LakiBeam ROS Driver
User Guide

Contents

Revision History

Date	Revision	Content
2021-11-18	0.1.0	Initial release
2021-12-10	0.2.0	Modify data points timestamp output
2022-04-16	0.2.1	Add configurable parameter: invert sensor
2022-04-16	0.2.2	Add configurable parameter: Point cloud rotation angle
2022-06-09	0.2.6	Add dual sensor using launch file, add Pointcloud2 node

Users feedback：<support@richbeam.com>

About the Project

LakiBeam ROS SDK project is the software development kit for: LakiBeam1/LakiBeam1L LiDAR sensor manufactured by Richbeam (Beijing) Technology.After launched, the project will monitor UDP packets from Lidar, parse data and publish point clouds frames into ROS under topic: /scan or topic: /pcd.

1 Environment and Dependencies

System environment requirement: Linux + ROS

Recommanded: Ubuntu 16.04 - with ROS kinetic desktop-full installed or

Ubuntu 18.04 - with ROS melodic desktop-full installed or

Ubuntu 20.04 - with ROS noetic desktop-full installed.

Check resources on http://ros.org for installation guide.

2 Install ROS Package

1. Create the work space for ros:

```
$ cd~
$ mkdir -p catkin_ws/src
```

2. Copy the ros package into the work space ~/catkin_ws/src

3. Build

```
$ cd ~/catkin_ws
$ catkin_make
```

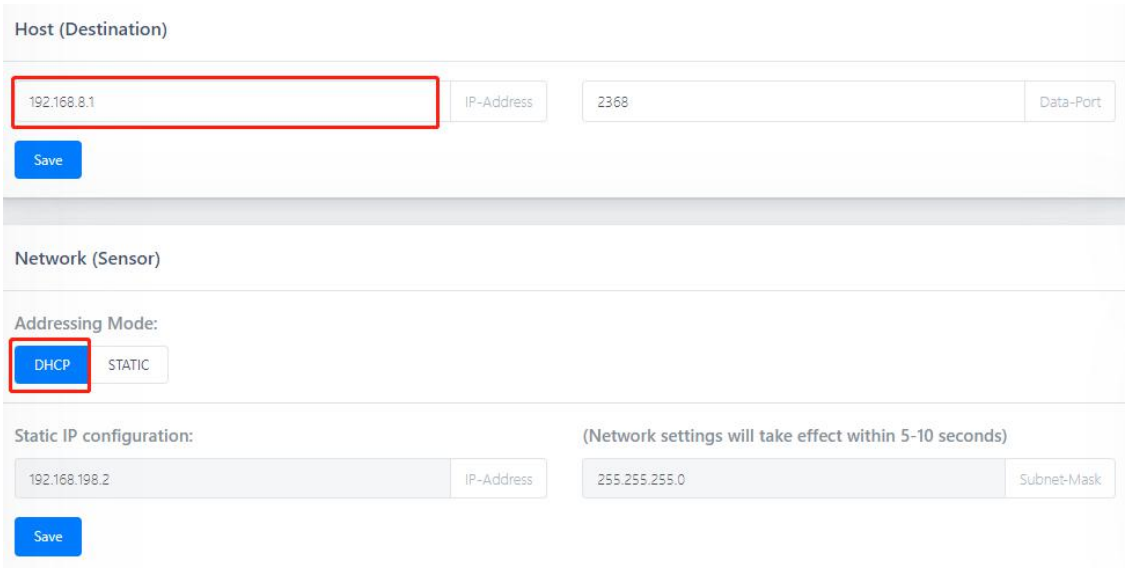
3 Configure PC IP Address

While Connecting via RJ45 cable and DC power supply, for the default LakiBeam1(L), it is configured the “192.168.198.2” as its own IP address, and the “192.168.198.1” as its destination PC IP address. So we need set the PC static IP as “192.168.198.1” and the net mask as “255.255.255.0”, while the gateway address is not necessary.

After configuration, we can use “ifconfig” command to check if the IP is work.

While Connecting via USB Type-C cable, it is configured the “192.168.8.2” as its own IP address, and the “192.168.8.1” as its destination PC IP address. But the PC static IP doesn’t need to be set, enter this URL into your web browser: 192.168.8.2, which is the own IP of sensor. Then set the Host (Destination) IP: 192.168.8.1 and set to dynamic configuration.The sensor will reset the network configuration after a short sub second delay.

The IP configuration via USB Type-C cable on sensor’s web server is shown in the picture below.



4 Launch File

Before receiving data from sensor, we should configure parameters in launch file if needed. The configurable parameters are shown in the table below.

Parameter name	instruction
inverted	Invert the sensor, ”true” is inverted.
hostip	Destination IP address, monitoring to all IP address when set to 0.0.0.0
port	Monitoring port, must be same with port number set on web server when using dual sensors in one PC.
angle_offset	Point cloud rotation angle around Z-axes, can be set to a negative number.

