YDLIDAR

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G6
DATA SHEET



www.ydlidar.com

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1 PRODUCT OVERVIEW

YDLIDAR G6 is a 360 degrees 2D LiDAR (hereinafter referred to as G6) developed by EAI team. Based on the principle of Triangulation, it is equipped with related optics, electricity, and algorithm design to achieve high-frequency and high-precision distance measurement. The mechanical structure rotates 360 degrees to continuously output the angle information as well as the point cloud data of the scanning environment while ranging.

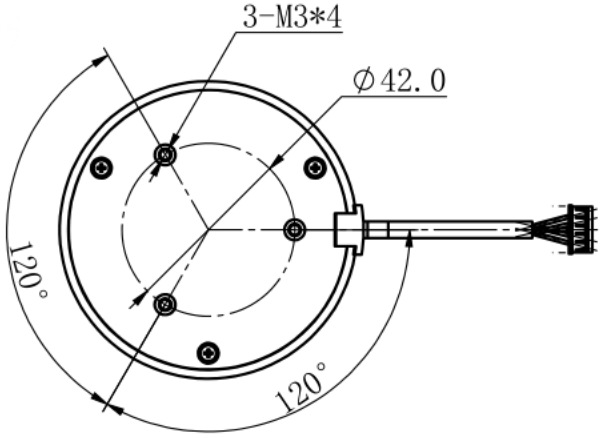
1.1 Product Features

- 360 degrees scan ranging
- High accuracy, stable performance
- Wide measuring range
- Strong resistance to ambient light interference
- Industrial grade brushless motor drive, stable performance
- Class I eye safety
- 360 degrees omnidirectional scanning and 5-12Hz frequency
- Using optical and magnetic fusion technology to realize wireless communication and wireless power supply
- High-speed ranging, up to 18000Hz frequency

1.2 Applications

- Robot navigation and obstacle avoidance
- Industrial automation
- Regional security
- Intelligent transportation
- Environmental scanning and 3D reconstruction
- Digital multimedia interaction
- Robot ROS teaching and research

1.3 Installation and Dimensions



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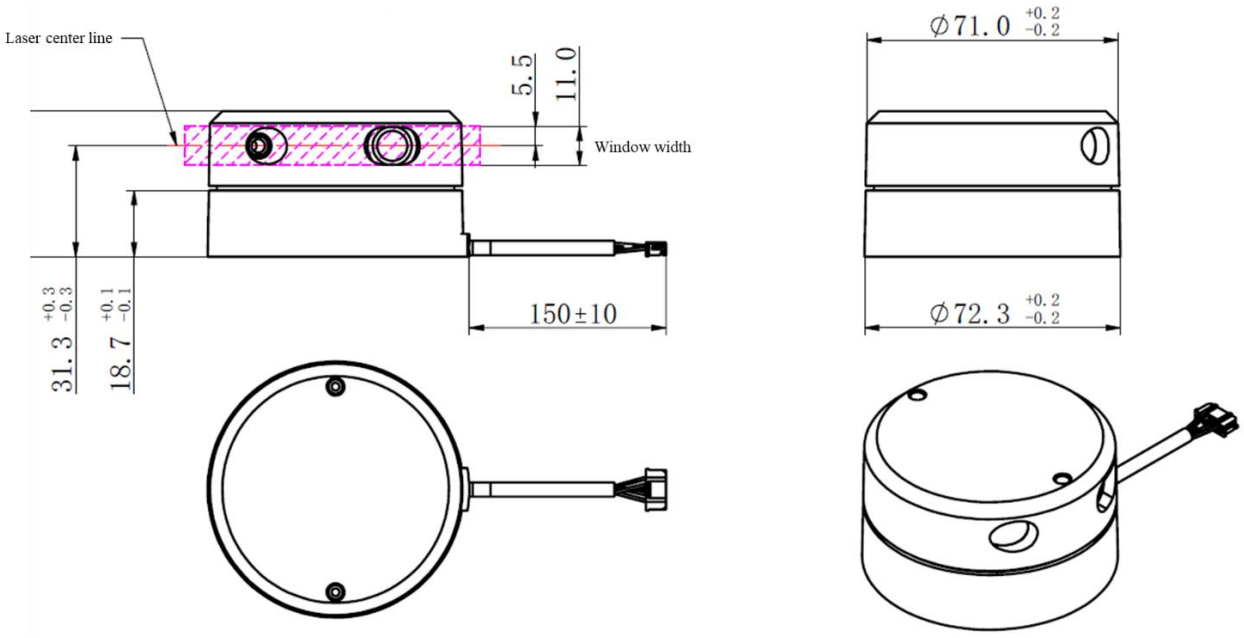


