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FASELASE D6 2D Lidar Scanner

FASELASE D6 2D Lidar Scanner User Manual

Contents

FASELASE®

FASELASE D6 2D Lidar Scanner

Product Information

Specifications

- Distance measuring range: 0.15m~6m @ 10%
- Scanning angle range
- Scanning frequency: 10 revolutions per second
- Output interface: Communication baud rate 921600bps
- Laser source: Laser diode 905nm, 1mW; comply with GB7247.1-2001 Class 1 Laser Eye Safety Requirements
- Power supply: DC power supply +5V
- Dimension: 78*78*56 mm
- Operating temperature range: 10°C to +50°C
- Storage temperature range: 20°C to +70°C
- Protection level: IP54
- Weight: 190 g

Product Usage Instructions

Operating Mode

The D6 2D LiDAR can be used in a fixed device mode for intrusion behavior detection in designated areas.

Connection

The device can be connected using the following wiring diagram:

Definitions of 10-pin Connection Wire

Pin	Function	Color	Notes
0	Positive pole of DC power supply +5V	Red	

Software Setting

To configure the device, follow these steps:

1. Run the driver software.
2. Set the protection range according to your requirements.

FAQ

Q: What is the maximum measuring range of the device?

A: The device can measure up to 6 meters when the reflectivity of the target is at least 10%.

Q: What is the default scanning frequency of the device?

A: The default rotating speed is set to 10 revolutions per second.

Q: What is the communication baud rate of the output interface?

A: The communication baud rate is set at 921600bps.

QUICK START

Turn on the external power supply +5V ± 10%, 2A (starting current requirement is greater than 1.5A), Connect the device to the computer via a USB cable, By setting the alarm area need to be protected, To start the early warning of the intrusion behavior of the designated area.

(Version V8.01.2)
For more info & supports, please visit **http://www.top1sensor.com**

Specifications

| Items	Parameters
Distance measuring range[1]	0.15m~6m@10%
Scanning angle range	360°
Scanning frequency [2]	10Hz
Output interface	3*NPN OUT, 2*NPN IN; TTL to USB setting interface
Communication baud rate	921600bps
Laser source	Laser diode 905nm, ≤1mW; comply with GB7247.1-2001 Class 1 Laser Eye Safety Requirements
Power supply	DC5V±10% 3W Starting current 1.5A,
Dimension	78*78*56 mm
Operating temperature range	10℃~ +50℃
Storage temperature range	20℃~ +70℃
Protection level	IP54
Weight	190 g

Notes:

1. The device can measure 6 meters range at most when the reflectivity of the target is10%.
2. The default rotating speed is 10 revolutions per a second.

