FDI-ahrs

1. Install dependencies

```
sudo apt-get install ros-$ROS_DISTRO-serial
```

2. Bind the port

2.1. There is only 1 CP210x on a machine

Copy both fdilink_ahrs.zip and FDILink.zip to the src folder of the workspace (here, ros_imu in the user directory is used as an example), and then unzip

```
cd ~/ros_imu/src
unzip fdilink_ahrs.zip
unzip FDILink.zip
```

Enter the fdilink_ahrs function package

```
cd fdilink_ahrs
```

Execute the .sh file to bind the port

```
sudo bash fdilink_ahrs_udev.sh
```

2.2. There are 2 or more CP210x on one machine

2.2.1. Method 1: Bind the port

This binding method, after binding, can only be used at the fixed interface; take [ttyUSB0] as an example, check the port of the device at this time

```
udevadm info --attribute-walk --name=/dev/ttyUSB0 |grep KERNELS
```
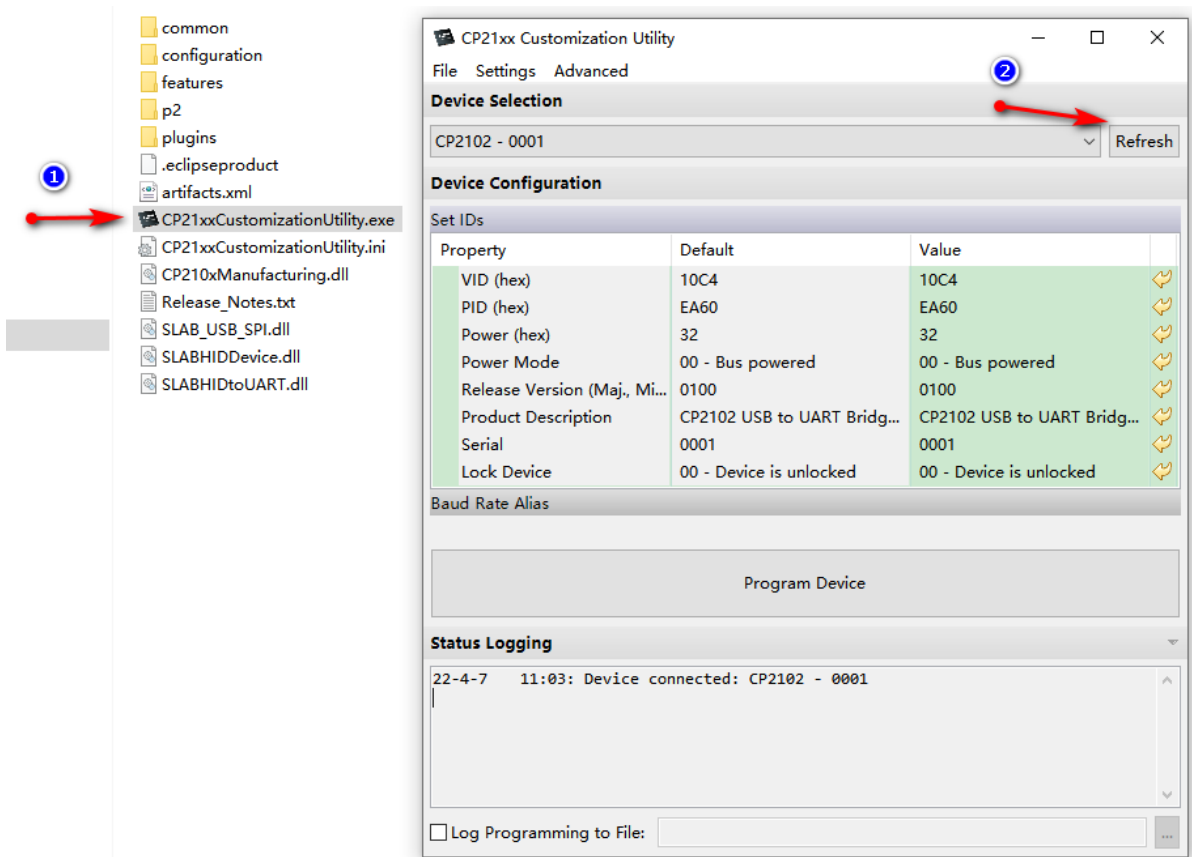
Open the rules file

```
sudo vim /etc/udev/rules.d/fdilink.rules
```
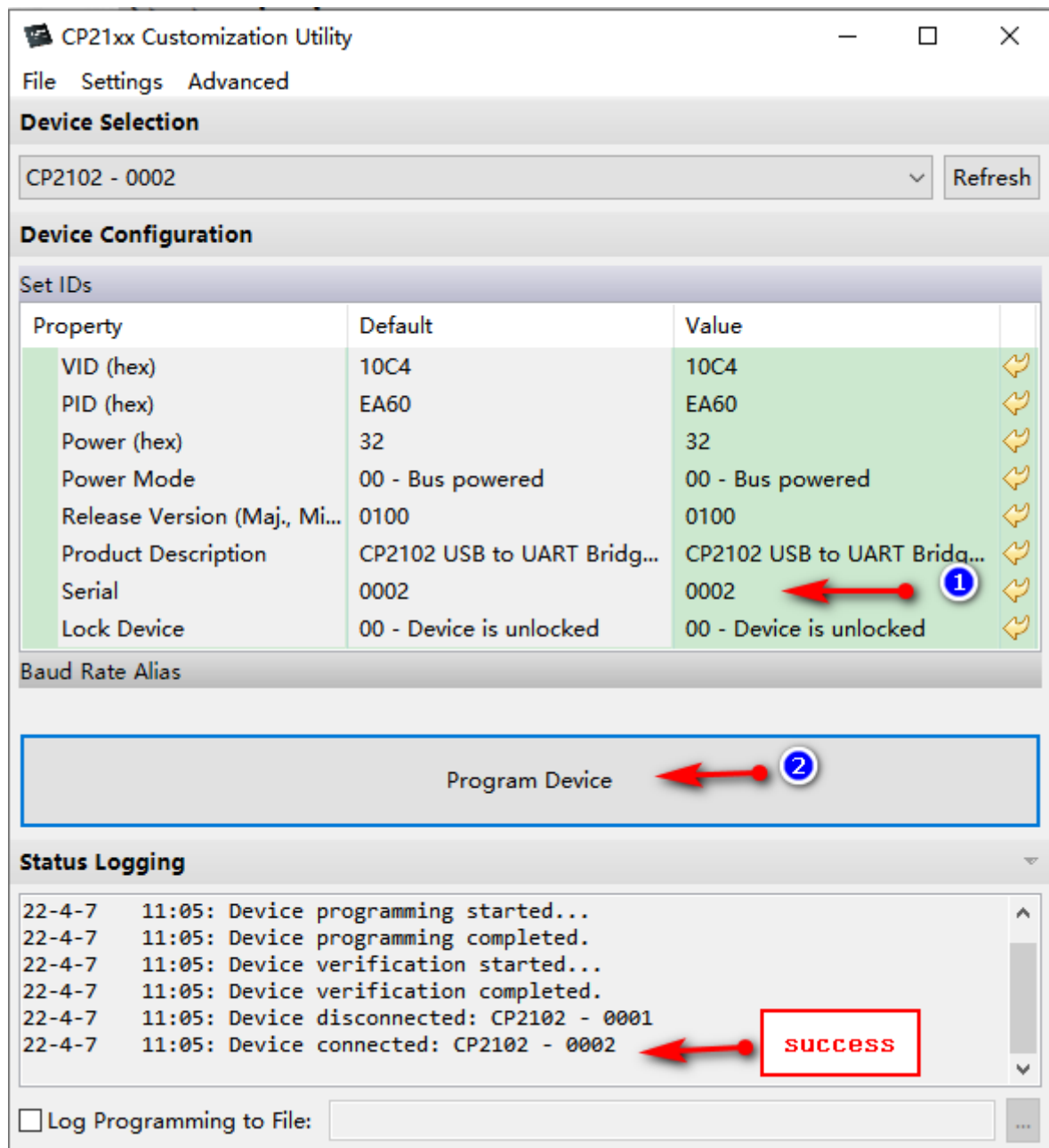
Add after clearing the content

```
KERNELS=="1-2.1.3", ATTRS{idVendor}=="10c4", ATTRS{idProduct}=="ea60",
MODE:="0777", SYMLINK+="fdilink"
```

2.2.2. Method 2: Modify the serial port number

In Windows, connect the module and double-click the exe file, as shown below.

