YDLIDAR

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YDLIDAR TIA-H
USER MANUAL BETA



www.ydlidar.com

Shenzhen EAI Technology Co.,Ltd.

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1 OPERATION UNDER WINDOWS

1.1 Device Connection

When TIA-H is evaluated and developed under windows, TIA-H and PC need to be interconnected. The specific process is as follows:

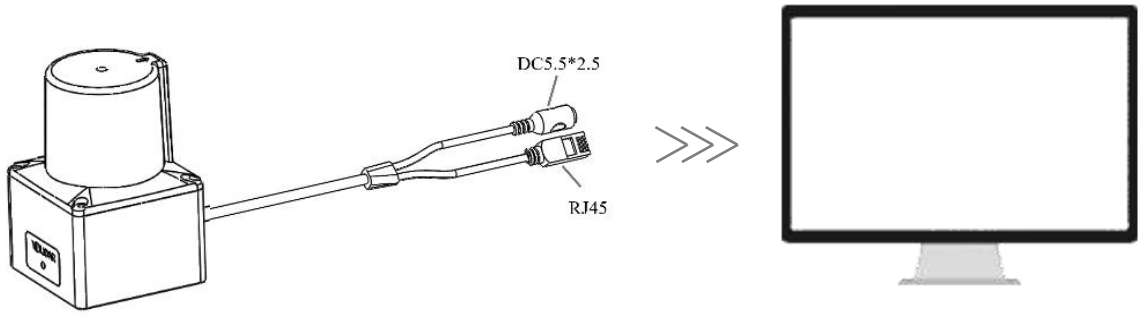

FIG 1 YDLIDAR TIA-H DEVICE CONNECTION

Connect the RJ45 port on one end of the device cable to the network port on the PC, set the device and PC to be on the same network segment. The DC port is connected to the power socket through the 12V-1A power adapter.

1.2 Network setting

TIA-H Initial network parameters have been set before delivery:

IP address: 192.168.0.11

Subnet mask: 255.255.255.0

When connecting to the lidar for the first time, the network parameters of the PC and lidar must be set in the same network segment and do not conflict with each other. As follows:

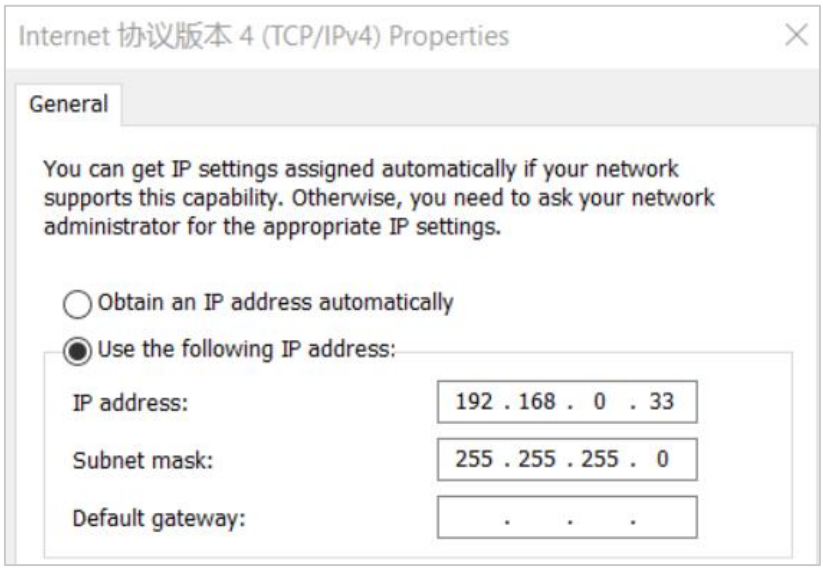

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FIG 2 PC NETWORK SETTING

When using the LidarClient software EaiLidarTest to check the point cloud data, the user need to penetrate the firewall of the operating system to obtain the data. It is recommended to add the software to the list of allowed software in the firewall. Operation method: "Control Panel - System and Security - Allow applications to pass through the firewall", allowing EaiLidarTest to pass through the firewall.

