



LI-USB30-AR0231-AP0202-TI913_USB3.0-Firmware_Release_Note

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Overview

This firmware is for LI-USB30-AR0231-AP0202-TI913 camera.
This firmware supports 1920x1080@20fps.
This firmware supports regular free-run mode and trigger mode.

Download link

<https://www.dropbox.com/sh/tusrpy6nd5leei2/AAAfwwqji5xTFscPcMpNY6GMfa?dl=0>

Platform

1 x LI-USB30-DESER-TI914

Camera

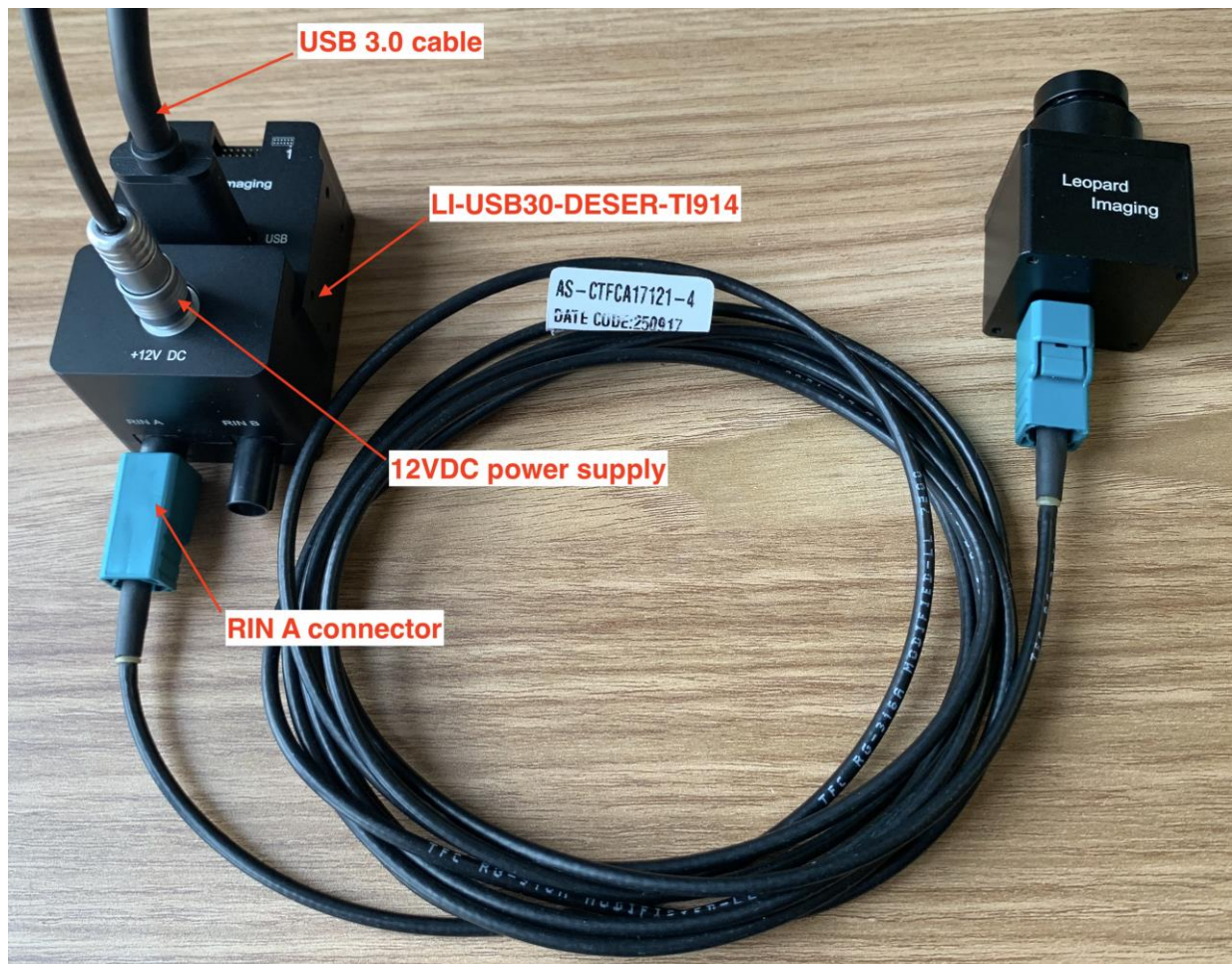
1 x LI-AR0231-AP0202-TI913

Cable

1 x USB 3.0 Micro-B cable
1 x FAK-SMZSMZ Fakra cable

Adapter/Carrier Board

1 x 12VDC power supply
External trigger device (Optional, for trigger mode)





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Revision	SVN version	Release Date	Author	Tested By
2019_09_30	Rev1501	09/30/2019	Chuan Jin	Simon Zhu
Updates				
2019_09_30: First version. 1. Support 1920x1080@20fps. 2. Support free run mode or trigger mode. Trigger mode can be enabled by software. 3. All sensor settings are controlled by on-board ISP automatically. 4. The camera includes LI-AR0231-CAM REV1.2, LI-AP0202-ISP V1.0 and LI-TI913-YUV-FKR V1.0.				
Known bugs				



Setup Procedure 1/2

- Hardware:

1. LI-AR0231-AP0202-TI913 x 1
2. LI-USB30-DESER-TI914 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/s4sr5hrerzc3ms0/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 below software to your PC.

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

If needed, you can also download below camera tool SDK.

https://www.dropbox.com/s/bkdavmltytp8q3y/USB30_CameraTool_SDK_rev1440_20190622.7z?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. There will be video output.
4. Enable trigger mode via software ((like select Options → TriggerMode → Positive Edge on camera tool).
The video will stop and wait for the trigger signals.
5. Send trigger signals to trigger connector (like 10Hz square wave). There will be video output @ 10fps.
The maximum frame rate can be 20fps via 20Hz trigger signal.

Note: Please refer to below sample code for trigger mode enable under Linux OS.

<https://www.dropbox.com/s/dcd0toue0ozoxdl/trigger.c?dl=0>



Note 1/2

- Firmware Update:

This camera kit includes ISP binary (in camera module) and Firmware (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.

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.

- Trigger pin connection

External trigger → pin1 (OPT_IN) of J3 → CTL1 (K7) of FX3 Input → GPIO45 (F2) of FX3 output → GPIO1 (pin 27)of TI914 → GPO_1 (pin16) of TI913 → FRAME_SYNC (G3) of AP0202 Input → GPIO_0 (G5) of AP0202 output → GPIO_3 (K10) of AR0231



Test Result

2019_09_30:

Image sample1:



Image sample2:

