

1. HOKUYO LiDAR UTM-30LX power switch: Connect the thin red line to the positive, and the thin brown line to the negative. Negative first, and positive first. Once connected, the red light and the green light will be on, and you will hear the sound.



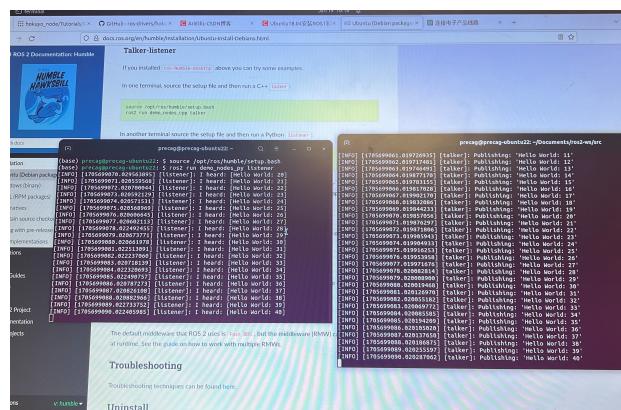
2. Install ROS2 :

Operation system: ubuntu 22.04.3 LTS, here we install ROS2 Humble version.
In the base environment,

Tutorials:

<http://docs.ros.org/en/humble/Installation/Ubuntu-Install-Debians.html>

Start from the Set locale, check if the computer is UTF-8
go through all the operations. When need to install, selected to install ros-humble-desktop
Last, check the talker and listener.
This part will be done.



3. Install driver and nodes

```
# make folder and init
mkdir -p ~/ros2-ws/src
cd ~/ros2-ws/src
# all the operations are done under ros2-ws document.
source /opt/ros/humble/setup.bash # every time want to start rot,
this command needs to be run.
# clone git repository
git clone https://github.com/ros-drivers/urg_node

# checkout if the version is ros2
cd urg_node/
git checkout ros2-devel # the output should be:' already on ros2-
level'

# now try to solve the rely problem
Cd ..
Cd .. # now the place should be: ~/Documents/ros2-ws$
Sudo pip install vcstool # in case you didn't install vcstool

vcs import src < src/urg_node/additional_repos.repos
sudo apt-get install ros-humble-diagnostic-updater
```

```
# Compile
colcon build --symlink-install # there might report error when you
first run.
# if the error is: ImportError: cannot import name 'generate_py' from
'rosidl_generator_py' try the command below:
Pip install empty
Pip install lark
# then run the command again
colcon build --symlink-install
# if success, there will be: summary: 4 packages finished

# Initialize environment
source install/local_setup.bash

# run the driver

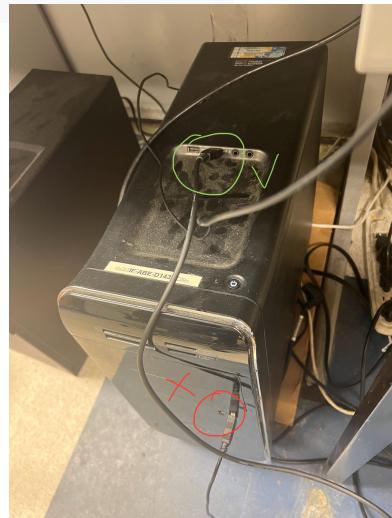
ros2 run urg_node urg_node_driver --ros-args --params-file src/launch/
urg_node_serial.yaml
```

```
# there might be errors:
```

```
[ERROR] [1705956157.515749213] [urg_node]: Error connecting to Hokuyo:  
Could not open serial Hokuyo: /dev/ttyACM0 @ 115200
```

```
# reference link: https://answers.ros.org/question/286646/error-connecting-to-hokuyo-could-not-open-serial-hokuyo/ there might  
because there is no permission.
```

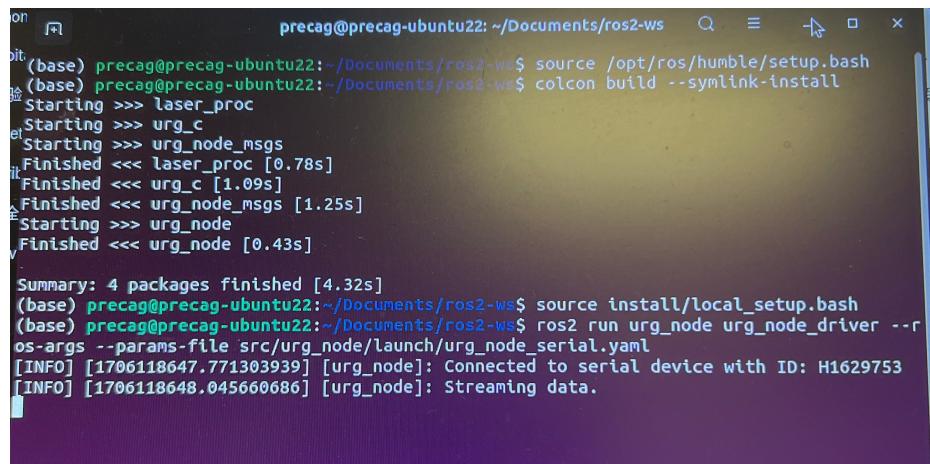
```
# run according this link: od /dev/ttyAMC0. But find there is no such  
document(run 'ls /dev/tty*' to list all the devices), reference:  
https://github.com/radar-lab/ti\_mmwave\_ros pkg/issues/23 find there  
might because there is a wrong port.
```



```
# plug out the line, turn on terminal, run 'ls /dev >  
device_names.txt', plug the line in, terminal run 'ls /dev | diff -  
device_names.txt', there will find there is dev/ttyACM0
```

```
# this document ttyACM0, must be the same with the content in src/  
launch/urg_node_serial.yaml
```

```
# now to solve the permission problem,  
  
sudo adduser precag dialout  
  
Restart computer  
  
# terminal run:  
  
groups precag  
  
# there will be' precag: precag root dialout sudo ' shows that precag  
is in precag, root and dialout, sudo group. dialout means you can now  
visit the devices now.  
  
# Now run the command again:  
  
ros2 run urg_node urg_node_driver --ros-args --params-file src/launch/  
urg_node_serial.yaml
```