1.3 Device Management

TIA-H can manage the device through the web. After the device is powered on normally, enter the device IP in the browser and log in to the web interface, as shown below:

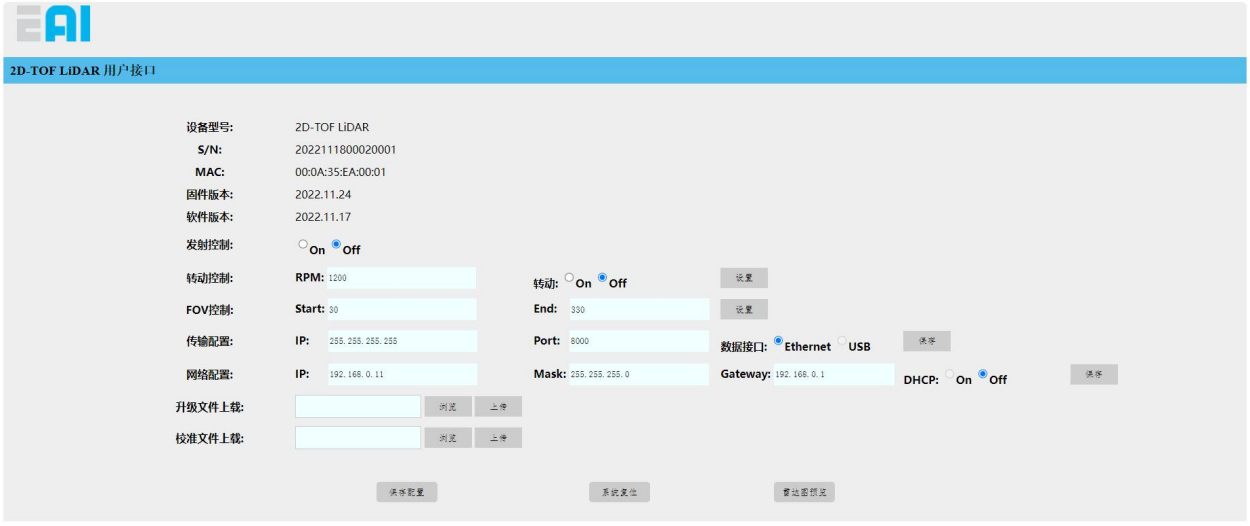

FIG 3 WEB INTERFACE MANAGEMENT

The device information can be obtained and the device can be configured through the web interface. The definition of each configuration item is as follows:

- **Device model:** device model information;
- **S/N:** device serial number;
- **MAC:** MAC address of device;
- **Firmware version:** firmware version number, which will be updated automatically after firmware upgrade;
- **Software version:** software version number, which will be updated automatically after software upgrade;
- **Emission control:** control laser emission, on means start, off means stop;
- **Rotation control:** control the motor rotation and set the motor speed. The setting range of the motor speed is 900~1800. Click "Set" button and the setting will take effect;
- **FOV control:** control the scanning field angle, and set the starting scanning angle and ending scanning angle through Start and End values. The minimum setting value of Start is 30, and the maximum setting value of End is 330. The setting takes effect after clicking the "Set" button;

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- **Transmission configuration:** configure the data transmission parameters, and set the IP address and port number of the destination host through IP and Port. The default IP is broadcast IP, and the port number is 8000. After changing any of the configurations, the user need to click the "Save" button to save the settings. After the device is restarted, the settings will take effect; (USB transmission is not supported temporarily)
- **Network configuration:** configure the device network parameters, set the device IP address, subnet mask, gateway, and set DHCP to automatically obtain the IP address. After changing any of the configurations, the user need to click the "Save" button to save the settings. After the device is restarted, the settings will take effect;
- **Upload the upgrade file:** set the upgrade, select the upgrade file, click "Upload", and the "Upgrading" window will pop up. Please keep the power connection stable during the upgrade. After the upgrade is completed, the device will restart and take effect;
- **Upload calibration file:** upload calibration file;
- **Save configuration:** save all the current web configuration items and take effect after the device is restarted;
- **System reset:** click to restart the device;
- **Lidar map preview:** load the point cloud data LidarClient software to preview the Lidar map;

