



YDLIDAR TG30 DATASHEET

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OVERVIEW

YDLIDAR TG30 is a 360-degree two-dimensional rangefinder (hereinafter referred to as TG30) developed by YDLIDAR team. Based on the principle of TOF, 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.

Product Features

- 360 degree omnidirectional scanning ranging distance measurement
- Small distance error, stable performance and high accuracy
- Ranging distance is no less than 30 m
- Strong resistance to ambient light interference
- Industrial grade brush-less motor drive for stable performance
- Laser power meets Class I laser safety standards
- 5-12Hz adaptive scanning frequency (support customization)
- Photomagnetic fusion technology to achieve wireless communication, wireless power supply
- Ranging frequency up to 20kHz (support customization)

Applications

- Robot navigation and obstacle avoidance
- Robot ROS teaching and research
- Regional security
- Environmental scanning and 3D reconstruction
- Commercial robot /Robot vacuum cleaner

Installation and dimensions

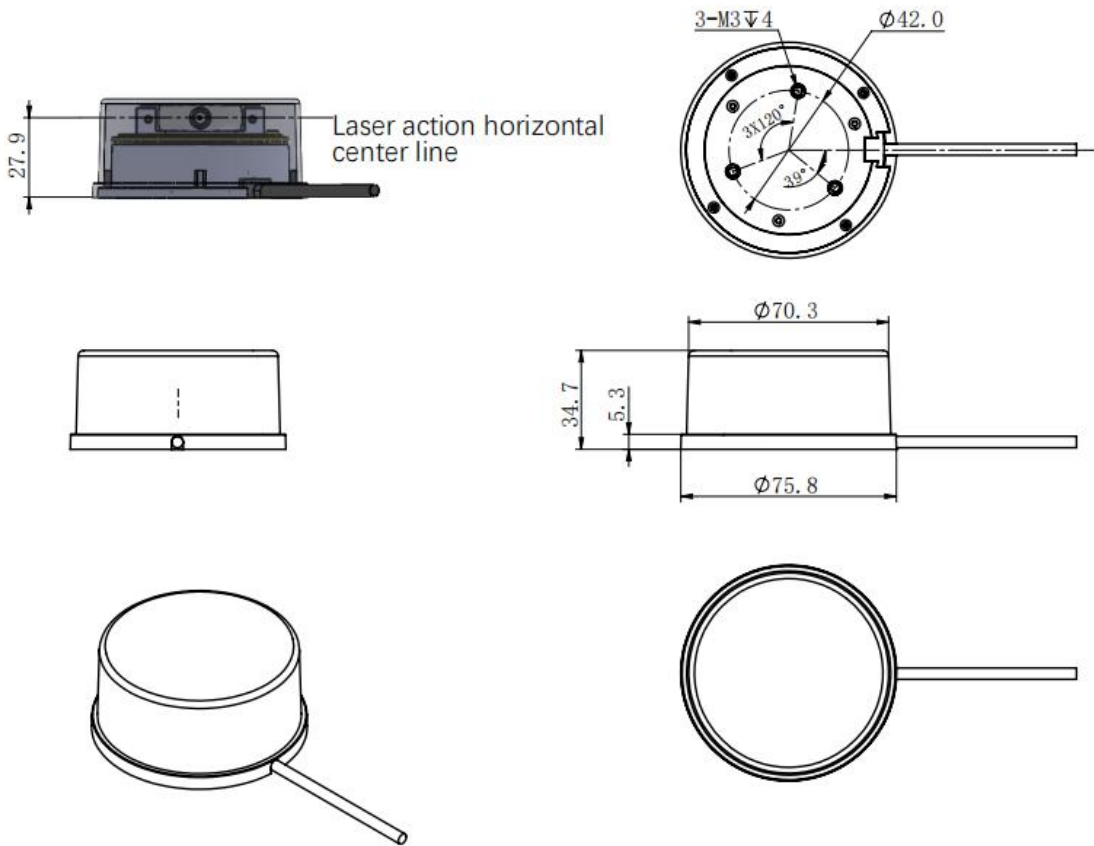


FIG1 YDLIDAR TG30 INSTALLATION&MECHANICAL SIZE

SPECIFICATIONS

Product Parameter

CHART1 YDLIDAR TG30 PRODUCT PARAMETER

Item	Min	Typical	Max	Unit	Remarks
Ranging frequency	4000	10000	20000	Hz	10000 times per second
Motor frequency	5	7	12	Hz	Software control
Ranging distance	0.10	-	30	m	80% reflectivity
Scanning angle	-	0~360	-	Deg	-
Ranging resolution		± 4		cm	
Angle resolution	0.09	0.13	0.22	Deg	Ranging frequency=18k

Electrical Parameter

CHART2 YDLIDAR TG30 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
Voltage ripple	0	50	100	mV	Excessive ripple affect normal performance
Starting current	450	500	550	mA	Higher current required at start-up
Sleeping current	-	<50	-	mA	System sleep, motor stops
Working current	400	450	480	mA	System work, motor rotation

Interface Definition

TG30 provides 2 interfaces :USB Type-C and PH2.0-5P female connector both with system power and data communication function.