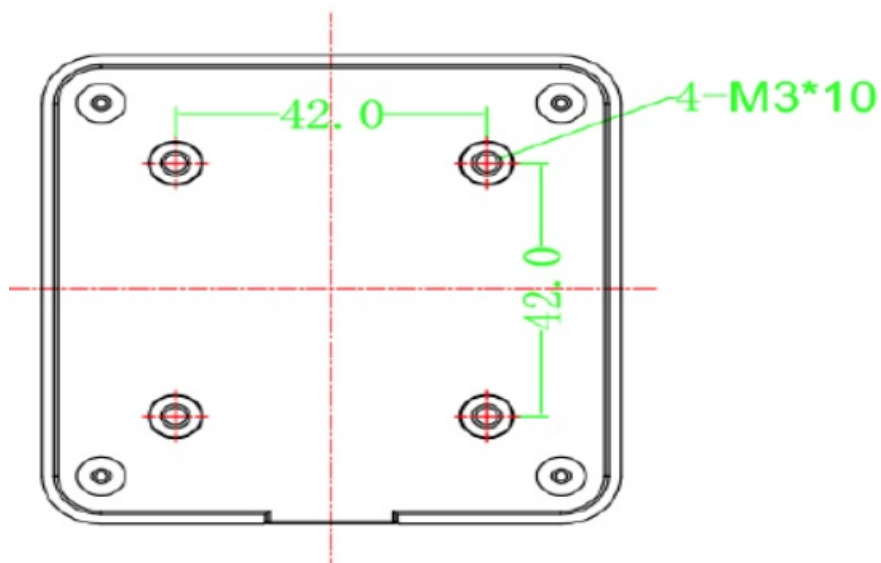## Dimensional drawing

Lidar pictures

Dimensional drawing

55.5
25.8
78.0
⌀68.2
78.0
41.8
39.5
55.5
