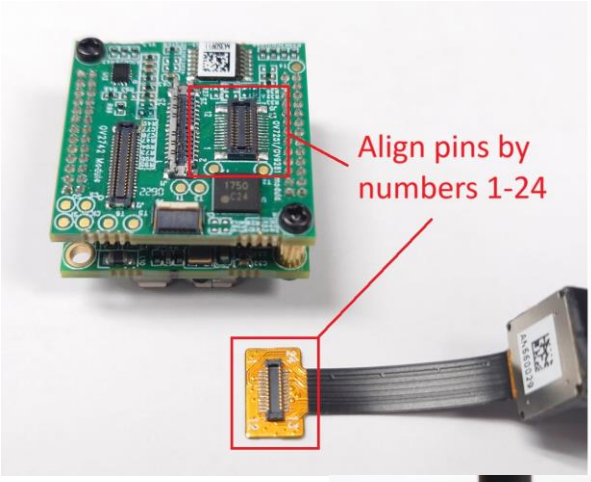
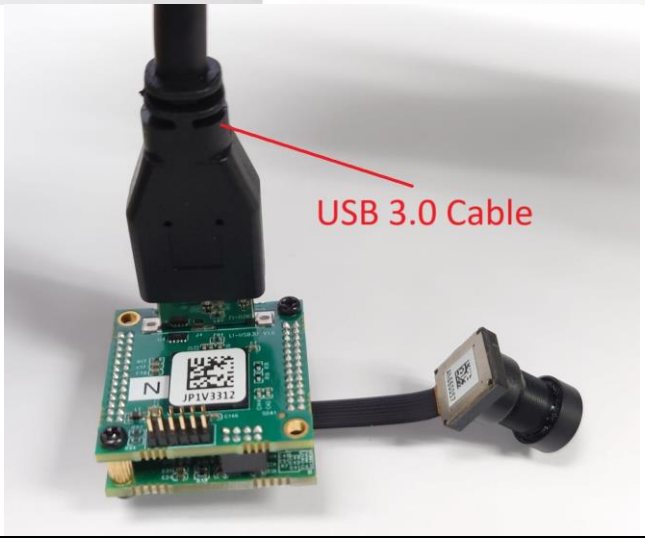
Overview

This firmware is for LI-USB30-OG02B10-MIPI camera.
This firmware supports 1600 x 1300 @ 30 fps.
This camera doesn't include ISP and outputs 10-bit raw data, color sensor, and UVC compliant.

Platform	Camera
1 x LI-USB30-MIPI-TESTER	1 x LI-OV2311-MIPI Camera
Cable	Adapter/Carrier Board
1 x USB 3.0 Micro-B cable	





Revision	SVN version	Release Date	Author	Tested By
2024_08_15		08/15/2024		Shelby Hache

Updates

Revision	Description	Release Date
2024_08_15	First Release	08/15/2024

Known bugs

Setup Procedure 1/3

- Hardware:

1. LI-OG02B10-MIPI Camera x 1
2. LI-USB30-MIPI-TESTER x 1
3. USB 3.0 Micro-B cable x 1

- Hardware Setup:

Connect the camera and USB 3.0 Tester board by aligning pins 1-24 as the picture on the first page.

- Software:

This camera kit can be tested with any one of the below software:

1. Camera tool (Windows OS)

The Camera tool can be downloaded from the link below:
https://www.dropbox.com/s/8daqfypyhnubjr5/CameraUSB30_3_2_20190622.7z?dl=0

It's better to use the 7-zip to uncompress the package:
http://www.7-zip.org/download.html

And install the software below on your PC:
https://www.dropbox.com/s/6uswl40z8rqh2et/vcredist_x86.exe?dl=0

If needed, you can also download the camera tool SDK:
https://www.dropbox.com/s/j6ccl8cvt75gu2g/USB30_CameraTool_SDK_rev1440_20190622.7z?dl=0

2. Linux Camera tool (Linux OS)

The Linux camera tool can be downloaded from link below.
https://www.dropbox.com/s/4m2efo696px9739/linux_camera_tool-master_20190624.zip?dl=0

For how to install it, please refer to the README.md in below link. (the latest version of Linux camera tool may have an issue, so please use above Linux camera tool)
https://github.com/LI01/linux_camera_tool

