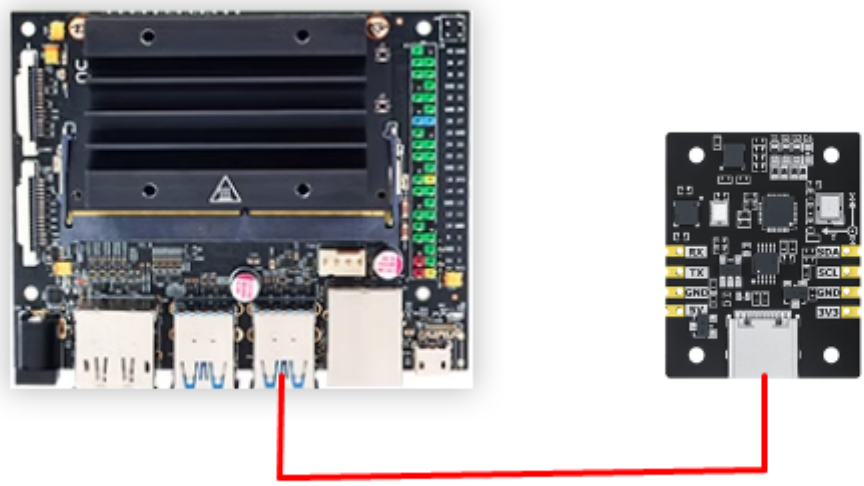
Viewing IMU Data with Jetson

1. Connecting the Device

This tutorial uses Jetson Nano B01 as an example.

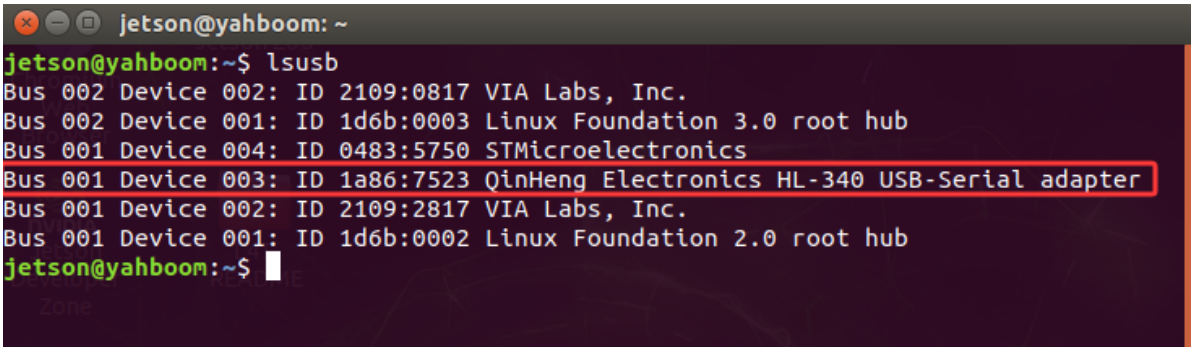
Connect the IMU attitude sensor to the host's USB port using a Type-C cable.



2. Viewing Device Status

View Device ID

```
lsusb
```



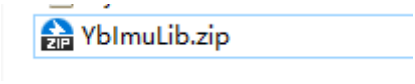
View Device Number

```
ll /dev/ttyU*
```

3. Installing Driver Libraries

3.1 Download the Python driver library file

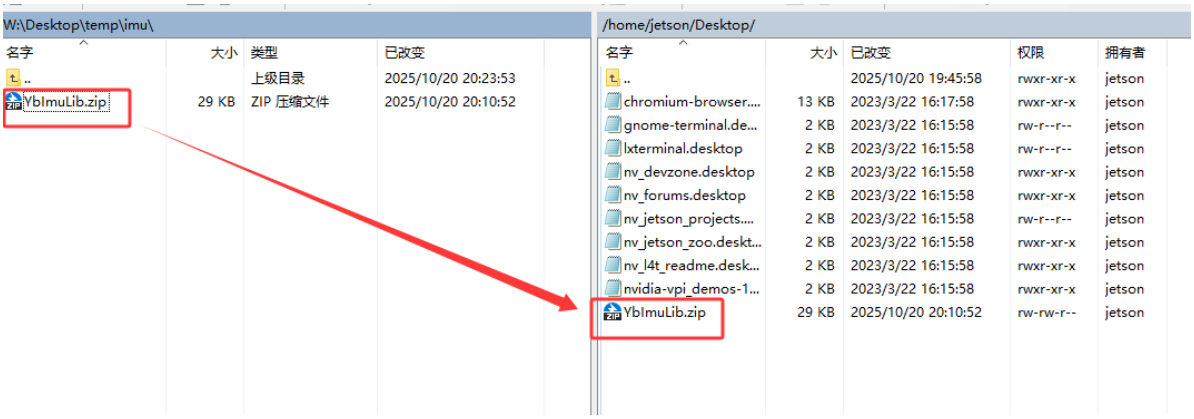
The latest version of the driver library, named YbImuLib.zip, is provided in the data folder.