Find the [Serial] column, and change the default value [0001] to [0002]. Of course, you can also modify other parameters for binding.

Wait until the modification is complete.

Open the rules file

```
sudo vim /etc/udev/rules.d/fdilink.rules
```

Add after clearing the content

```
KERNEL=="ttyUSB*", ATTRS{idVendor}=="10c4", ATTRS{idProduct}=="ea60",
ATTRS{serial}=="0002", MODE:="0777", SYMLINK+="fdilink"
```

3. Get started quickly

Enter the workspace to compile the project, and only need to compile it once if the code is not modified.

```
cd ~/ros_imu/
catkin_make
```

To enable the development environment, you must re-enable the development environment every time you open the terminal.

```
source devel/setup.bash src/
```

Execute the following commands (choose one of two)

```
roslaunch fdilink_ahrs fdilink_driver.launch
roslaunch fdilink_ahrs fdilink_ahrs.launch
```

- fdilink_driver.launch

  - The parameters are as follows:
  - use_rviz: whether to open rviz; true or false
  - port: port number /dev/fdilink, the same as the bound port
  - imu_frame: the coordinate system of the gyroscope imu_link
  - imu_topic: topic name of gyroscope data
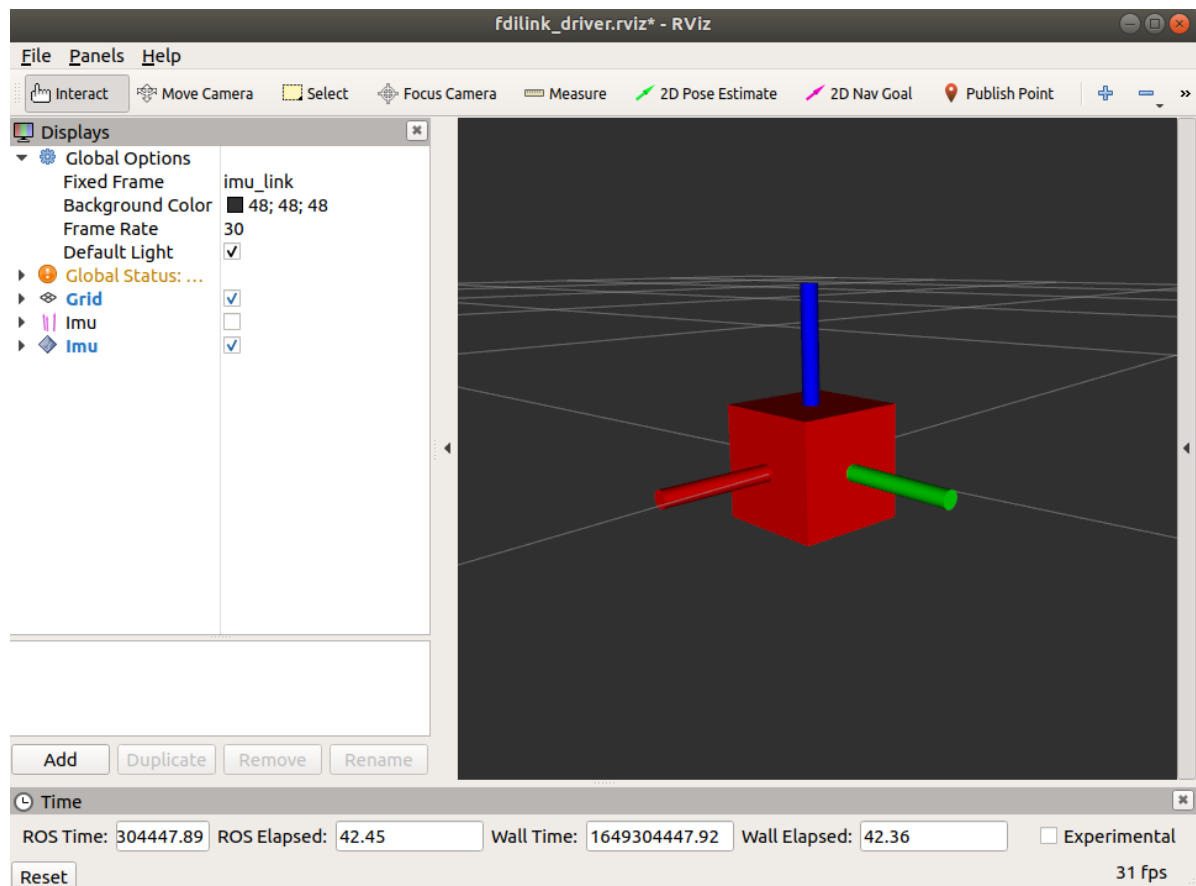
- fdilink_ahrs.launch