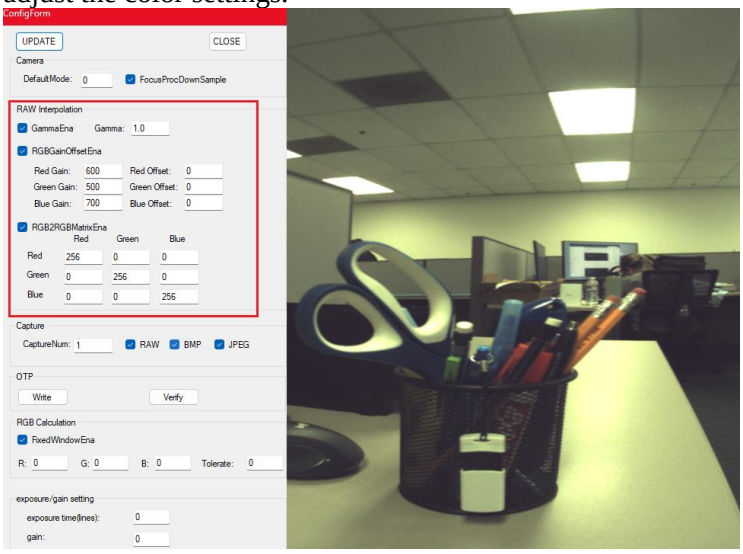
Please follow the README.md in GitHub to install the Linux camera tool.
There are instructions online for how to install the OpenCV on Ubuntu OS.
Below is an example:
https://www.learnopencv.com/install-opencv-3-4-4-on-ubuntu-18-04/

Run Camera 1/3

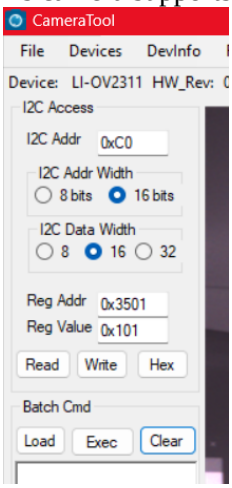
- Camera Tool (Windows OS)

1. Connect the camera to USB 3.0 Tester by aligning pins 1-24 (refer to picture in page 1)
2. Connect the camera to your PC (USB3.0 port) using the USB 3.0 cable.
3. Open camera Tool.

Color Matrix:
This camera supports the Color Matrix. You can go into the camera tool Options -> Configuration -> and adjust the color settings.



Register access function:
This camera supports register access function. The IC2 Address is **0xC0**



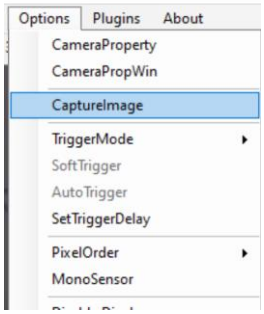
	Exposure Setting	Gain Setting
Reg Addr	0x3501	0x350a
Reg Value	0x101	0x100

Change the highlighted value to adjust the levels.

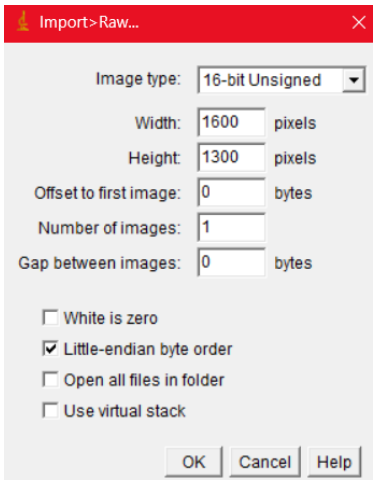
You can also use BatchCmd.txt file to write/read register.

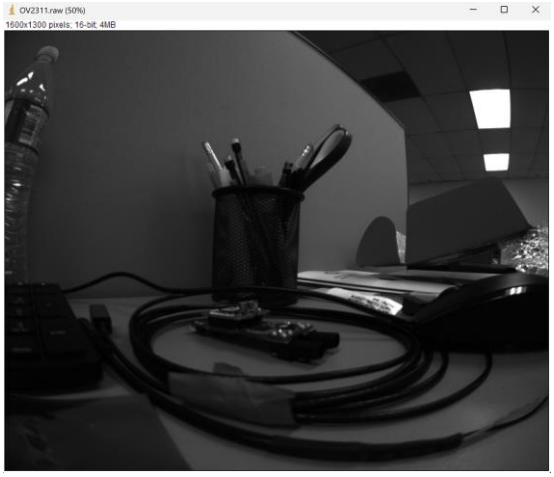
Run Camera 2/3

Capture Image:
The images can be captured by clicking Options→ CaptureImage. Two images (RAW and BMP) will be saved.



The raw image can be viewed by ImageJ.
https://www.dropbox.com/s/fsvfmdy6s9ft03i/ImageJ.7z?dl=0





Raw-to-RGB function Supported.

