

电应普
BEST SENSOR



DATASHEET

A17 Series Sensor Module

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SHENZHEN DIANYINGPU TECHNOLOGY CO., LTD.

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Product Description

1. General

A17 series ultrasonic sensor module designed with reflective structure, adopts high-performance processor and superior quality elements, providing reliable quality and long life span. Ultrasonic probe adopts anti-water technology design, effectively reduce the problem of probe condensation, IP67 suitable for harsh environments. Build in high-precision distance sensing algorithm and low power consumption procedure.

2. Features

- Adopting intelligent signal processing circuit, small blind zone, long detection distance, 25-1000 cm measuring range .
- Build-in high-precision distance sensing algorithm, error < 1 cm.
- Beam angle is controllable, high sensitivity and strong anti-interference ability.
- Build-in target recognition algorithm, high target recognition accuracy.
- Output interface optional, PWM, UART auto, UART Controlled, RS485 controlled.
- Internal temperature compensation function, stable output from -15°C to +60°C.
- Anti-water process design, reduce the problem of probe condensation.
- Low power consumption design, static current < 10uA, operating current < 15mA.
- 3.3-5.0VDC low voltage input.
- Anti static electricity design in accordance with IEC61000-4-2 standard.
- Firmware remote updating.
- Operating temperature from -15°C to +60°C.

3. Applications

Sewer water level monitoring.

Narrow beam angle level monitoring.

Smart detecting system.

Specification

1. Performance

Description	Specification	unit	remark
Input voltage	DC3.3~5.0	V	
Static current	<10	uA	
Operating current	<15	mA	(1)
Blind zone	0~25	cm	(2)
Measuring range	25~1000	cm	(2)
Beam angle	≈15°	-	(3)
Accuracy	±(1+S×0.3%)	cm	(2)
Response time	0.9~2.5	S	
Resolution	1	cm	
Temp compensation	yes	-	

Remark:

(1) Testing result under temperature 25±5°C, humidity 65% RH, input voltage 5.0V, 900ms working cycle.

(2) Temperature 25±5°C, humidity 65% RH, 50cm*60cm flat carton measured data, default to the bottom of the reflective structure surface as the detection starting point. In order to improve the stability of the ranging, keep last measured value if distance change is less than 2cm.

(3) Temperature 25±5°C, humidity 65% RH, For 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

Description	Minimum value	Typical value	Max value	Unit	Remark
Storage Temp	-25	25	70	°C	
Storage Humidity		65%	90%	RH	(1)
Operating Temp	-15	25	60	°C	
Operating Humidity		65%	80%	RH	(2)

Remark:

- (1) Environment temperature is 0-39°C, max humidity is 90%(Non-condensation)
 (2) Environment temperature is 40-50°C, max humidity is the highest at current temperature in nature.

3.Electronics

Description	Minimum value	Typical value	Max value	Unit	Remark
Input voltage	3.2	5.0	5.25	V	
Peak current	30		160	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 lead comply with the IEC61000-4-2 standard.

