

YDLIDAR TEA DATA SHEET



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1 PRODUCT OVERVIEW

YDLIDAR TEA is a series of 2D LiDAR (hereinafter referred to as TEA) developed by EAI team. Based on ToF principle, TEA is based on the single-line scanning design and can output 30k point cloud data per second. It adopts 905nm infrared excitation light, with the self-developed signal processing algorithm, to meet the requirement of outdoor application scenarios. TEA also adopts industrial interface design to transmit point cloud data through network protocol, and the dustproof and waterproof of the whole device reaches IP65 level. TEA structure design is compact, easy to integrate, and provides a complete integrated development interface, widely used in robot navigation and obstacle avoidance, environmental scanning and mapping, industrial AGV, assisted driving and other fields.

1.1 Product Features

- High speed range and frequency range of 30kHz
- Ranging repeat of high precision, good consistency
- 300 degrees horizontal view
- Maximum 30Hz scanning frequency can be configured
- Strong resistance to ambient light interference
- IP65 protection level of dustproof and waterproof
- 100M adaptive network interface for data transmission

1.2 Applications

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

1.3 Installation and Dimensions

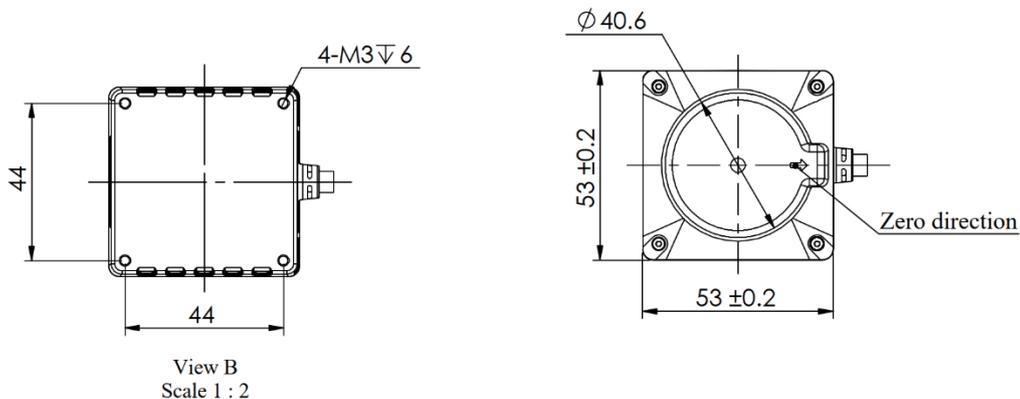


FIG 1 YDLIDAR TEA INSTALLATION DIMENSION (UNIT:MM)

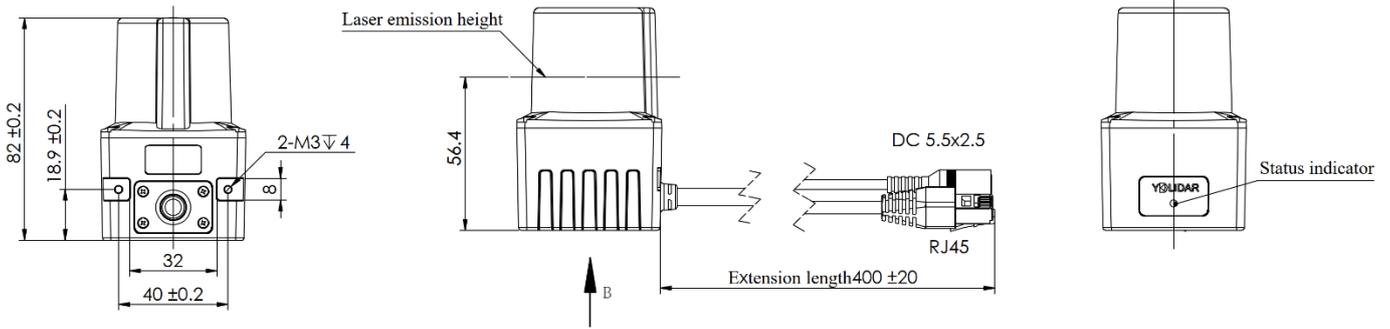


FIG 2 YDLIDAR TEA MECHANICAL DIMENSION (UNIT:MM)

2 SPECIFICATIONS

2.1 Performance Parameter

CHART 1 YDLIDAR TEA PERFORMANCE PARAMETER

| Item | Min | Typical | Max | Unit | Remarks |
|--------------------|------|---------|------|------|-------------------------|
| Ranging frequency | / | 30000 | / | Hz | / |
| Scanning frequency | 10 | 20 | 30 | Hz | Software control |
| Ranging distance | 0.05 | / | 25 | m | 80% reflectivity |
| | 0.05 | / | 10 | m | 10% reflectivity |
| Field of view | / | 300 | / | Deg | / |
| Systematic error | / | / | ±3 | cm | / |
| Angle resolution | 0.12 | 0.24 | 0.36 | Deg | Ranging frequency=30kHz |

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

Note 2: Lidar is a precision device, please avoid using Lidar under high or low temperature or strong vibration situation, the systematic error parameter index will be relatively larger, and it may exceed the typical value.

