

G2 DATA SHEET



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1 PRODUCT OVERVIEW

YDLIDAR G2 is a 360 degrees 2D LiDAR (hereinafter referred to as G2) 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
- Stable performance and high accuracy
- Wide measuring range
- Strong resistance to ambient light interference
- Industrial grade brushless motor drive, stable performance
- Laser power meets Class I laser safety standards
- 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 5000Hz 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

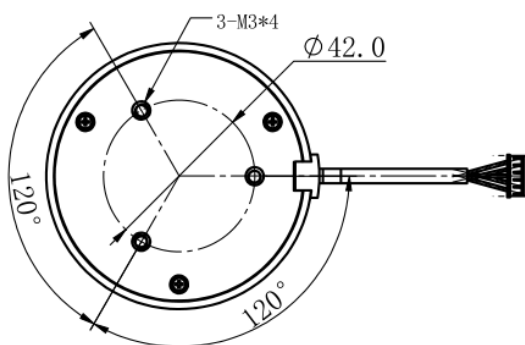


FIG 1 YDLIDAR G2 INSTALLATION SIZE (UNIT: MM)

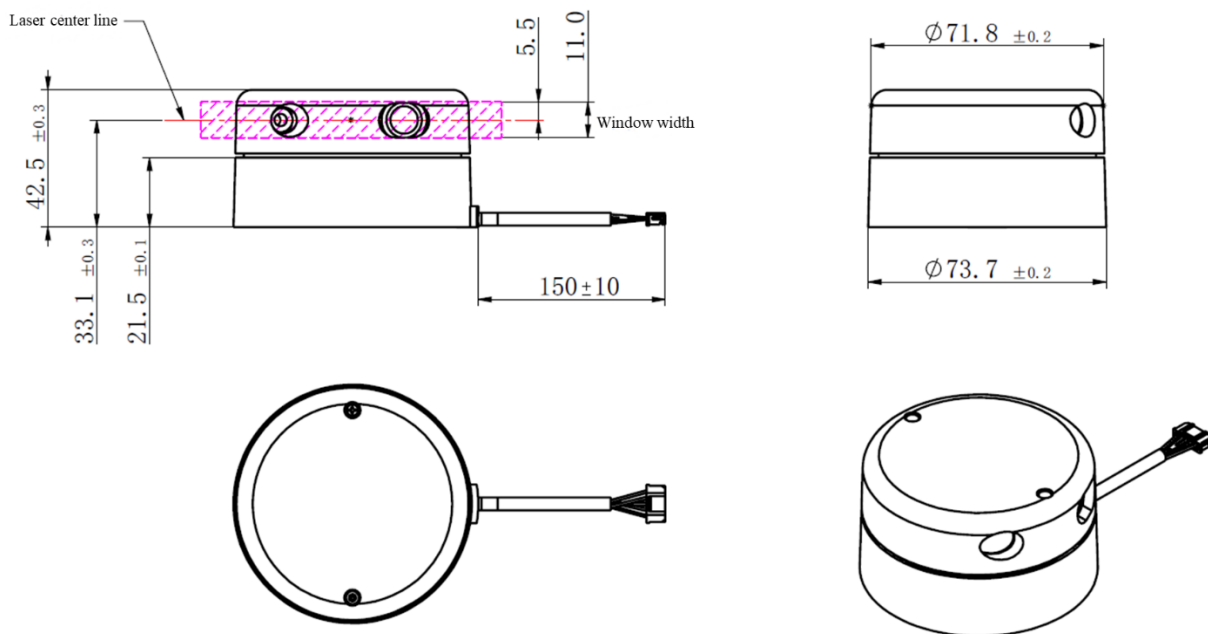


FIG 2 YDLIDAR G2 MECHANICAL SIZE (UNIT: MM)

2 SPECIFICATIONS

2.1 Performance Parameter

CHART 1 YDLIDAR G2 PERFORMANCE PARAMETER

Item	Min	Typical	Max	Unit	Remarks
Ranging frequency	/	5000	/	Hz	Ranging 5000 times per second
Motor frequency	5	7	12	Hz	Software control, Factory setting 7Hz
Ranging distance	0.12	/	16	m	80% Reflectivity
Field of view	/	0-360	/	Deg	/
Systematic error	/	2	/	cm	Range ≤ 1 m
Relative error	/	2.0%	/	/	$1\text{m} < \text{Range} \leq 8\text{m}$
Luminous intensity range	0	/	1023	/	laser intensity
Tilt angle	0.25	1	1.75	Deg	Laser tilt angle
Angle resolution	0.36 (Frequency @5Hz)	0.504 (Frequency @7Hz)	0.864 (Frequency @12Hz)	Deg	/

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 G2 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

G2 provides PH2.0-5P plug interface for system power supply and data communication.