FIG 1 YDLIDAR G6 INSTALLATION&MECHANICAL SIZE (UNIT: MM)

2 SPECIFICATIONS

2.1 Product Parameter

CHART 1 YDLIDAR G6 PRODUCT PARAMETER

Item	Min	Typical	Max	Unit	Remarks
Ranging frequency	10000	18000	18000	Hz	/
Motor frequency	5	7	12	Hz	/
Ranging distance	0.12	/	16	m	Ranging frequency =10KHz (to be customized), 80% Reflectivity
	0.26	/	16	m	Ranging frequency =16KHz (to be customized), 80% Reflectivity
	0.28	/	16	m	Ranging frequency =18KHz, 80% Reflectivity
Field of view	/	0-360	/	Deg	/
Systematic error	/	2	/	cm	Range≤1m
Relative error	/	2.0%	/	/	1m<Range ≤8m
Tilt angle	0.25	1	1.75	Deg	/
Angle resolution	0.1 (Frequency @5Hz)	0.14 (Frequency @7Hz)	0.24 (Frequency @12Hz)	Deg	frequency of sample=1800Hz

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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 G6 ELECTRICAL PARAMETER

Item	Min	Typical	Max	Unit	Remarks
Supply voltage	4.8	5.0	5.2	V	Excessive voltage might damage the Lidar while low affect normal performance
Startup current	1000	/	/	mA	Instantaneous peak current at start-up
Sleeping current	/	/	50	mA	System sleep, motor stops
Working current	/	350	500	mA	System work, motor speed=7Hz

2.3 Interface Definition

G6 provides PH2.0-5P plug for system power supply and data communication.

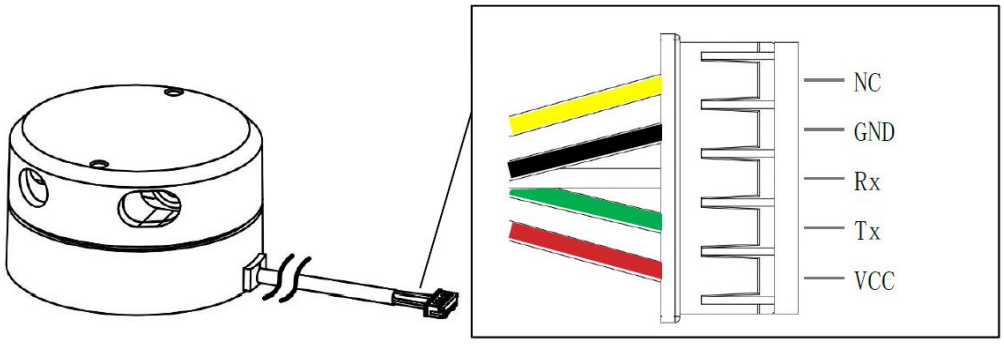


FIG 2 YDLIDAR G6 INTERFACES

CHART 3 YDLIDAR G6 INTERFACE DEFINITION

Pin	Type	Description	Defults	Range	Remarks
VCC	Power supply	Positive	5V	4.8V-5.2V	/
Tx	Output	System serial port output	/	/	Data stream: LiDAR→Peripherals
Rx	Input	System serial port Input	/	/	Data stream: Peripherals→LiDAR
GND	Power supply	Negative	0V	0V	/
NC	Reserve	Reserved pin	/	/	/

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2.4 Data Communication

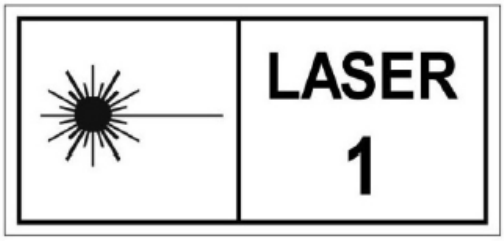
With a 3.3V level serial port (UART), users can connect the external system and the product through the physical interface. After that, you can obtain the real-time scannedpoint cloud data, device information as well as device status. The communication protocol of parameters are as follows:

CHART 4 YDLIDAR G6 SERIAL SPECIFICATION

Item	Min	Typical	Max	Unit	Remarks
Baud rate	/	512000	/	bps	8-bit data bit,1 stop bit, no parity
High signal level	2.4	3.3	3.5	V	/
Low signal level	0	0.3	0.6	V	/

2.5 Optical Characteristic

The infrared point pulse laser used in G6 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 G6 LASER OPTICAL PARAMETERS

Item	Min	Typical	Max	Unit	Remarks
Laser wavelength	775	792	800	nm	Infrared band
Laser power	/	3.5	6	mw	Average power
FDA	Class I IEC60825-1				

2.6 Polar Coordinate System Definition

In order to facilitate secondary development, G6 internally defines a polar coordinate system. The polar coordinates of the system take the center of the rotating core of G6 as the pole, and the specified Angle is positive clockwise (top view). The zero Angle is located in the direction of the outlet of the G6 PH2.0-5P interface line (top view). Due to individual differences, there is a deviation of plus or minus 3 degrees, as shown in the figure:

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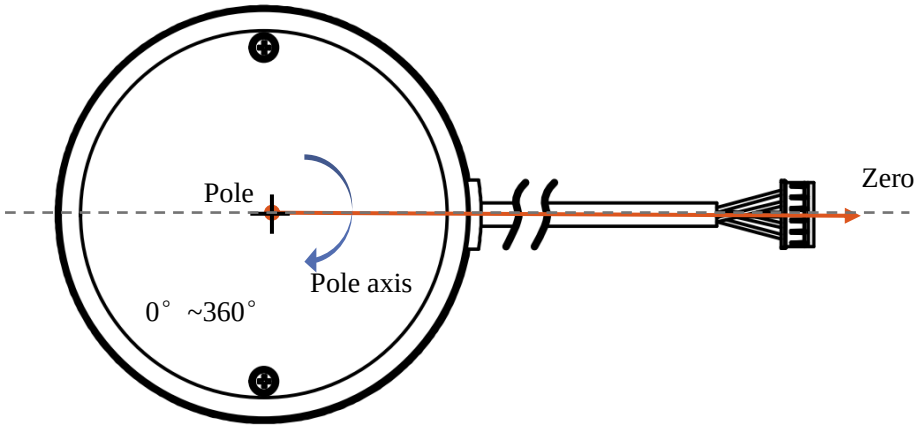


FIG 3 YDLIDAR G6 POLAR COORDINATE SYSTEM DEFINITION

2.7 Others

CHART 6 YDLIDAR G6 OTHERS

Item	Min	Typical	Max	Unit	Remarks
Operating temperature	0	20	50	℃	Long-term working in a high temperature environment will reduce the life span
Storage temperature	-10	/	60	℃	/
Lighting environment	0	550	2000	Lux	For reference only
weight	/	214	/	g	N.W.

3 DEVELOPMENT AND SUPPORT

G6 provides a wealth of software interfaces, which can realize the motor enabling control, speed control, range unit enabling control and output control of the system. On this basis, users can also implement the power control and scan control purpose.

Also, the 3D model of G6 is disclosed. YDLIDAR provides the graphics debugging Workstation under Windows, as well as the corresponding SDK and ROS development kit to users, which could be downloaded from our website: https://www.ydlidar.com/.

In order to facilitate users' development, G6 development manual, SDK development manual and ROS user manual are also provided. Please download them from our website.

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4 REVISE

Date	Version	Content
2018-11-14	1.0	Compose a first draft
2019-02-15	1.1	Modify statistical Error, Change the footer to 2015-2019 EAI
2019-05-06	1.2	Modify document code, specification parameters and page number
2019-07-02	1.3	Modify the blind distance, change the accuracy of 8-16m and 16-25m
2019-10-15	1.4	Adjust the color of the NC line and adjust the starting current (same as G4)
2020-01-07	1.5	Adjust the accuracy and wavelength of the G6, increase the pitch Angle, optimize the expression of the application scene
2021-06-29	1.6	Modify current, temperature, power and other relevant parameters

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