

## 2. Voice control module port binding

### 2. Voice control module port binding

- 2.1. Bind the port number of the HUB board
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Since both the HUB board and the voice module use CH340 serial ports, when they are used at the same time, the main control board will not be able to identify which device is the HUB board and which device is the voice module due to port conflict.

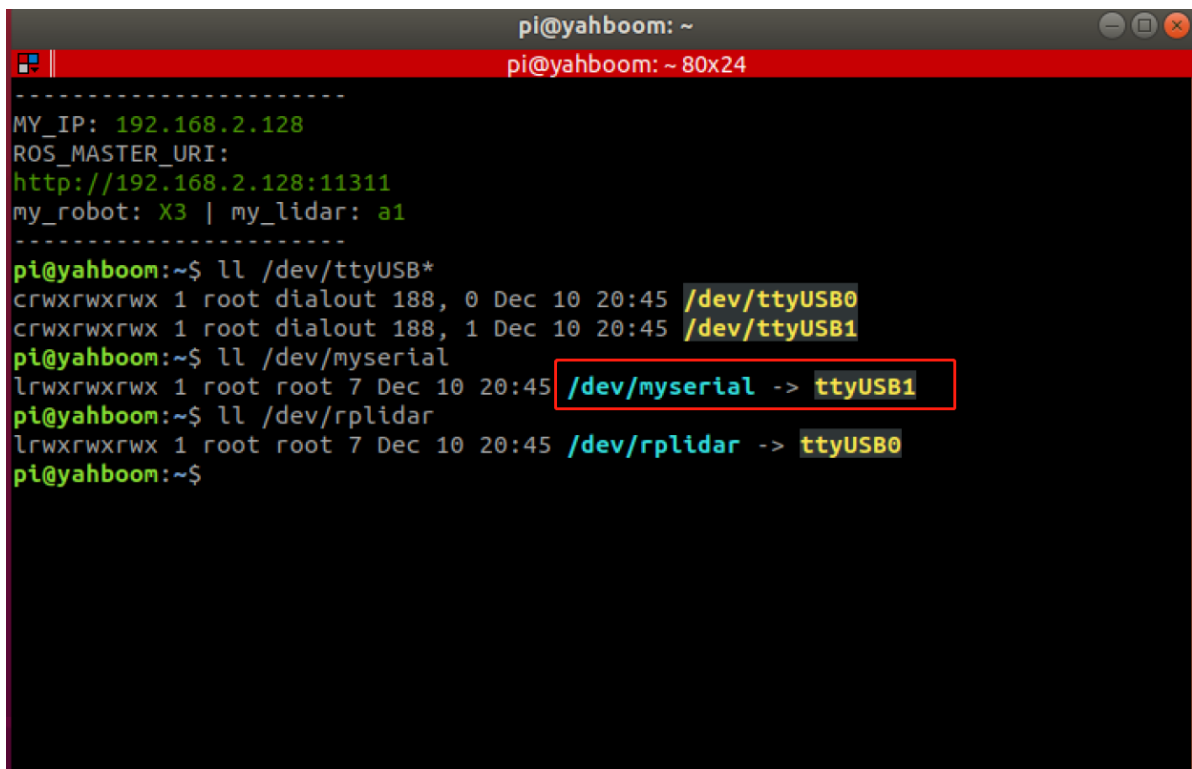
So we need to bind the port of the voice module. Once the port is bound, the wiring of the voice module cannot be replaced, otherwise the binding will be invalid.

In this course, we take the Raspberry Pi as an example to demonstrate, the Jetson version is the same operation steps.

### 2.1. Bind the port number of the HUB board

```
ll /dev/ttyUSB*
ll /dev/myserial
ll /dev/rplidar
```

- First, Do not connect to the voice board to the robot, you can find the lidar and the HUB board are ttyUSB0 and ttyUSB1, as shown below.



```
pi@yahboom: ~
pi@yahboom: ~ 80x24
-----
MY_IP: 192.168.2.128
ROS_MASTER_URI:
http://192.168.2.128:11311
my_robot: X3 | my_lidar: a1
-----
pi@yahboom:~$ ll /dev/ttyUSB*
crwxrwxrwx 1 root dialout 188, 0 Dec 10 20:45 /dev/ttyUSB0
crwxrwxrwx 1 root dialout 188, 1 Dec 10 20:45 /dev/ttyUSB1
pi@yahboom:~$ ll /dev/myserial
lrwxrwxrwx 1 root root 7 Dec 10 20:45 /dev/myserial -> ttyUSB1
pi@yahboom:~$ ll /dev/rplidar
lrwxrwxrwx 1 root root 7 Dec 10 20:45 /dev/rplidar -> ttyUSB0
pi@yahboom:~$
```

- Then, we check the port information of the HUB board, mainly to check the device path information.

