

# *oCam-18CRN-U™*

## *User Manual*



**2019. 8.**

**WITHROBOT Inc.**

## Revision History

Rev	Date	Description	Author
1.0	2019. 9	1 <sup>st</sup> Release	PD

**Note**

This product is for indoor use only. Severe electrostatic stress can damage the product.

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# 1. INTRODUCTION

## Features

oCam-18CRN-U is a color camera of 18 mega pixels with the following features.

- **Interface:** USB3.0 SuperSpeed at the maximum frame rates of 10 FPS @4896 × 3672, 10 FPS @4320 × 3240, 20 FPS @3840 × 2160, 60 FPS @2048 × 1152, 60 FPS @1920 × 1440, 60 FPS @1920 × 1080, 120 FPS @1280 × 1024, 120 FPS @1280 × 720, 120 FPS @1024 × 768, 240 FPS @640 × 480
- **Easy Installation:** With UVC 1.1 support, no additional driver needs to be installed for Windows and Linux.
- **Versatility:** Supports wide range of standard C mount lenses with a lens replaceable structure.
- **Durability:** The enclosure is made of aluminum to provide sturdy protection.
- **Stable Cable Connection:** Holes for USB connector locking pins provided for stable cable connection.

# External View

Metal Enclosure

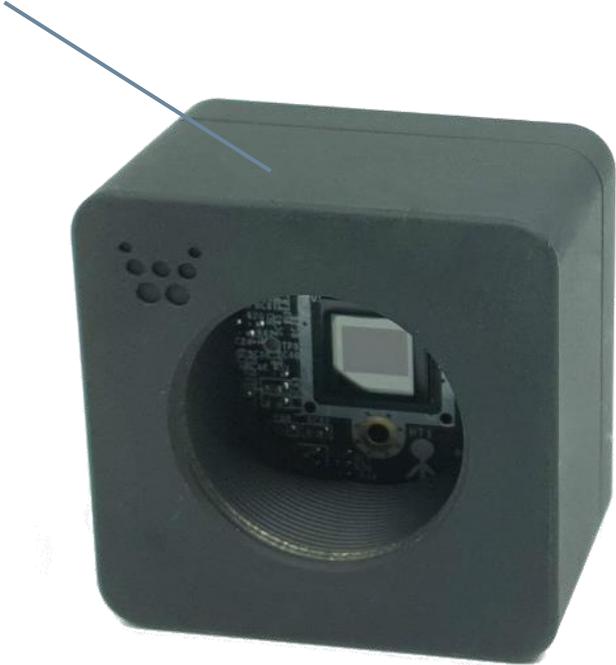


Figure 1. oCam-18CRN-U External View - Front

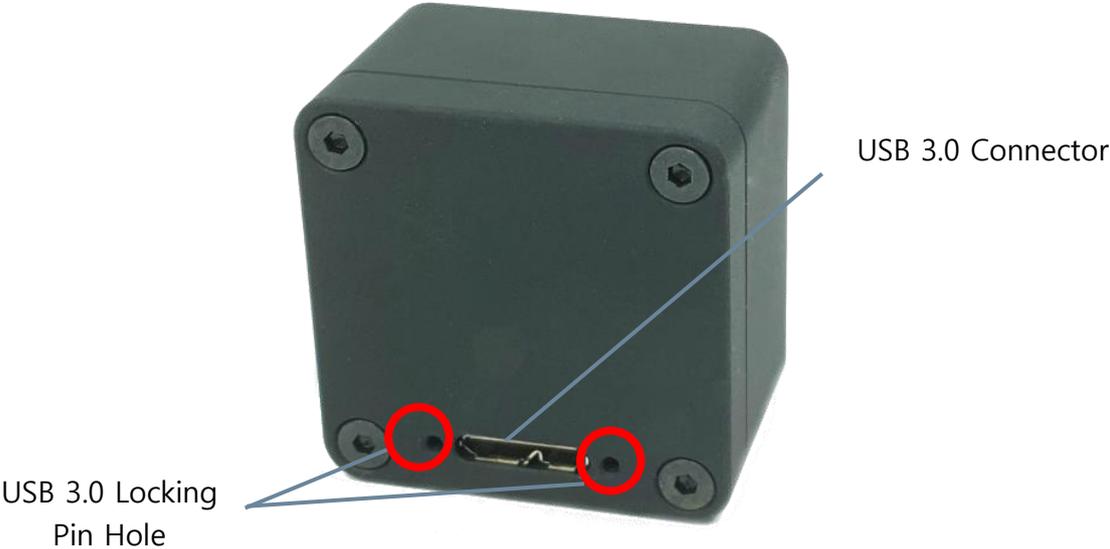


Figure 2. oCam-18CRN-U External View - Back

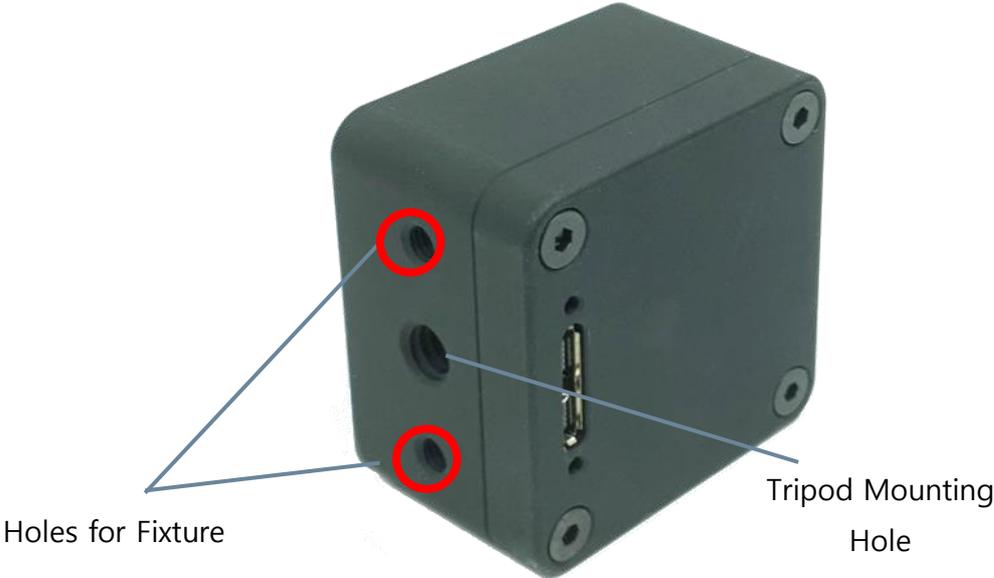


Figure 3. oCam-18CRN-U External View – Bottom & Back

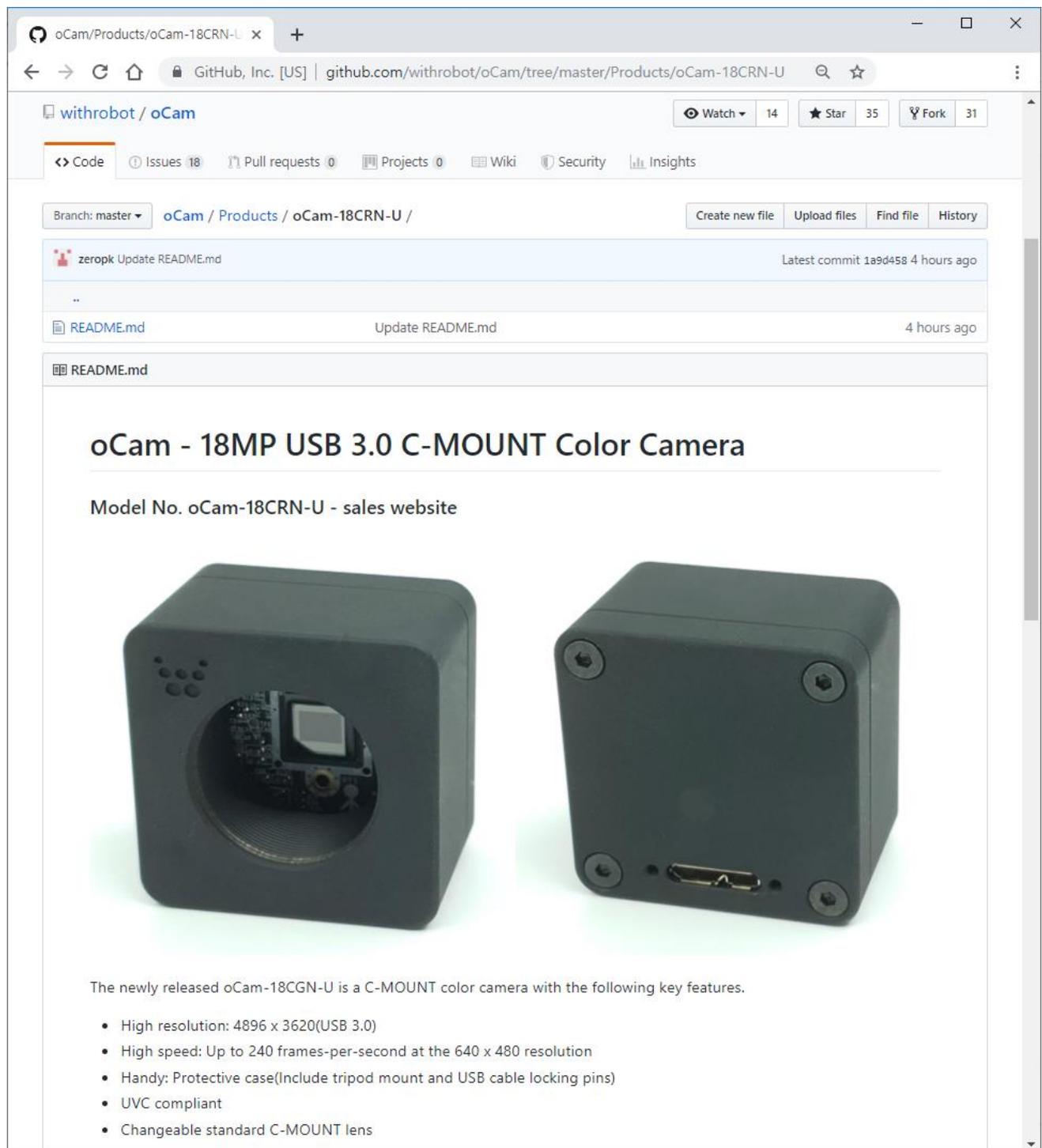


Figure 4. oCam-18CRN-U with C mount lens installed (exemplary image)

## Additional Technical Information

Further technical information is available at

["https://github.com/withrobot/oCam/tree/master/Products/oCam-18CRN-U"](https://github.com/withrobot/oCam/tree/master/Products/oCam-18CRN-U).



oCam / Products / oCam-18CRN-U /

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### oCam - 18MP USB 3.0 C-MOUNT Color Camera

Model No. oCam-18CRN-U - sales website



The newly released oCam-18CGN-U is a C-MOUNT color camera with the following key features.

- High resolution: 4896 x 3620(USB 3.0)
- High speed: Up to 240 frames-per-second at the 640 x 480 resolution
- Handy: Protective case(Include tripod mount and USB cable locking pins)
- UVC compliant
- Changeable standard C-MOUNT lens