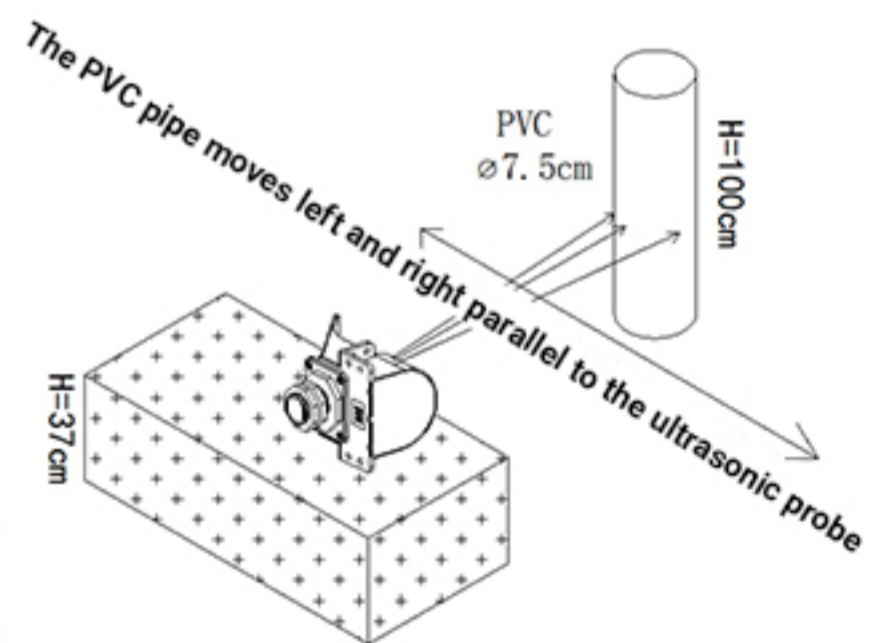
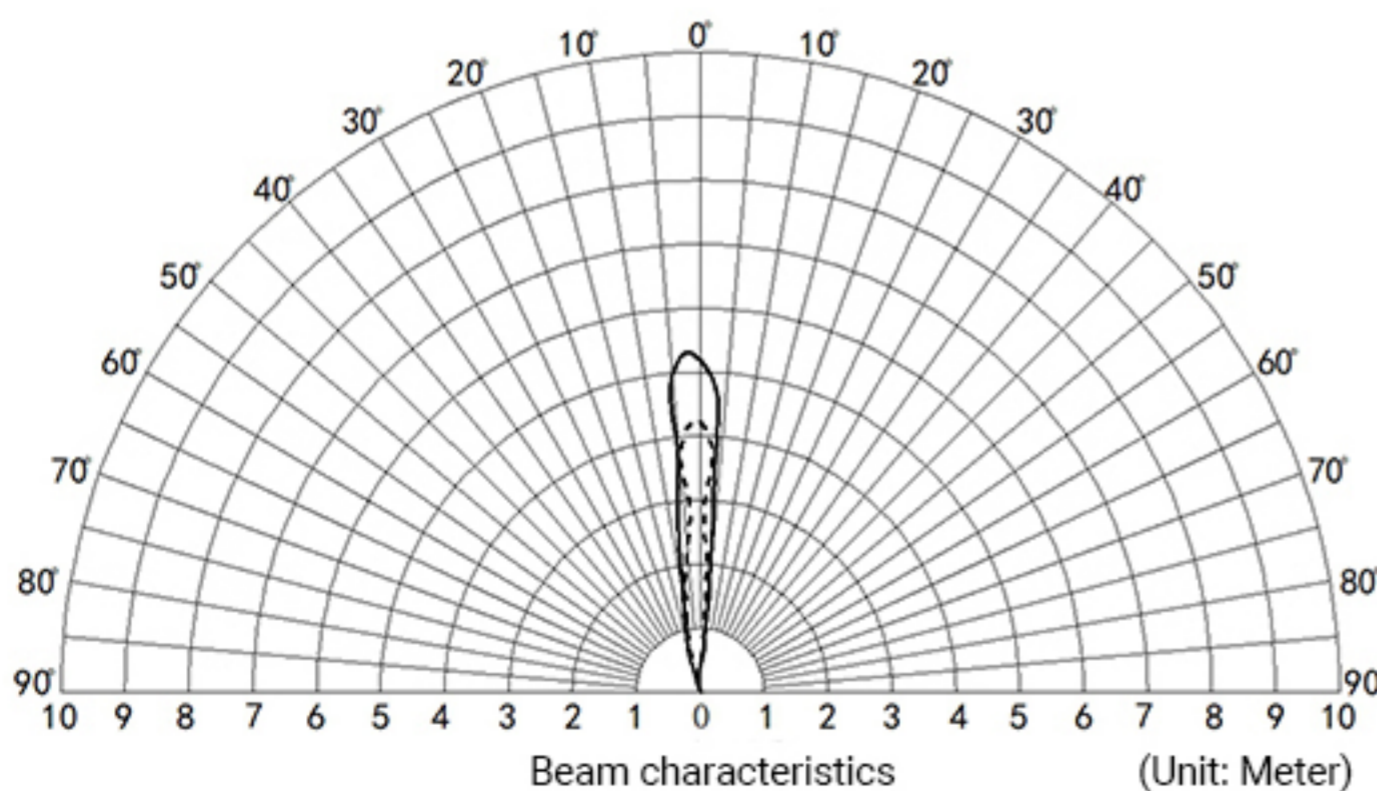
Sensor Selection Instruction

The A17 series module is divided into the following 4 types according to different output methods and functions. Users can choose the corresponding model according to actual application requirements. Custom solution following customer's project is available.

