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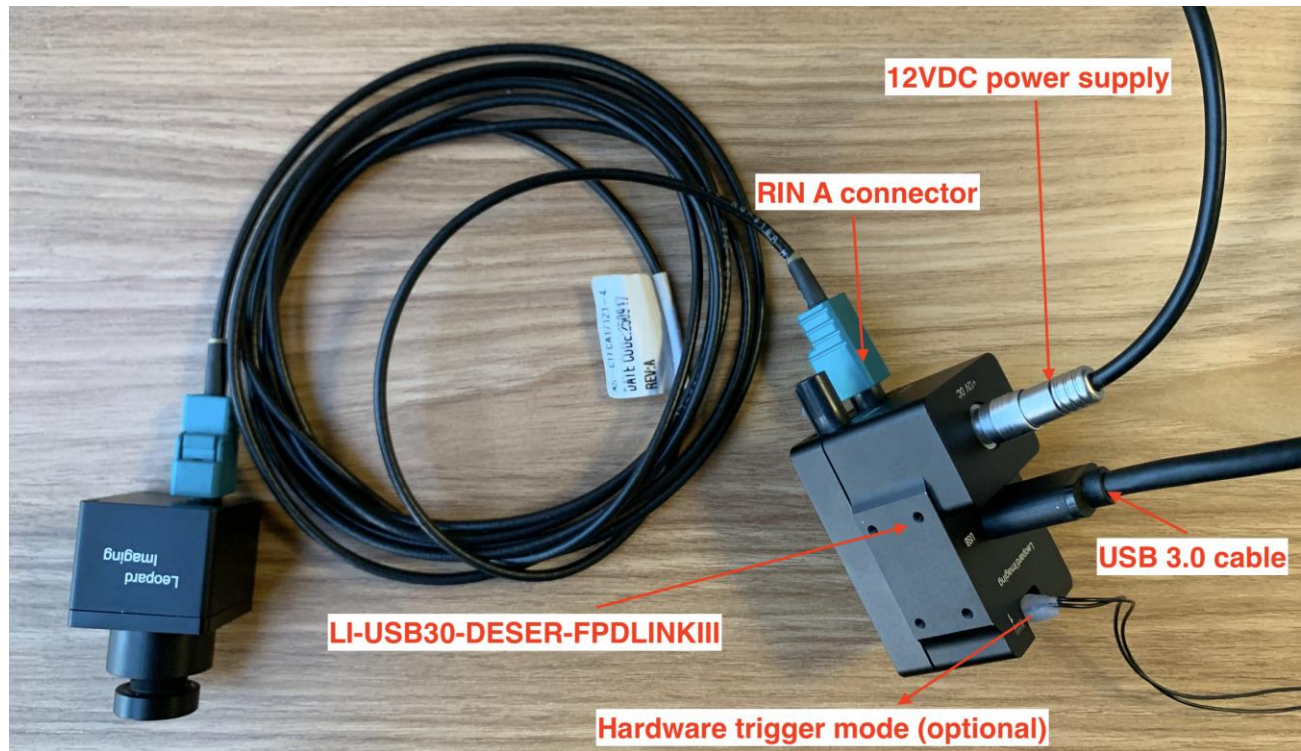
Overview

This firmware is for LI-USB30-OV2775-495-TI953 camera.
This firmware supports 1920x1080@30fps.
This firmware supports regular free-run mode and trigger mode.

Download link

<https://www.dropbox.com/sh/xwn5x11stt4pk0i/AACW0Gs3xp-GiHAokKBKBHMva?dl=0>

Platform	Camera
1 x LI-USB30-DESER-FPDLINKIII	1 x LI-OV2775-495-FPDLINKIII
Cable	Adapter/Carrier Board
1 x USB 3.0 Micro-B cable 1 x FAK-SMZSMZ Fakra cable	1 x 12VDC power supply External trigger device (Optional, for trigger mode)





LI-USB30-OV2775-495-TI953_USB3.0-Firmware_20191022_Release_Note

Revision	SVN version	Release Date	Author	Tested By
2019_10_22	Rev1508	10/22/2019	Meng Gao	Simon Zhu
Updates				
2019_10_22: 1. Support both free-run and trigger mode via the same ISP file.				
2019_09_29: First version. 1. Support 1920x1080@30fps. 2. Support free run mode or trigger mode via different ISP binaries pre-loaded on camera. 3. All sensor settings are controlled by on-board ISP automatically.				
Known bugs				
1. Video stuttering issue via camera tool. In trigger mode, 27Hz or lower trigger signals can fix this issue. AMcap and Guvview don't have this issue.				



