电应普

BEST SENSOR

DATASHEET

A08 Series Sensor Module

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SHENZHEN DIANYINGPU TECHNOLOGY CO., LTD.

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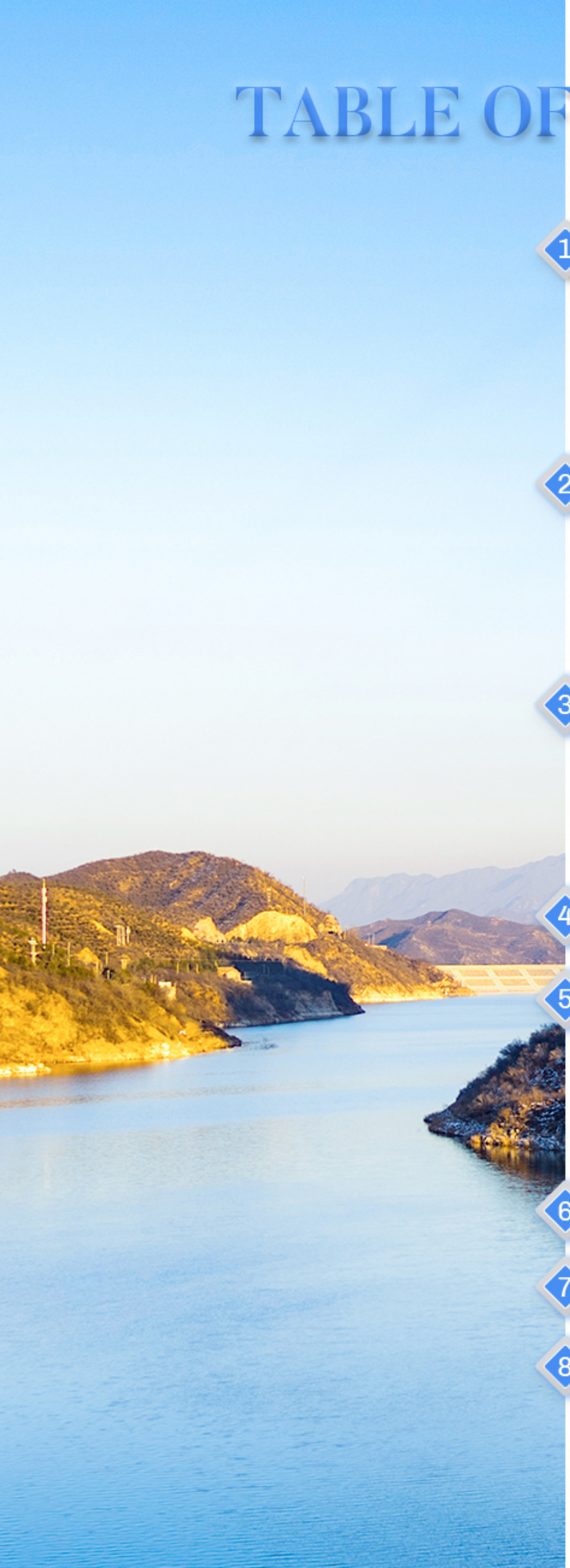


Product Description

1. General

The A08 sensor module uses ultrasonic sensing technology for distance measurement. The module adopts high-performance processor and high-quality components, the product is stable and reliable, and has a long service life.
The module uses a waterproof ultrasonic transducer, has a built-in high-precision ranging algorithm and power management program, with high ranging accuracy, low power consumption, long measurement distance, and small measurement angle.

2. Features

- Adopts intelligent signal processing circuit, small blind zone and long measuring range.
- Build-in high precision algorithm, minimum error ＜10mm.
- Controllable measuring angle, high sensitivity and strong anti-interference ability.
- Build-in true target recognition algorithm, high target recognition accuracy.
- Intelligent matching technology can automatically adjust the ultrasonic transducer to the best working condition, good module performance consistency.
- The measurement mode can be set to target the human body, flat objects and waste bin level.
- Multiple output interface optional, PWM, UART, SWITCH.
- Internal temperature compensation, stable value output from -15℃ to +60℃.
- Low power consumption design, operating current＜15mA Static current＜5uA.
- 3.3-5.0V power input.
- Anti-static electricity design in accordance with IEC61000-4-2 standard.
- Operating temperature from -15℃ to +60℃.

3. Applications

Narrow beam angle distance sensing.
Smart detection system.
Object proximity and presence awareness.
Sewer water level monitor.
Smart waste bin management system.

Module Classification

According to different characteristics and advantages, the modules are including three series:
A08A series modules, mainly used for plane distance measurement;
A08B series modules, mainly used for human body distance measurement;
A08C series modules, mainly used for waste bin distance measurement;

1. A08A Series Module

A08A series modules have four output modes which including PWM processing value output, UART automatic output, UART controlled output and switch output.
The measurement setting range of this module is 25~1100cm, and the stable measurement reference range is 25cm~800cm.
Under the UART automatic output, pin(RX) is connected to the low level, and the output data is the real-time value (real-time measurement data), which can improve the output data refresh speed. when it is disconnect or connected to the high level, the output data is the processed value (data processed by the algorithm) , The output data is more stable, but the refresh speed has decreased.

2. A08B Series Module

A08B series modules have four output modes including PWM processing value output, UART automatic output, UART controlled output and switch output.
The measurement setting range of the module is 25cm~600cm, and the stable measurement reference range is 25cm~500cm.
Under the UART automatic output, pin (RX) is connected to the low level, output real-time value (real-time measurement data), which can improve the output data refresh speed. when it is disconnect or connected to the high level, the output data is the processed value (data processed by the algorithm) , The output data is more stable, but the refresh speed has decreased.

3. A08C Series Module

A08C series modules have only one output mode for UART automatic output.
The measurement setting range of the module is 25cm~200cm, in order to effectively filter out the reflection echo of baffle and the diameter of waste bin,accuracy detect overflow level of waste, the module has built-in frame filtering algorithm.
Pin(RX)receives a falling edge pulse, which can automatically filter the interference of the inner frame within 30cm~80cm, it can filter up to four frame interferences at the same time.

Module Spcification

1. Operating specification

Item	A08A Series	A08B Series	A08C Series	Unit	Remark
Operating voltage	DC3.3~5.0	DC3.3~5.0	DC3.3~5.0	V	
Static current	<5	<5	<5	uA	
Operating current	<15	<10	<5	mA	(1)
Blind zone	≤25	≤25	≤25	cm	(2)
Measuring range of flat object	25～800	25～500	25～200	cm	(2)
Beam angle	≈20°	≈ 70 °	≈ 25 °	-	(3)
Accuracy	±(1+S×0.3%)	±(1+S×0.3%)	±(1+S×0.3%)	cm	(2)
Temp compensation	Support	Support	Support	-	

Remark:

(1) Typical data obtained by testing with a temperature of about 25°C,65% RH humidity, a power supply of 5V, and a 100ms duty cycle. Operating cycle of PWM processing value output is 200ms, 500ms of A08C series module.

(2) Temperature 25°C, humidity 65% RH, 50cm*60cm flat carton measured data, the detection starting point defaults to the probe surface, if the detection starting point is calculated based on the horn plane, 3.5cm should be subtracted. The measuring range is 25cm~150cm in the switch output mode.

(3) The temperature is 25°C, the humidity is 65% RH, and the reference data obtained from the test of a φ75mm*100cm white PVC pipe with a distance of 100cm. The measurement distance is also different at different angles.

The above test data are all carried out in an open room, and the installation height of the detection module is 30cm from the ground

2.Environment

Item	Minimum value	Typical value	Max value	Unit	Remark
Storage Temp	-25	25	70	℃	
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
Operating voltage	3.2	5.0	5.25	V	
Peak current	50		75	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)

Note:

(1) The probe shell and output pin conform to the IEC61000-4-2 standard.

(2) Assembly line contact static electricity ±200V, air static electricity ±2KV.

Sensor Selection Instruction

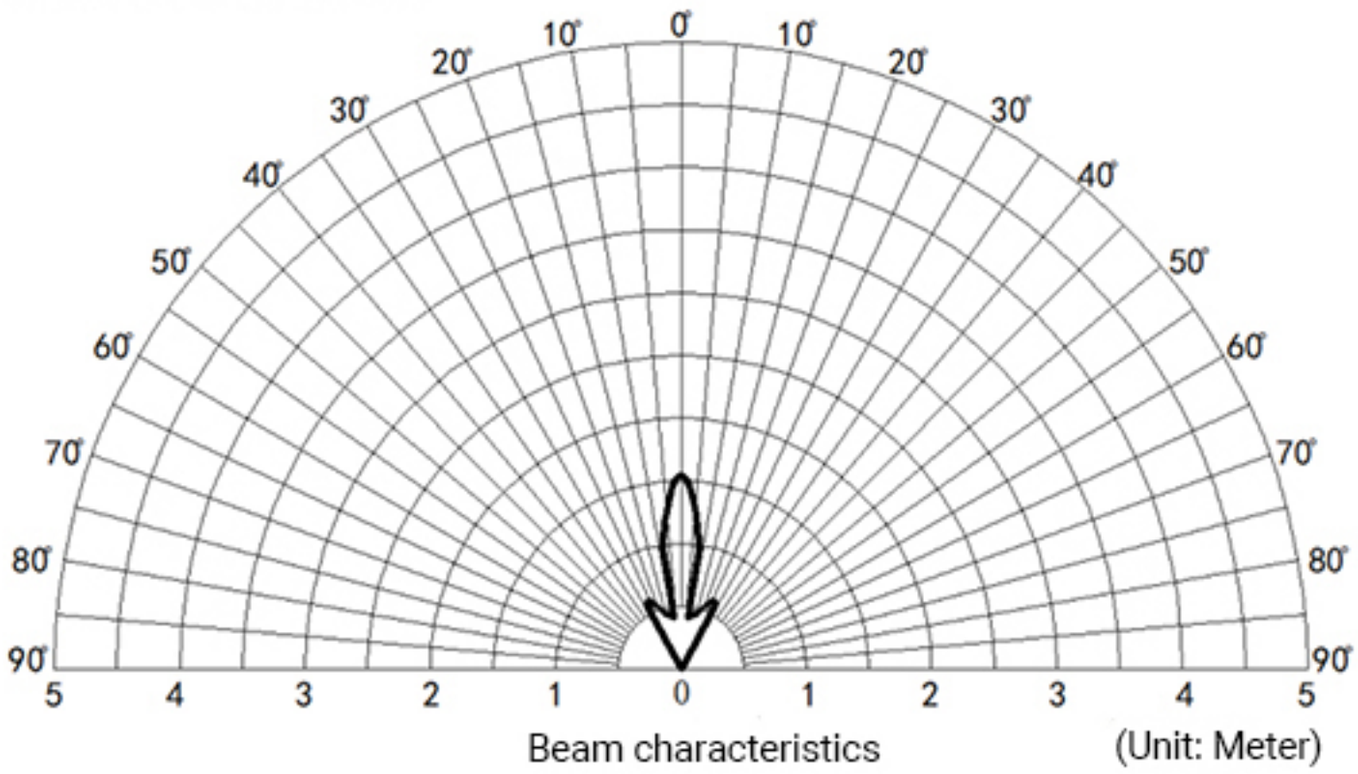
A08 series module including 9 types according to different output methods and functions. Users can choose the corresponding model according to actual application requirements. Customized development can be carried out according to customer needs.

Series	Model No.	Function	Output interfaces	Remark
A08A	DYP-A08ANYUB-V1.0	Flat Object	UART Auto	
	DYP-A08ANYTB-V1.0		UART Controlled	
	DYP-A08ANYWB-V1.0		PWM process value	
	DYP-A08ANYGDB-V1.0		Switch	
A08B	DYP-A08BNYUB-V1.0	Human body	UART Auto	
	DYP-A08BNYTB-V1.0		UART Controlled	
	DYP-A08BNYWB-V1.0		PWM process value	
	DYP-A08BNYGDB-V1.0		Switch	
A08C	DYP-A08CNYUB-V1.0	Wast bin level	UART Auto	

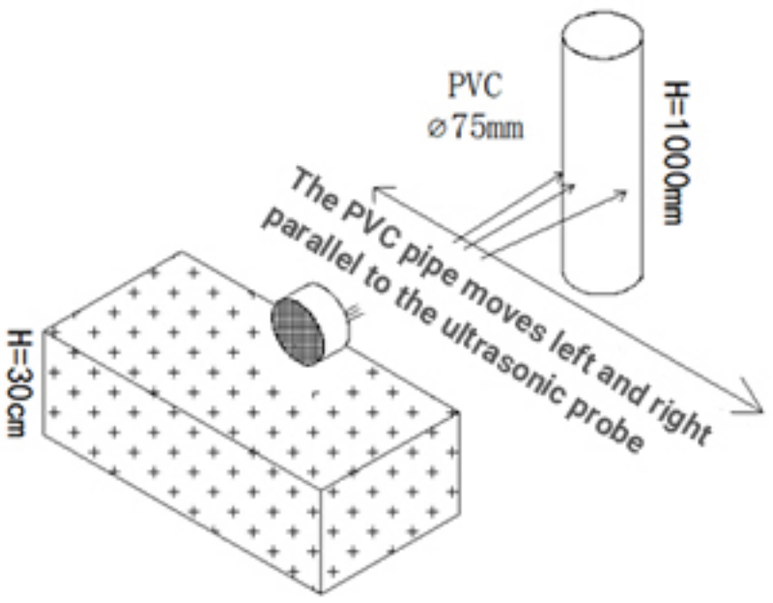
Beam Pattern

1. A08A module

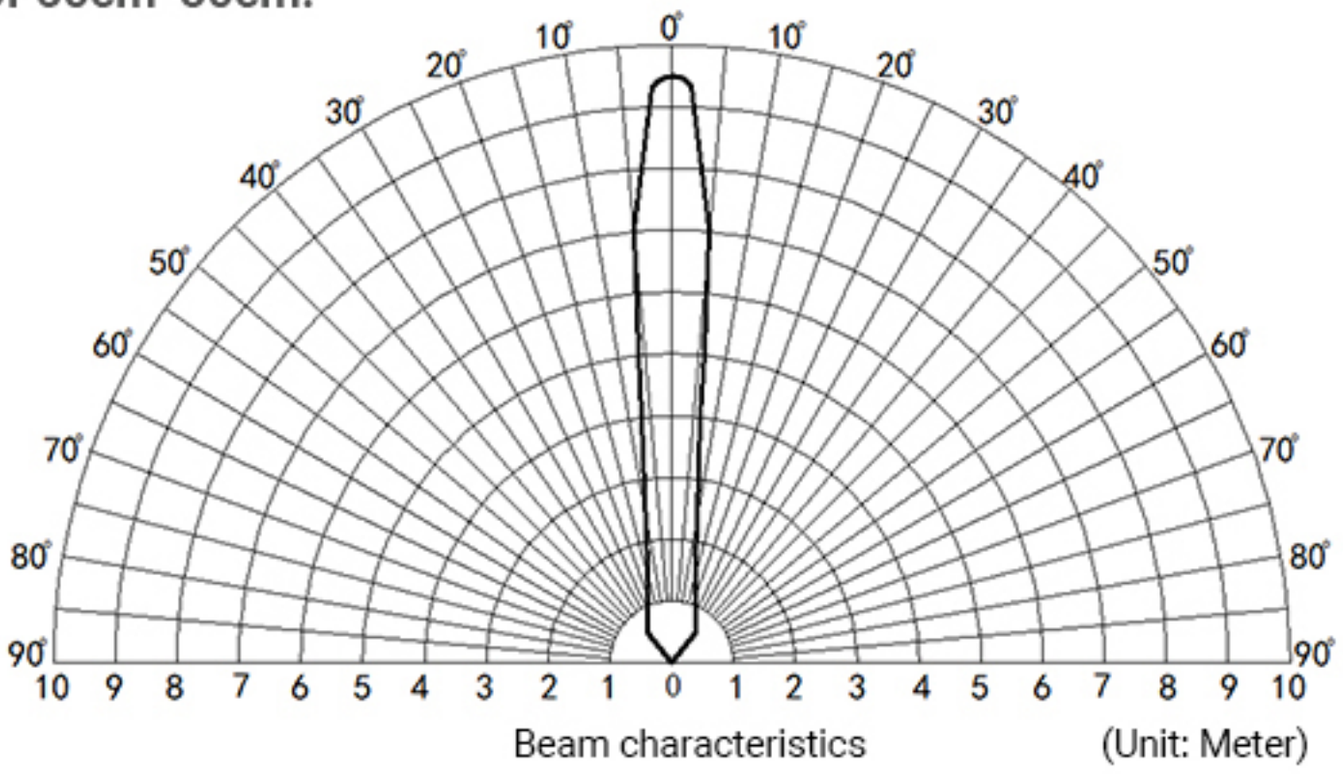
(1) The tested object is a white cylindrical tube made of PVC material, with a height of 100cm and a diameter of 7.5cm.

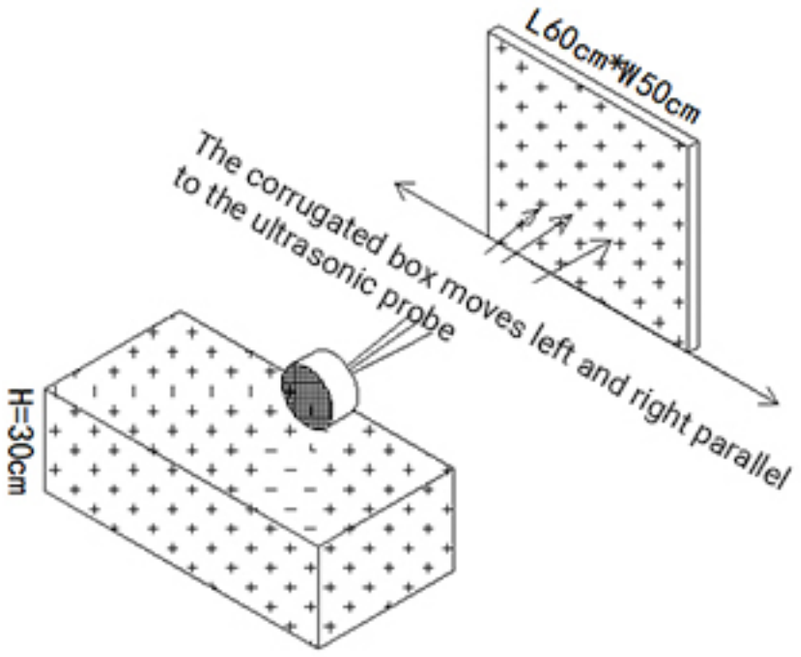


Beam characteristics (Unit: Meter)



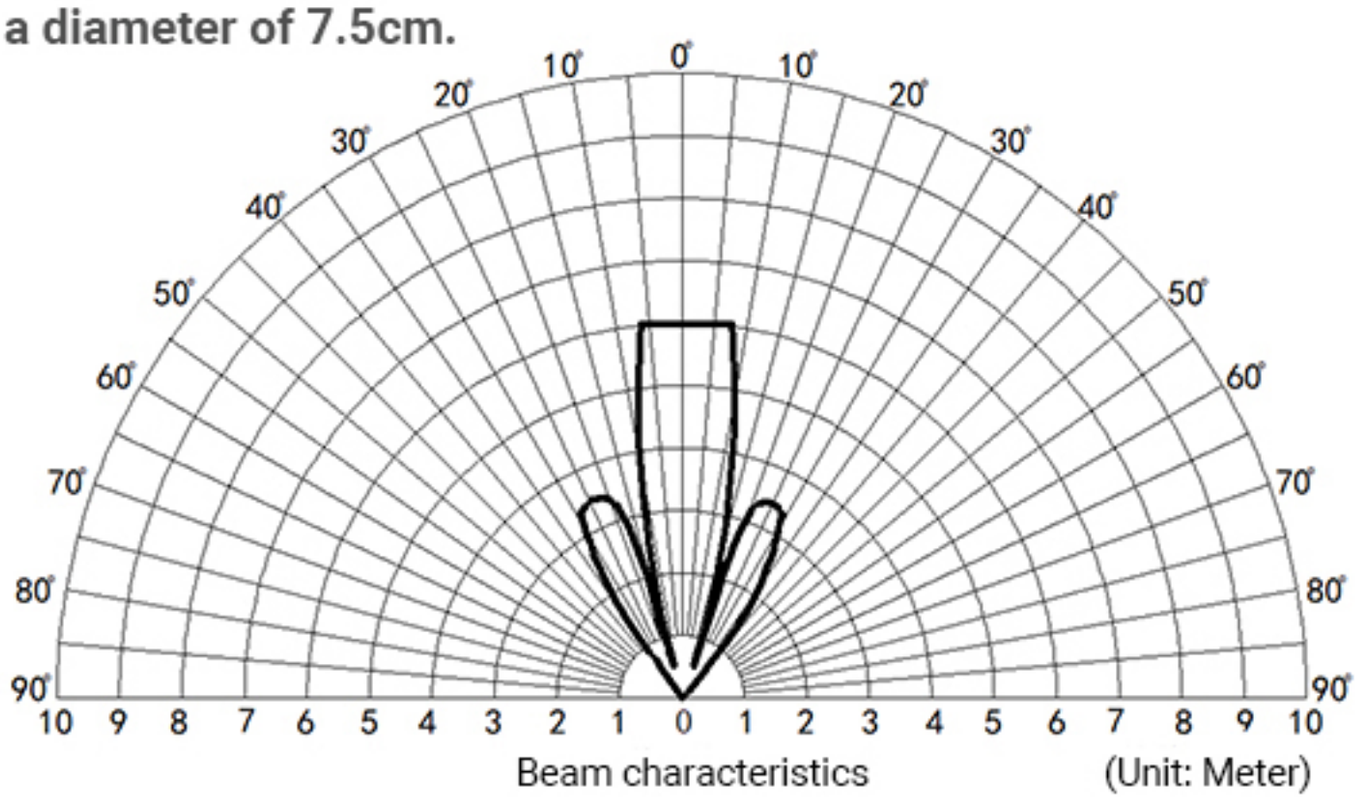
(2) The tested object is a corrugated box perpendicular to the 0° central axis, with a length * width of 60cm*50cm.

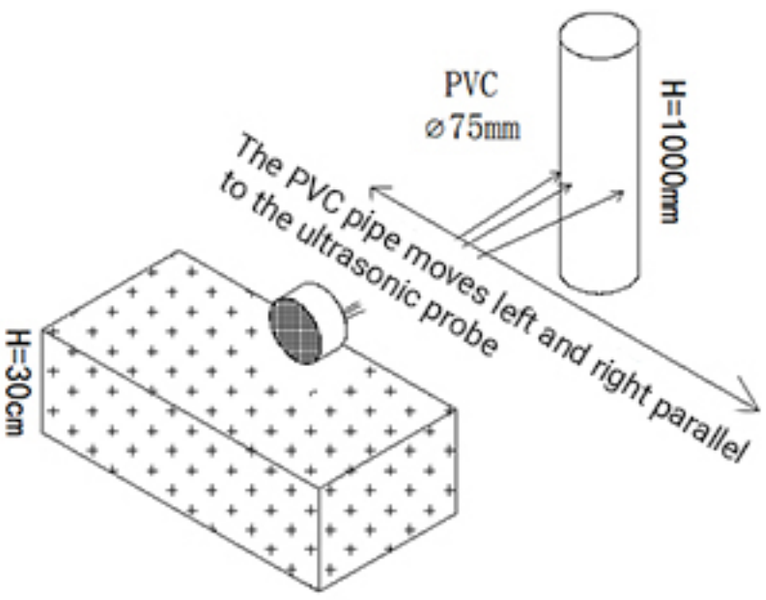




2. A08B Module

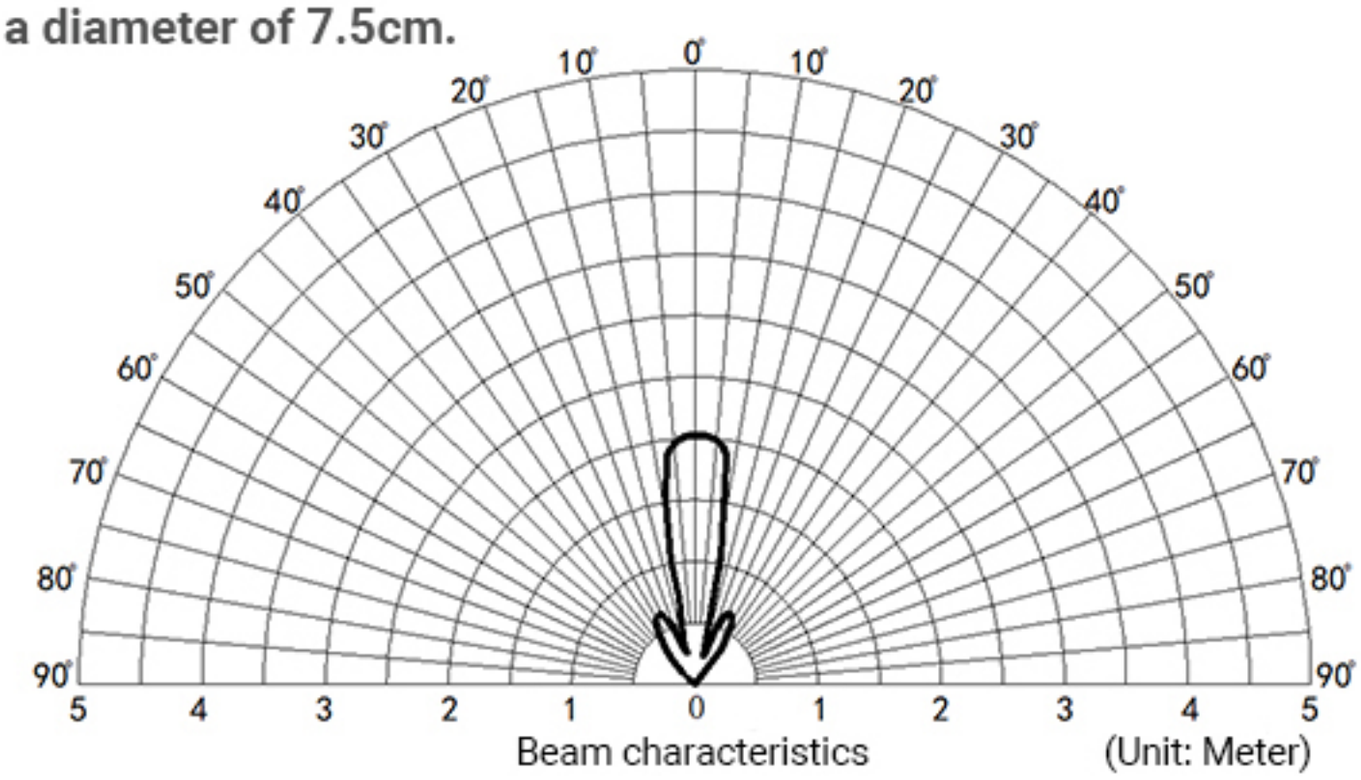
(1) The tested object is a white cylindrical tube made of PVC material, with a height of 100cm and a diameter of 7.5cm.

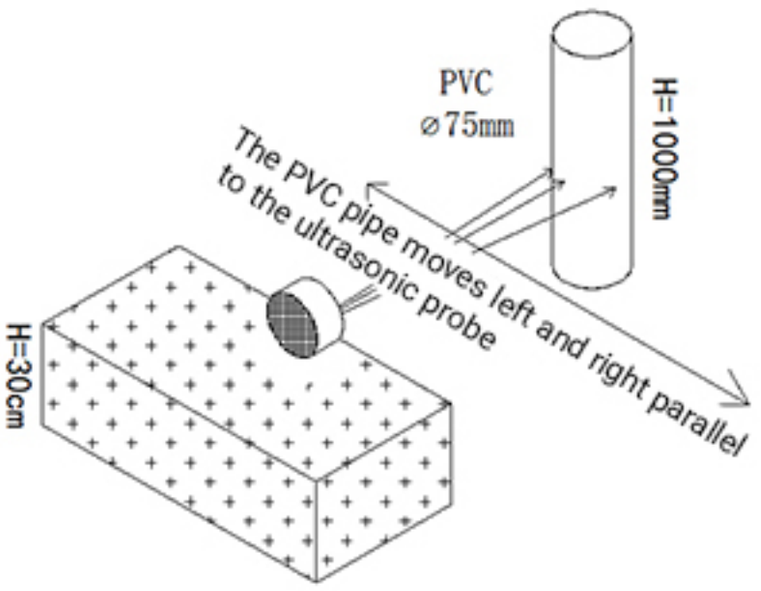




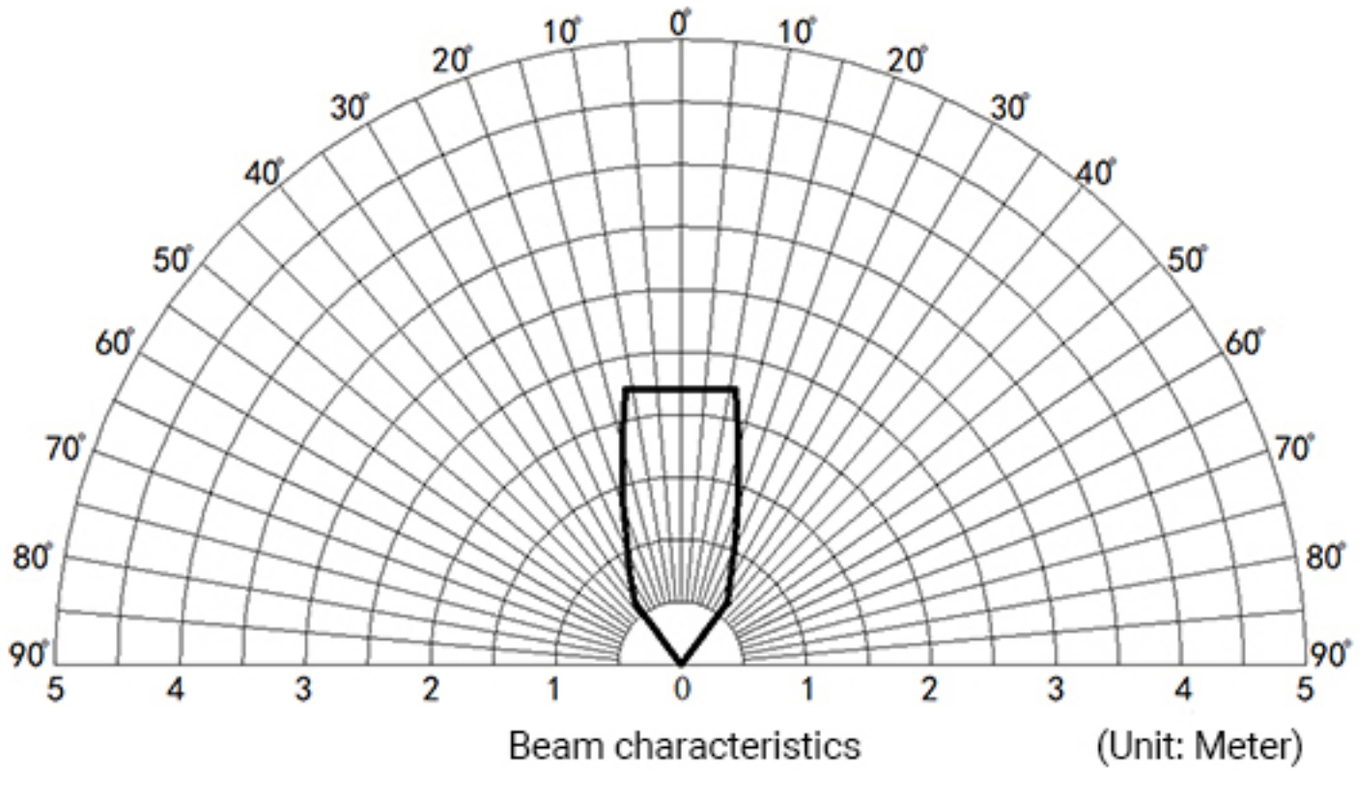
3. A08C Module

(1) The tested object is a white cylindrical tube made of PVC material, with a height of 100cm and a diameter of 7.5cm.

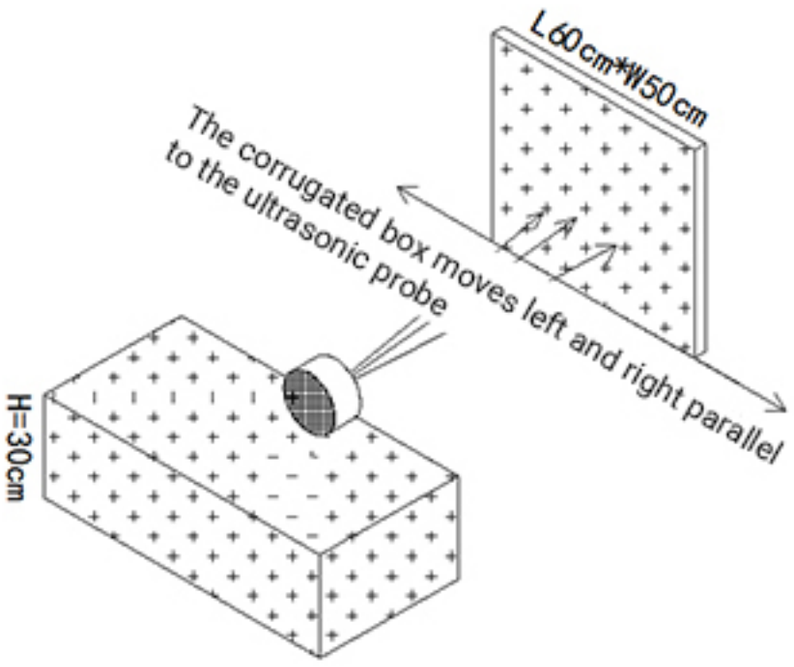




(2) The tested object is a corrugated box perpendicular to the 0° central axis, with a length * width of 60cm*50cm.



Beam characteristics (Unit: Meter)



Note: The above is the laboratory test data of Dianyingpu company. 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	120cm free fall, 5 times on wooden floor	3	

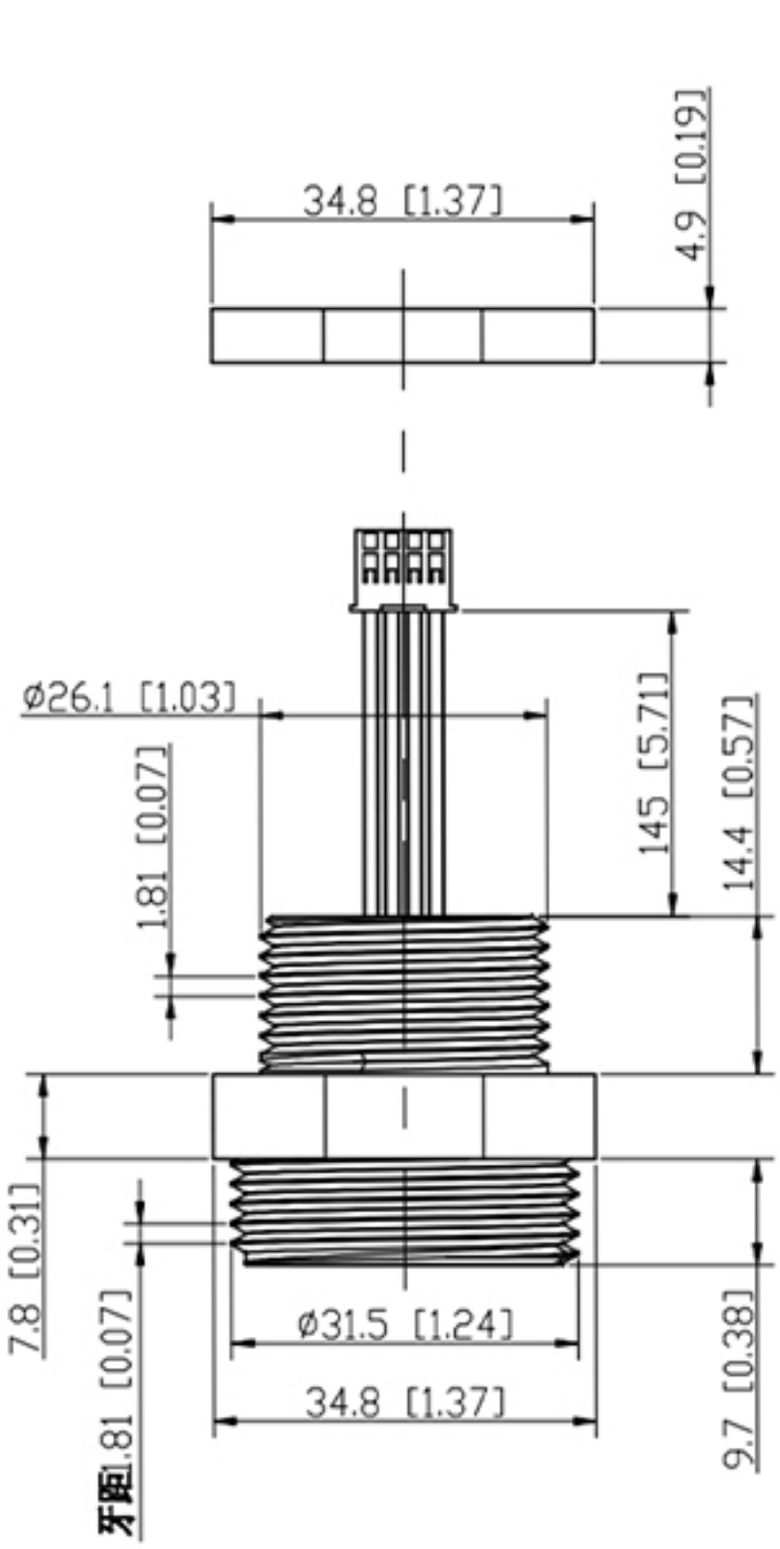
Note: After the test, the module is determined to be OK after the function test, and the performance degradation rate is ≤10%.

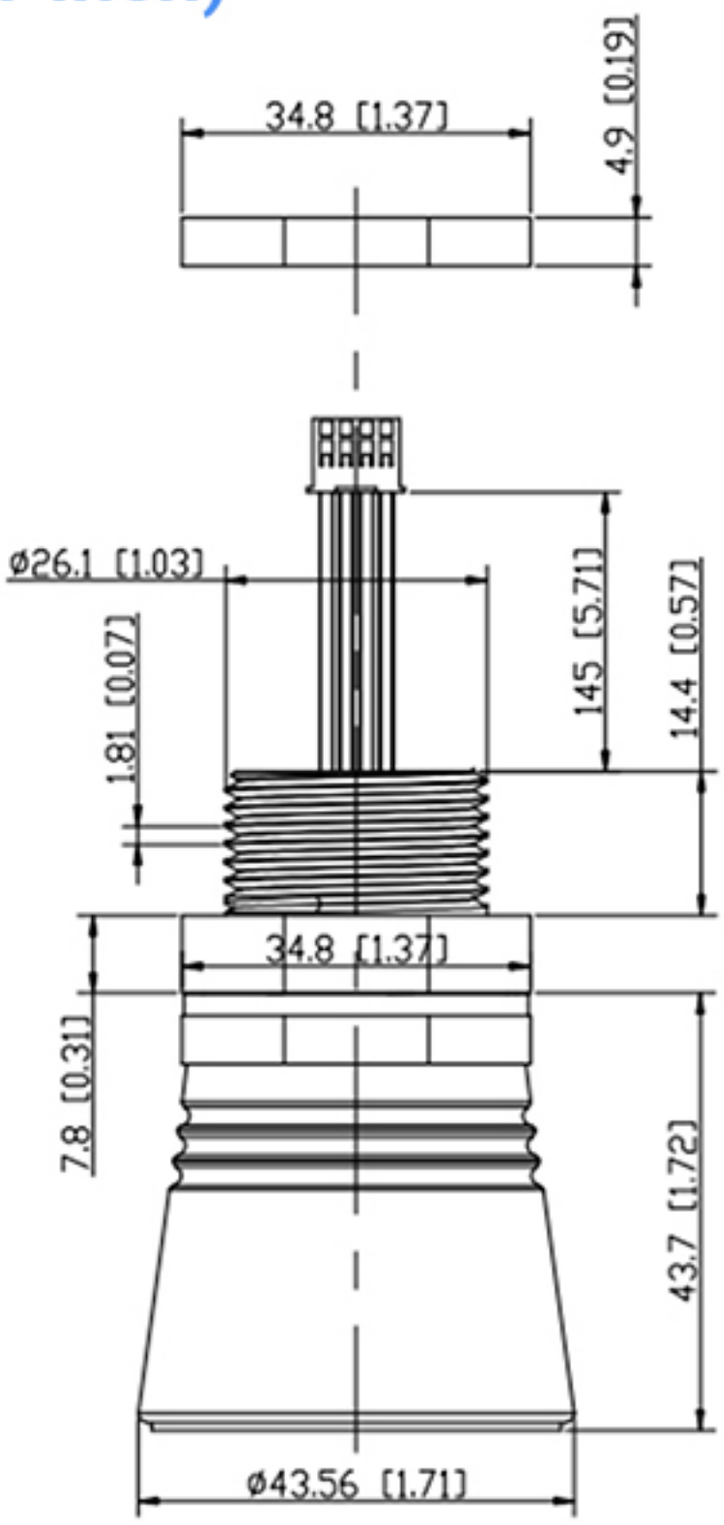
Notice

1. Please pay attention to the structural tolerances when designing. Unreasonable structural design may cause temporary abnormalities in module functions.
2. Please pay attention to the evaluation of electromagnetic compatibility when designing. Unreasonable system design may cause malfunction of the module.
3. When the boundary application of the product limit parameter is involved, you can contact after sale service dept. to confirm the relevant precautions.
4. The company reserves the right to change this document and update the functions without prior notice.

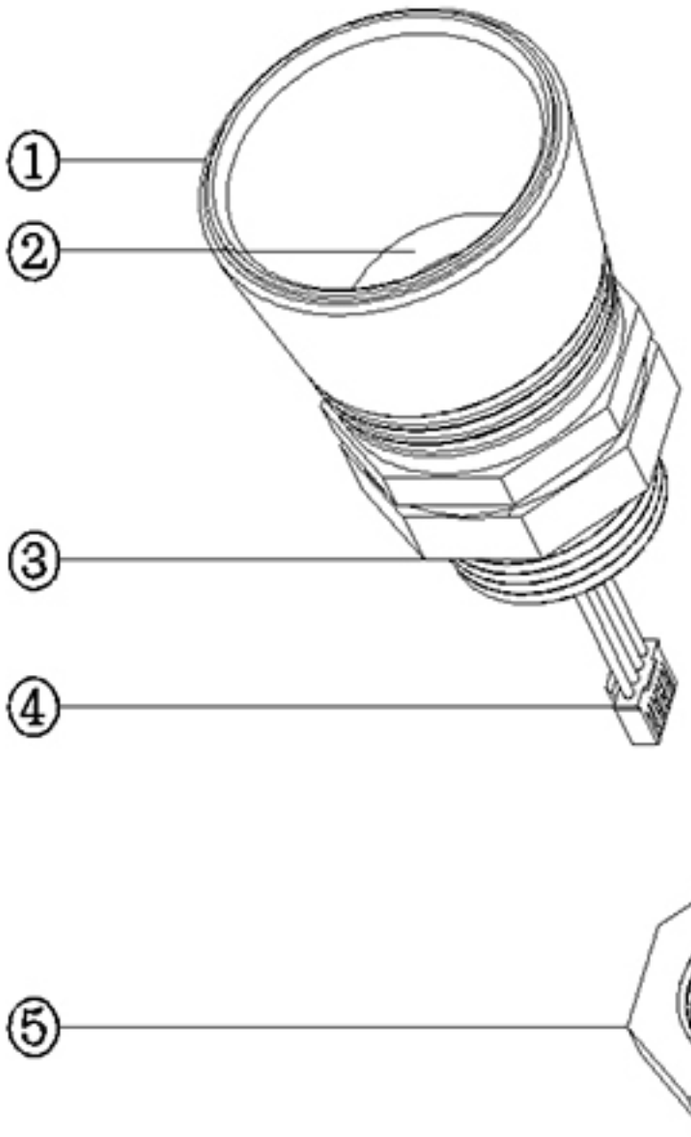
Mechanics

1. Mechanical Dimensions (mm-inch)



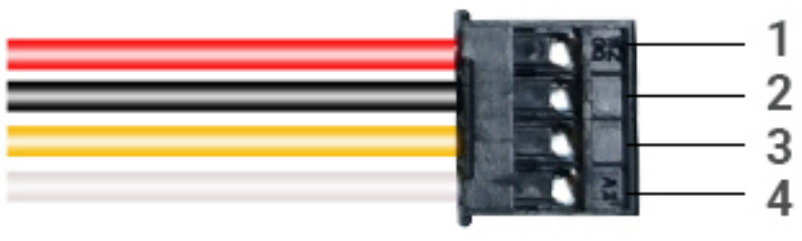


2. Parts Description



① Horn
② Ultrasonic transducer
③ Waterproof case
④ HY2.0mm-4P connector with lock
⑤Fixing Nut

3. Pin out



Pin No.	Mark	Description	Remark
①	VCC	3.3V-5V 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