Figure 5. Technical Information Site

## 2. SPECIFICATIONS

### Camera Specifications

Item	Value
<b>Image Sensor</b>	<ul style="list-style-type: none"> <li>ON Semiconductor, AR1820 CMOS Image Sensor, 1/2.3 inches</li> </ul>
<b>Interface</b>	<ul style="list-style-type: none"> <li>USB 3.0 SuperSpeed</li> </ul>
<b>Resolutions</b>	<p><b>USB 3.0</b></p> <ul style="list-style-type: none"> <li>4896 (H) x 3672 (V) pixels @10, 5 fps</li> <li>4320 (H) x 3240 (V) pixels @10, 5 fps</li> <li>3840 (H) x 2160 (V) pixels @20, 10 fps</li> <li>2048 (H) x 1152 (V) pixels @60, 30 fps</li> <li>1920 (H) x 1440 (V) pixels @60, 30 fps</li> <li>1920 (H) x 1080 (V) pixels @60, 30 fps</li> <li>1280 (H) x 1024 (V) pixels @120, 60 fps</li> <li>1280 (H) x 720 (V) pixels @120, 60 fps</li> <li>1024 (H) x 768 (V) pixels @120, 60 fps</li> <li>640 (H) x 480 (V) pixels @240, 120 fps</li> </ul>
<b>Image Format</b>	<ul style="list-style-type: none"> <li>RGB Bayer</li> </ul>
<b>Shutter</b>	<ul style="list-style-type: none"> <li>Rolling Shutter</li> </ul>
<b>Camera Control</b>	<ul style="list-style-type: none"> <li>Exposure</li> <li>Gain</li> <li>White Balance Blue</li> <li>White Balance Red</li> </ul>
<b>Lens</b>	<ul style="list-style-type: none"> <li>Standard C-Mount, Replaceable</li> </ul>
<b>Supported OS</b>	<ul style="list-style-type: none"> <li>Windows 10, Linux</li> </ul>
<b>Power</b>	<ul style="list-style-type: none"> <li>USB Bus Power, DC 5V / 190mA</li> </ul>
<b>Operating Temperature</b>	<ul style="list-style-type: none"> <li>0°C ~ + 70°C</li> </ul>
<b>Weight</b>	<ul style="list-style-type: none"> <li>Approx. 87 grams (without lens)</li> </ul>
<b>PCB Size</b>	<ul style="list-style-type: none"> <li>39mm x 39mm</li> </ul>
<b>Enclosure Size</b>	<ul style="list-style-type: none"> <li>42mm x 42mm x 27mm (without lens)</li> </ul>

Table 1. Camera Specifications

### Board Dimensions

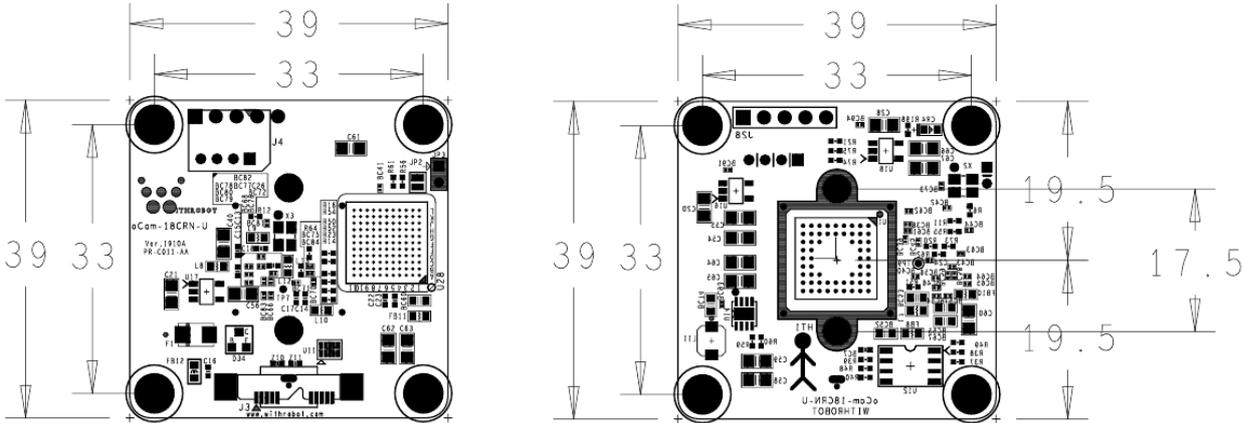


Figure 6. . Board Size (unit: mm)

### Enclosure Dimensions

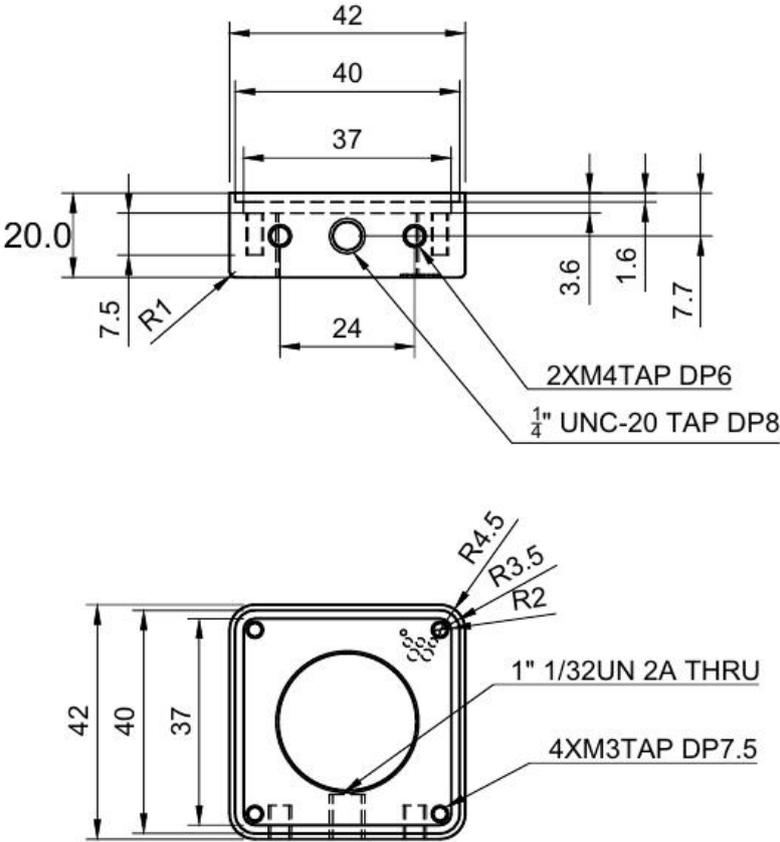
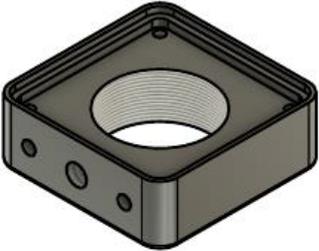


Figure 7. oCam-18CRN-U Front Part

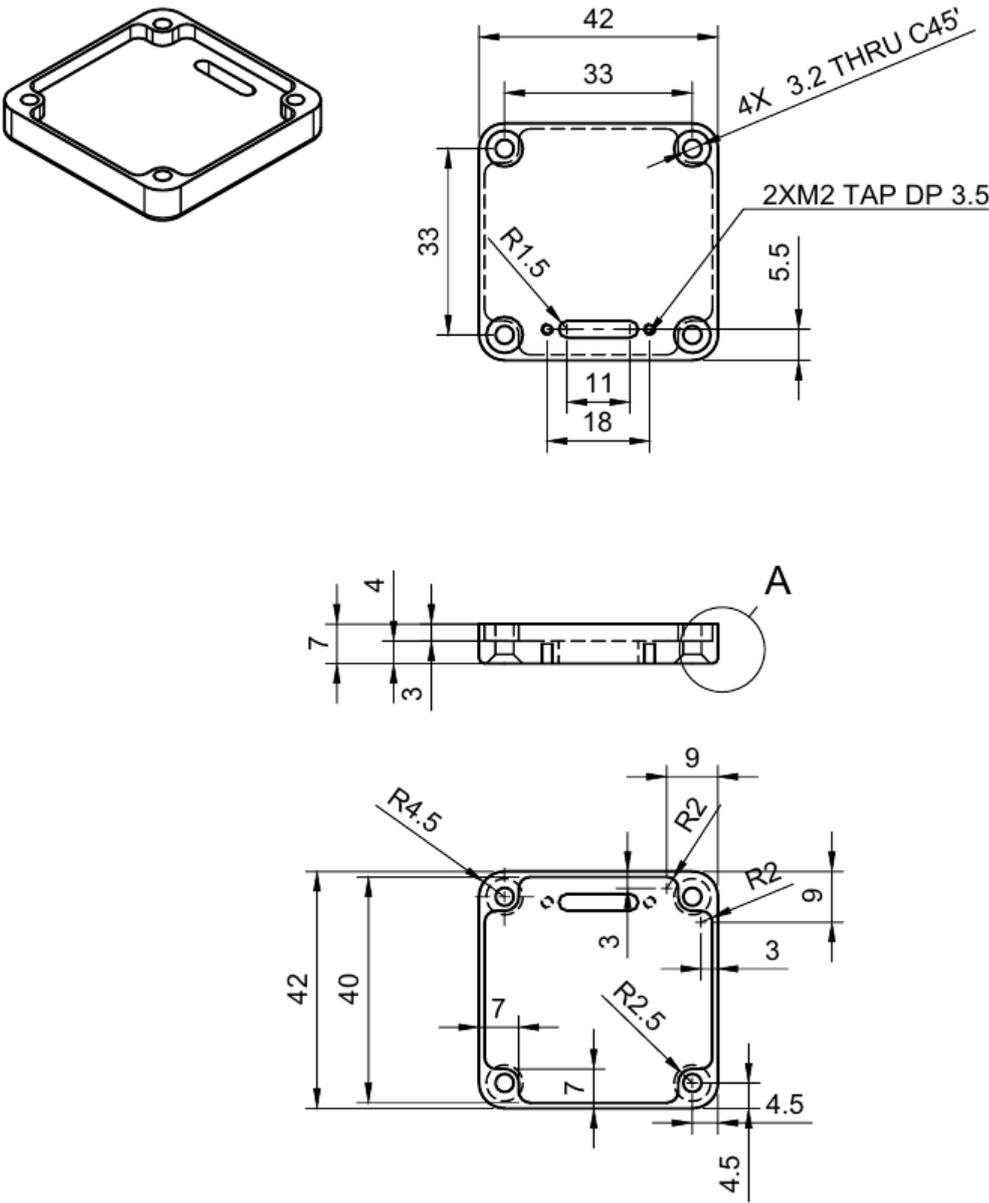


Figure 8. oCam-18CRN-U Back Part

### 3. HOW TO USE ON WINDOWS SYSTEM

#### Connection to Windows PC

Connect the USB 3.0 cable to the USB port of the computer. You can also use the connector with locking pins for oCam-18CRN-U.



Figure 9. Normal Type USB 3.0 Connector



Figure 10. USB 3.0 Connector with Locking Pins

After the camera is detected, the computer will show a message that the camera is connected. To check if the camera is connected successfully, open the device manager and check if the oCam-18CRN-U appears correctly as shown below.

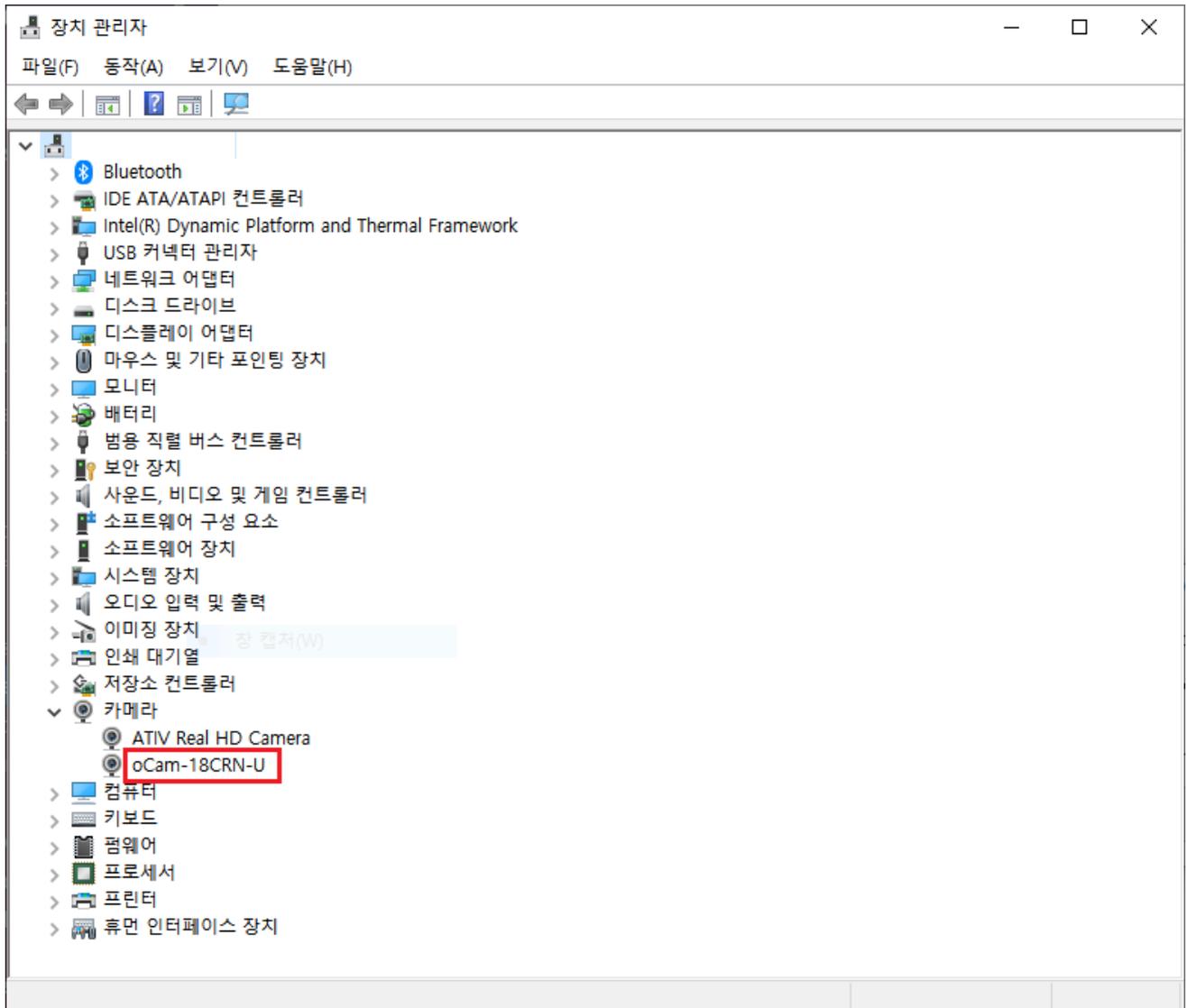


Figure 11. Connection Check on Device Manager (This example is for Windows 10)

## Viewing the Camera Image

- The oCamViewer is camera image viewing program that supports all the oCam cameras from the WITHROBOT Inc.

- Full source code of the oCamViewer is available at the following site:

<https://github.com/withrobot/oCam/tree/master/Software>

- On starting the oCamViewer, the main window will appear as shown below with "USB3" as the type of USB cable currently connected.



Figure 12. Main Window of the oCamViewer for Windows

- Select the resolution and the fps on the dropdown list.

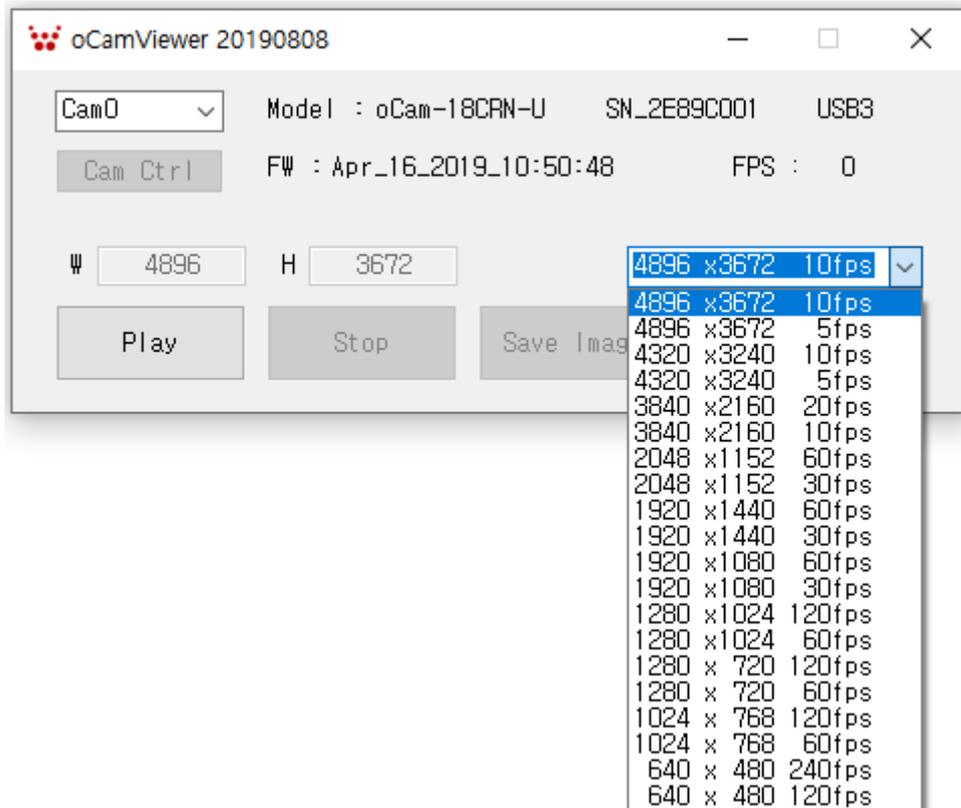


Figure 13. Resolution Selection on the oCamViewer

- Click the [Play] button.
- To change the resolution/fps, click the [Stop] button first and then select one on the dropdown list, and then click the [Play] button.
- To check or change the camera parameters, click the [Cam Ctrl] button **while the camera is being displayed** to open the control window. Use the slide bar to change a parameter.