Setup Procedure 1/2

- Hardware:

1. LI-OV2775-495-FPDLINKIII x 1
2. LI-USB30-DESER-FPDLINKIII Tester x 1
3. FAK-SMZSMZ Fakra cable x 1
4. USB 3.0 cable x 1
5. External trigger device x 1 (optional, for trigger mode only)

- Hardware Setup:

Connect the camera and US 3.0 Tester as the picture in the first page.

- Trigger Device Connection (for trigger mode only):

Connect the external trigger device (like signal generator) to pin1 (OPT_IN) and pin5 (GND) of the trigger connector. The voltage of the trigger signal can be 3.3V ~ 12V.

Trigger connector part#: 20021111-00012T4LF



More info about trigger mode:

https://www.dropbox.com/s/a243n4nbaj74vuq/USB3_Camera_Trigger_mode.pdf?dl=0



Setup Procedure 2/2

- Software:

This camera kit can be tested with any one of below software or other software.

1. AMcap (Windows OS)

The AMcap can be downloaded from link below.

<http://noeld.com/programs.asp?cat=video>

2. Camera tool (Windows OS)

The Camera tool can be downloaded from link below.

https://www.dropbox.com/s/sgl4qjtdeudsrx/CameraTool_20190919.7z?dl=0

It's better to use the 7-zip to uncompress the package.

<http://www.7-zip.org/download.html>

And install below software to your PC.

https://www.dropbox.com/s/6uswl40z8rqh2et/vcredist_x86.exe?dl=0

3. Gvvcview (Linux OS)

<https://sourceforge.net/projects/gvvcview/files/source/>

or use below command to install gvvcview.

```
sudo add-apt-repository main
sudo add-apt-repository universe
sudo add-apt-repository restricted
sudo add-apt-repository multiverse
sudo apt-get update
sudo apt-get install gvvcview
```



Run Camera

- Free-run mode

1. Plug in 12V power supply to USB 3.0 Tester.
2. Plug the camera to PC (on **USB 3.0** port) with USB 3.0 cable.
3. Open video software. There will be video output.

- Trigger mode

1. Plug in 12V power supply to USB 3.0 Tester.
2. Plug the camera to PC (on **USB 3.0** port) with USB 3.0 cable.
3. Open video software. The software will be video output.
4. Click Options → TriggerMode → Negative Edge to enable the trigger mode. The video will stop.
5. Send trigger signals to trigger connector (like 20Hz square wave). There will be video output @ 20fps.
The maximum frame rate can be 30fps via 30Hz trigger signal.



Note 1/3

This camera kit includes ISP binary (in camera module), Firmware (in USB 3.0 Tester) and FPGA (in USB 3.0 Tester) .

The ISP binary normally will be pre-loaded in our factory and can only be updated by Leopard Imaging. The customer can update the Firmware and FPGA.

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/4yx2p31b7qo2gix/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.



Note 2/3

2. FPGA Update:

Please disassemble the LI-USB30-DESER-FPDLINKIII box and get the LI-TI954-DESER and USB 3.0 main board.

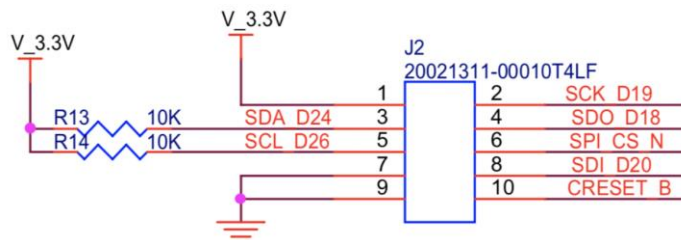
1) Download the Lattice programmer tool software **Programmer Standalone 3.10 64-bit for Windows** from link below and install it to your PC.