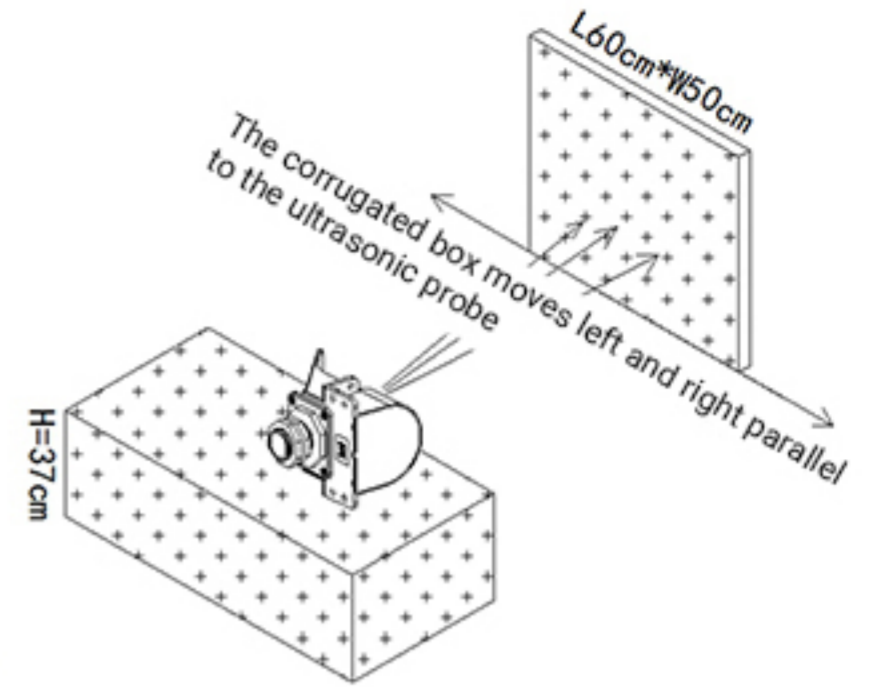
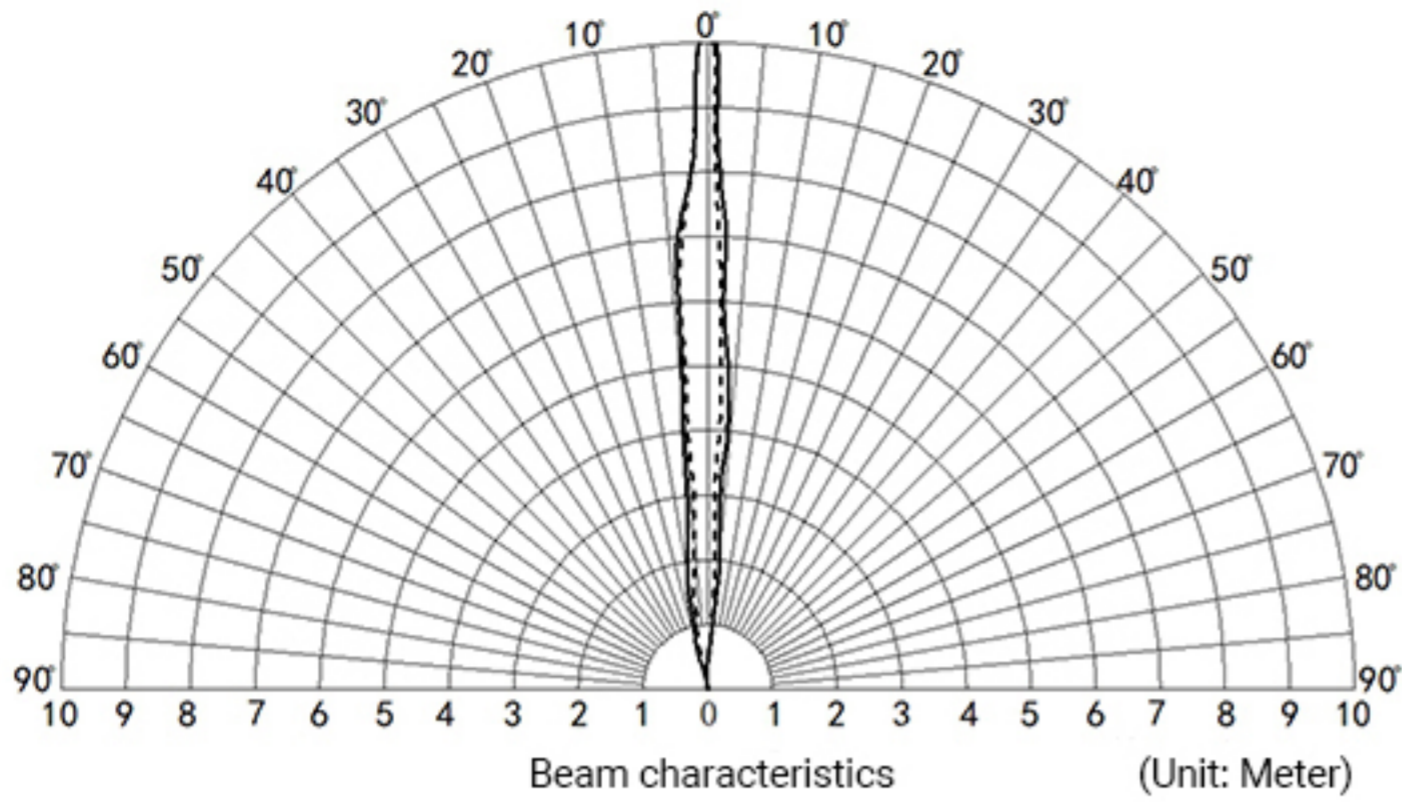
Series	Model No.	Function	Output interfaces	Remark
A17 sensor module	DYP-A17NYUW-V1.0	Well water level	UART AUTO	
	DYP-A17NYTW-V1.0		UART Controlled	
	DYP-A17NYWW-V1.0		PWM process value	
	DYP-A17NY4W-V1.0		RS485	