3.2 Transferring files

Drag the compressed driver library file onto the Jetson desktop using WinSCP software.

The driver library file can be deleted after successful installation.



If you are unfamiliar with using WinSCP to transfer files, please refer to the following webpage for detailed WinSCP installation and operation instructions:

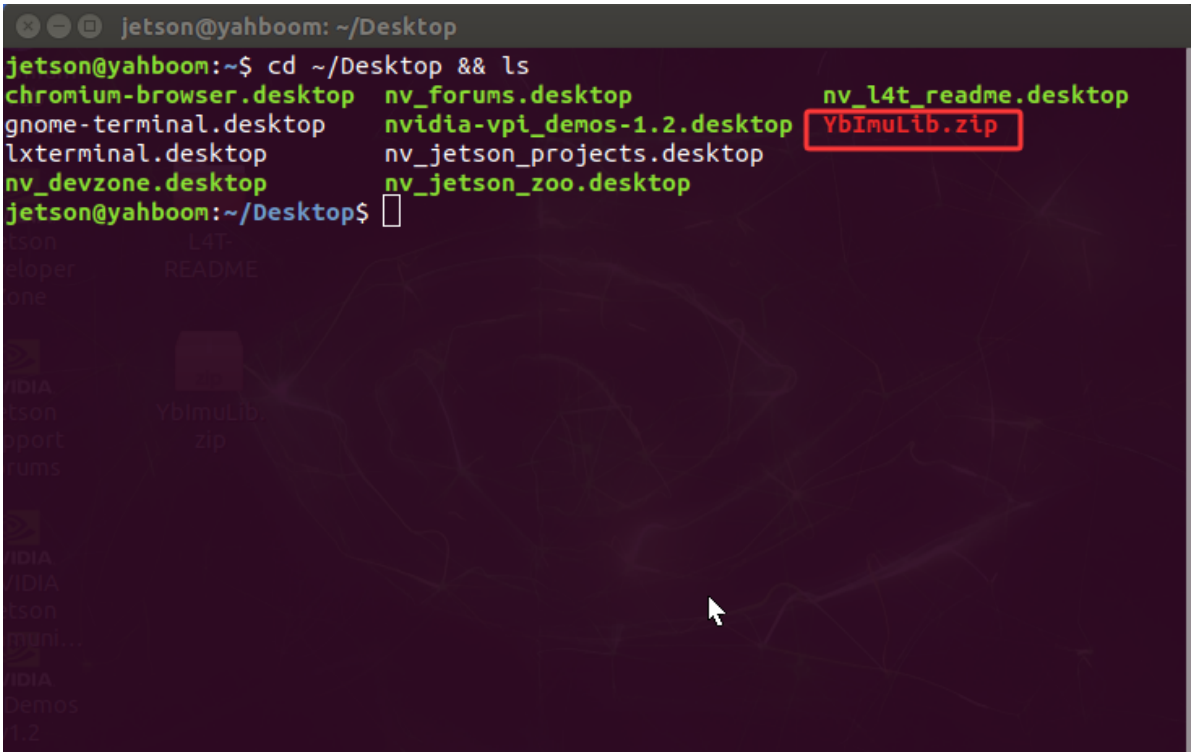
File Transfer (Jetson Nano 4 GB)

3.3 Installing Driver Libraries

Open the terminal on your Jetson Nano and enter the following command to extract the files.