25.8
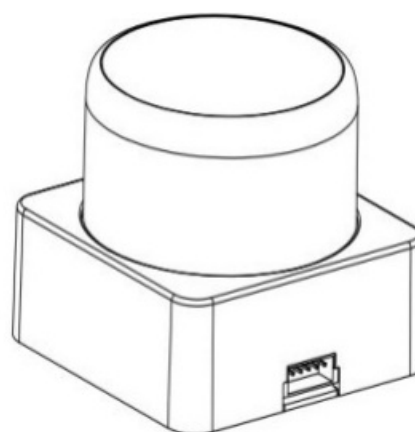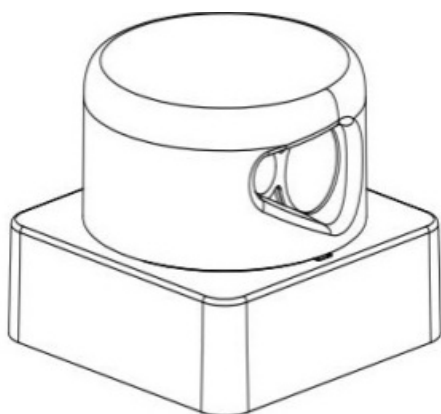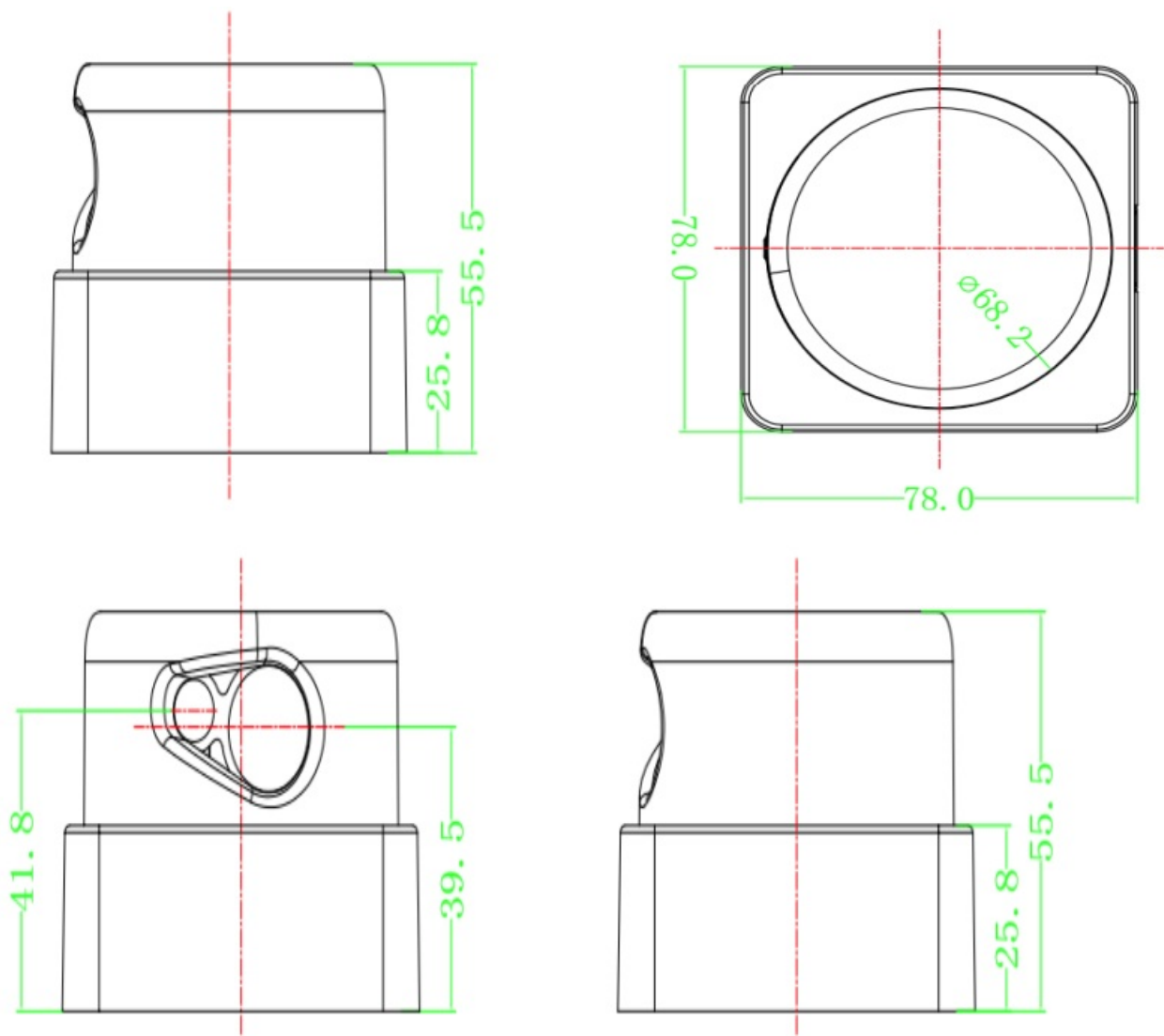
Operating mode

