Helpdesk XIMEA

Linux USB 3.0 Support

Support SK - 2023-10-19 - in USB cameras

https://www.ximea.com/support/wiki/apis/linux_usb30_support

Linux USB 3.0 Support¶

General¶

General support for USB 3.0 on Linux is still in a relatively early phase and future releases of Linux kernel and libusb should improve this situation.

Nevertheless, here are the steps needed for enabling USB 3.0 support in XIMEA Linux Software Package:

- Check kernel version on your system:

  ```
  uname -sr
  ```

  You'll need at least **Linux 3.4. Upgrade kernel** (if needed Ubuntu users can follow instructions on this page: https://wiki.ubuntu.com/Kernel/MainlineBuilds)
  See example for Linux Ubuntu 12.04 upgrade kernel to 3.4

- Download and unpack XIMEA Linux Software Package, then start installation using this command:

  ```
  ./install
  ```

- (Re)connect xiQ USB 3.0 camera
- Check if the current user is in **plugdev** group
  - If not, execute the command: **sudo gpasswd -a $USER_NAME plugdev**,
  - For changes to apply user has to relog.
- Most recent version of the troubleshooting guide is in section **4c** of README file included in XIMEA Linux Software Package.

Configure Linux USB Data Path¶

Most Linux distributions need to be tweaked somehow to ensure that all images from the USB3 camera at a high data rate will be delivered.
This requires some actions:

Increase the USB Buffer Size in Linux¶

The default USB buffer size in Linux is small (16 MB). This limitation can be removed by command (in Ubuntu):

```
sudo tee /sys/module/usbcore/parameters/usbfs_memory_mb >/dev/null
<<<0
```

Symptoms: Error code: 13 during startAcquisition()

Increase the USB Buffer Size in xiAPI¶

The default xiAPI setting is optimized to be compatible with most controllers.
On some controllers (e.g. FL1100) it is possible to increased buffer sizes and counts so data streaming is more reliable.

Change the buffer commit count to 32:

```
xiSetParamInt(handle, XI_PRM_ACQ_TRANSPORT_BUFFER_COMMIT, 32);
```

Change the buffer size to maximum:

```
xiGetParamInt(handle, XI_PRM_ACQ_TRANSPORT_BUFFER_SIZE
XI_PRM_INFO_MAX, &buffer_size);
xiSetParamInt(handle, XI_PRM_ACQ_TRANSPORT_BUFFER_SIZE, buffer_size);
```

Allow to Run Application Realtime¶

xiAPI has receiving thread that is normally switched to Realtime priority.
This requires some Linux distributions to run with root privileges.
If a privilege does not allow to set priority to realtime - the USB buffer handling remains in normal priority thread and warning message shows.

- Standard solution:
    - Add following lines to /etc/security/limits.conf

    ```
    *               -       rtprio          0
    @realtime       -       rtprio          81
    *               -       nice            0
    @realtime       -       nice            -16
    ```

    - Create realtime group (groupadd realtime) and add user to it (gpasswd -a user realtime). For changes to apply user has to logoff or just reboot the system.
- Simple solution - run the application with highest privilegies:

    ```
    sudo ./xiSample
    ```

Tags

Linux