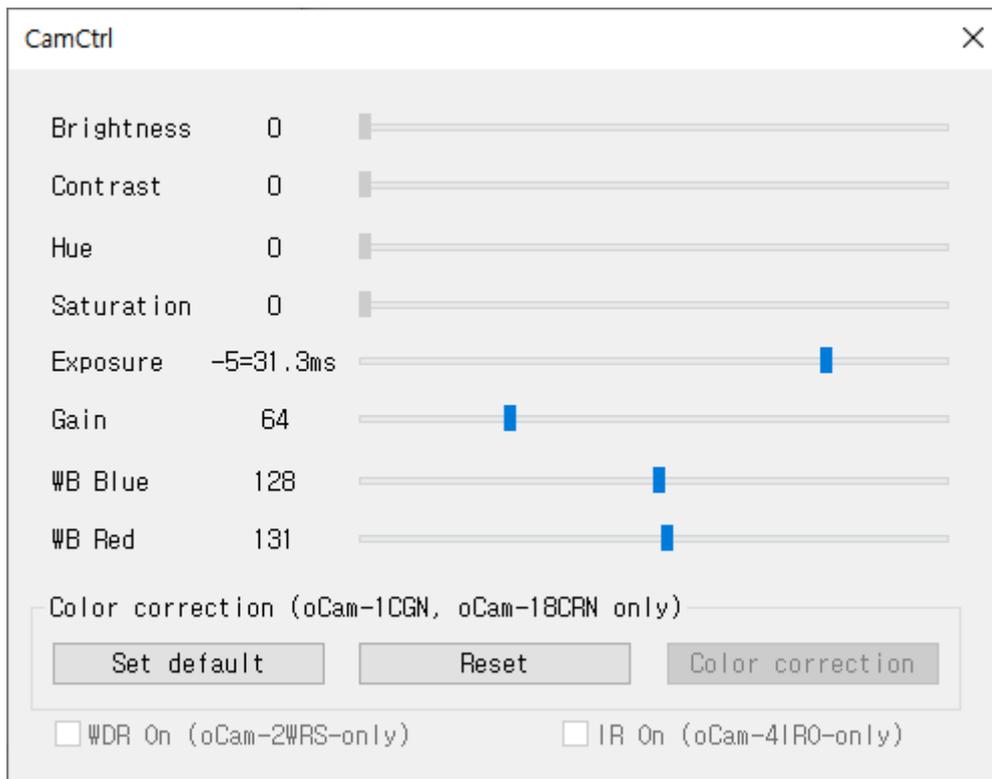


Figure 14. Control Window of the oCamViewer for Windows

- To stop viewing the camera image, click the [Stop] button on the main window.
- To terminate the oCamViewer, click the [Exit] button on the main window.

## 4. HOW TO USE ON LINUX SYSTEM

### Viewing the Camera Image on Linux System

#### (1) Viewing the Camera Image with the oCamViewer

- As the oCam-18CRN-U sends the image in Bayer RGB format, other than the typical YUV format, it is needed to use image viewing software that can handle this format, such as the oCamViewer program provided by the WITHROBOT Inc.
- On starting the oCamViewer, the main window will appear as shown below.

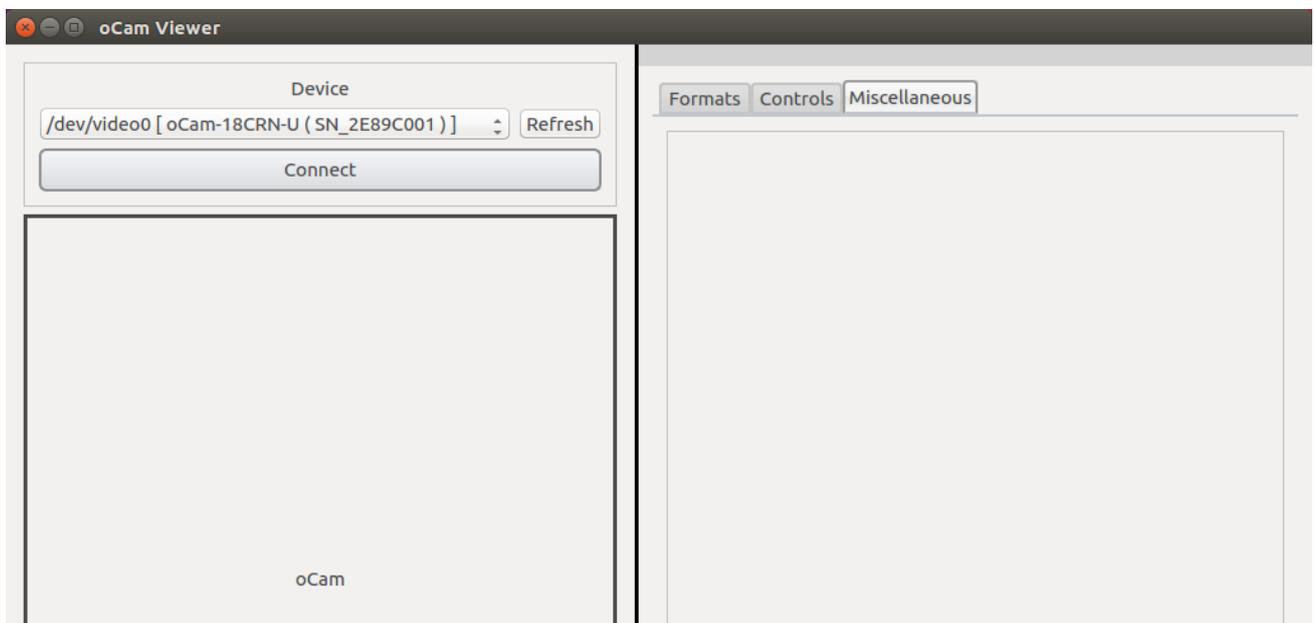


Figure 15. Main window of the oCamViewer for Linux

- Select the oCam-18CRN-U in the "Device" list. On clicking the [Connect] button, the camera image will appear.