<http://www.latticesemi.com/programmer>

2) Connect the HW-USBN-2A or HW-USBN-2B to J2 of LI-TI954-DESER board. Below is the pinout. You may need to build an adapter cable for the programmer tool and J2. J2 is a 1.27mm pitch interface. Below pins in red need to be connected.

Only below pins in red need to be connected:

TI954 Board <--> HW-USBN-2B	TI954 Board <--> HW-USBN-2B
Pin1: V_3.3V <--> VCC	Pin2: SCK_D19 <--> TCK/SCLK
Pin3: N/A	Pin4: SDO_D18 <--> TDO/SO
Pin5: N/A	Pin6: SPI_CS_N <--> ISPEN/PROG
Pin7: GND <--> GND	Pin8: SDI_D20 <--> TDI/SI
Pin9: N/A	Pin10: CRESET_B <--> TRST



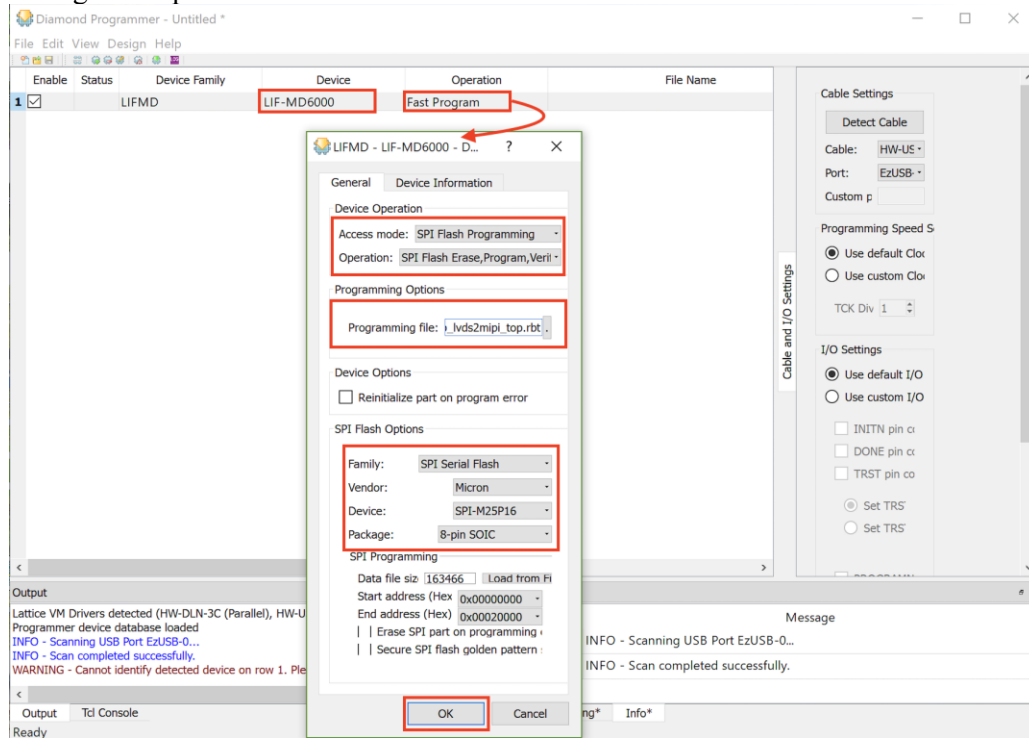
* Indicates flywire connections required for most basic JTAG programming.





Note 3/3

- 3) Connect the USB3.0 Tester to PC via USB 3.0 cable.
- 4) Open **LP_USB3_FirmwareUpdateTool** in the camera tool folder and click “Erase” to erase the firmware.
- 5) Open Lattice software (which you installed in 1). The Device name should be “LIF-MD6000”. Set the settings of “Operation” as below and click “OK”.



- 6) Click program icon.



- 7) It may take 9s to program the FPGA.



- 8) Refer to the “Firmware Update” section to install the firmware.



Test Result

2019_10_22:

Image sample1:



Image sample2:

