

CE30-A is one of the Planar array IR LiDAR in our CE30 series. It is based on ToF principle and specializes in obstacle avoidance with its advance algorithm and customizable ROI (Region of Interest). The nearest object inside ROI would be represented as a single-point polar coordinates and transferred by CAN-BUS cable. Absence of mechanical rotating component gives CE30-A higher reliability and stability than other single-point scanner.



### Features

- Complete solid-state LiDAR
- IP65 enclosure level
- Obstacle avoidance mode
- Multiple interfaces, CAN-BUS, Ethernet

### Applications

- AGV/Robot obstacle avoidance
- Subway/elevator secure door warning

## ■ Technical specifications

Parameters		Standard version	Long-distance version
Product performance	Detection range <sup>1</sup>	0.1-4m@90% reflectivity 0.1-1.5m@10% reflectivity	0.1-7.5m@90% reflectivity 0.1-2.5m@10% reflectivity
	Accuracy <sup>2</sup>	±3cm (within 4m), ±6cm (4m and further)	
	Distance resolution	1cm	
	Pixel resolution	320*24	
	Frame rate	20Hz	
	Ambient light immunity	60Klux	
	Operation temperature	0~50°C	
	Enclosure rating	IP65	
Optical parameters	Light source	LED	
	Central wavelength	850nm	
	Photobiological safety	Exemption level (EN62471)	
	FoV <sup>3</sup>	132°*9°	
Electrical parameters	Supply voltage	DC 12 V±5% (≥2A)	
	Average current	≤500mA	≤670mA
	Power consumption	≤6W	≤8W
	Communication interface	CAN/TCP	
Others	Dimension	79mm*47mm*50mm (L*W*H)	
	Enclosure material	Aluminum alloy	

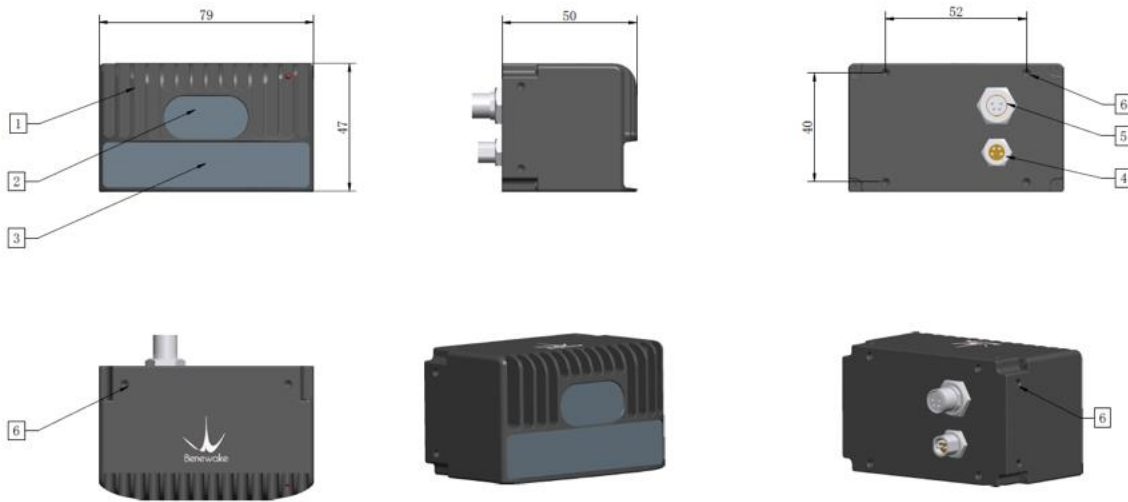
1 Ambient light doesn't affect CE30-A's detection range. Please refer to 'Benewake CE30-A user manual' for detailed information.

2 Accuracy is measured with white board (90% reflectivity) and will be different in the case of different reflectivity or light sensitivity.

3 FoV (Field of View), the horizontal angle is different with vertical angle. The FoV listed in the parameters table is the horizontal angle, the bigger one.