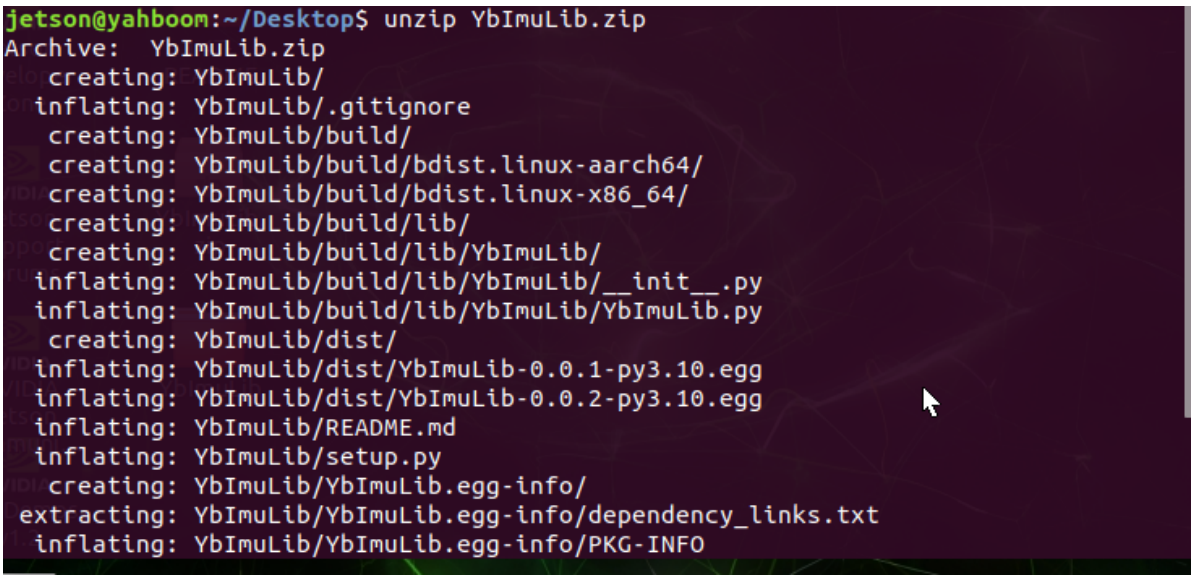
Access the desktop and check if the file exists; the target file is highlighted in the red box.

```
cd ~/Desktop && ls
```



Unzip the file

```
unzip YbImuLib.zip
```



Enter the driver library folder

```
cd YbImuLib
```

Run the installation command. If you see the version number displayed at the end, the installation was successful. This command will overwrite any previously installed Rosmaster_Lib driver library.

```
sudo python3 setup.py install
```

```
jetson@yahboom:~/Desktop/YbImuLib$ sudo python3 setup.py install
[sudo] password for jetson:
running install
/usr/local/lib/python3.6/dist-packages/setuptools/command/install.py:37: SetuptoolsDeprecationWarning: setup.py install is deprecated. Use build and pip and other standards-based tools.
  setuptools.SetuptoolsDeprecationWarning,
/usr/local/lib/python3.6/dist-packages/setuptools/command/easy_install.py:159: EasyInstallDeprecationWarning: easy_install command is deprecated. Use build and pip and other standards-based tools.
  EasyInstallDeprecationWarning,
/usr/local/lib/python3.6/dist-packages/pkg_resources/__init__.py:119: PkgResourc
```

Install required libraries

```
sudo pip3 install pyserial
sudo pip3 install smbus2
```

4. View IMU data

Refer to the **3.2 File Transfer** operation, use WinSCP to transfer the **YbImu_ReadData_Serial.py** file to the Jetson, and then run the command

```
python3 YbImu_ReadData_Serial.py
```

```
jetson@yahboom:~/Desktop$ python3 YbImu_ReadData_Serial.py
YbImu Serial Opened! Baudrate=115200
----------------create receive threading--------------
Firmware version: V0.0.9
Press Ctrl+C to exit the program.
------ Sensor Data ------
Acceleration [g]:       x=-0.230, y=-0.013, z= 0.980
Gyroscope [rad/s]:      x= 0.000, y= 0.000, z= 0.000
Magnetometer [uT]:      x= 18.262, y= 9.107, z=-13.404
Quaternion:             w=-0.95560, x=-0.02311, y=-0.11265, z= 0.26501
Euler Angle [deg]:      roll=-0.91, pitch= 13.15, yaw=-31.00
Barometer:              height= 0.00 m, temperature= 0.00 °C
                        pressure= 0.00000 Pa, pressure_diff= 0.00000 Pa
-------------------------
------ Sensor Data ------
Acceleration [g]:       x=-0.229, y=-0.018, z= 0.978
Gyroscope [rad/s]:      x=-0.012, y= 0.000, z= 0.000
Magnetometer [uT]:      x= 18.165, y= 8.985, z=-13.477
Quaternion:             w=-0.95546, x=-0.02221, y=-0.11261, z= 0.26560
Euler Angle [deg]:      roll=-1.02, pitch= 13.12, yaw=-31.09
Barometer:              height= 0.00 m, temperature= 0.00 °C
                        pressure= 0.00000 Pa, pressure_diff= 0.00000 Pa
```

Note: The above data reads are for the 9-axis IMU. Data from the 6-axis IMU is not available for the magnetometer and barometer, and data from the 9-axis IMU is not available for the barometer.

5. Precautions

If the device ID can be found on the Orin series motherboard, but the device number cannot be found, you can refer to the following commands to install the ch34x driver:

```
sudo apt remove brltty
git clone https://github.com/clhchan/CH341SER.git
cd CH341SER
make -j6
sudo make install
sudo modprobe ch34x
```