



TOF-25 Navigation type Laser Radar



Product parameters

Model	XD-TOF-25
Detection distance	0.05-25m
Light source wavelength	905nm
Laser class	I
Minimum response time	≤66ms
Angular resolution	0.33°
Output resolution	1.0mm
Interface	Ethernet
Operating temperature	-10° -50°
Radar module power supply voltage	DC 9-30V
Power consumption (heating module off)	<3W
Heating module power consumption	≤8W
Programmable alert area	10
Support zone shape	Convex polygon

Environmental adaptability parameters

Chassis protection level	IP67	
Laser radiation safety level	Level 1	GB 7247.1-2012
Conducted CE	A grade industrial grade	GBT_17626.6-2008
Conduction CS	Level 3 10V/M	GBT_17626.6-2008
Power frequency magnetic field	Level 5 100AV/M	GBT_17626.8-2006
Voltage drop	40%、70%、80%、120%	GBT_17626.29-2006
Electrostatic discharge	Level 2 4KV	GBT_17626.2-2006
Electrical fast-shift pulse train	Level 4 4KV	GBT_17626.4-2008
Surge	Level 2 1000V	GBT_17626.5-2008
Radiation RE	A grade industrial grade	GB_9254-2008
Radiation RS	Level 3 10V/M	GB_17626.3-2006
Vibration	10-55Hz double amplitude 1.5mm, 2h each in X/Y/Z axis	GBT_2423.10-2008
Shock	150m/s ² for 11ms	GBT_2423.5-1995
Enclosure rating	IP67	GB4208-2008
Electrical insulation	100VAC/not less than 1MΩ	GB 4793.1-2007
Dielectric strength	500VAC	GB 4793.1-2007

Working principle

XD-TOF-25 is a scanning photoelectric lidar sensor. The emitted laser beam is reflected and deflected by a mirror fixed on a rotating motor and scans the surrounding environment at a fixed frequency. As shown in Figure 1, XD-TOF-25 has a two-dimensional sector area with a scanning range of 270° . The maximum scanning distance is determined by the specific model of the product. In each specific direction, XD-TOF-25 calculates the distance between the obstacle and the radar at this angle by emitting a laser pulse with a short pulse width and calculating the time between the pulse and the radar to the obstacle. The principle is shown in Figure 2.

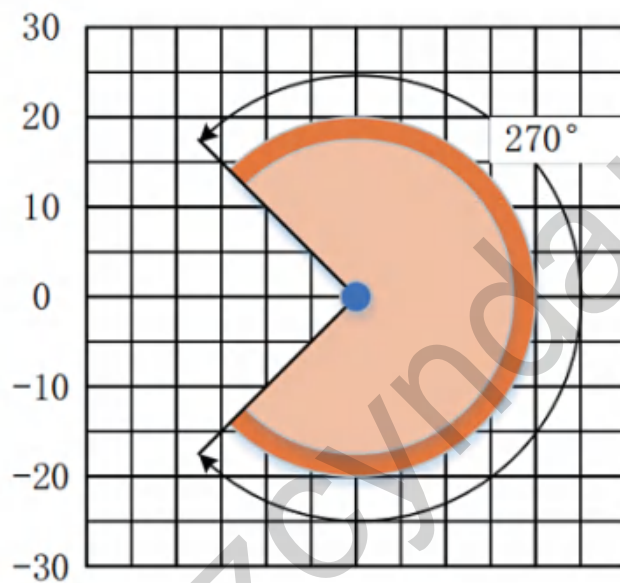


Figure 1 Scanning area of XD-TOF-25 lidar sensor

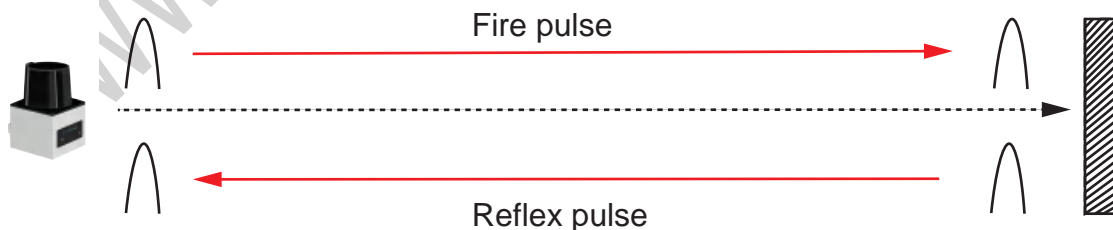


Figure 2 XD-TOF-25 lidar sensor ranging principle diagram

Working principle

The XD-TOF-25 lidar sensor emits laser pulses through a laser diode, and after related processing, it becomes a Gaussian distributed circular spot and emits at a certain divergence angle. The beam exit diameter is 8mm. As the detection distance increases, Figure 3 visually shows the beam divergence process. Figure 3 shows the curve of the spot size at different distances.

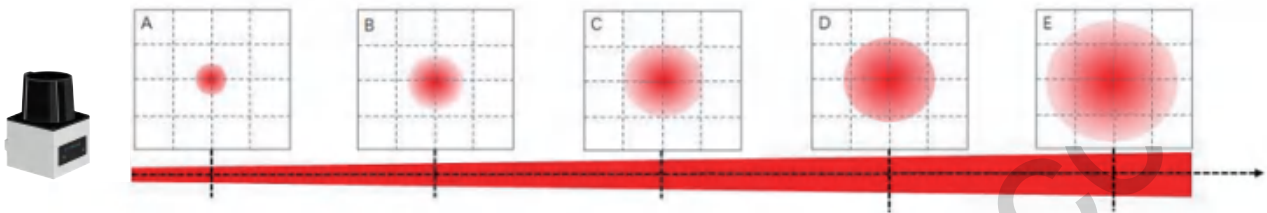


Figure 3 The laser pulse gradually diverges

Common material reflectivity

Material name	Reflectivity
Black cloth	3%
Black rubber	4%
Opaque black plastic	14%
Clean rough board	20%
Blank paper	55%
Cardboard box	68%
Human palm	75%
Opaque white plastic	87%
White drawing paper	90%
Unpolished white metal surface	130%
Glossy light metal surface	150%
Matte surface stainless steel	200%

Area alarm

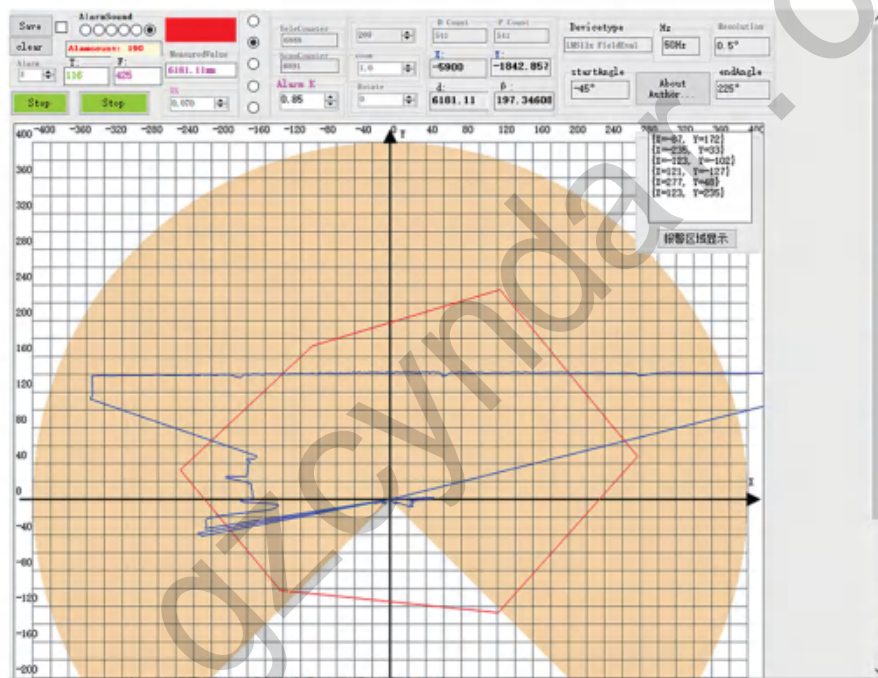
Within the measurement range, XD-TOF-25 integrates two different area alarm methods.

method one:

Set through the client application TCPClient of XD-TOF-25; users can connect with radar through TCPClient and set any polygonal alarm area. When foreign objects invade the alarm area, TCPClient will flash the red icon and trigger an alarm bell.

