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YDLIDAR GS5
DATA SHEET

www.ydlidar.com

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1 PRODUCT OVERVIEW

YDLIDAR GS5 is a Linear array solid LiDAR (hereinafter referred to as GS5) developed by EAI team. Based on the principle of Triangulation, it is equipped with related optics, electricity, and algorithm design, to achieve 60 degrees high-precision laser distance measurement, and output point cloud data of the scanning environment. It can be used for robot obstacle avoidance, path planning, etc.

1.1 Product Features

- High accuracy, stable performance
- High resolution of ranging angle, up to 0.54 degrees
- Good obstacle avoidance effect, the smallest object with a diameter of 6mm can be detected
- Wide detection range, no blind zone in combination, FOV up to 85 degrees
- Small detection range blind area, detectable distance is 70mm~1000mm
- 10000h Service life

1.2 Applications

- Robot obstacle avoidance
- Obstacle avoidance of smart equipment
- Navigation and obstacle avoidance of home service robots/vacuum clean robots

1.3 Installation and Dimensions

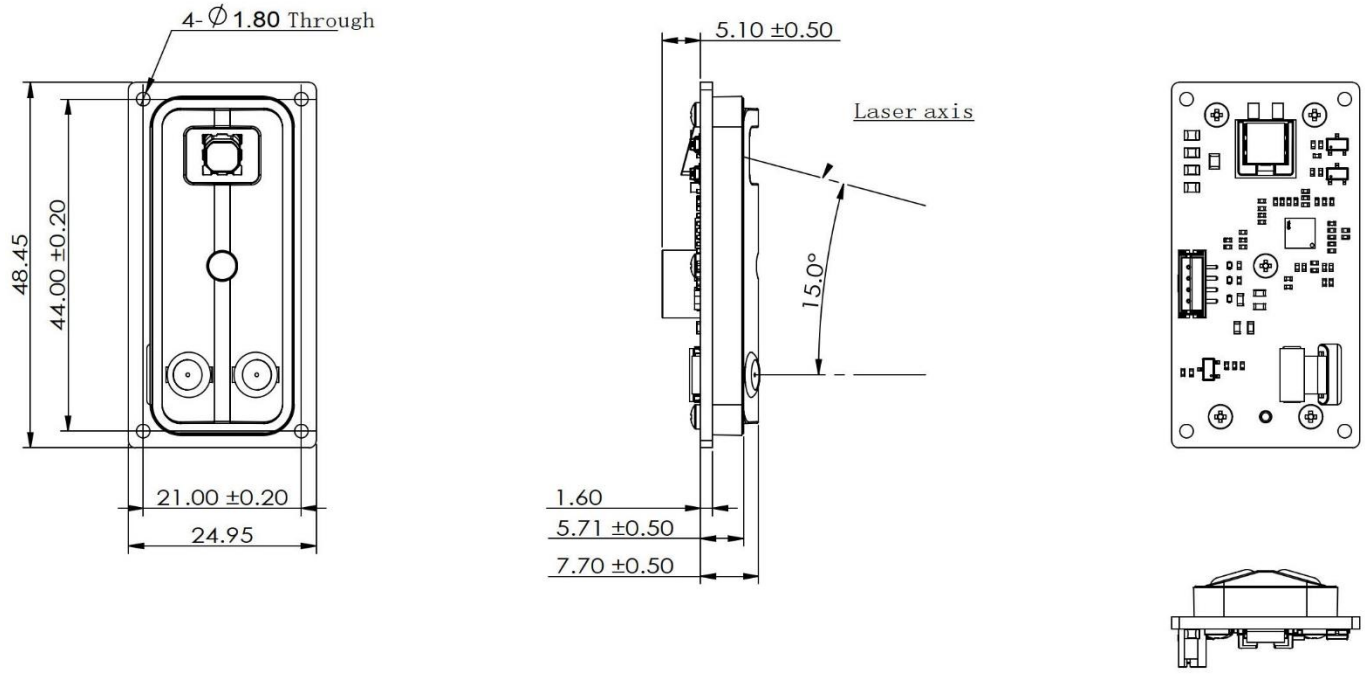


FIG 1 YDLIDAR GS5 INSTALLATION DIMENSION (UNIT:MM)

2 SPECIFICATIONS

2.1 Performance Parameter

CHART 1 YDLIDAR GS5 PERFORMANCE PARAMETER

Item	Min	Typical	Max	Unit	Remarks
Ranging frequency	7.5	/	28	Hz	Indicates the ranging times per second, and the frequency changes in real time according to the scene
Ranging distance	70	/	1000	mm	80% reflectivity
Field of view	/	85	/	Deg	/
Angle resolution	/	0.54	/	Deg	/
Relative error	/	≤3%	/	/	70mm≤Distance < 300mm
	/	≤5%	/	/	300mm≤Distance < 600mm
	/	≤8%	/	/	600mm≤Distance < 1000mm
Sunlight resistant	/	/	25000	Lux	500mm testing distance
Life-time	10000	/	/	h	/

Note 1: It is factory FQC standard value, 80% reflectivity material object.

Note 2: The relative error value indicates the accuracy of the Lidar measurement. Relative error (mean value) = (average measured distance-actual distance)/actual distance *100%, sample size: 100pcs.

Note 3: Lidar is a precision device, please avoid using Lidar under high or low temperature or strong vibration situation, the relative error parameter index will be relatively larger, and it may exceed the typical value.

2.2 Electrical Parameter

CHART 2 YDLIDAR GS5 ELECTRICAL PARAMETER

Item	Min	Typical	Max	Unit	Remarks
Supply voltage	3.2	3.3	3.4	V	Excessive voltage might damage the Lidar while low affect normal performance
Start-up current	/	450	/	mA	/
Working current	/	200	/	mA	/

2.3 Interface Definition

The structural dimension of GS5 is 48.5*25*13.5mm.

GS5 provides ZH1.5-4P receptacle, which has system power supply and data communication interface.

CHART 3 YDLIDAR GS5 INTERFACE DEFINITION

Pin	Type	Description	Defaults	Range	Remarks
VCC	Power supply	Negative	3.3V	/	/
TX	Output	System serial port output	/	/	Data stream: LiDAR→Peripherals
Rx	Input	System serial port Input	/	/	Data stream: Peripherals→LiDAR
GND	Power supply	Positive	0V	0V	/

Note: GS5 cable sequence uses the first cable as GND.

2.4 Data Communication

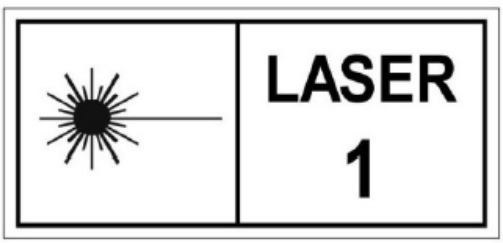
With a 3.3V level serial port (UART), users can connect the external system and the product through the physical interface. After that, it can obtain the real-time scanned point cloud data, device information as well as device status, and can set the working mode of the equipment, etc. The communication protocol of parameters are as follows:

CHART 4 YDLIDAR GS5 SERIAL SPECIFICATION

Item	Min	Typical	Max	Unit	Remarks
Baud rate	/	921600	/	bps	8-bit data bit,1 stop bit, no parity
High signal level	2.4	3.3	3.4	V	Signal voltage>2.4V is high signal
Low signal level	0	0	0.5	V	Signal voltage<0.5V is low signal

2.5 Optical Characteristic

The infrared point pulse laser used in GS5 can ensure the safety of human and pet. The lidar has passed testing and conformed to Class I, 21 CFR 1040.10 and 1040. 11 safety level, except for IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.



The laser and optical lens finish the transmission and reception of the laser signal to achieve high-frequency ranging while working. To ensure system ranging performance, please keep the laser and optical lens clean. The detailed optical parameters are as follows:

CHART 5 YDLIDAR GS5 LASER OPTICAL PARAMETERS

Item	Min	Typical	Max	Unit	Remarks
Laser wavelength	840	850	860	nm	GS5-x850x01 Infrared band
	798	808	818	Nm	GS5-x808x01 Infrared band
Laser power	/	200	/	mW	/
FDA	 Class I IEC60825-1				

Note: The personal adjustment or reassembly of the Lidar may result inhazardousradiation exposure.

2.6 Others

CHART 6 YDLIDAR GS5 OTHERS

Item	Min	Typical	Max	Unit	Remarks
Operating temperature	-10	25	50	℃	Long-term working in a high temperature environment will reduce the life span
Storage temperature	-30	25	70	℃	/
weight	/	11	/	g	N.W. (Without cable)

3 REVISE

Date	Version	Content
2023-07-17	1.0	The 1st release