1.4 How to Use LidarViewer

YDLIDAR provides LidarClient, a point cloud dataLidarClient software for TIA-H real-time scanning. Users can use this software to visually observe the TIA-H scanning map: YDLIDAR provides TIA-H real-time point cloud data and real-time scanning frequency. At the same time, the scanned data can be saved offline to an external file for further analysis.LidarClient software download link:

https://www.ydlidar.com/download/category/lidar-sensor

Run the evaluation software: EaiLidarTest.exe, select the corresponding model number (default IP: 192.168.0.11). Meanwhile, users could choose language on the top right corner.

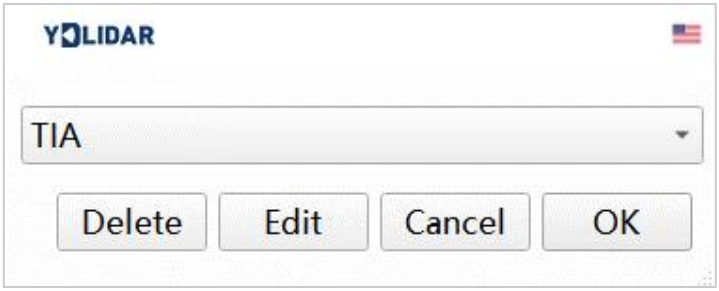

FIG 4 YDLIDAR TIA-H EVALUATION SOFTWARE

If lidar IP address has been changed, add a custom model as follows, The IP address will be automatically searched, and users can also click "Modify" to update the IP address.

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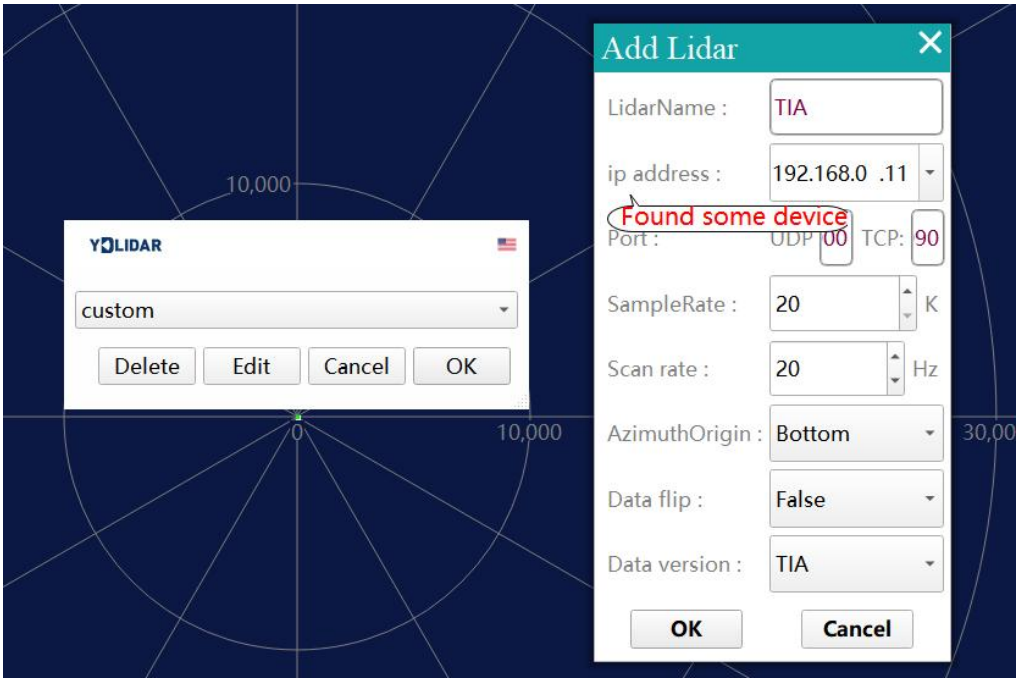