Regional alarm settings

①: Client application TCPClient settings



②: Network TCP/IP protocol to set alarm area

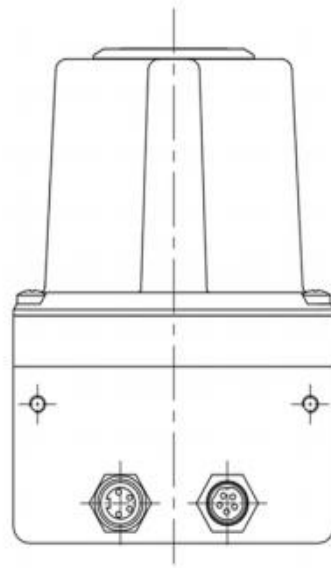
TCPClient can set the alarm threshold, that is, the number of intrusion points allowed in the alarm area. When the value is set to 0, any object that enters the area will trigger an alarm.

Method 2:

Set the alarm area through the network TCP/IP protocol, and realize the external area alarm through the digital I/O pin of the device. The digital I/O pin voltage is the same as the external power supply voltage: when there are no abnormal objects in the alarm area, the digital I/O level is lowered, and when foreign objects invade the alarm area, the digital I/O level is raised.

Power accessories

Interface main view



Device external interface

- ① Network interface ② I/O interface ③ Data interface ④ Power interface



Device interface

Interface I	Ethernet port	M8 connector D type code 4 holes
Interface II	Power input/Digital I/O/RS232	M8 connector A type code 5 holes

In the test version of the prototype, the RS232 interface is not yet open. It is expected that this function will be fully opened in the next version of the product.

Product Features

Features



25 meters away

0.33° angular resolution
270° scanning angle



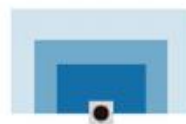
Multi-region monitoring

Convex polygon
Three independent signal outputs



Two external interfaces

Working voltage power consumption
9V-28V DC/5W



16 programmable police zones

Convex polygon, three signal outputs



Automatic learning

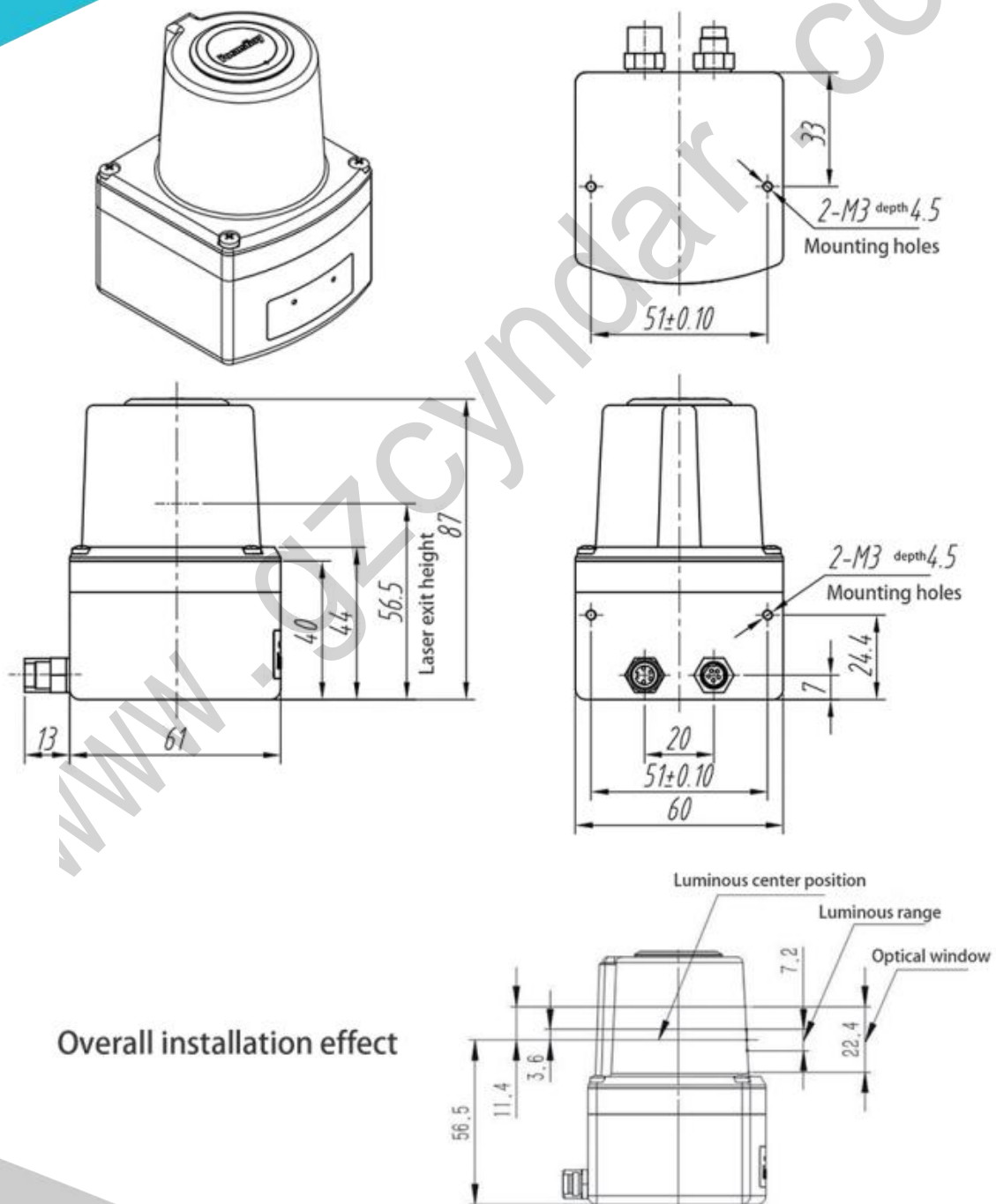
Support self-learning background tailoring
Monitor profile



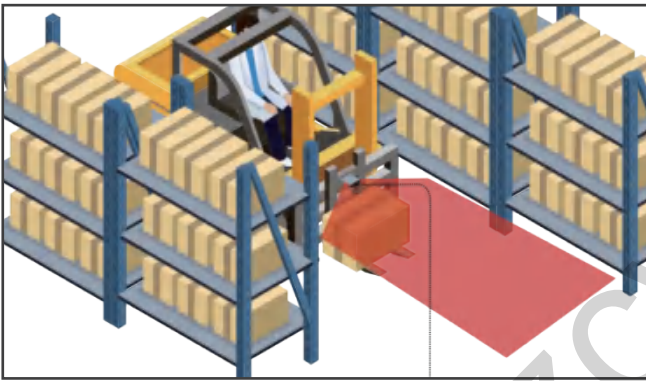
IP65

Dustproof and waterproof, with heating function
Applicable in harsh industrial environments

Product Size



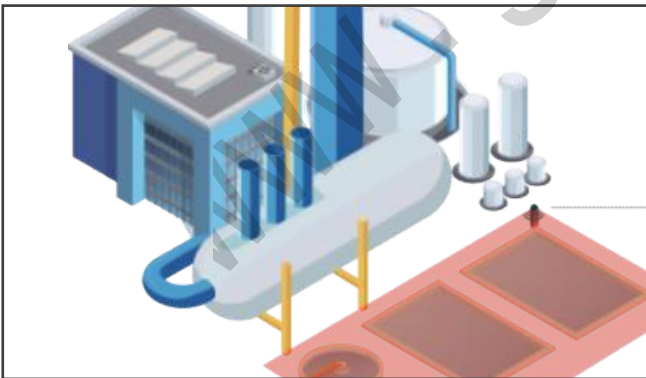
Application field



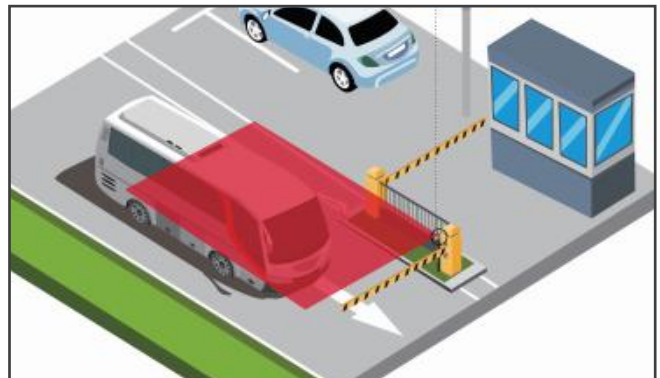
Protect people in narrow aisle warehouses



Boarding bridge anti-collision system



Liquid level detection



Classify vehicles

科技，绘见未来

TECHNOLOGY, SEE THE FUTURE

-  Company address: Room 301-260, Building 6, No. 18,
Kelin Road, Tianhe District, Guangzhou
-  Sales Hotline: +86 18922155361 +86 13713346108
-  Email:sales1@cyndar.net
-  Chinese website:www.gzcyndar.cn
English website : www.gzcyndar.com