Input following command:

```
udevadm info --attribute-walk --name=/dev/ttyUSB1 |grep devpath
```

As shown below. The content in the red wireframe represents the device path.

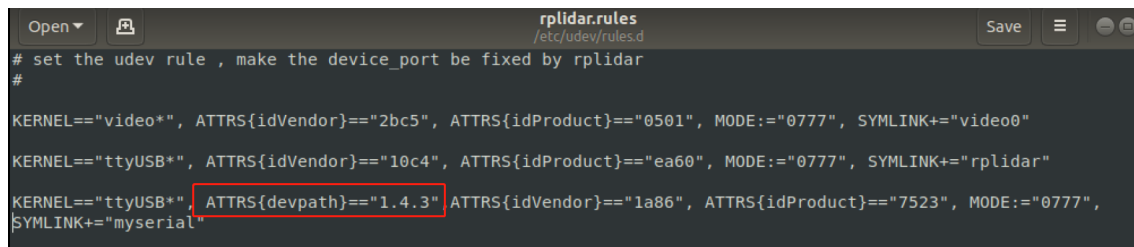
```
pi@yahboom:~$ udevadm info --attribute-walk --name=/dev/ttyUSB1 |grep devpath
udevadm info starts with the device specified by the devpath and then
ATTRS{devpath}=="1.4.3"
ATTRS{devpath}=="1.4"
ATTRS{devpath}=="1"
ATTRS{devpath}=="0"
```

- Next, we modify the /etc/udev/rules.d/rplidar.rules file, bind the port number of the HUB board.

Input following command:

```
sudo gedit /etc/udev/rules.d/rplidar.rules
```

Find the myserial column in the file, as shown below, add the content.



```
Open ▾  rplidar.rules /etc/udev/rules.d Save
# set the udev rule , make the device_port be fixed by rplidar
#
KERNEL=="video*", ATTRS{idVendor}=="2bc5", ATTRS{idProduct}=="0501", MODE=="0777", SYMLINK+="video0"
KERNEL=="ttyUSB*", ATTRS{idVendor}=="10c4", ATTRS{idProduct}=="ea60", MODE=="0777", SYMLINK+="rplidar"
KERNEL=="ttyUSB*", ATTRS{devpath}=="1.4.3" ATTRS{idVendor}=="1a86", ATTRS{idProduct}=="7523", MODE=="0777",
SYMLINK+="myserial"
```

- Save and exit, input the following three commands in the terminal to reload the device.

```
sudo udevadm trigger
```

```
sudo service udev reload
```

```
sudo service udev restart
```

## 2.2. Bind the port number of the HUB board

- Input following command in the terminal to view the device number.

```
ll /dev/ttyUSB*
```

```
pi@yahboom:~$ ll /dev/ttyUSB*
crwxrwxrwx 1 root root 188, 0 Apr 21 20:09 /dev/ttyUSB0
crwxrwxrwx 1 root root 188, 1 Apr 21 20:09 /dev/ttyUSB1
crwxrwxrwx 1 root dialout 188, 2 Apr 21 20:09 /dev/ttyUSB2
pi@yahboom:~$ ll /dev/rplidar
lrwxrwxrwx 1 root root 7 Apr 21 20:09 /dev/rplidar -> ttyUSB0
pi@yahboom:~$ ll /dev/myserial
lrwxrwxrwx 1 root root 7 Apr 21 20:09 /dev/myserial -> ttyUSB1
pi@yahboom:~$
```

We find that the system recognizes the voice board as /dev/ttyUSB2 by the system, then, we input the following command to view the device path information.

```
udevadm info --attribute-walk --name=/dev/ttyUSB2 |grep devpath
```

As shown below. The content in the red wireframe represents the device path.

```
pi@yahboom:~$ udevadm info --attribute-walk --name=/dev/ttyUSB2 |grep devpath
Udevadm info starts with the device specified by the devpath and then
ATTRS{devpath}=="1.4.2"
ATTRS{devpath}=="1.4"
ATTRS{devpath}=="1"
ATTRS{devpath}=="0"
```

- Then, we modify the /etc/udev/rules.d/rplidar.rules file, bind the port number of the voice board.

