

# SLAM\_C1\_Lidar\_ROS2

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1. Re-map USB serial port
2. Terminal test
3. rviz2 visual test
4. gmapping mapping test

ROS2 website: <https://docs.ros.org/>

**Equipment: pc \*1; C1 radar**

**Environment: Ubuntu20.04; ROS2 (Foxy)**

Create a new workspace:

```
mkdir -p rplidar_ws/src
```

When using this lidar, you need to enter the workspace every time to execute the command:

```
cd ~/rplidar_ws_ws
```

Extract the [rplidar\_ws\_src.zip] function package and put it into the src folder of the rplidar\_ws workspace,

Input following command:

```
colcon build          #compile
source install/setup.bash #Update environment
```

**Note: Every time you modify the code in the function package, you need to re-compile and then [update environment].**

Input following command to add the workspace to the .bashrc of the environment variable.

```
echo "source ~/rplidar_ws/install/setup.bash" >> ~/.bashrc
```

## 1. Re-map USB serial port

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Input following command:

```
cd ~/rplidar_ws/src/rplidar_ros-dev-ros2/scripts
sudo chmod 777 *
sudo bash create_udev_rules.sh
```

After binding, unplug and plug the radar again.

Use the following command to view modified remapping

```
ll /dev/rplidar
```

```
yahboom@VM: ~ 80x24
yahboom@VM:~$ ll /dev/rplidar
lrwxrwxrwx 1 root root 7 10月 28 12:03 /dev/rplidar -> ttyUSB0
yahboom@VM:~$
```

**Note:** This is not necessarily ttyUSB0. As long as /dev/rplidar is displayed, the binding is successful.

## 2. Terminal test

1. Input following command to start lidar:

```
ros2 launch rplidar_ros rplidar_c1_launch.py
```

2. View lidar data

```
ros2 topic echo /scan
```

You can see the scan results of rplidar in the terminal.

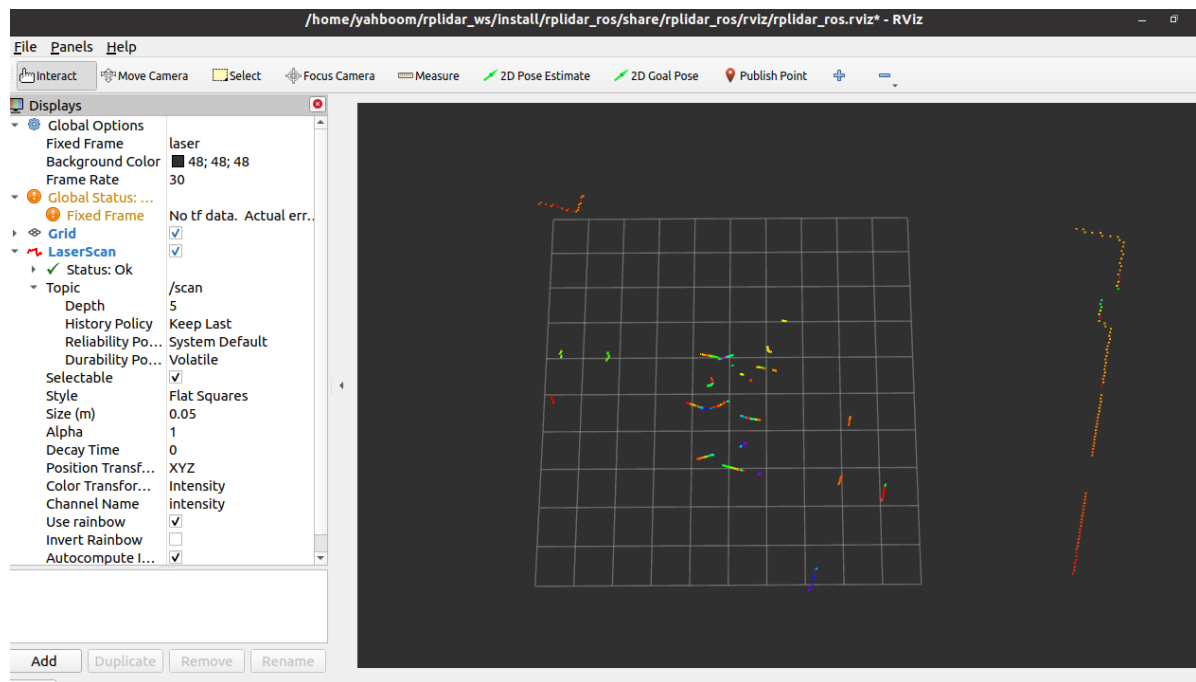
```
header:
  stamp:
    sec: 1698474489
    nanosec: 465518946
  frame_id: laser
angle_min: -3.1241390705108643
angle_max: 3.1415927410125732
angle_increment: 0.008714509196579456
time_increment: 0.00013901808415539563
scan_time: 0.09995400160551071
range_min: 0.15000000596046448
range_max: 16.0
ranges:
- 10.096500396728516
- 10.096500396728516
- 10.131500244140625
- .inf
- 10.183500289916992
- 10.183500289916992
- 10.220250129699707
- 10.254249572753906
- 10.287750244140625
- 10.287750244140625
- 10.336000442504883
- 10.383000373840332
- 10.383000373840332
- 10.427000045776367
- 10.479249954223633
```

## 3. rviz2 visual test

**ctrl c** Close the terminal of the lidar launch file just started.

```
ros2 launch rplidar_ros view_rplidar_c1_launch.py
```

You can see the scan results of the lidar in rviz2.



Note: The topics of 【Fixed Frame】 coordinate system and 【LaserScan】 must be consistent with those published.

## 4. gmapping mapping test

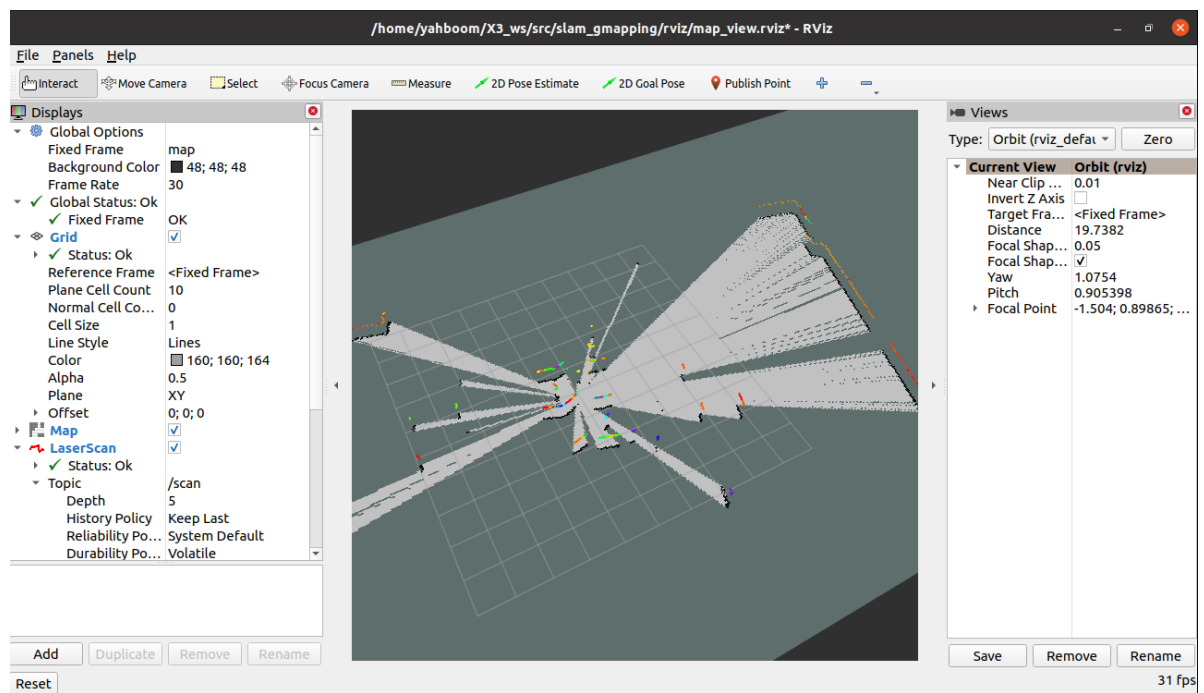
1. Input following command to start lidar:

```
ros2 launch rplidar_ros rplidar_c1_launch.py
```

2. Start gmapping mapping

```
ros2 launch slam_gmapping slam_gmapping.launch.py  
ros2 run slam_gmapping slam_gmapping
```

You can see the scan results of the lidar in rviz2.



Note: The 【Fixed Frame】 coordinate system, 【LaserScan】 topic, and 【map】 topic must be consistent with the published ones.