Beam Pattern

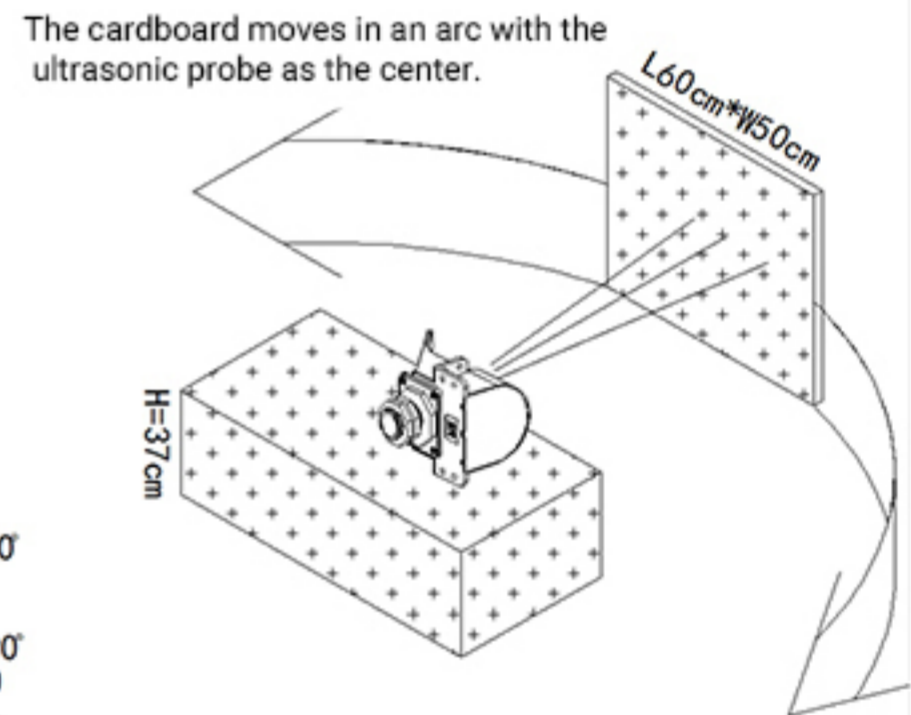
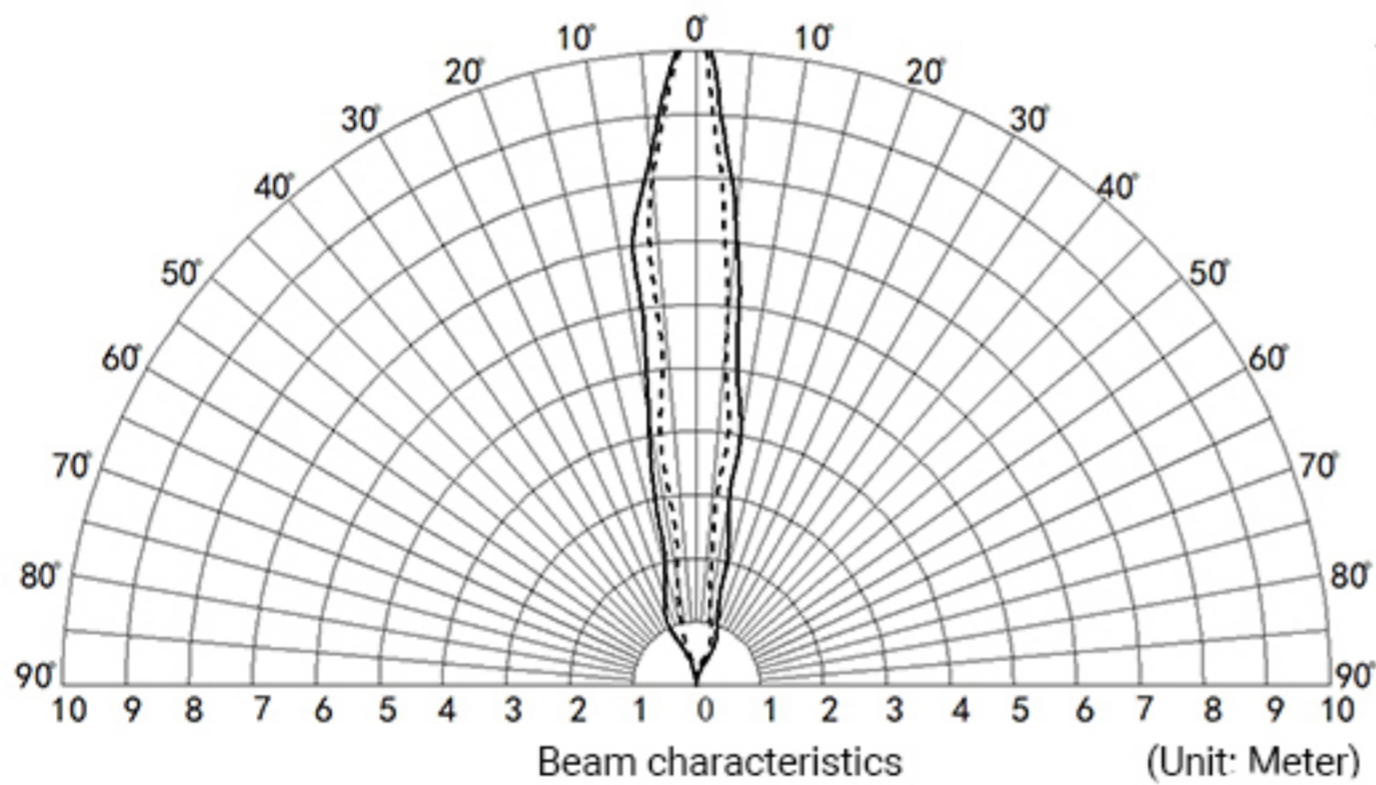
(1) The tested object is a white cylindrical tube made of PVC material, with a height of 100cm and a diameter of 7.5cm. The solid line in the figure below is the module's default angle test data, the dashed line is the small angle mode test data.