Launch File Configurable Parameters

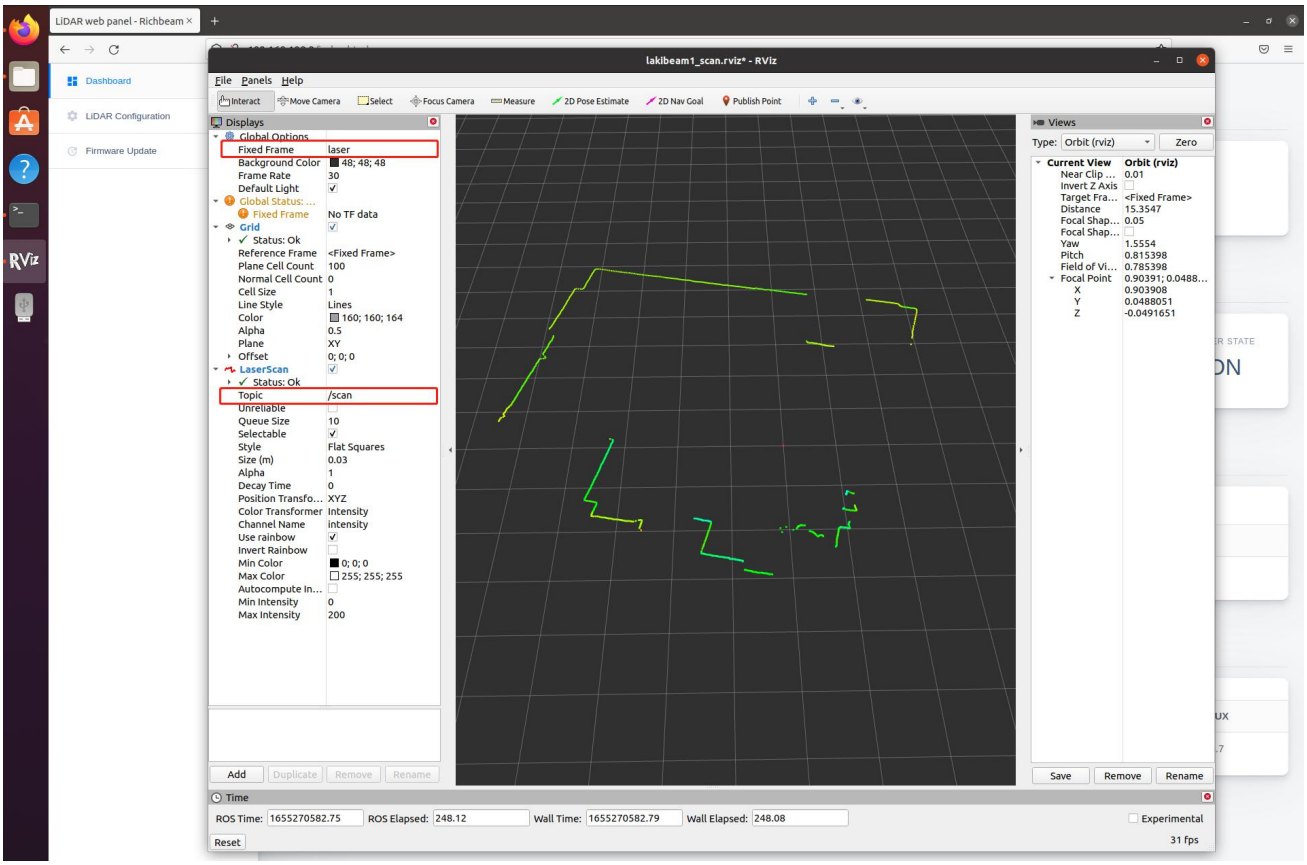
5 View the Real Time Data

1. Connect the LakiBeam1(L) to your PC via RJ45 cable and DC power supply or USB Type-C cable, and power on it.

2. We have provided several example launch files, such as “lakibeam1_scan.launch” and “lakibeam1_scan_view.launch” under /launch.To start the LaserScan node, we can run the launch file to view the real time point cloud data. Open a terminal:

```
$ cd ~/catkin_ws
$ source devel/setup.bash
$ roslaunch lakibeam1 lakibeam1_scan.launch
(run LaserScan node)
$ roslaunch lakibeam1 lakibeam1_scan_view.launch
(run LaserScan node in Rviz)
```

The real time point cloud data under LaserScan in Rviz is shown in the picture below.



3. While using launch file to start PointCloud2 node, we can run the launch file "lakibeam1_pcd.launch" or "lakibeam1_pcd_view.launch" under /launch to view the real time point cloud data. Open a terminal:

```
$ cd ~/catkin_ws
$ source devel/setup.bash
$ roslaunch lakibeam1 lakibeam1_pcd.launch
(run PointCloud2 node)
$ roslaunch lakibeam1 lakibeam1_pcd_view.launch
(run PointCloud2 node with Rviz)
```

The real time point cloud data under PointCloud2 in Rviz is shown in the picture below.