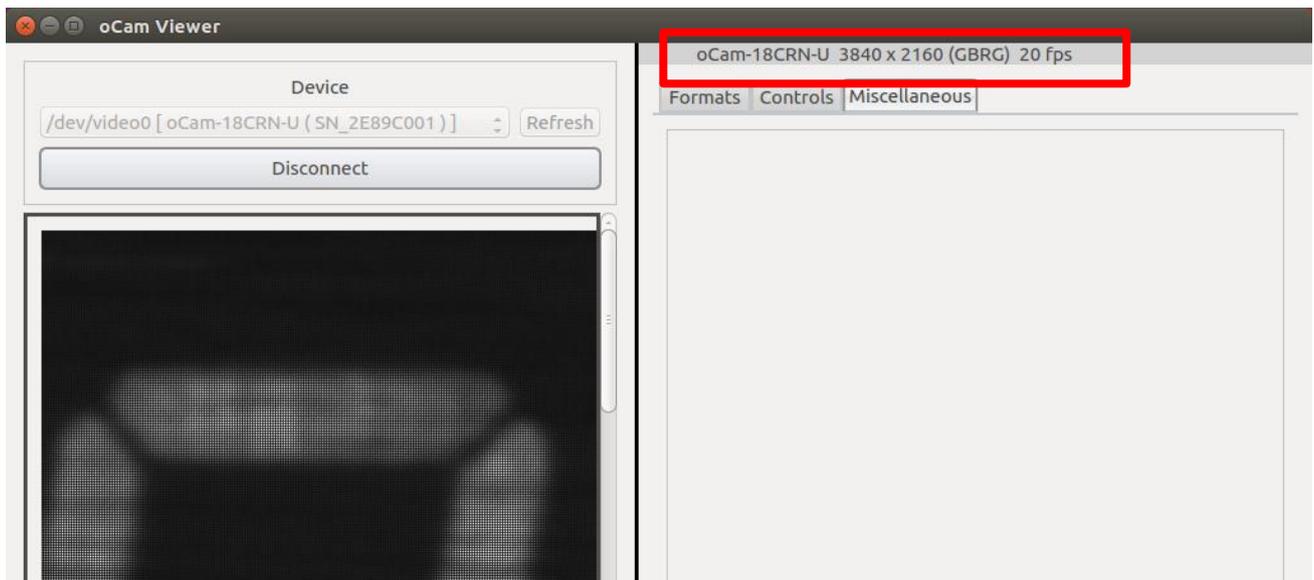


Figure 16. Main window of the oCamViewer for Linux – Camera Connected

- To change the resolution/fps, select "Format" on the right panel and select one on the dropdown list, and then click the [Apply] button at the bottom.

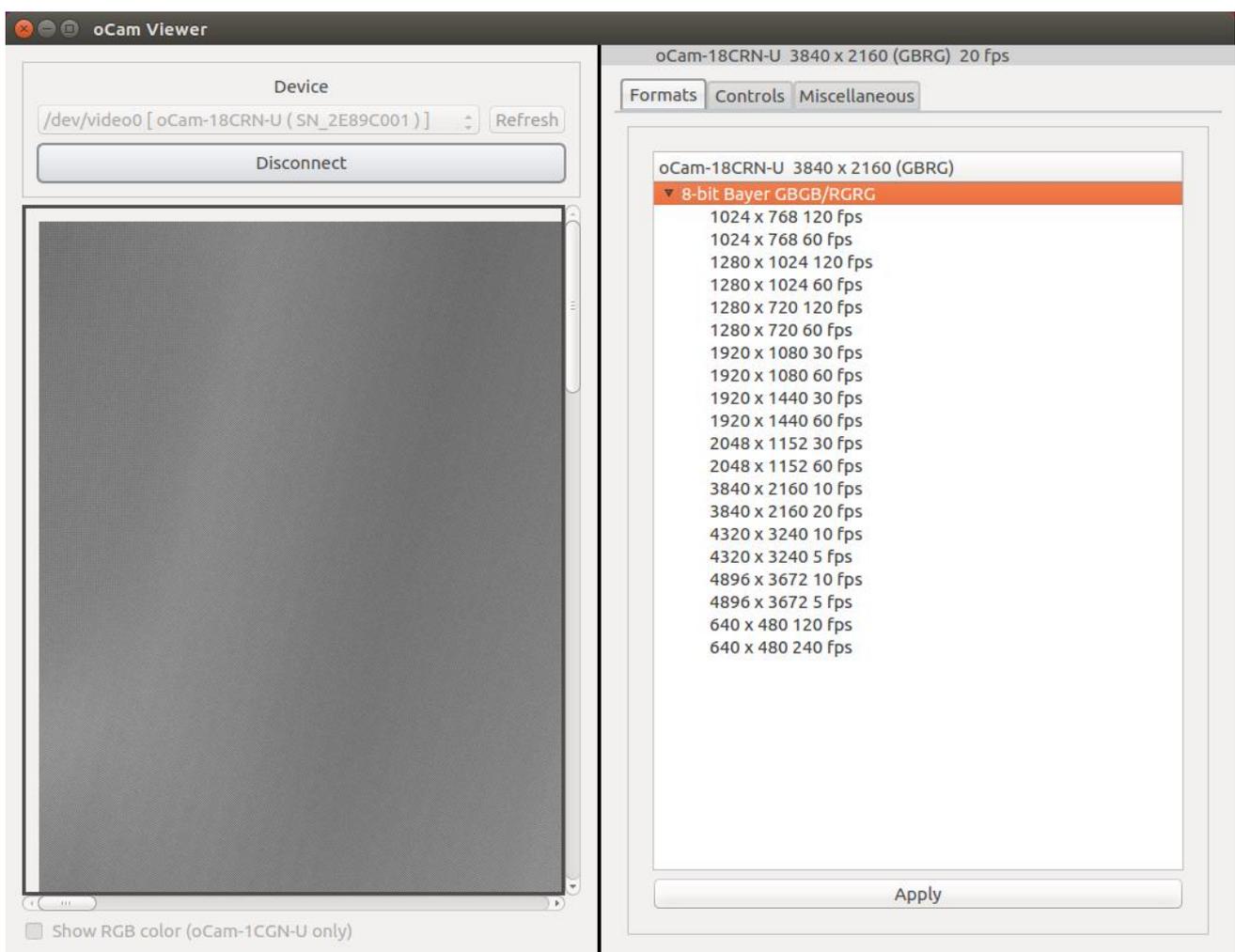


Figure 17. Resolution selection on the oCamViewer

- To change the camera parameters, select "Controls" on the right panel and use the slide bar to change a parameter.