(2) The tested object is a corrugated box perpendicular to the 0° central axis, with a length * width of 60cm*50cm. The solid line in the figure below is the module's default angle test data, the dashed line is the small angle mode test data.



(3) The tested object is a corrugated box tangent to the arc, length * width is 60cm*50cm, the solid line in the figure below is the module's default angle test data; the dotted line is the small angle mode test data.



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°C, 85%RH, Power ON@5V, 72hrs	3	
2	low temperature	-20°C, Power ON@5V,72hrs	3	
3	High temperature and humidity storage	80°C, 80%RH, storage, 72hrs	3	
4	Low temperature storage	-30°C, storage, 72hrs	3	
5	Vibration test	10-200Hz,15min,2.0G, XYZ three axes, each axis is 0.5 hours	3	
6	Drop test	50cm 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 $\leq 10\%$.

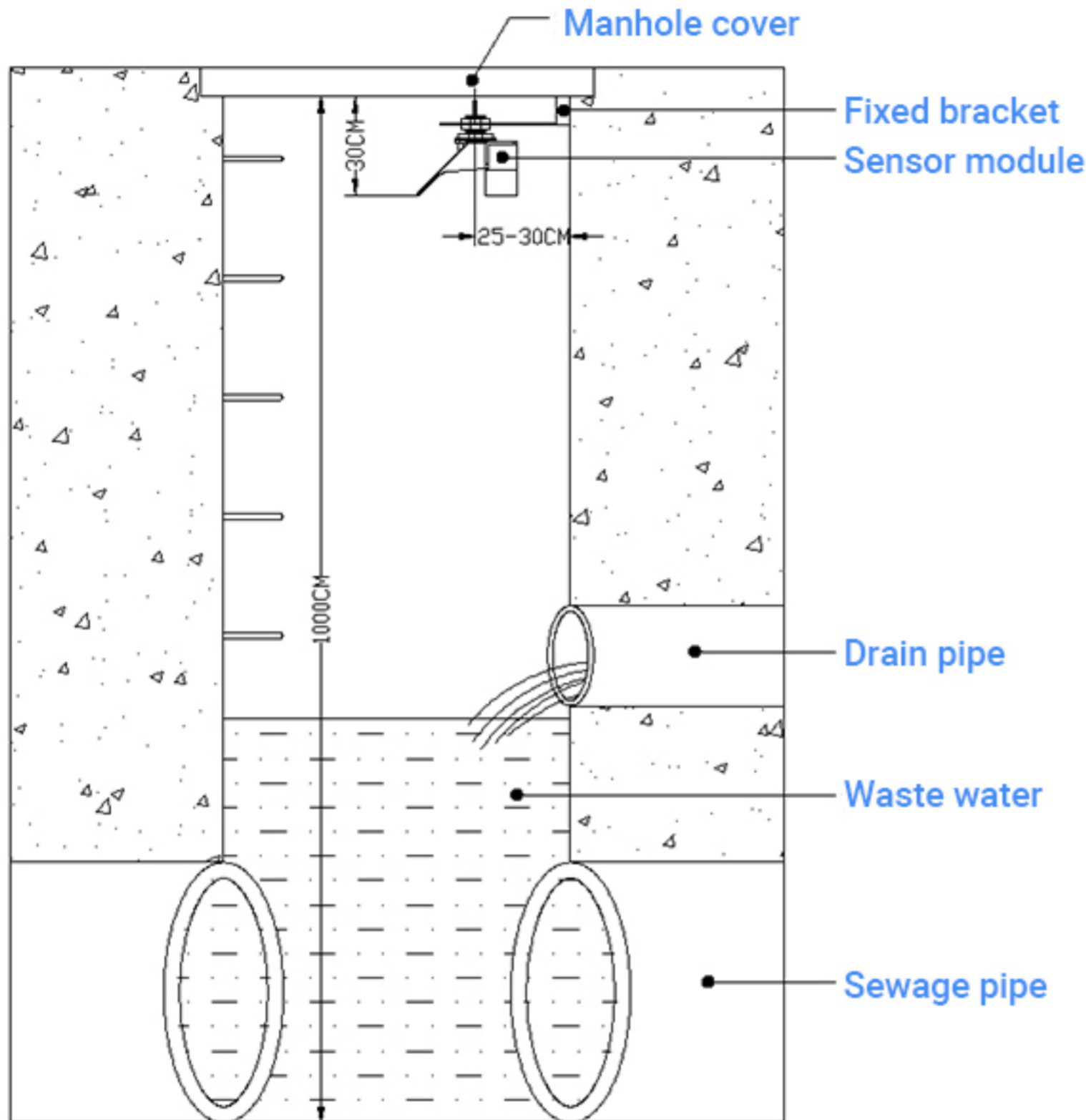
Instruction manual

1. Product advantage

The design of algorithm of sensor module is based on the sewer structure. The module can effectively filter the interference of conventional facilities in the well (stairs, protruding bricks and stone walls, inlet and outlet pipes, small hanging objects on the well wall, etc.). Accurately obtain the current water level to prevent the accumulation of water from overflowing.

2. Installation requirements

Well water level application shown in the figure below. The best position of the module should be far away from the protruding object (stairs) of the well wall, and the flattest side of the well wall is selected as the installation support. The fixed module should be vertical to the water surface, Parallel to the well wall. The best installation distance between the module and the well wall on the same side is 25cm-30cm.

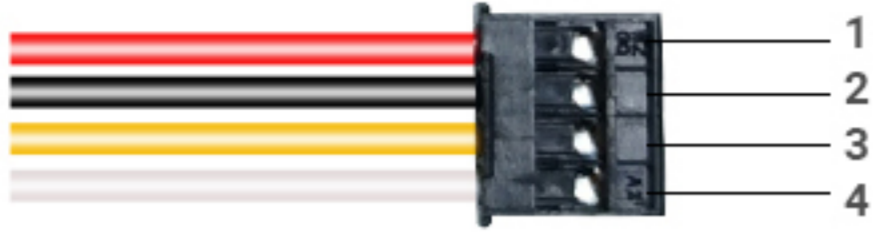


Sensor Module Installation Instruction

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.