Fixed device

42.0
42.0
4-M3*10

The above image is an upward view of the device, using four M3×10 self-tapping screws.

Connection

Wiring diagram

0123456789

Definitions of 10pin connection wire

Pin	Function	Color	Notes
0	+5V±10%	Red	Positive pole of DC power supply +5V
1	GND	White	DC power ground
2	Tx	Yellow	Connect to external TTL Rx
3	Rx	Green	Connect to external TTL Tx
4	GND	Black	Connect to internal GND
5	IO_1 Out	White	NPN output 1
6	IO_2 Out	Green	NPN output 2
7	IO_3 Out	Yellow	NPN output 3
8	IO_1 In	Red	NPN input 1
9	IO_2 In	Black	NPN input 2

Relationship between the input groups and the I/O levels

Input pins Groups	IO_1 In	IO_2 In
Group 1	H (High level)	H (High level)
Group 2	L (Low level)	H (High level)
Group 3	H (High level)	L (Low level)
Group 4 (Default input group)	L (Low level)	L (Low level)

The group number of protection area is determined by the voltage of the I/O input.
When no external circuit is connected, the system defaults to the current input group as Group 4, and now the input voltage is 0V. To adjust the input group, add a high level (such as 3.3V) to the I/O input.

The schematic of the I/O input and output is as follows:
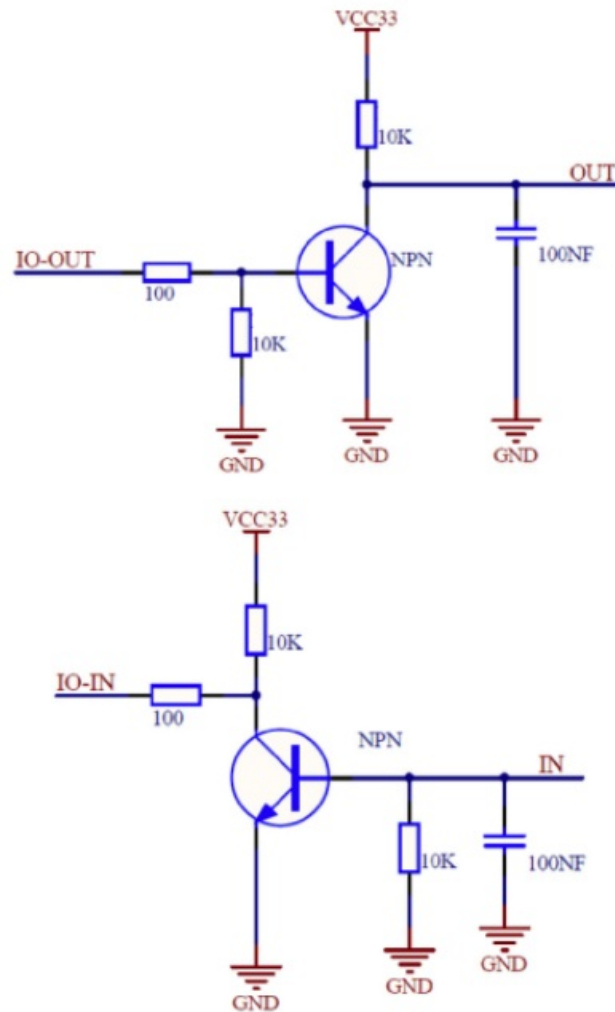
Notes:
The I/O input and output can withstand up to 36V and the maximum output is 200mA.
If it exceeds, it will damage the machine!

Power supply
The starting voltage need to be 5V, the starting current need to be 1500mA, the normal working current is 500mA. However the ripple coefficient of the power supply should not be greater than 40mV.The factory setting is that the D6 automatically starts rotating after power-on.

## Software setting

Driver running
After the USB driver is successfully installed, connect the Lidar to the computer to confirm that it recognizes the com port, and then turn on the power. If the power is turned on first and then connected, there is a possibility that the computer mouse will be out of control. Please pay attention to the operation sequence. Run the "software exe file" and it can be used normally.

Some PC can automatically install the driver after LiDAR connected, if not, please download the CP210X driver in our software package.

Protection range setting
To run 'FaseLase LiDAR Point Cloud Data Acquisition and Analysis System.exe' program. Double click the software .exe file, communication settings window will popup. First, select device D6. Second, select serial port(the program can automatically identify the serial port that has been connected to the PC).Third: select band