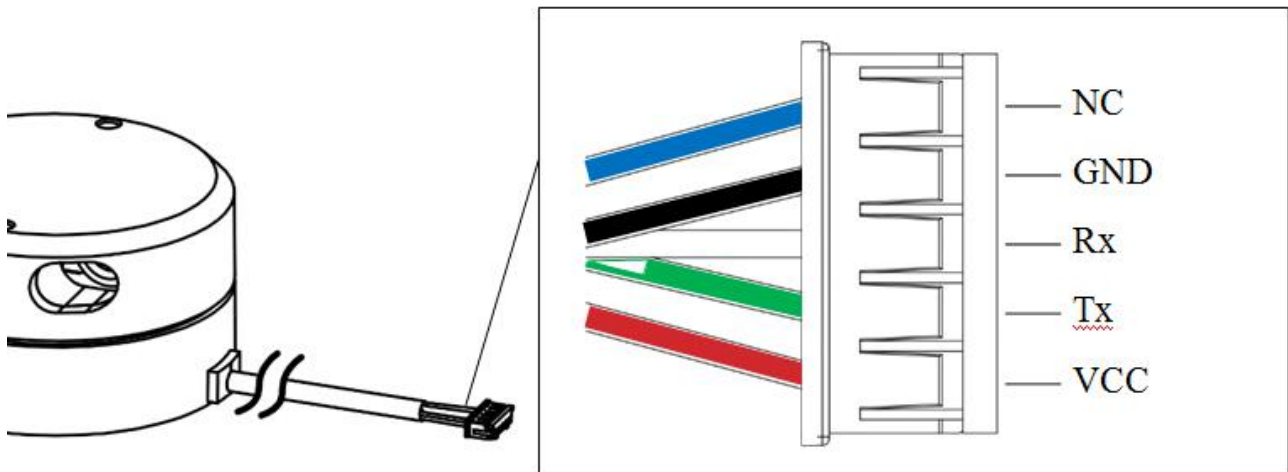


FIG2 YDLIDAR TG30 INTERFACES

CHART3 YDLIDAR TG30 INTERFACE DEFINITION

Pin	Type	Description	Defaults	Range	Remarks
VCC	Power Supply	Positive	5V	4.8V~5.2V	-
Tx	Output	System serial output	-	-	Data stream: Lidar → Peripherals
Rx	Input	System serial port Input	-	-	Data stream: Peripherals → Lidar
GND	Power Supply	Negative	0V	0V	-
NC	-	Reserved pin	-	-	-

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 scanned point cloud data, device information as well as device status. The communication protocol of parameters are as follows:

CHART4 YDLIDAR TG30 SERIAL SPECIFICATION

Item	Min	Typical	Max	Unit	Remarks
Baud rate	-	512000	-	bps	8-bit data bit, 1 stop bit, no parity
High Signal Level	1.8	3.3	3.4	V	Signal voltage > 1.8V
Low signal Level	0	0	0.5	V	Signal voltage < 0.5V


Motor control

The TG30 has its own motor drive with motor speed control function and a command interface instead of a hardware interface for motor control. Please refer to the development manual of this product for details.

Optical Characteristic

TG30 uses an infrared point pulsed laser that meets FDA Class I laser safety standards. 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:

CHART5 YDLIDAR TG30 LASER OPTICAL PARAMETERS

Item	Min	Typical	Max	Unit	Remarks
Laser wavelength	895	905	915	nm	Infrared band
Laser power	-	75	85	W	Peak power
FDA	 Class I				

Polar coordinate system definition

In order to facilitate secondary development, TG30 internally defines a polar coordinate system.

Pole: the center of the rotating core of the TG30;

Positive direction: clockwise;

Zero angle: The direction of the outlet of the TG30 PH2.0-5P interface cable is shifted 180° clockwise (top view)

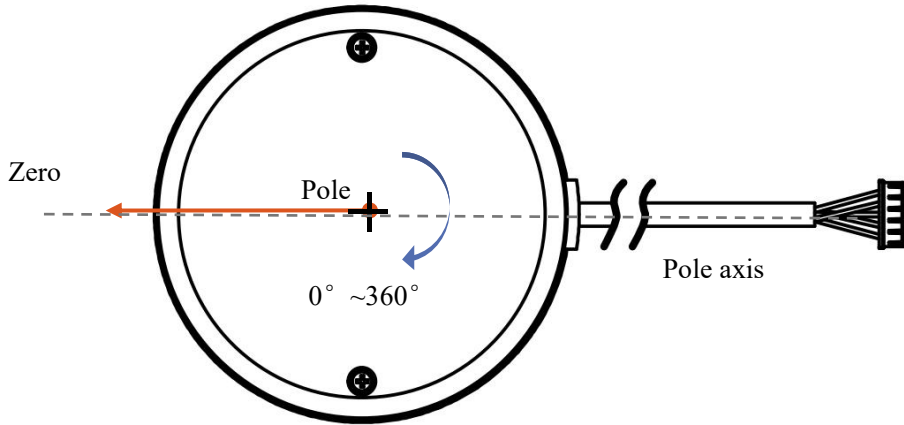


FIG3 YDLIDAR TG30 POLAR COORDINATE SYSTEM DEFINITION

Note: When the Lidar is assembled on the machine, the deviation of the assembly may cause slight difference in the consistency of the zero position. For the convenience of use, we provide a zero calibration software, which can customize the zero direction and assemble to the machine. The Lidar is calibrated twice. For details, please refer to the instruction manual.

Others

CHART6 YDLIDAR TG30 OTHERS

Item	Min	Typical	Max	Unit	Remarks
Operating temperature	0	20	50	°C	Long-term work in high temperature environment will reduce life expectancy
Lighting environment	0	70000	100000	Lux	For reference only
weight	-	214	-	g	N.W.

Development and support

With a wealth of hardware and software interfaces, TG30 can support motor enable control, speed control, and enable control&output control of the ranging core. Thus, users can also implement the power control and scan control purpose.

Also, the 3D model is open. YDLIDAR provides the graphical debugging client-PointCloud Viewers, together with the corresponding SDK development kit and Ros development kit.

SDK: <https://github.com/YDLIDAR/sdk/tree/TG30>

ROS: https://github.com/YDLIDAR/ydlidar_ros/tree/TG30

Point Cloud Viewers: <http://bit.ly/2XXvyKt>