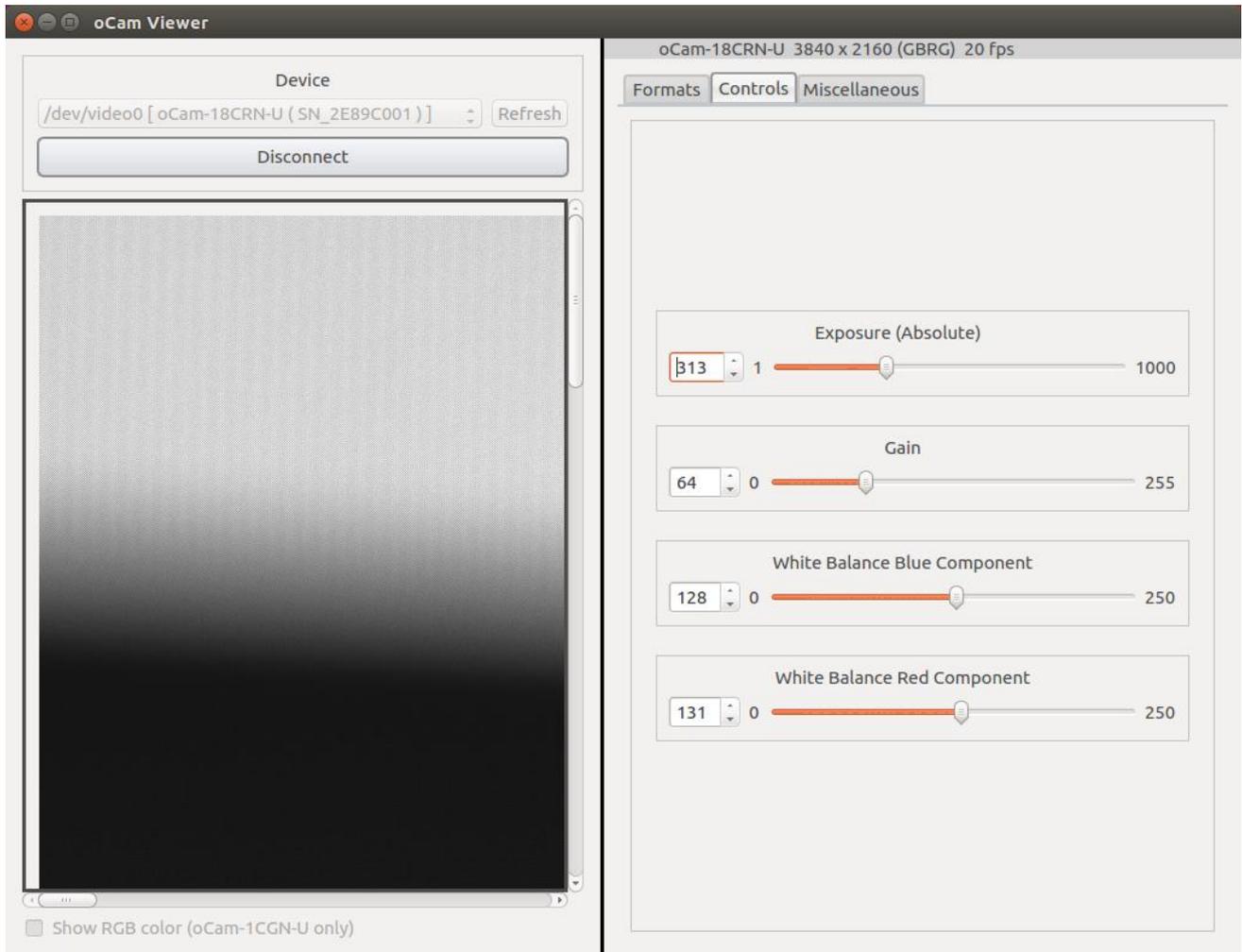


Figure 18. Camera controls of the oCamViewer for Linux

- To disconnect the camera, click [Disconnect] button on the left panel.

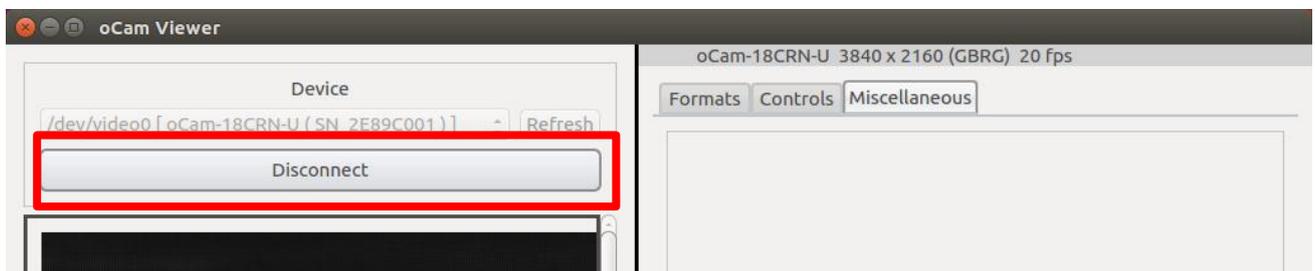


Figure 19. Disconnect the camera.

## (2) Viewing the Camera Image with the Gvuvview

- Start the Gvuvview by entering the "gvuvview" command on the terminal window.

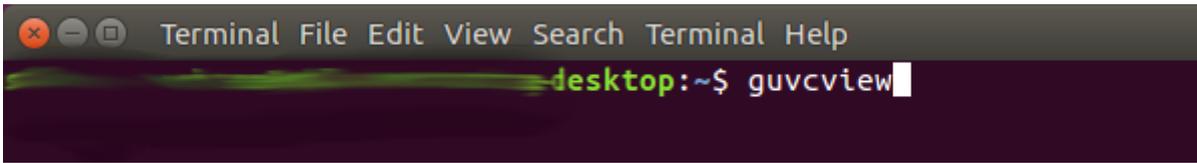


Figure 20. Starting the Gvuvview



Figure 21. Gvuvview image window

- On the Gvuvview camera image window, the current frame rate is shown on the top bar.

## 5. NOTES

The value of exposure can affect the frame rate. When the exposure is set more than the frame interval time, the actual frame rate will drop from the value set on selecting the resolution – frame rate list.

## How to Update the Camera Firmware

- The latest camera firmware is available at the following site.

<https://github.com/withrobot/oCam/tree/master/Firmware>

- The firmware update software (UpdateFW.exe) is available at the following site.

[https://github.com/withrobot/oCam/tree/master/Firmware/Update\\_FW](https://github.com/withrobot/oCam/tree/master/Firmware/Update_FW)

- The instruction to use the UpdateFW.exe is available at the following site.

<https://github.com/withrobot/oCamS/tree/master/Firmware>

- The oCamViewer source code is available at the following site.

<https://github.com/withrobot/oCam/tree/master/Software>

## Technical Support

- E-Mail: [withrobot@withrobot.com](mailto:withrobot@withrobot.com)

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