	Storage temperature	-30~70°C
	Weight	219g
	Cable length	100cm

■ Product dimensions



- 1. Shell
- 2. Receiving panel (working area)
- 3. Emitting panel (working area)
- 4. Power supply/CAN-BUS (M8 aerial socket)
- 5. Ethernet port (M8 aerial socket)
- 6. Equipment installing hole (M3)

Figure 1 CE30-A dimension figure (Unit: mm)

Considering all kinds of needs, CE30-A is capable with two communication interfaces: CAN-BUS and Ethernet. Each one of two has a connector on CE30-A. Note that the CAN-BUS connector is also power supply.

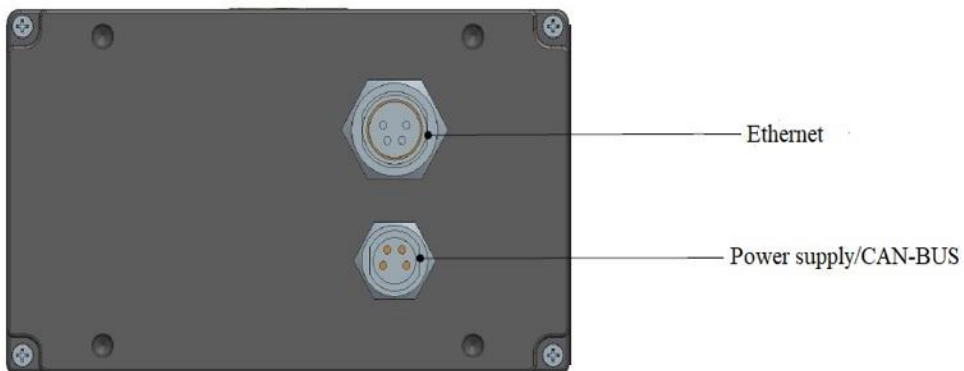


Figure 2 Diagram of CE30-A's connectors

The two interfaces can work together or separately. Check PIN definitions of connectors in the table below.

Table 1 Definition of CE30-A's CAN-BUS pins

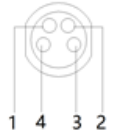
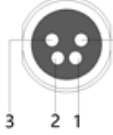
Diagram	PIN number	PIN definition
	1	CAN_L
	2	CAN_H
	3	GND
	4	12V

Table 2 Pin definition of CE30-A's TCP connector

Diagram	PIN number	PIN definition
	1	ETH_RX_P
	2	ETH_RX_N
	3	ETH_TX_P
	4	ETH_TX_N

## ■ Obstacle avoidance mode

The obstacle avoidance mode of CE30-A is especially developed for the application of robot's or AGV's obstacle avoidance. In this mode, CE30-A will select the most critical obstacle and upload its distance information to the robot or AGV.

The principle of the obstacle selection is as follows: CE30-A selects the nearest obstacle to LiDAR. Then it gathers detecting and computing resources, to calculate the azimuth and the projected distance of the obstacle more precisely.