FIG 5 YDLIDAR TIA-H PARAMETER CONFIGURATION

1.4.1 Start Scanning

Click "Start/Stop" in the Stopped state. Click button to start scanning and display the environment point cloud. The angle and distance information of the red line position will be displayed in the upper left corner (unit: mm). Click to stop it. as shown below:

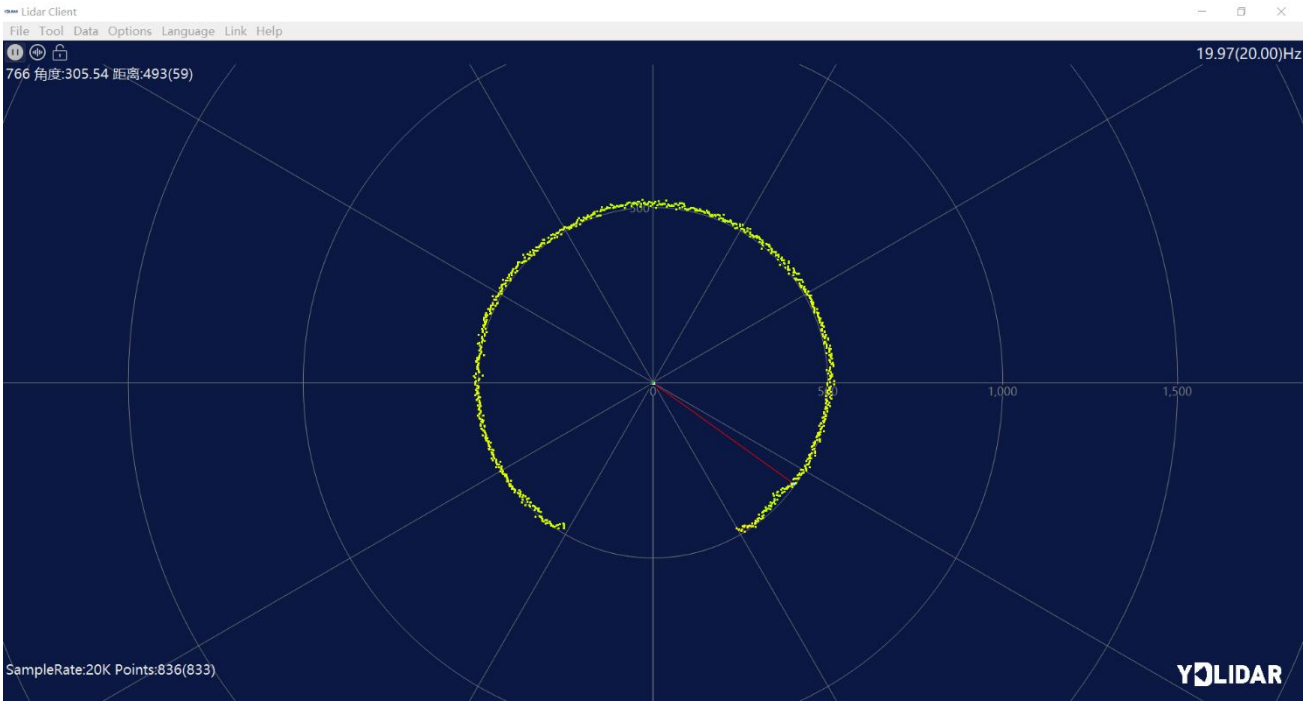

FIG 6 LIDAR SCANNING POINT CLOUD DISPLAY

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1.4.2 Data Storage

During lidar scanning, click [File] in the main menu, select [Export to Excel], and save point cloud data according to the prompts. Then the system will save the point cloud information scanned in a circle in Excel format.



FIG 7 SAVE DATA

1.4.3 Parameter Configuration (Scanning Frequency)

Click [Tools] in the main menu and select [Parameter Configuration] to configure the "Sampling Frequency" and "Scanning Frequency".

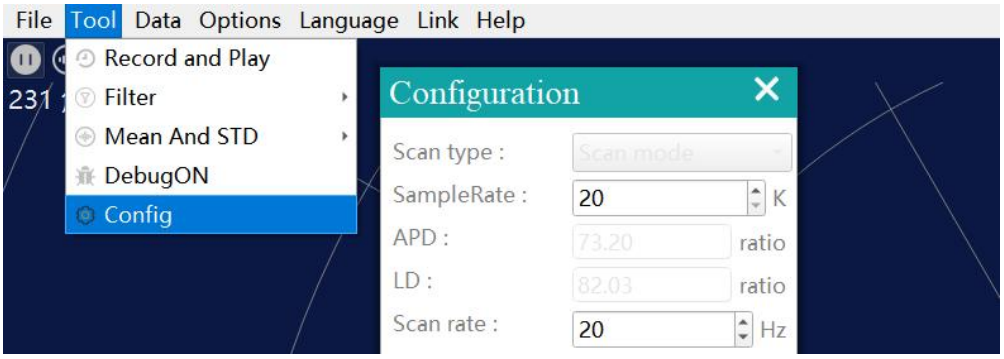

FIG 8 PARAMETER CONFIGURATION

1.4.4 Display Mean and Standard Deviation

Click [Tools] in the main menu, then select [Mean And STD] - [View].

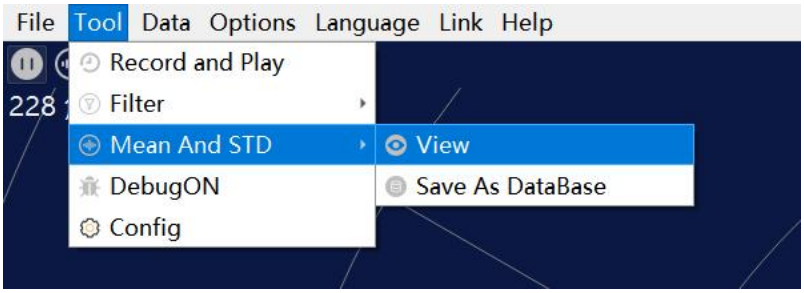

FIG 9 YDLIDAR TIA-H DISPLAY MEAN AND STANDARD DEVIATION

Choose one according to the user requirement, move the mouse to the test position, right-click the pop-up menu, and select [Lock Mouse Tracking].

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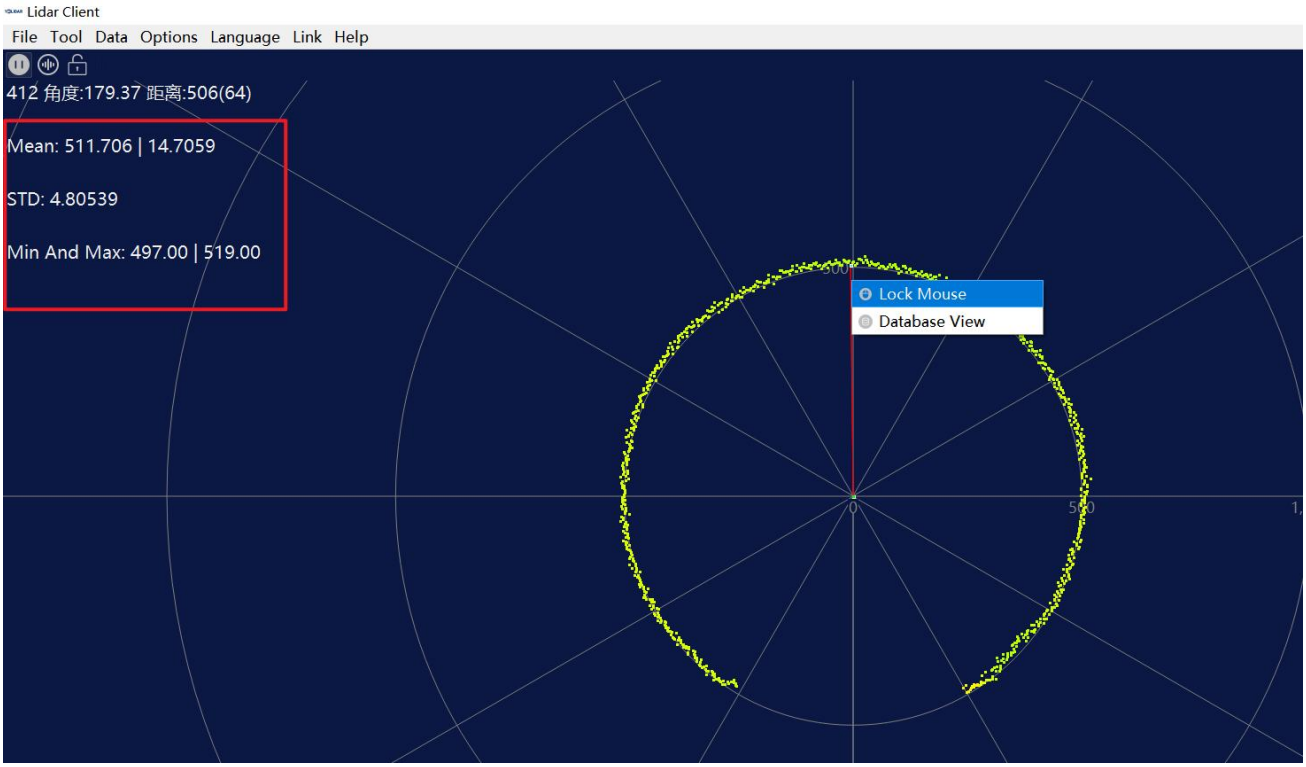

FIG 10 LOCK MOUSE TRACKING

1.4.5 Play and Record

Click [Tools] in the main menu, then select [Record and Play].

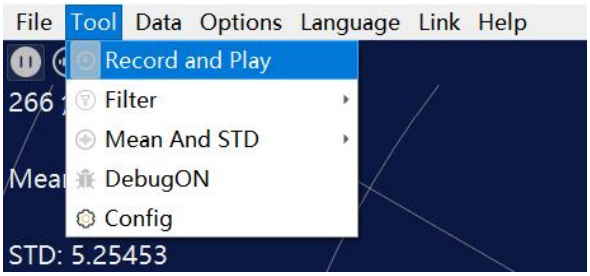

FIG 11 RECORD AND PLAY

The main window is displayed as follows:

To record lidar data, click to start recording, and click to stop recording.

In non-scanning mode, click to start play.

The play process is as follows:

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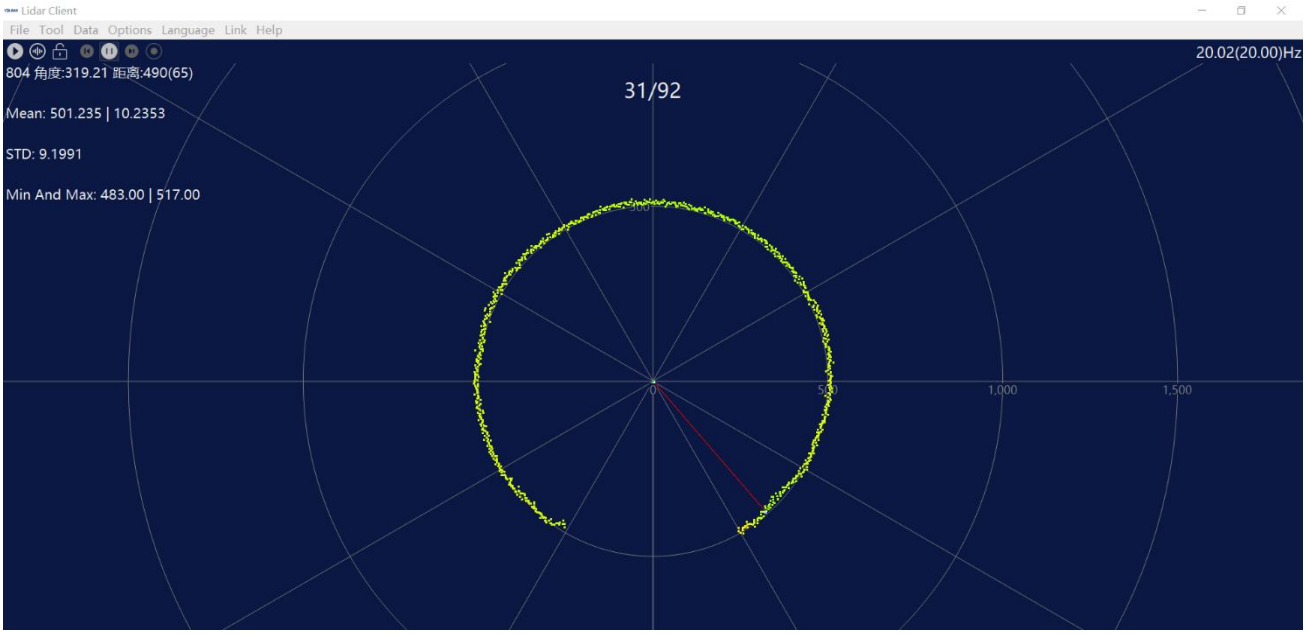

FIG 12 PLAY PROCESS

2 LINUX ROS OPERATION

There are many Linux distributions, and this article only takes Ubuntu 18.04 and Melodic version ROS as examples.

SDK driver address:

https://github.com/YDLIDAR/LIDAR_SDK

ROS driver address:

https://github.com/YDLIDAR/LIDAR_ros_driver

ROS2 driver address:

https://github.com/YDLIDAR/LIDAR_ros2_driver

2.1 Device Connect

Under Linux, the interconnection process between TIA-H and PC is consistent with the operation under Windows, see Device Connection under Window.

2.2 Compile and Install LIDAR_SDK

LIDAR_ros_driver depends on the TIA-H_SDK library. If the user has never installed the LIDAR_SDK library, or it has expired, the user must first install the LIDAR_SDK library. If the user has the latest version of LIDAR_SDK installed, please skip this step, then go to the next step.

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```
$git clone https://github.com/YDLIDAR/LIDAR_SDK.git

$cd LIDAR_SDK/build

$ cmake ..

$ make

$ sudo make install
```

2.3 ROS Driver Installation

1) Cloning GitHub's LIDAR_ros_driver Package:

```
$ git clone https://github.com/YDLIDAR/LIDAR_ros_driver.git TIA-H_ros/src/LIDAR_ros_driver
```

2) Build the LIDAR_ros_driver software package:

```
$ cd LIDAR_ros

$ catkin_make
```

3) Package environment Settings:

```
$ source ./devel/setup.sh
```

Note: add a permanent workspace environment variable. It will be very convenient if ROS environment variables are automatically added to your bash session every time you start a new shell:

```
$ echo "source ~/LIDAR_ros/devel/setup.bash" >> ~/.bashrc
$ source ~/.bashrc
```

4) Verify that your package path is set, echo the ROS_PACKAGE_PATH variable.

```
$ echo $ROS_PACKAGE_PATH
```

Users should see something like this: /home/tony/TIA-H_ros/src:/opt/ros/melodic/share.

5) Create Serial Port Alias [Optional]

```
$ chmod 0777 src/LIDAR_ros_driver/startup/*

$ sudo sh src/LIDAR_ros_driver/startup/initenv.sh
```

Note: After completing the previous operation, re-insert the LiDAR again.

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2.4 Run the LIDAR.launch

Run launch file, as shown below:

```
$ cd src/LIDAR_ros_driver/launch

$ roslaunch LIDAR.launch
```

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3 Revise

Date	Version	Content
2022-12-21	0.1.0	The 1st release
2023-05-22	0.1.1	Optimizing SDK&ROS directives
2023-12-07	0.1.2	Update section 2
2025-06-21	0.1.3	Revised Lidarclient driver address

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