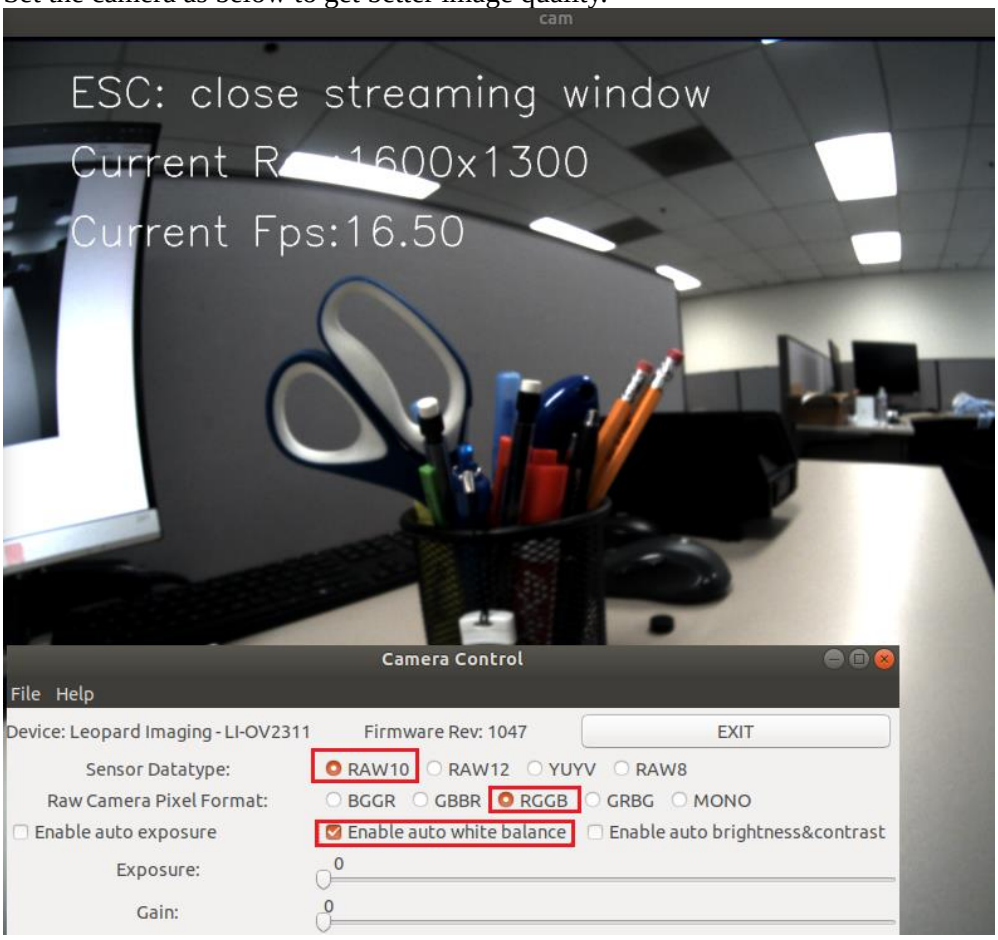
Note: This camera tool supports Raw-to-RGB function which will reduce the display frame rate. You can click **Options→ DisableDisplay** to get actual frame rate from the sensor. You can also use other regular software (like AMcap) to get higher frame rate, but the video will be green due to lack of Raw-to-RGB conversion function.

Run Camera 3/3

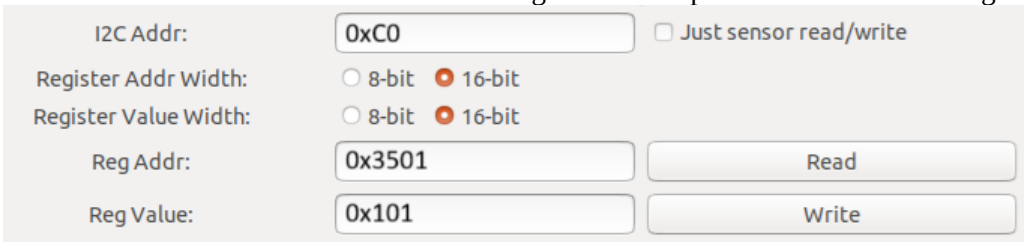
- Camera Tool (Linux OS)

1. Connect the camera to USB 3.0 Tester by aligning pins 1-24 (refer to picture in page 1)
2. Connect the camera to PC (USB3.0 port) through USB 3.0 cable.
3. Open a terminal and use the command “leopard_cam” to open the camera.

Set the camera as below to get better image quality.



This camera tool can be used to write/read registers and capture Raw and BMP images.



Firmware

This camera kit is pre-loaded with Firmware (in USB 3.0 Tester).
If there is any new firmware from Leopard Imaging, you can refer to the instructions below to update them.

1. Firmware Update:

Please use the **LP_USB3_FirmwareUpdateTool** in the camera tool folder to update the firmware.

1) Click “Erase” to erase the old firmware.
2) Click “FW Update” button to select the lif file. (If the “FW_Update is unavailable, please install the WestBridge driver, check below)
3) The update process may take about 15 seconds.
4) If the process takes too long, please disconnect the USB and reconnect it to PC.
   Then try the update tool again.

——Install WestBridge:
If the camera cannot be recognized after you update the firmware, and there is a device name “WestBridge” on the Device Manager, please download the driver from the link below and install it.

https://www.dropbox.com/s/4yx2p31b7qo2gjx/WestBridge_driver.zip?dl=0

1) Right click on “WestBridge” and select Update Driver Software.
2) Choose browse my computer for driver software.
3) Click Browse, locate the driver at the downloaded and unzipped folder. (C:\temp\driver\bin\ for example)
If your PC has Win7 or later version, please select the folder “win7”.
4) Click next and complete the installation process.

After install the driver, please update the firmware again.