2.2 Physical Parameters

CHART 2 YDLIDAR TEA PHYSICAL PARAMETERS

| Item | Min | Typical | Max | Unit | Remarks |
|-----------------------|-----|----------|-----|------|--|
| Supply voltage | 9 | 12 | 28 | V | / |
| Operating power | / | 2 | 3 | W | / |
| Operating temperature | 0 | 25 | 50 | °C | / |
| Laser wavelength | 895 | 905 | 915 | nm | / |
| Lighting environment | / | 80000 | / | lux | For reference only, the laser transceiver window cannot be directly facing the strong light source such as the sun |
| Degree of protection | / | IP65 | / | / | / |
| Weight | / | 230 | / | g | N.W. |
| Dimension | / | 53*53*82 | / | mm | / |

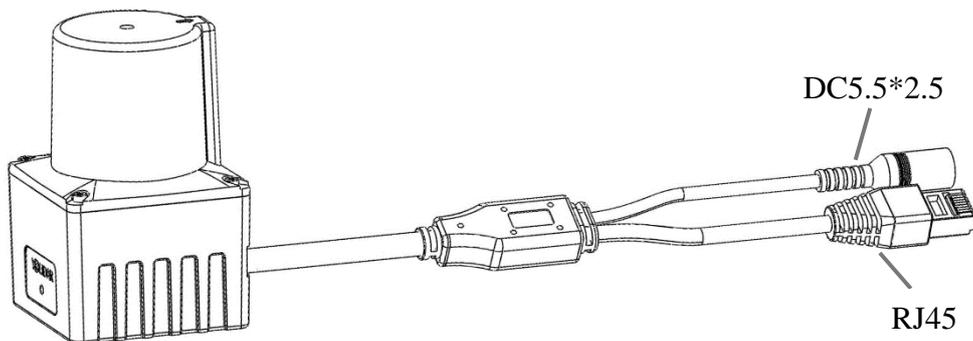
2.3 Default Settings

CHART 3 YDLIDAR TEA DEFAULT SETTINGS

| Item | Default value | Remarks |
|-----------------------|---|----------------|
| Network IP | 192.168.0.11 | configurable |
| Ranging zero | Center point of lidar | unconfigurable |
| Direction of rotation | Clockwise (top view) | unconfigurable |
| Angle zero | Arrow direction on top of protective cover | configurable |
| Indicator light | Steady red: The system is in standby state Steady green: The system is working | unconfigurable |

2.4 Interface Definition

TEA has its own connection cables, and the cable is separated into the network port and the power port by splitting in two. The RJ45 network interface is used for data transmission and supports 10M/100M adaptive network. The DC5.5*2.5 interface for power supply, support wide voltage input (9-28V).



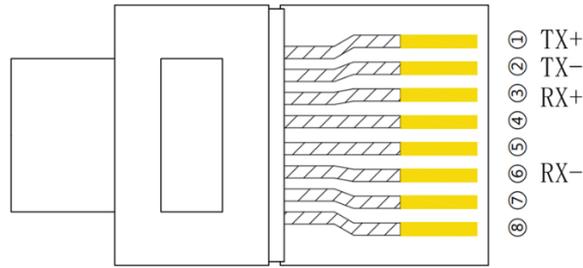
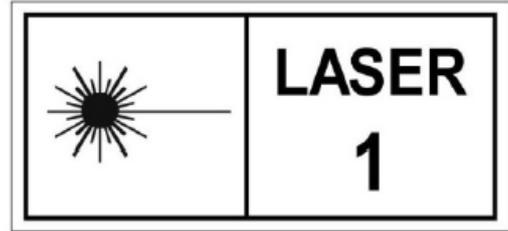


FIG 3 YDLIDAR TEA INTERFACES

2.5 Optical Characteristic

The infrared point pulse laser used in TEA 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. The detailed optical parameters are as follows:

CHART 1 YDLIDAR T-MINI PRO LASER OPTICAL PARAMETERS

| Item | Min | Typical | Max | Unit | Remarks |
|------------------|----------------------|---------|-----|------|---------------|
| Laser wavelength | 895 | 905 | 915 | nm | Infrared band |
| 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, TEA internally defines a polar coordinate system. The polar coordinates of the system take the center of the rotating core of TEA as the pole, and the specified Angle is positive clockwise (top view). The zero Angle is located in the direction of the arrow at the top of the protective cover, as shown in the figure:

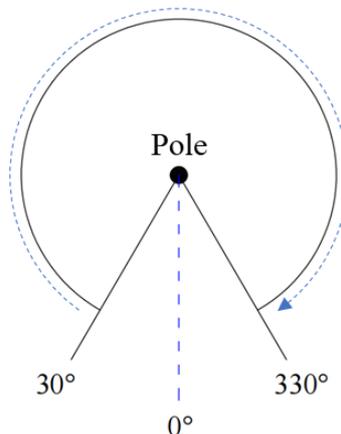


FIG 4 YDLIDAR TEA POLAR COORDINATE SYSTEM DEFINITION

3 DEVELOPMENT AND SUPPORT

TEA 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 TEA 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, TEA development manual, SDK development manual and ROS user manual are also provided. Please download them from [our website](#).

4 REVISION

| Date | Version | Content |
|------------|---------|-----------------|
| 2023-03-14 | 1.0 | The 1st release |