电应普
BEST SENSOR

DATASHEET

A15 Series Sensor Module

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Product Description

1. General

A15 series module uses proven ultrasonic sensing technology for distance measurement. Adopts high-performance processor and superior quality elements which output reliable stability value and has long life span. Waterproof ultrasonic transducer with strong adaptability to various operating environment. This module build-in high precision ranging algorithm, ranging high accuracy and narrow measurement angle.

2. Features

- Arrow measuring angle, strong directional characteristics.
- 15cm small blind zone
- Build-in high precision algorithm
- Controllable measuring angle, high sensitivity and strong anti-interference ability
- Build-in true target recognition algorithm, high target recognition accuracy
- Multiple output interface optional, PWM, UART, RS232, RS485, SWITCH, Analog Voltage, Analog Current
- Internal temperature compensation, stable value output from -15℃ to +60℃
- Low power consumption design, Static current＜15uA, operating current＜15mA(5VDC power supply)
- Anti-static electricity design in accordance with IEC61000-4-2 standard
- Operating temperature from -15℃ to +60℃

3. Applications

Horizontal distance sensing

Industrial automation target detection

Object proximity and presence awareness

Module specification

1. Operating specification

Item Description	PWM output	UART Auto	UART Controlled	RS232	RS485	Switch	Analog Voltage	Analog Current	Unit	Remark
Operating voltage	3.3～24					10～30	15～30	15～30	V	DC
Standby current	≤15	-	≤15	-	-	-	-	-	uA	(1)
Average operating current	20	20	20	20	20	20	30	50	mA	(1)
Blind zone	15	15	15	15	15	15	15	15	cm	(2)
Measuring range of flat object	15～200								cm	(2)
Response time	100	100	100	100	100	100	≤150	≤150	ms	
Accuracy	±(5+S*0.3%)						±(5+S*1%)		mm	
Repeatability	S*0.3%								mm	
Temp Compensation	Support									

(1) Typical data obtained by testing with a temperature of about 25℃, a power supply of 15V, and a 100ms duty cycle.

(2) The temperature is about 25℃, the measured object is a 10cm×10cm flat carton, and the transducer should be as vertical as possible to the measured object.

(3) The temperature is about 25℃, and the indoor environment without wind, the object to be measured is a 10cm×10cm flat carton, and S represents the measuring distance.

2. Environment

Item	Minimum value	Typical value	Max value	Unit	Remark
Storage Temp	-25	25	80	℃	

Storage Humidity		65%	90%	RH	(1)
Operating Temp	-15	25	60	℃	
Operating Humidity		65%	80%	RH	(2)

Remark:

(1) Environment temperature is 0-39℃, max humidity is 90%(Non-condensation)

(2) Environment is 40-50℃, max humidity is the highest at current temperature in nature.

3.Electronics

| Item	Minimum value	Typical value	Max value	Unit	Remark
Peak current	50		70	mA	Peak value
Input Ripple			50	mV	Peak value
Input Noise			100	mV	Peak value
ESD			±200/±2K	V	(1)
ESD			±4K/±8K	V	(2)

Remark:

(1) The static electricity specification of assembly line, contact static electricity should not be higher than ±200V, and air static electricity should not be higher than ±2KV.

(2) The probe shell and output comply with the IEC61000-4-2 standard.

Sensor Selection instruction

The A15-module providing variety of output formats, customer can choose the corresponding model according to actual application needs.

No.	Output interface	Model No.	Remark
A15 Sensor Module	PWM	DYP-A15NYMW-V1.0	
	UART Auto	DYP-A15NYUW-V1.0	
	UART Controlled	DYP-A15NYTW-V1.0	
	RS232	DYP-A15NY2W-V1.0	
	RS485	DYP-A15NY4W-V1.0	
	Switch	DYP-A15NYGDW-V1.0	
	0～5V Analog voltage	DYP-A15NYVW-V1.0	
	0～10V Analog voltage	DYP-A15NYV1W-V1.0	
	4～20mA Analog current	DYP-A15NYIW-V1.0	

Beam Pattern

Flat cardboard 100x100mm   Φ75mm diameter of 75mm white cylindrical tube
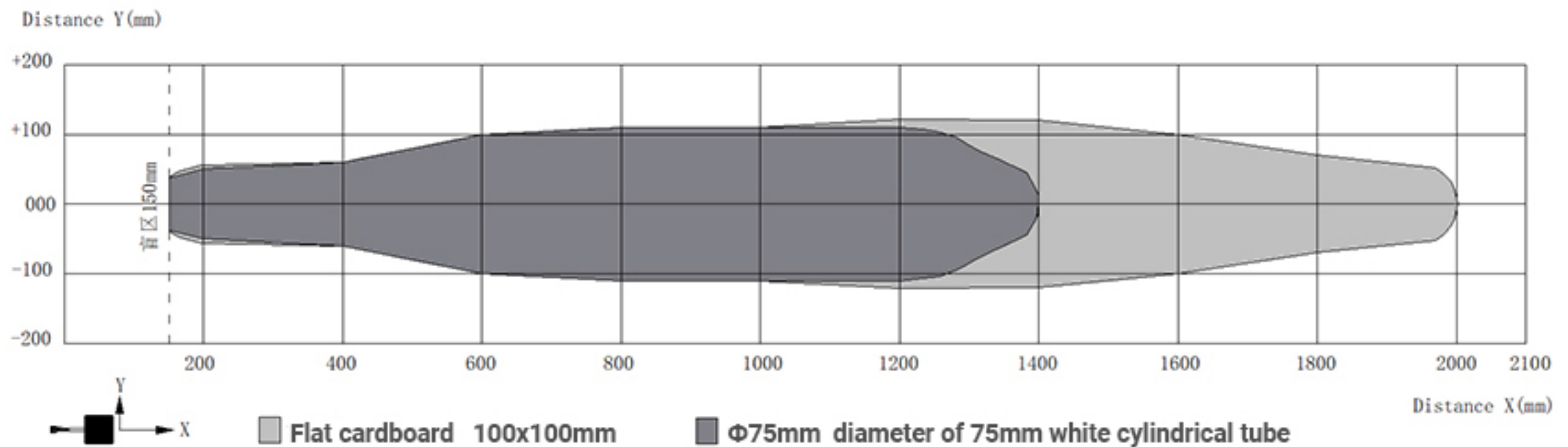
Note: The above is the factory laboratory test data. In actual use, various factors such as product installation method and use environment may be different from the laboratory data. Please refer to the actual application environment test.

Reliable testing Instruction

| No.	Description	Testing condition	sample QTY	remark
1	High temperature and humidity	65℃，85%RH，Power ON@5V，72hrs	3	
2	low temperature	-20℃，Power ON@5V,72hrs	3	
3	High temperature and humidity storage	80℃，80%RH，storage，72hrs	3	
4	Low temperature storage	-30℃，storage，72hrs	3	
5	Vibration test	10-200Hz,15min,2.0G, XYZ three axes, each axis is 0.5 hours	3	
6	Drop test	120 cm free fall, 5 times on wooden floor	3	

Note: After the test, the module is determined to be OK after the function test, and the performance degradation rate is ≤10%.

Notice

(1) When two or more modules are used in the application scenario, it is recommended to use a module with controlled output (high-level pulse width output, UART controlled output), and use a time-sharing work method to prevent mutual communication between modules interference.

(2) Please pay attention to the evaluation of electromagnetic compatibility when designing. Unreasonable system design may cause malfunction of the module.

(3) When it comes to the application of the module limit parameter boundary, you can contact our engineer to confirm the relevant precautions.

(4) The company reserves the right to change this document and update the functions without prior notice.
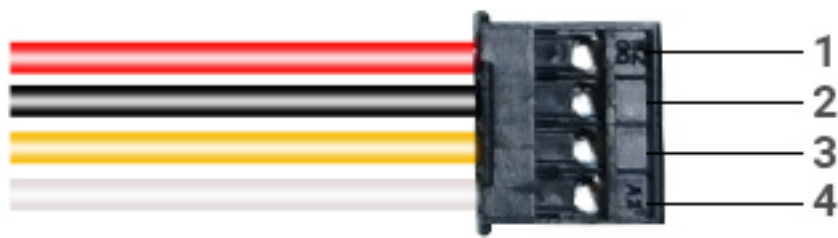
Mechanics

1. Mechanical Dimensions(mm-inch)

300 [11.81]

Ø40 [1.57]

HY2.0-4Y白款(带扣款)

PH1.2 [0.05]

41.5 [1.63]

48 [1.89]

48 [1.89]

7 [0.28]
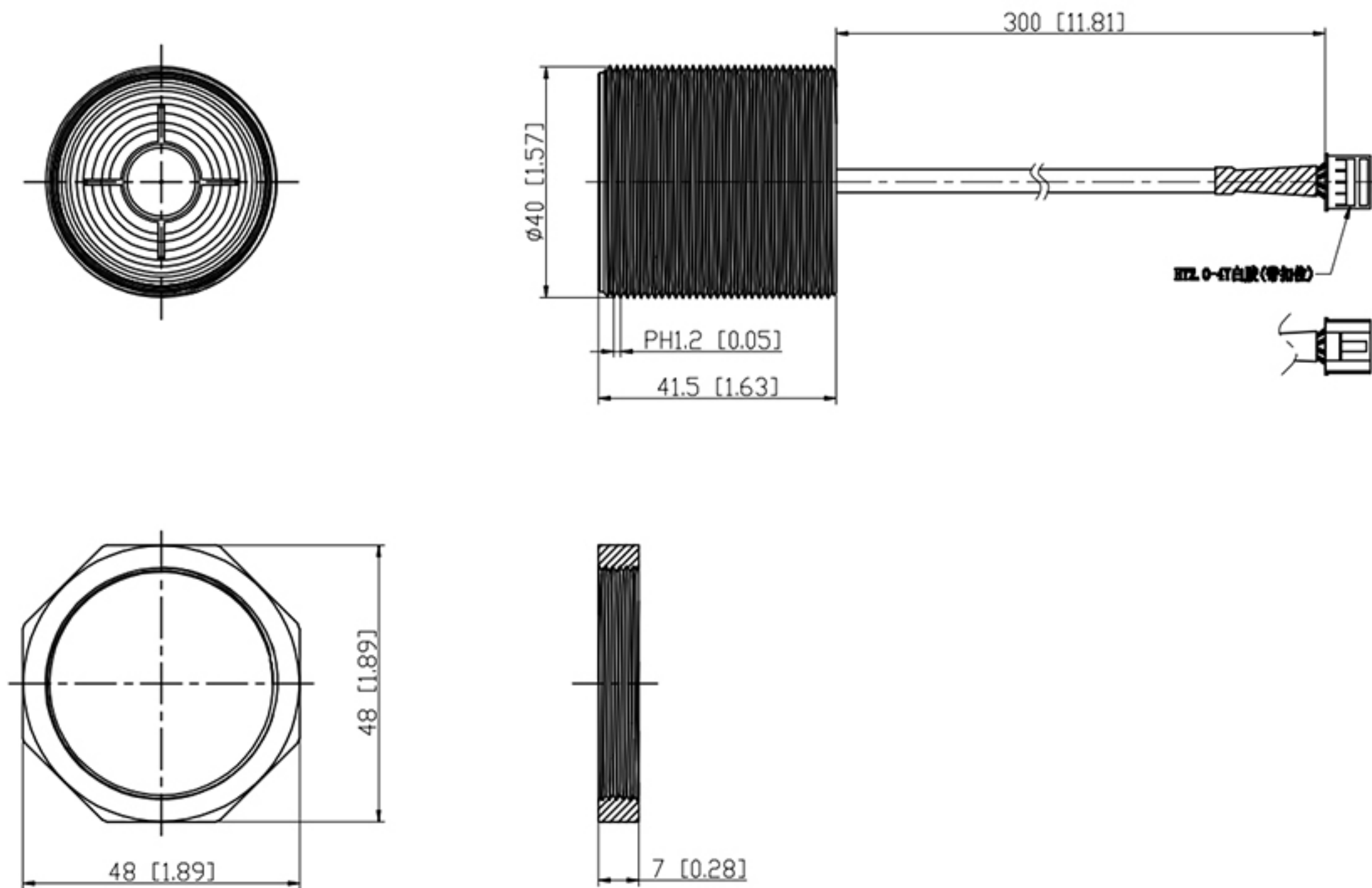
2. Parts Description
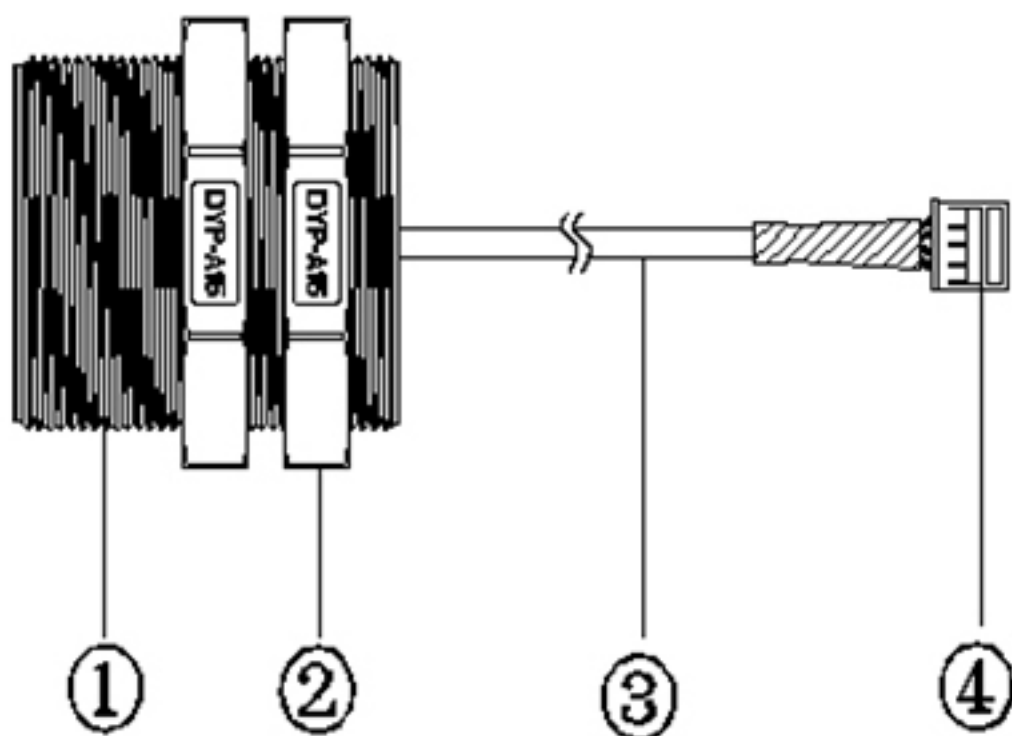
① Ultrasonic transducer
② Fixing nut

③ Wire
④ HY2.0-4Y plug

3. Pin out

Pin No.	Mark	Description	Remark
①	VCC	Power Input	
②	GND	GND	
③	RX	Functional PIN	different output modes have different functions
④	TX	Functional PIN	different output modes have different functions

Note: The pin function setting followed customer's order, can't coexist with other output modes.