3. Pin out

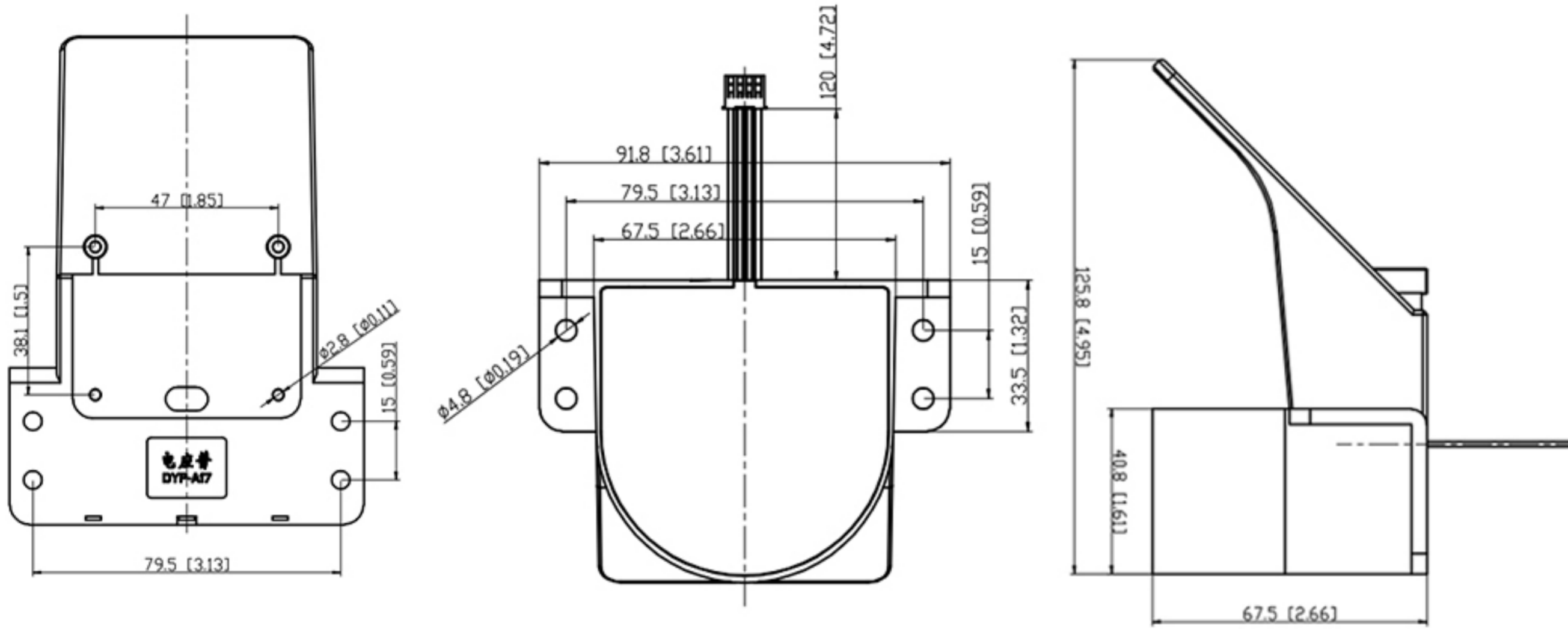


Pin No.	Mark	Description	Remark
①	VCC	3.3V-5V power input	
②	GND	GND	
③	RX	Functional PIN	different output modes have different functions
④	TX	Functional PIN	different output modes have different functions

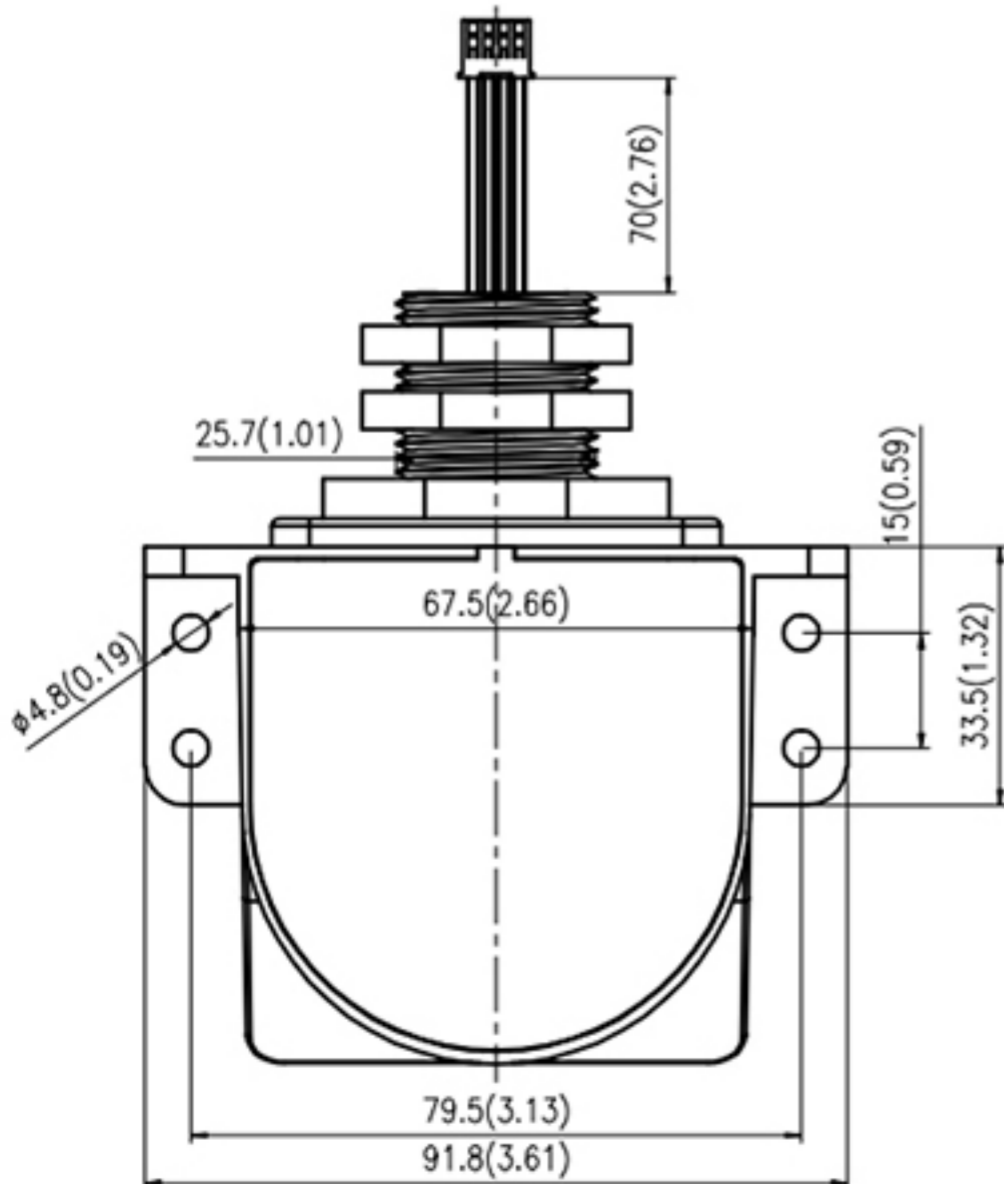
