YDLIDAR

T-MINI PRO
DATA SHEET ALPHA

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1 PRODUCT OVERVIEW

YDLIDAR T-mini Pro is a 360 degrees 2D LiDAR (hereinafter referred to as T-mini Pro) developed by EAI team. Based on the principle of ToF, it is equipped with related optics, electricity, and algorithm design to achieve high-precision laser distance measurement, while measuring the distance, the mechanical structure rotates 360 degrees to continuously obtain angle information, thereby realizing 360 degrees scanning distance measurement and outputting point cloud data of the scanning environment.

1.1 Product Features

➢ Dustproof and waterproof
➢ 360 degrees scanning and ranging,6-12Hz scan frequency
➢ Ranging frequency up to 4000Hz
➢ High accuracy, stable performance
➢ Strong ability to resist ambient light interference
➢ Class I eye safety

1.2 Applications

➢ Robot navigation and obstacle avoidance
➢ Robot ROS teaching and research
➢ Regional security
➢ Environmental scanning and 3D reconstruction
➢ Navigation and obstacle avoidance of home service robots/ robot vacuum cleaners
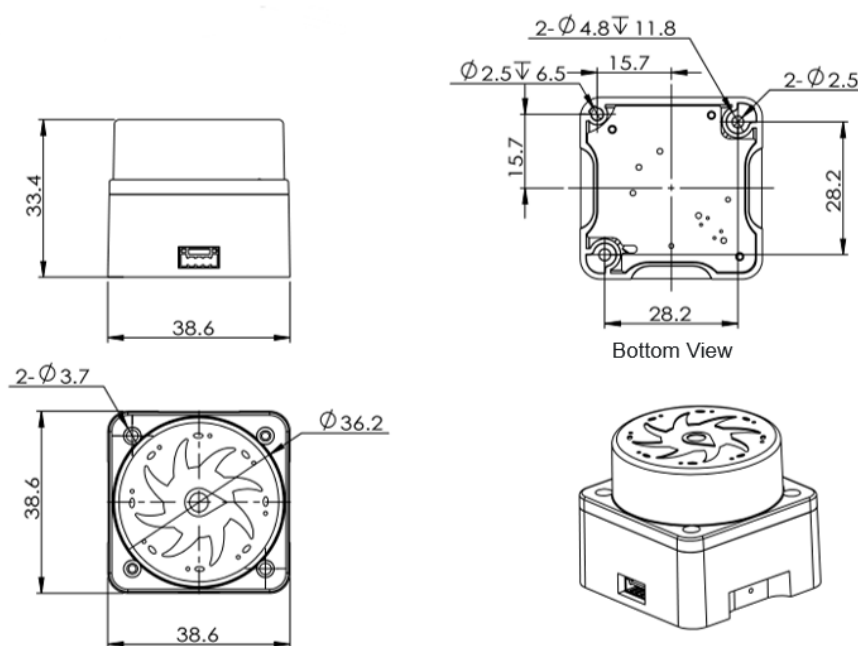
1.3 Installation and Dimensions

FIG 1 YDLIDAR T-MINI PRO INSTALLATION AND MECHANICAL SIZE

2 SPECIFICATIONS

2.1 Product Parameter

CHART 1 YDLIDAR T-MINI PRO PRODUCT PARAMETER

Item	Min	Typical	Max	Unit	Remarks
Ranging frequency	/	4000	/	Hz	/
Scan frequency	6	6	12	Hz	Software speed regulation, default 6Hz
Ranging distance	0.02	/	12	m	80% reflectivity
	0.02	/	4	m	10% reflectivity
Fileld of view	/	0-360	/	Deg	/
Systematic error	/	20	/	mm	0.05m < Distance≤12m
Angle resolution	0.54	/	/	Deg	/
Tilt angle	0	0.75	1.5	Deg	/

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 relative error parameter index will be relatively larger, and it may exceed the typical value.

2.2 Electrical Parameter

CHART 2 YDLIDAR T-MINI PRO 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
Start-up current	/	840	1000	mA	Peak current at power-on
Working current	/	340	480	mA	System works, motor rotates
Sleeping current	/	/	50	mA	System sleeps, motor stops

Note: It is recommended to use 5V 1A power supply equipment.

2.3 Interface Definition

The T-mini Pro external physical interface terminal is GH1.25-4P, which realizes system power supply and data communication.
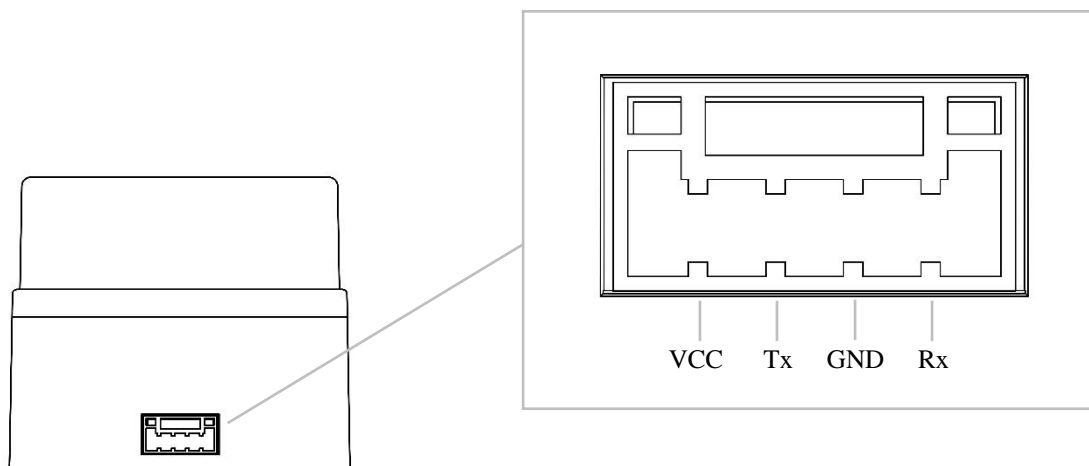
FIG 2 YDLIDAR T-MINI PRO INTERFACES

CHART 3 YDLIDAR T-MINI PRO INTERFACE DEFINITION

Pin	Type	Description	Defults	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	/

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, and can set the working mode of the equipment, etc. The communication protocol of parameters are as follows:

CHART 4 YDLIDAR T-MINI PRO 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	/	0.6	V	/

2.5 Motor Control

T-mini Pro has its own motor driver with motor speed control function, and provides a command interface instead of a hardware interface for motor control. For details, please refer to the development documentation of this product.

2.6 Optical Characteristic

T-mini Pro uses an infrared laser that meets FDA Class I eye safety standards. 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 5 YDLIDAR T-MINI PRO LASER OPTICAL PARAMETERS

Item	Min	Typical	Max	Unit	Remarks
Laser wavelength	895	905	915	nm	Infrared band
Laser power	/	25	/	W	/
Average laser power	/	1.5	/	mW	/
FDA	Class I				

2.7 Polar Coordinate System Definition

In order to facilitate secondary development, T-mini Pro internally defines a polar coordinate system. The polar coordinate of the system takes the center of the rotating core of T-mini Pro as the pole. The deviation of plus or minus 3 degrees, as shown in the figure:
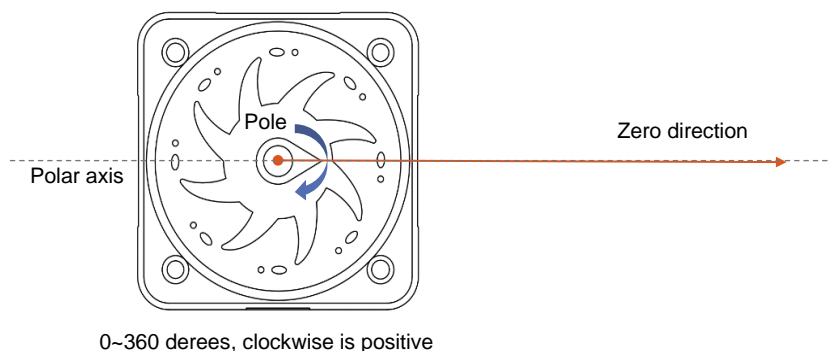

0~360 derees, clockwise is positive

FIG 3 YDLIDAR T-MINI PRO POLAR COORDINATE SYSTEM DEFINITION

2.8 Others

CHART 6 YDLIDAR T-MINI PRO OTHERS

Item	Min	Typical	Max	Unit	Remarks
Operating temperature	-10	25	50	℃	/
Store temperature	-20	25	70	℃	/
Lighting environment	/	/	30000	Lux	For reference only, the laser transceiver window cannot be directly facing the strong light source such as the sun
weight	/	45	/	g	N.W.

3 DEVELOPMENT AND SUPPORT

T-mini Pro 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 T-mini Pro 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, T-mini Pro development manual, SDK development manual and ROS user manual are also provided. Please download them from our website.

4 REVISE

Date	Version	Content
2022-04-11	0.1.0	The 1st release