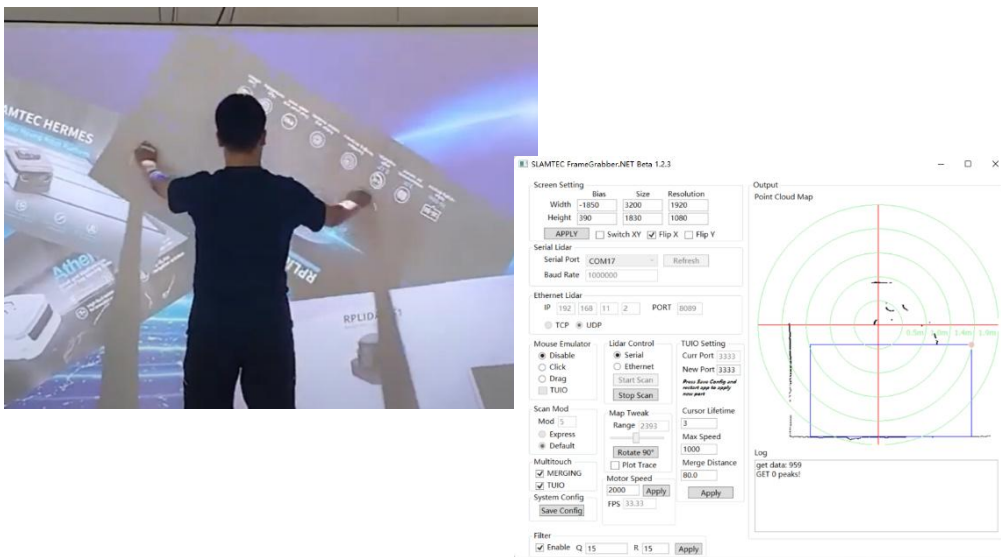


# SLAMTEC

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## RPLIDAR Interactive Toolkit (Framegrabber.NET)



# Instruction Manual

Version Beta 1.2.3-EN Date 2023-09-11

## **I. How this works**

RPLIDARs are usually used for mapping and piloting, while the RPLIDAR itself is to scanning and digitalizing the scene, providing data for computers understanding the real world. As there are enough data for building larger world (80m diameter for RPLIDAR-S3), it takes no effort to localizing your hand on any surface. Connect your RPLIDAR to any PC, it will digitalize real world data to point cloud and transfer to this software. With SLAMTEC Fusion Reality Algorithm embedded in this software, you can operate as fast as the speed of light and as precise as the way of laser. You can catch as many points as your RPLIDAR can, and carry it in your pocket at the back of your jeans. Since there is no need for an actual surface for interactive using RPLIDAR, you can even use it to interactive with hologram like what you seen in the movie. We can neither confirm nor deny that Tony Stark is using our tech in his warehouse.

## **II. Introduction to the software**

SLAMTEC FrameGrabber.NET is an interactive tool configuration software developed by SLAMTEC that allows users to easily and quickly adjust the size of the touch area and correct the coordinates with the display system. The configuration software not only supports the emulation of mouse clicks and drag-and-drop movements, but also integrates the industry-standard TUIO multi-touch communication protocol, which makes it easy to integrate with mainstream software systems on the market. Such as UNITY3D, FLASH, VENTUZ, COOLUX and so on.