rate,(the baud rate is fixed at 921600 and cannot be modified). Fourth: Click 'Yes' to enter the monitoring interface. Baud rate: 921600 bps , Parity bit: None , Data bits: 8 , Stop bit: 1 D6 outputs real-time point cloud data or switching amount signal, Only the change in the switching amount status can be seen through the software.
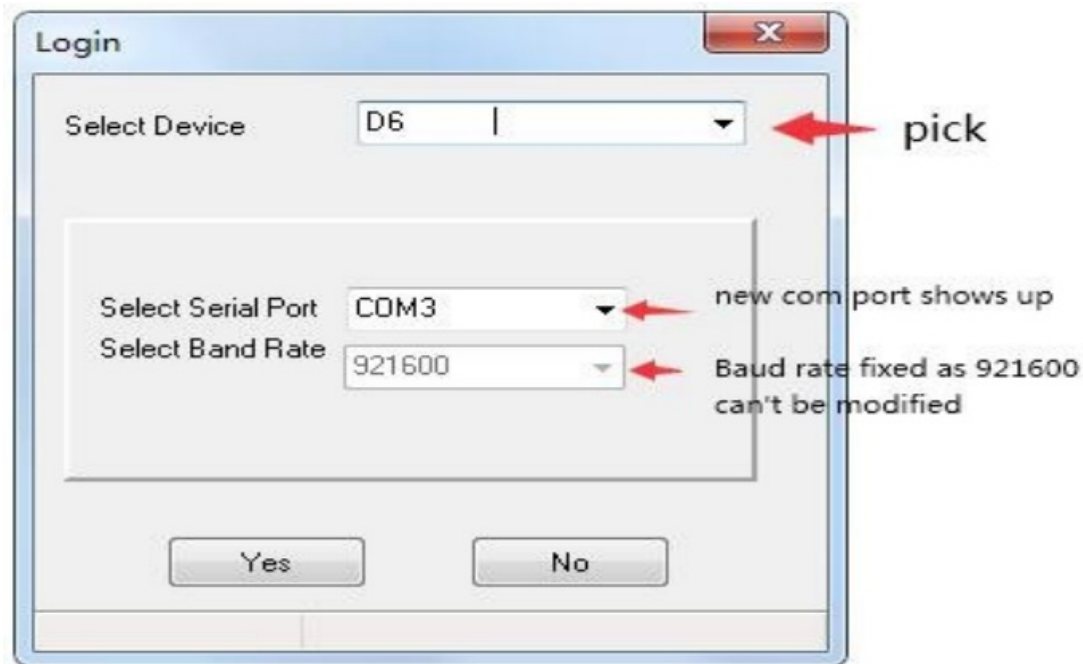
Click the protection area button in the upper right corner, pop-up protection area settings box, as shown in the figure:
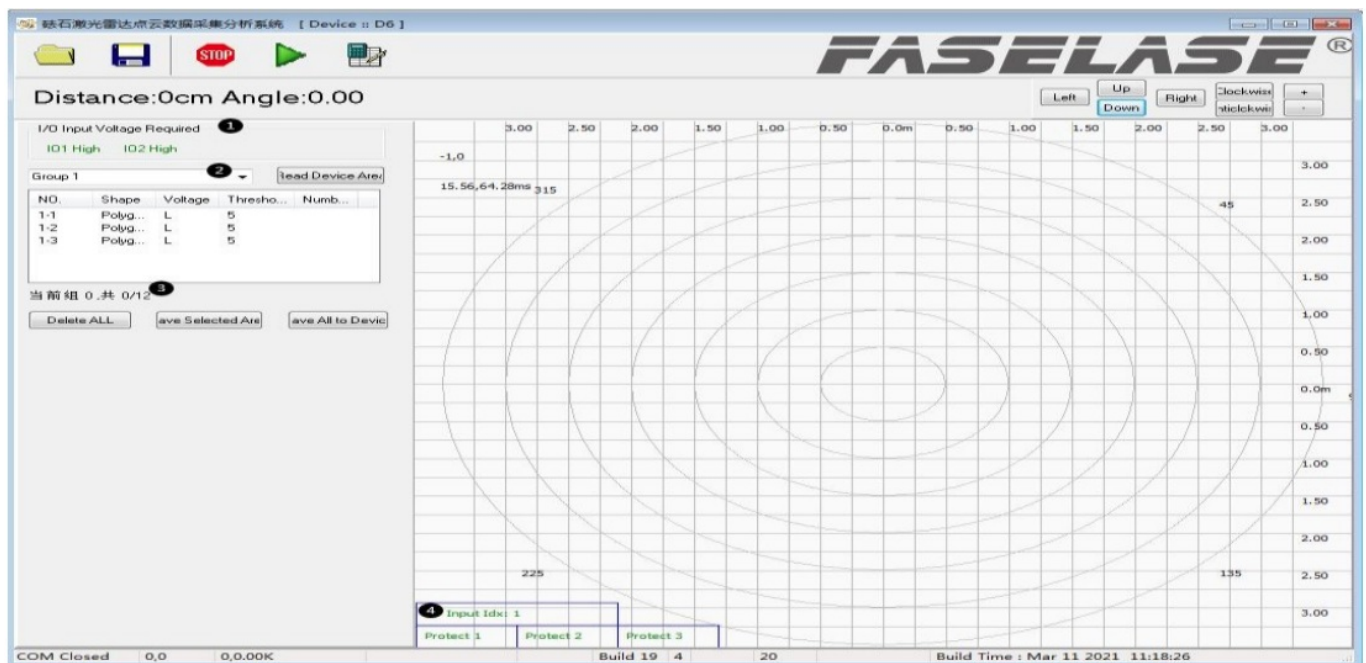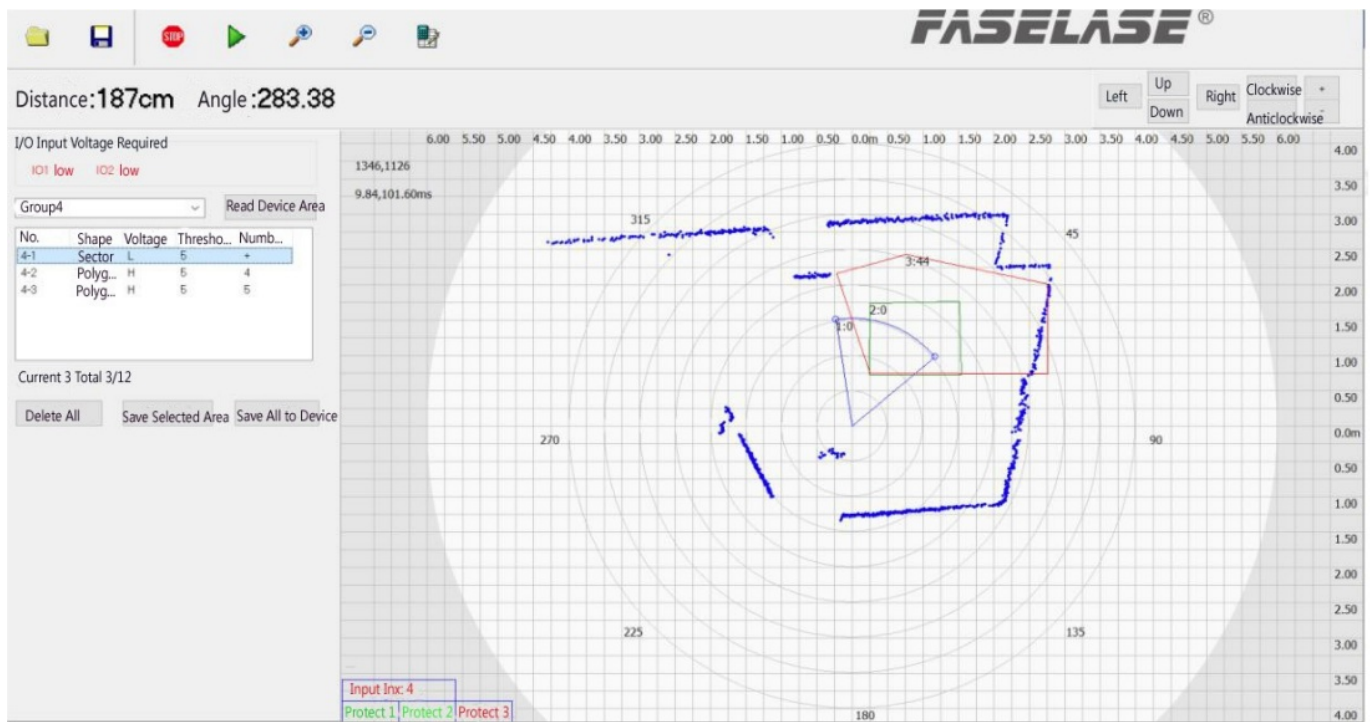

