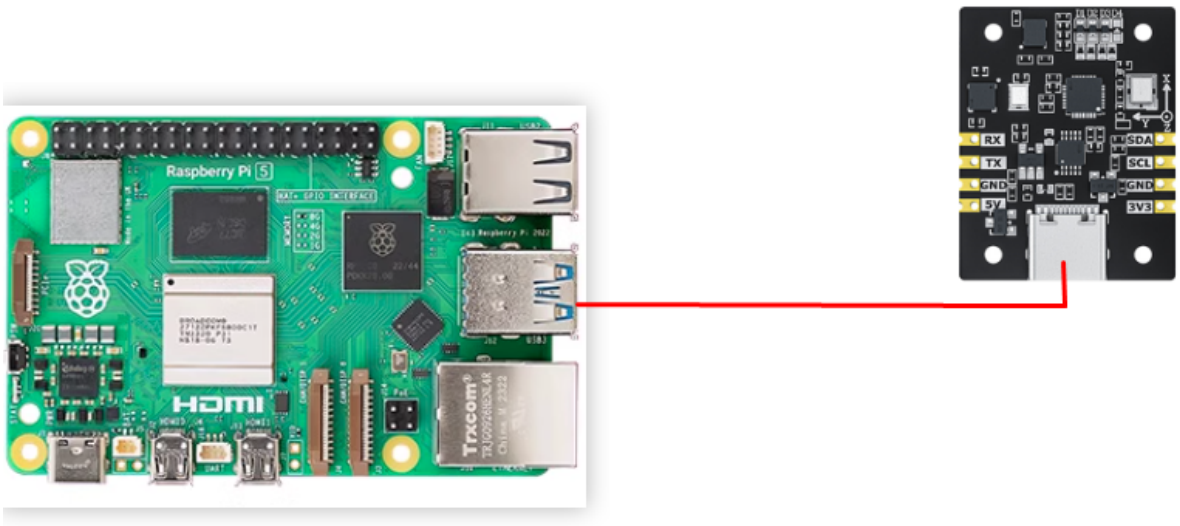
Viewing IMU Data on Raspberry Pi

1. Connecting the Device

This tutorial uses a Raspberry Pi 5 motherboard and the official 64-bit image 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
```

```
pi@raspberrypi:~ $ lsusb
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 002: ID 1a86:7523 QinHeng Electronics CH340 serial converter
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
pi@raspberrypi:~ $
```

View Device Number

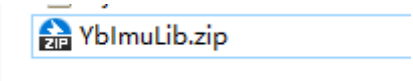
```
ls -l /dev/ttyU*
```

```
pi@raspberrypi:~ $ ls -l /dev/ttyU*
crw-rw---- 1 root dialout 188, 0 Mar 25  2025 /dev/ttyUSB0
pi@raspberrypi:~ $
```

3. Installing Driver Libraries

3.1 Download the Python driver library file

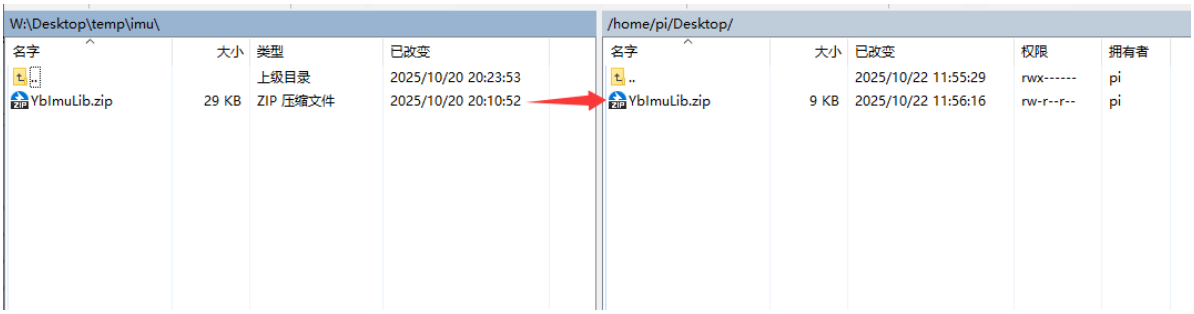
The latest version of the driver library, named YbImuLib.zip, is provided in the data folder.



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

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
```

```
pi@raspberrypi:~ $ cd ~/Desktop && ls
YbImuLib.zip
pi@raspberrypi:~/Desktop $
```

Unzip the file

```
unzip YbImuLib.zip
```

```
pi@raspberrypi:~/Desktop $ unzip YbImuLib.zip
Archive:  YbImuLib.zip
   creating: YbImuLib/
  inflating: YbImuLib/.gitignore
  inflating: YbImuLib/README.md
  inflating: YbImuLib/setup.py
   creating: YbImuLib/YbImuLib/
  inflating: YbImuLib/YbImuLib/__init__.py
  inflating: YbImuLib/YbImuLib/YbImuI2cLib.py
  inflating: YbImuLib/YbImuLib/YbImuSerialLib.py
pi@raspberrypi:~/Desktop $
```

Enter the driver library folder

```
cd YbImuLib
```

Run the installation command. If you see the installation 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
```

```
pi@raspberrypi:~/Desktop/YbImuLib $ sudo python3 setup.py install
running install
```

Install required libraries

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

4. View IMU data

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

```
python3 YbImu_ReadData_Serial.py
```

```
pi@raspberrypi:~/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=-0.178, y= 0.143, z=-0.975
Gyroscope [rad/s]:      x= 0.000, y= 0.000, z= 0.000
Magnetometer [uT]:      x= 26.612, y=-30.934, z= 23.218
Quaternion:             w=-0.02513, x=-0.89445, y= 0.42881, z= 0.10987
Euler Angle [deg]:      roll= 171.82, pitch= 10.08, yaw=-51.79
Barometer:              height= 0.00 m, temperature= 0.00 °C
```

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

5. Precautions

If you can find the device ID but not the device serial number, 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
```