## **III. Software Advantages**

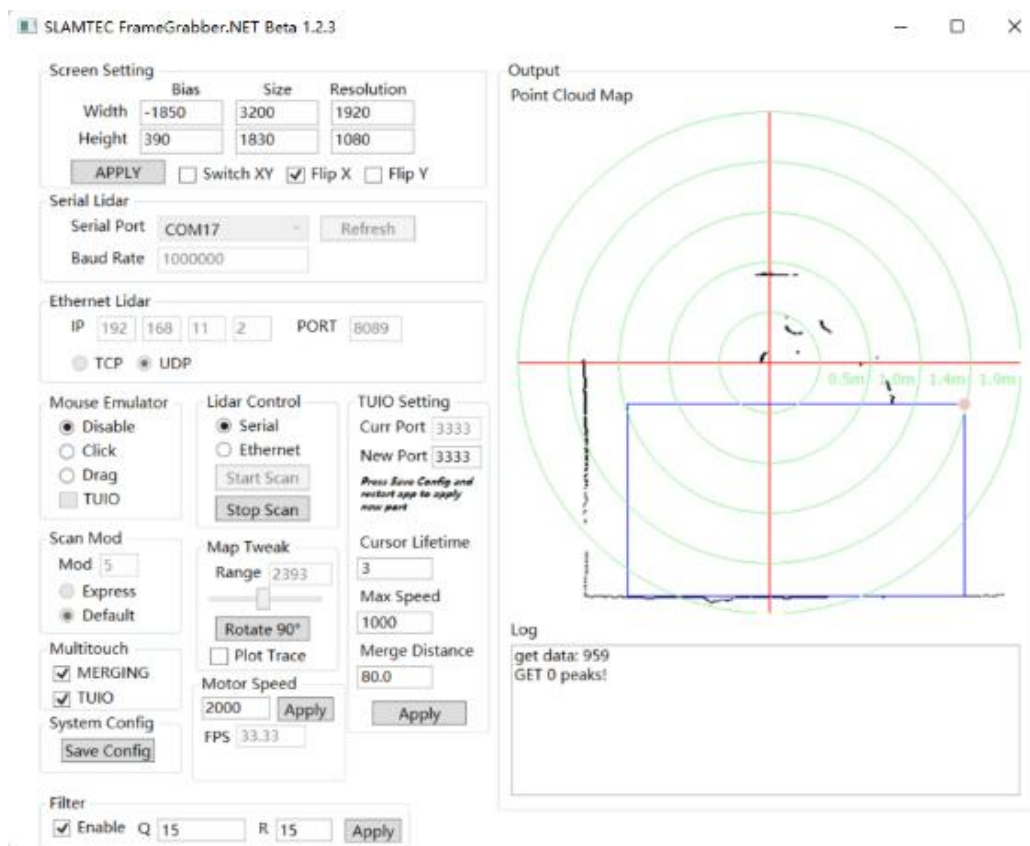
- (1) Support ALL SLAMTEC LIDARs, including A-series, S-series and T1, of which the S2 P LIDAR can reach a scanning range of 50m.
- (2) Easy to calibrate.
- (3) Supports both Serial and Ethernet communication.
- (4) The touch range can be selected from different models of LIDAR depending on the radius.
- (5) Simple installation and calibration, suitable for beginners to get started quickly.

## **IV. Instructions for use**

### **4.1 Opening the software**

Unzip the software package and click on the "Framegrabber.NET" application as shown below.

« Framegrabber.Net Beta 1.2.3 » Framegrabber.Net Beta 1.2.3	
名称	修改日期
Changelog	2023/8/22 14:35
Framegrabber.NET	2023/8/22 14:30
Framegrabber.NET.exe	2023/8/22 14:23
RPLidarDLL.dll	2023/7/11 10:23

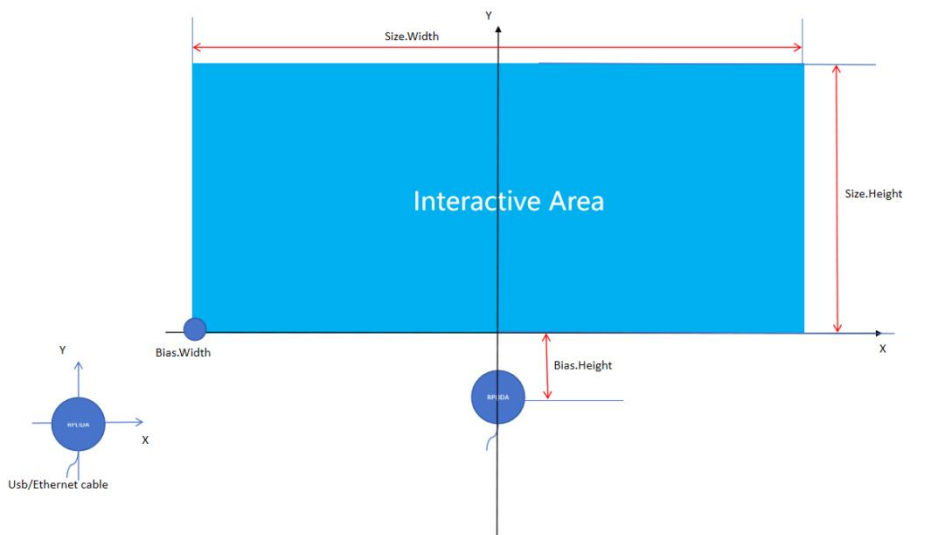


## 4.2 Interactive screen setup

In order to ensure the interactive effect of the LIDAR, the LIDAR is usually installed in the interactive screen area directly above or directly below the position of about 50cm, support customized settings.

First of all, according to the LIDAR interactive area (interactive wall, floor or screen) of the actual size to set Size (Width, Height), the unit is mm, for example, the actual size of the interactive wall for 3.2m \* 1.83m, then Size Width = 3200, Height = 1830.

Next, according to the actual installation location of the LIDAR Bias parameter settings, if the LIDAR is installed in the interactive area of the lower position, usually Bias Width is set to  $-1/2 * \text{Size.Width} = -1600$ , Bias Height is set to the center of the LIDAR distance from the bottom of the interactive area of the actual distance of the 390, as shown in the following schematic diagram 1.



Depending on the installation angle of the LIDAR, the LIDAR coordinate system is supported to be adjusted and flipped as shown in the figure below.

Screen Setting

	Bias	Size	Resolution
Width	-1850	3200	1920
Height	390	1830	1080

Switch XY
  Flip X
  Flip Y

### 4.3 LIDAR communication parameter setting

#### 4.3.1 Serial communication LIDAR settings

Refer to the user manual of the LIDAR product, install the USB serial port driver and select the corresponding port number, and also select the corresponding communication baud rate according to the LIDAR model. As shown in the figure below.

Serial Lidar

Serial Port

Baud Rate

**NOTE:**

The driver can be found in the provided SDK

package or downloaded from Silicon Labs' official website:

[CP210x USB to UART Bridge VCP Drivers - Silicon Labs \(silabs.com\)](http://www.silabs.com)

Model	A1	A2	A3	S1	S2	S3
baud	115200	256000	256000	256000	1000000	1000000

#### 4.3.2 Ethernet Communication LIDAR Setting

Enter the IP address and port number corresponding to the LIDAR and select TCP mode.

Ethernet Lidar

IP     PORT

TCP  UDP

#### 4.4 Mouse Emulation

LIDAR Interactive can emulate mouse movements, mainly consisting of clicking and dragging. As shown in the figure below.

Mouse Emulator

Disable

Click

Drag

TUIO

#### 4.5 Multi-touch

The software supports multi-touch and TUIO data output. It is recommended to use TUIO data output with MMERGING and TUIO checkbox configuration, where the TUIO port is configured as 3333, as shown in the following figure.

Multitouch

EDGING

MERGING

TUIO

**TUIO Setting**

Curr Port

New Port

*Press Save Config and restart app to apply new port*

Cursor Lifetime

Max Speed

Merge Distance

You can change the port to any number you need, but the port setting will only be effective after restating this software since you will not want to messing up with other software. The lifetime option decides how many frames a cursor could live after an object has left the tracking area. Max speed is the largest distance in pixels one cursor could move between two frames, that if it moves larger than this number, it will be taken as two different frames. Merge distance decide the minimum distance in mm between two objects if they need to be considered as different cursors. This number should be larger than 30.

#### 4.6 LIDAR control

After completing the screen setup, LIDAR communication configuration, and mouse emulation and TUIO mode configuration, remember click Save Configuration. LIDAR scanning can then be turned on as shown below.

**Lidar Control**

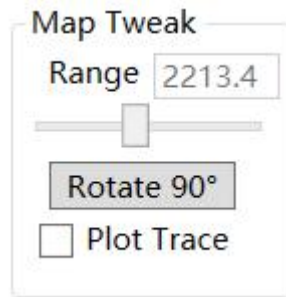
Serial

Ethernet

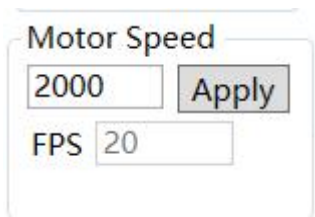
#### 4.7 Map adjustments

Map Tweak allows you to adjust the extent of the map in the viewing area and rotate the map as shown below. This will only affect display. So if you found cursors moving opposite to your

movements, use flip settings in screen setting.



#### 4.8 Motor speed



This could change the rotation speed of your Lidar. For S series, this number is in RPM (rotation per minute). For earlier model, please refer to their user manual. FPS shows the refreshing rate of point cloud map. This is not strictly equals to the actual speed of Lidar motor.

#### 4.9 Filter options



Filter is only available for multi-touch TUIO mode. Point will move smoother with filter on at the cost of latency. The Q and R value are used to balancing smoothing and jelly. Higher Q and lower R allows you move faster. While these lags are usually acceptable since it's much smaller than the latency of your display.

#### 4.10 Installation example



SLAMTEC FrameGrabber.NET

**Screen Setting**

Bias	Size	Resolution
Width -1500	3200	1920
Height 600	1380	1080

APPLY  Switch XY  Flip X  Flip Y

**Serial Lidar**

Serial Port COM7 Refresh

Baud Rate 1000000

**Ethernet Lidar**

IP 192 168 11 2 PORT 20108

TCP  UDP

**Mouse Emulator**

Disable  
 Click  
 Drag  
 TUIO

**Scan Mod**

Mod 5

Express  
 Default

**Multitouch**

EDGING  
 MERGING  
 TUIO

**Lidar Control**

Serial  
 Ethernet

Start Scan  
Stop Scan

**Map Tweak**

Range 2213.4

Rotate 90°  
 Plot Trace

**System Config**

Save Config

**TUIO Setting**

Curr Port 3333  
New Port 3333

*Press Save Config and restart app to apply new port*

**Cursor Lifetime**

3  
Max Speed 1000  
Merge Distance 80.0

Apply

**Output**

Point Map

Log

```
get data: 3176
GET 0 peaks!
```



#### 4.9 Unity Demo Materials

The download link is

<https://wiki.slamtec.com/download/attachments/83066883/SlamTecDemo.zip?version=1&modificationDate=1690535681110&api=v2>

For more user manuals of all our products, you can also visit our Help Center.

<https://wiki.slamtec.com/display/SD/Overseas+Help+Center>