1. Set the required level state of each IO_IN when setting the input group.

2. Select the input group to be set through the drop-down menu.

3. The total number of areas of the current group and the total number of areas of all groups.

4. The group where the current Lidar internal scanning detection is located.

In the setting window, use the drop-down menu to determine the group to be set, a total of 4 groups can be selected. Each group supports setting 3 different protection areas, for example: No. 1-3 refers to protection area 3 in group1.

- **Read Device Areas:** Read information of protection area written in the current Lidar. Save All to Device: Write the protection information of each area in all 4 groups to the Lidar.
- **Save Selected Area:** Write the protection information of the currently selected number into the Lidar, while other numbers remain unchanged.
- **Delete All:** clear the information of 12 protection areas.

As shown in the figure above, "current input group 4" means that the connected level status of IO_In1 and IO_IN2 of this Lidar is low, in the wiring state of IO_In, the Lidar calls protected area 3 in current input group 4. In this case that the I/O input is not connected to any external circuit, the default current input is group 4. Threshold points refer to the number of trigger points in the protection area. The effective range of Threshold Points is 2-200, the smaller Threshold Points lead to faster response time and more sensitive to smaller obstacles but easier disturbed, while the greater Threshold Points is more stable but relatively longer response time. When setting multi-layer protection, generally the larger the area, the more points; the smaller the area, the less points; the setting of the trigger high and low level can make the IO output port state reverse. The protection area can be set as a sector or polygon, the coordinates in the settings are in centimeters. The Lidar starts detecting obstacles in the area. The font in the area where obstacles are detected changes from green to red, and the I/O output port level changes at the same time. Before modifying the Lidar settings, you must click the STOP button to pause the motor rotation, otherwise there will be a communication failure. After pausing, click the Read All Areas button firstly (the graph saved by the software may be inconsistent with the graph stored by the Lidar), let the graph saved in the Lidar overlays the graph cached in the software.

Distance:187cm Angle:283.38

Left | Up / Down | Right | Clockwise +
Anticlockwise -

I/O Input Voltage Required

IO1 low   IO2 low

1346,1126

9.84,101.60ms

Group4 ⌄   Read Device Area

No.	Shape	Voltage	Thresho...	Numb...
4-1	Sector	L	5	+
4-2	Polyg...	H	5	4
4-3	Polyg...	H	5	5

Current 3 Total 3/12

Delete All   Save Selected Area Save All to Device

Input Inx: 4
Protect 1 Protect 2 Protect 3

As shown in the above Figure, if you want to set the image area in protection area 1 of 4th group, click No. 4-1 with the left mouse button, then move the mouse to the grid on the right. Click the left mouse button at any position to set the first coordinate point, as long as the graph is not closed, each click the left mouse can add a new point and it can connect with the previous point automatically. The coordinates of the point will be displayed on the right side of the point after each click. In a closed graph, click the left mouse button on the edge of the shape to add a new coordinate point, and drag to change the shape. Currently, it supports up to five vertices. Click the right mouse button at the coordinate point to pop up an option box which can select edit area, delete point, delete area, or delete group, load file, save as file.12 groups of already set regions can be saved as files with ini suffix, which is convenient to load the file directly next time.

In the mode of edit area, you can fine-tune the position of the coordinate point by inputting the specific coordinate value, and you can also set the output level mode of the area in the trigger state (In the protection area, output level high or low can be set), you can also choose whether the protection area is a polygon or a sector. Threshold refers to the number of trigger points in the protection area. For example, the Threshold of protection area 1 is 5, then when there are only 4 points in protection area 1, the area will not trigger the output level change. The selected area will turn into a blue line, and the coordinates of the point will be displayed accordingly. After all settings are completed, click Save selected area or Save all to device and then click Run, the Lidar starts working according to the newly set area.

Standard and optional accessories

No.	Items	Qty pc	Remarks
1	D6 Lidar	1	
2	Data cable	1	
3	TTL to USB adapter plate	1	
4	DC +5V power adapter	1	

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Documents / Resources

FASELASE D6 2D Lidar Scanner [pdf] User Manual
D6, D6 2D Lidar Scanner, 2D Lidar Scanner, Lidar Scanner, Scanner

References

- 🛰 **laser distance sensor-Xian Zhizun International**
- **User Manual**