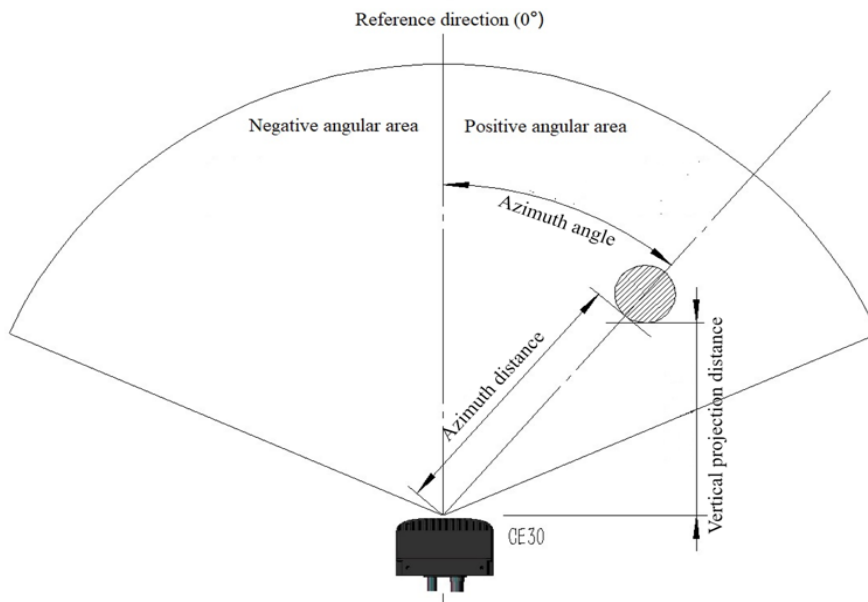


Figure 3 Diagram of obstacle avoidance mode

Among them, azimuth represents the angular deviation between the obstacle and the central line of the LiDAR's HFOV (0 for central line, negative for left side and positive for right side) and the degree of trajectory deflection required to avoid the obstacle.

Projected distance represents the projected distance from the obstacle to the robot (the robot is square at default and LiDAR is installed on the front surface of the robot). It also indicates the emergence level of avoiding the obstacle.

What's more, to improve the customer experience, CE30-A has released the function of changing the parameters of ROI. The ROI can be set up in the obstacle avoidance mode. Once the ROI is set, though the detection range is the same, only the information of the obstacles inside the ROI will be reported to the robot.

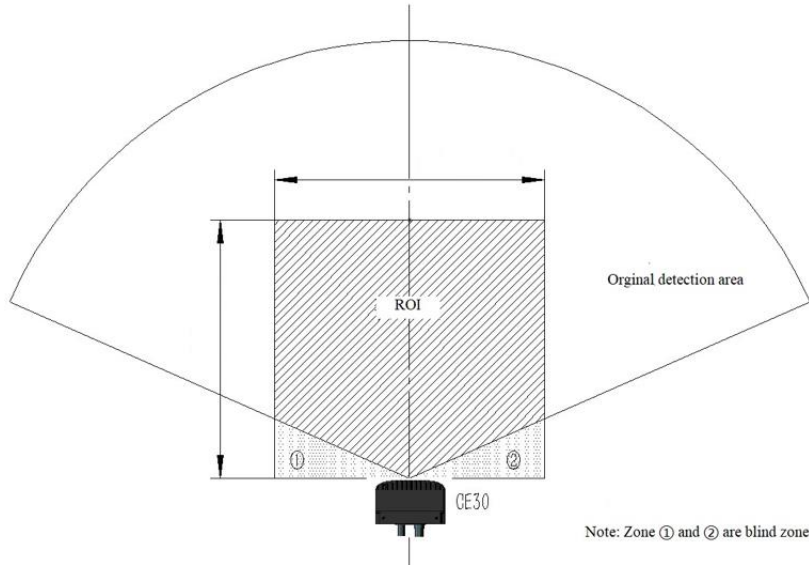


Figure 4 Schematic diagram of ROI

Please refer to 'Benewake CE30-A user manual' for more detailed information about ROI.

### ■ Configurable parameters

In order to meet the needs of actual scenarios, CE30-A opens some common parameters' configuration. By configuring these parameters, CE30-A is more suitable for use scenarios.

Table 3 Configurable parameters of CE30-A

Configurable parameters	Description	Default
Output switch	Enable or disable the output with command	Enabled
Frame rate	Frame rate could be configured by related command.	20Hz
ROI	Set the depth and width of ROI	/

Note: More configuration parameters and command could be found in the user manual.

#### Benewake(Beijing) Co., Ltd.

ADDR: No.28 Xinxi Road, Haidian District, Beijing, China

Tel: +86-010-57456983

Email: bw@benewake.com (Company)

support@benewake.com (Technical support)