  - The parameters are as follows:
  - use_rviz: whether to open rviz; true or false
  - port: port number /dev/fdilink, the same as the bound port
  - imu_frame: the coordinate system of the gyroscope imu_link
  - imu_topic: topic name of gyroscope data
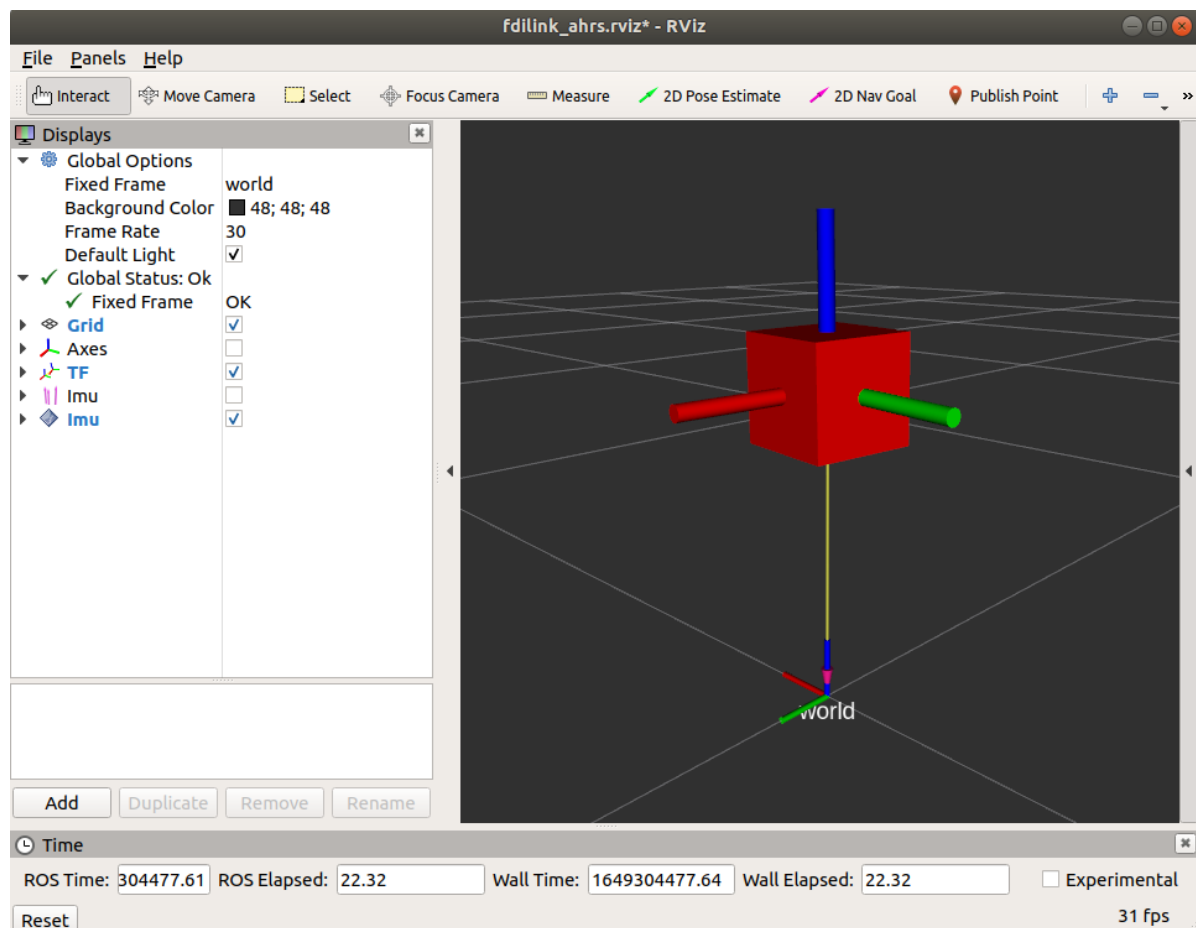
Rotate the module, and the red square in rviz will rotate accordingly.