

YDLIDAR SDM15 DATA SHEET ALPHA



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1 PRODUCT OVERVIEW

YDLIDAR SDM15 is a high-performance single-point LiDAR (hereinafter referred to as SDM15) 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 and outputting high frame rate point cloud data of the scanning environment. It can be used for UAV alt-hold, robot obstacle avoidance and navigation, etc.

1.1 Product Features

- High Ranging frequency, high internal sampling rate and filtering algorithm, the data has high stability
- Ranging distance up to 15 meters
- Distance blind area is small, the recent detection range of 50 mm
- FDA Class I eye safety standard
- 10000h service life

1.2 Applications

- UAV alt-hold and obstacle avoidance
- Robot obstacle avoidance
- Intelligent equipment obstacle avoidance
- Navigation and obstacle avoidance of home service robots/ robot vacuum cleaners

1.3 Installation and Dimensions

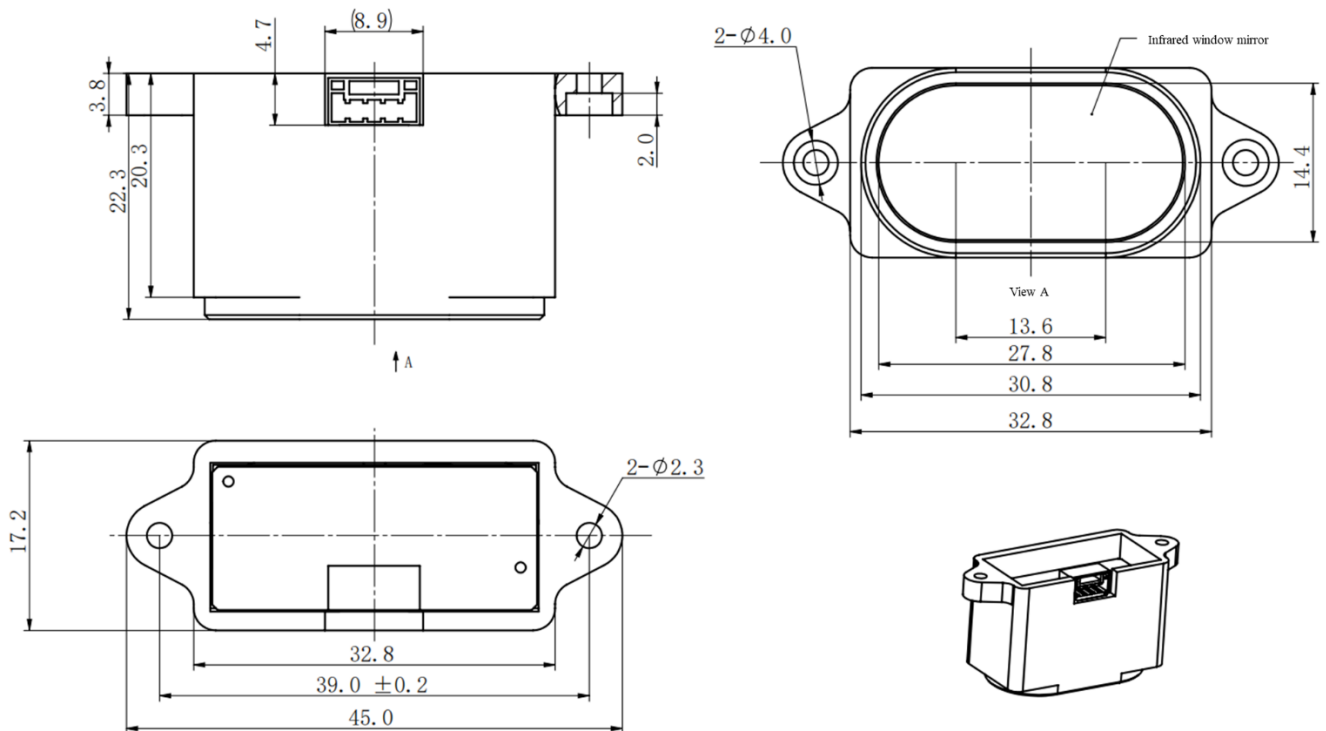


FIG 1 YDLIDAR SDM15 INSTALLATION AND MECHANICAL SIZE (SCREW SPECIFICATION: M2)

2 SPECIFICATIONS

2.1 Product Parameter

CHART 1 YDLIDAR SDM15 PRODUCT PARAMETER

Item	Min	Typical	Max	Unit	Remarks
Ranging frequency	10	/	1800	Hz	Indicates ranging times per second, and the frequency changes in real time according to the scene
Ranging distance	50	/	15000	mm	80% reflectivity
Relative error	/	/	20	mm	Distance ≤ 1000mm
	/	/	3%	/	1000 < Distance < 2000mm
	/	/	4%	/	2000 ≤ Distance < 15000mm
Service life	10000	/	/	h	/

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 SDM15 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	78	90	mV	High ripple affects performance and even can't measure distance
Start-up current	/	10	/	A	/
Working current	/	100	/	mA	/

2.3 Interface Definition

The SDM15 provides external pad interface, which realizes system power supply and data communication.

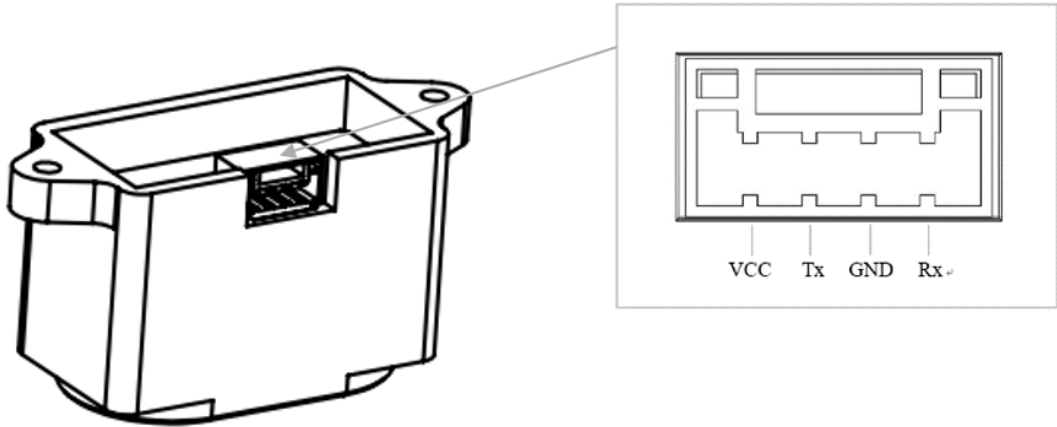


FIG 2 YDLIDAR SDM15 INTERFACES

CHART 3 YDLIDAR SDM15 INTERFACE DEFINITION

Pin	Type	Description	Defaults	Range	Remarks
VCC	Power supply	Positive	5V	/	/
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

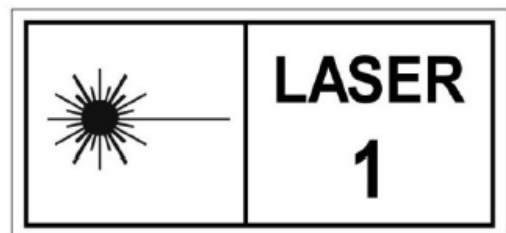
With a 5V level serial port (UART), users can connect the external system and the product through the physical interface. After that, users can obtain the real-time scannedpoint cloud data, device information as well as device status, and can set the working mode of the equipment, etc. The communication protocol of parameters are as follows:

CHART 4 YDLIDAR SDM15 SERIAL SPECIFICATION

Item	Min	Typical	Max	Unit	Remarks
Baud rate	/	460800	1500000	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 Optical Characteristic

The infrared point pulse laser used in SDM15 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 operating. The detailed optical parameters are as follows:

CHART 5 YDLIDAR SDM15 LASER OPTICAL PARAMETERS

Item	Min	Typical	Max	Unit	Remarks
Laser wavelength	898	905	912	nm	Infrared band
Laser power	/	25	/	mW	/
FDA	 Class I IEC60825-1				

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

2.6 Others

CHART 6 YDLIDAR SDM15 OTHERS

Item	Min	Typical	Max	Unit	Remarks
Operating temperature	-10	25	50	°C	Long-term operation in a high-temperature environment will reduce the service life
Store temperature	-20	25	70	°C	/
Lighting environment	/	/	60000	Lux	/
weight	/	15	/	g	N.W.

3 REVISE

Date	Version	Content
2022-10-10	0.1.0	The 1st release
2023-01-16	0.1.1	Update installation dimension, PIN definition, operating temperature
2023-02-28	0.1.2	1) Update chart 2 start-up current and working current 2) Update chart 3 weight value