The screenshot shows a terminal window with the following log output:

```
on [REDACTED] precag@precag-ubuntu22: ~/Documents/ros2-ws
(base) precag@precag-ubuntu22:~/Documents/ros2-ws$ source /opt/ros/humble/setup.bash
(base) precag@precag-ubuntu22:~/Documents/ros2-ws$ colcon build --symlink-install
Starting >>> laser_proc
Starting >>> urg_c
Starting >>> urg_node_msgs
[INFO] [1706118647.771303939] [laser_proc]: Connected to serial device with ID: H1629753
[INFO] [1706118647.771303939] [laser_proc]: Streaming data.
[INFO] [1706118647.771303939] [urg_c]: Connected to serial device with ID: H1629753
[INFO] [1706118647.771303939] [urg_c]: Streaming data.
[INFO] [1706118647.771303939] [urg_node_msgs]: Connected to serial device with ID: H1629753
[INFO] [1706118647.771303939] [urg_node_msgs]: Streaming data.
[INFO] [1706118647.771303939] [urg_node]: Connected to serial device with ID: H1629753
[INFO] [1706118647.771303939] [urg_node]: Streaming data.

Summary: 4 packages finished [4.32s]
(base) precag@precag-ubuntu22:~/Documents/ros2-ws$ source install/local_setup.bash
(base) precag@precag-ubuntu22:~/Documents/ros2-ws$ ros2 run urg_node urg_node_driver --ros-args --params-file src/urg_node/launch/urg_node_serial.yaml
[INFO] [1706118647.771303939] [urg_node]: Connected to serial device with ID: H1629753
[INFO] [1706118648.045660686] [urg_node]: Streaming data.
```

It means it's connected successfully!

4. Get the lidar data:

```
# open another terminal
```

```
ros2 topic echo /scan    (might need to pip install python3-rostopic ) #  
by this command, you can see the data point
```

```
# run this command to see the data type
```

```
ros2 interface show sensor_msgs/msg/LaserScan
```

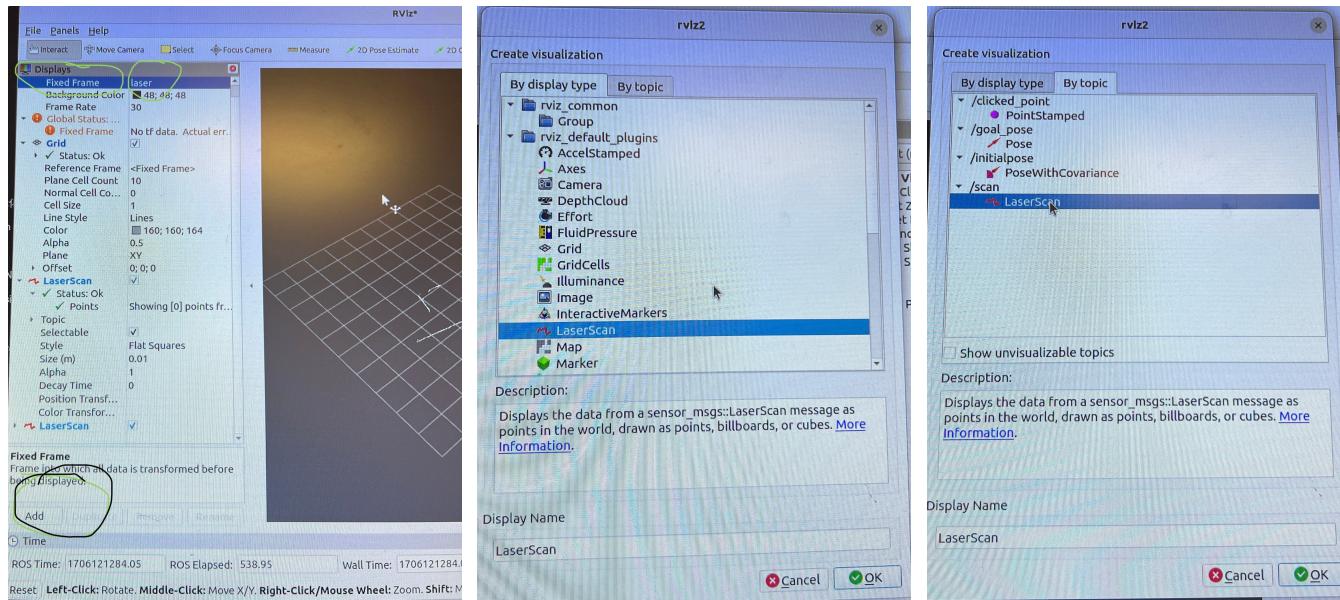
```
# open rviz to visualize.
```

```
ros2 run rviz2 rviz2
```

Initialize: displays -> Fixed frame change the value to 'laser'

Click: add-> by display type -> LidarScan -> ok

Add -> by topic->laserscan -> ok



Than it's all set!

The green command means when you set up all the stuff, you want to connect with lidar again, run these green command only