Input following command:

```
sudo gedit /etc/udev/rules.d/rplidar.rules
```

Add the content as shown in the image below,

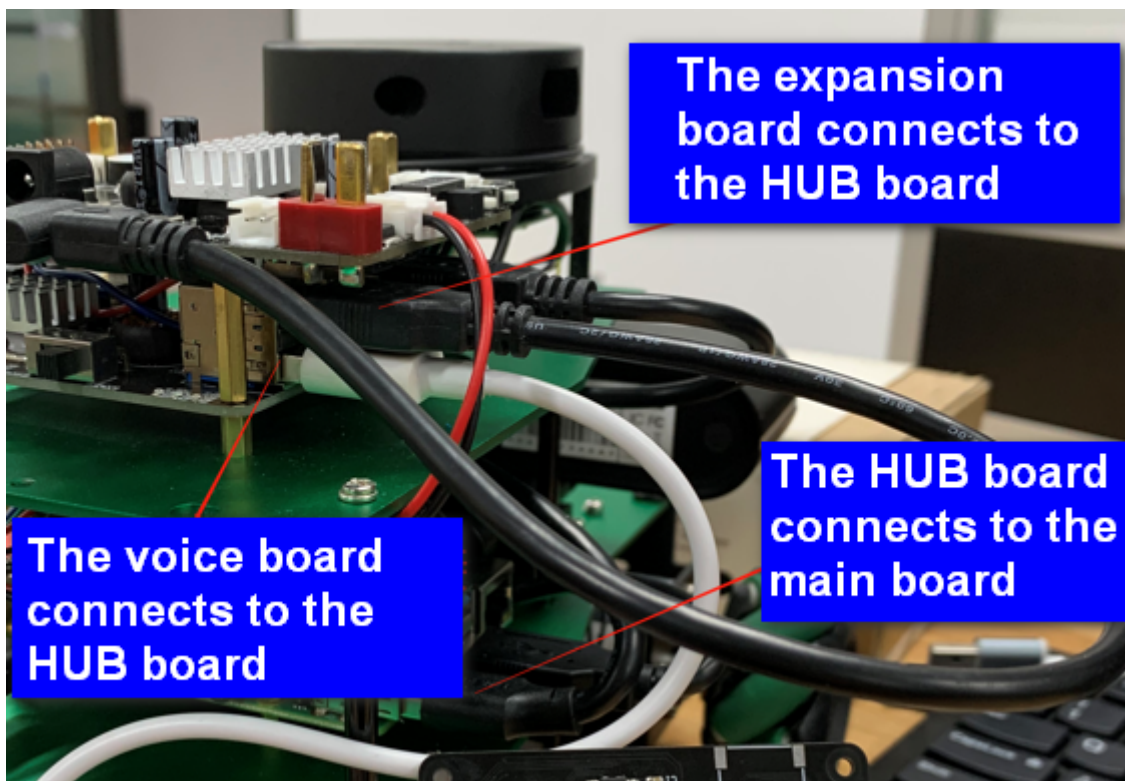
```
KERNEL=="ttyUSB*" ATTRS{devpath}=="1.4.2", MODE:="0777", ATTRS{idVendor}=="1a86", ATTRS{idProduct}=="7523",  
SYMLINK+="myspeech"
```

- Save and exit, input the following three commands in the terminal to reload the device.

```
sudo udevadm trigger  
sudo service udev reload  
sudo service udev restart
```

## 2.3. Test

Finally, the physical connection diagram of the port after binding, as shown in the following figure,



**Note:** Don't change the wiring, Otherwise, the port will not recognize the device.

Input following command to test voice board.

```
python3 voice_ctrl_test.py
```

- After successfully connecting the voice module. "Speech Serial Opened! Baudrate=115200" will be displayed in the terminal.
- After saying "Hi, Yahboom" to the module, it will answers "Hi, i am here".
- After unplugging the voice board, the program will report an error and exit.

If the actual result is consistent with the above three points, it means that the device is successfully bind.

**Note: The HUB and voice board cannot be plugged into other ports, otherwise the device number will not be recognized.**