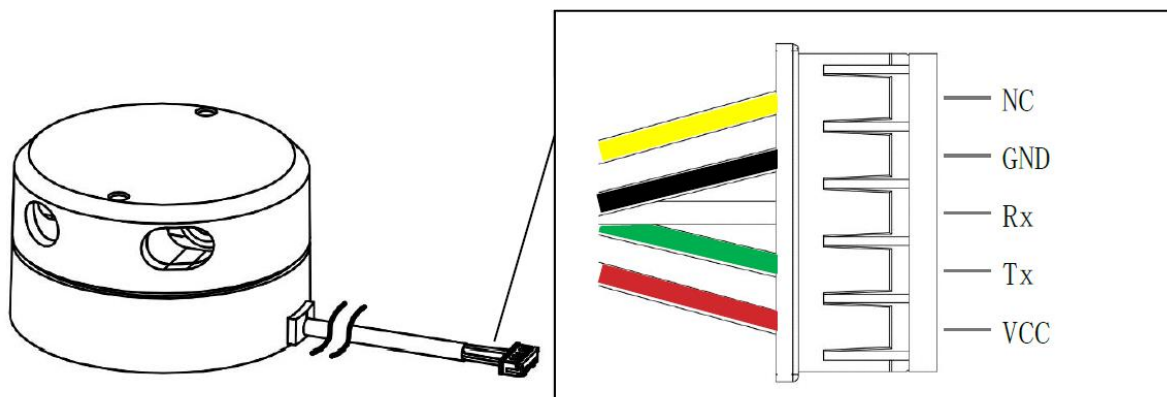


FIG 3 YDLIDAR G2 INTERFACES

CHART 3 YDLIDAR G2 INTERFACE DEFINITION

Pin	Type	Description	Defaults	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	/	/	/

2.4 Data Communication

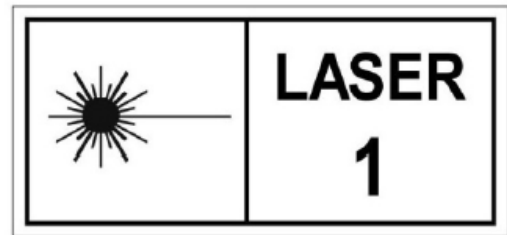
With a 3.3V level serial port (UART), users can connect the external system and the product through the physical interface. After that, you can obtain the real-time scannedpoint cloud data, device information as well as device status. The communication protocol of parameters are as follows:

CHART 4 YDLIDAR G2 SERIAL SPECIFICATION

Item	Min	Typical	Max	Unit	Remarks
Baud rate	/	230400	/	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 G2 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 G2 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				

Note: The personal adjustment or reassembly of the Lidar may result in hazardous radiation exposure.

2.6 Polar Coordinate System Definition

In order to facilitate secondary development, G2 internally defines a polar coordinate system. The polar coordinates of the system take the center of the rotating core of G2 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 G2 PH2.0-5P interface line. Due to individual differences, there is a deviation of plus or minus 3 degrees, as shown in the figure:

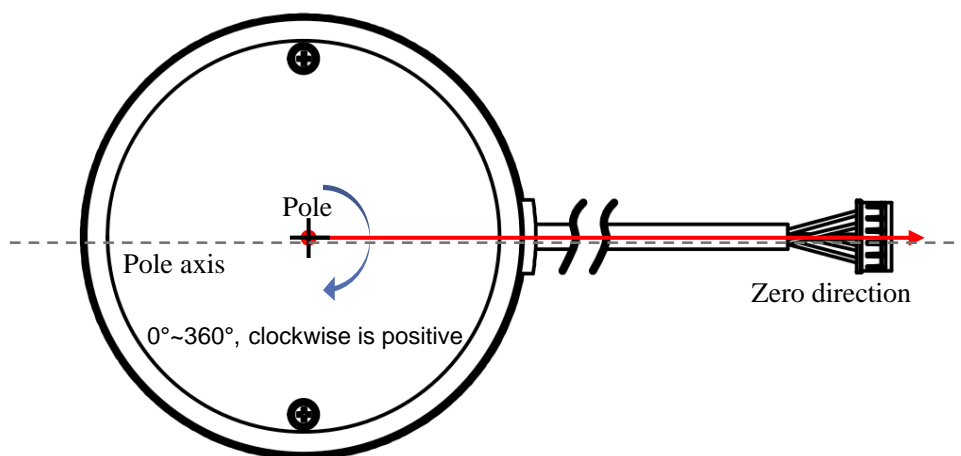


FIG 4 YDLIDAR G2 POLAR COORDINATE SYSTEM DEFINITION

2.7 Others

CHART 6 YDLIDAR G2 OTHERS

Item	Min	Typical	Max	Unit	Remarks
Operating temperature	0	20	50	°C	Long-term working in a high temperature environment will reduce the life span
Storage temperature	-10	/	60	°C	/
Lighting environment	0	550	2000	Lux	For reference only
weight	/	185	/	g	N.W.

3 REVISE

Date	Version	Content
2019-09-03	1.0	Compose a first draft
2020-01-07	1.1	Optimize the presentation of application scenarios and adjust the accuracy
2020-11-18	1.2	Correct the Startup current value
2021-06-23	1.3	Modify current, temperature, power and other relevant parameters