tr>
<td>Camera Board</td>
<td>3B×38mm</td>
</tr>
</tbody>
</table>

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**SOFTWARE**

**1. Driver Installation**

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

```
ls /dev/video*
```

**NOTE:** The kernel driver installation only supported by the latest version. 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-pivariety-camera/

**2. 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.

```
dmesg | grep arducam
```

- **View the Status of Driver and Camera**
  It will display arducam-pivariety if driver installed successfully and 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 standard video device under /dev/video* node, so you can use the command for listing the contents in the /dev folder.

```
s/dev/video* -l
```

Since the camera module is V4L2 compliant, you can use the V4L2 controls to list the supported color space, resolutions, and frame rates.

```
v4l2-ctl --list-formats-ext
```

**NOTE:** Although V4L2 interface is supported, only RAW format images can be obtained, without ISP support.

**3. Official Libcamera App Installation**

```
sudo apt install libcamera_apps
```

**4. Capture Image and Record Video**

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

```
libaba-camera-still -t 5000 -o test.jpg
```

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

```
libaba-camera-vid -t 10000 --width 1920 --height 1080 -o test.h264
```

**4. Failed to Install the Driver**

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

**Contact Us**

If you want to know more about other models of Pivariety Camera, please visit: https://www.arducam.com/docs/cameras-for-raspberry-pi/pivariety/

**About Customer Service**

**TROUBLESHOOT**

**1. Cannot Allocate Memory**

```
```

**2. The Image Displays Color Dots**

Add code `--denoise cdn_off` at the end of command

```
libaba-camera-still -t 5000 -o test.jpg --denoise cdn_off
```

**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 Pivariety camera is released.

**4. Failed to import fd 19**

If you find the same error, you may make the wrong selection about the graphics driver. Please follow Arducam Doc page to select the correct graphics driver.