Mechanics

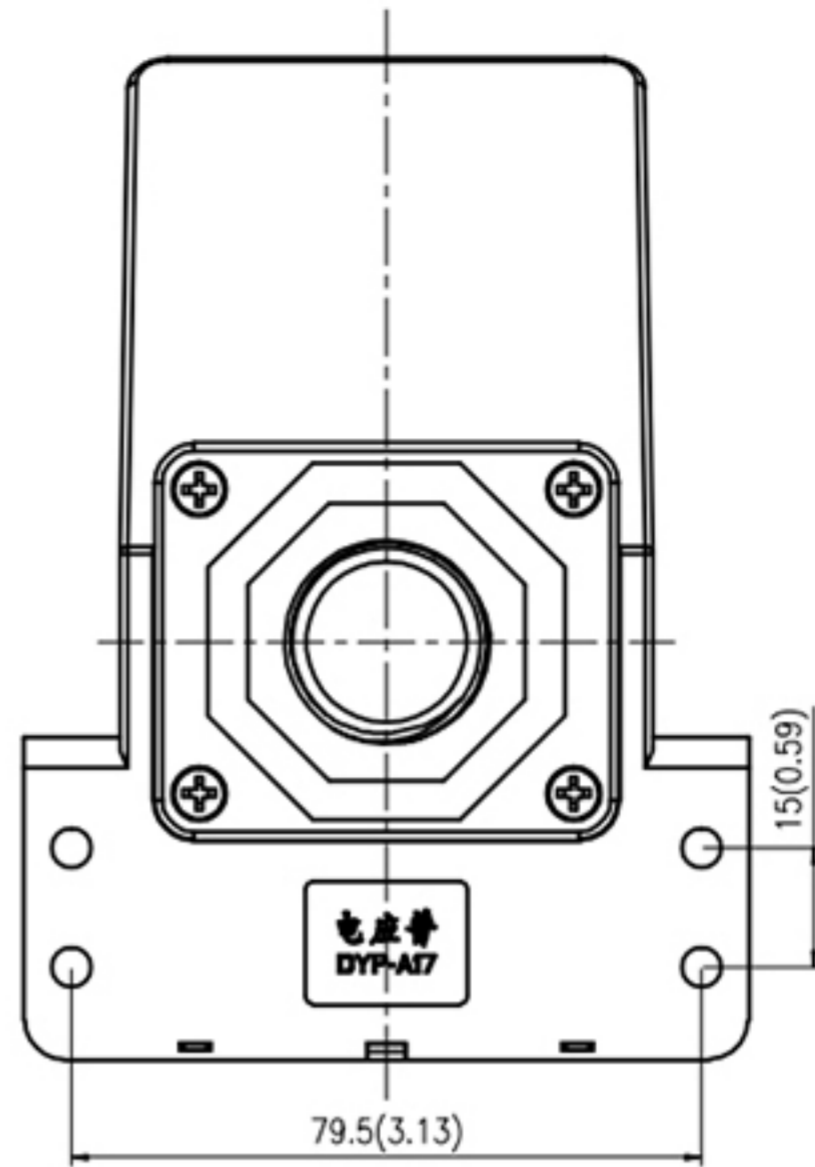
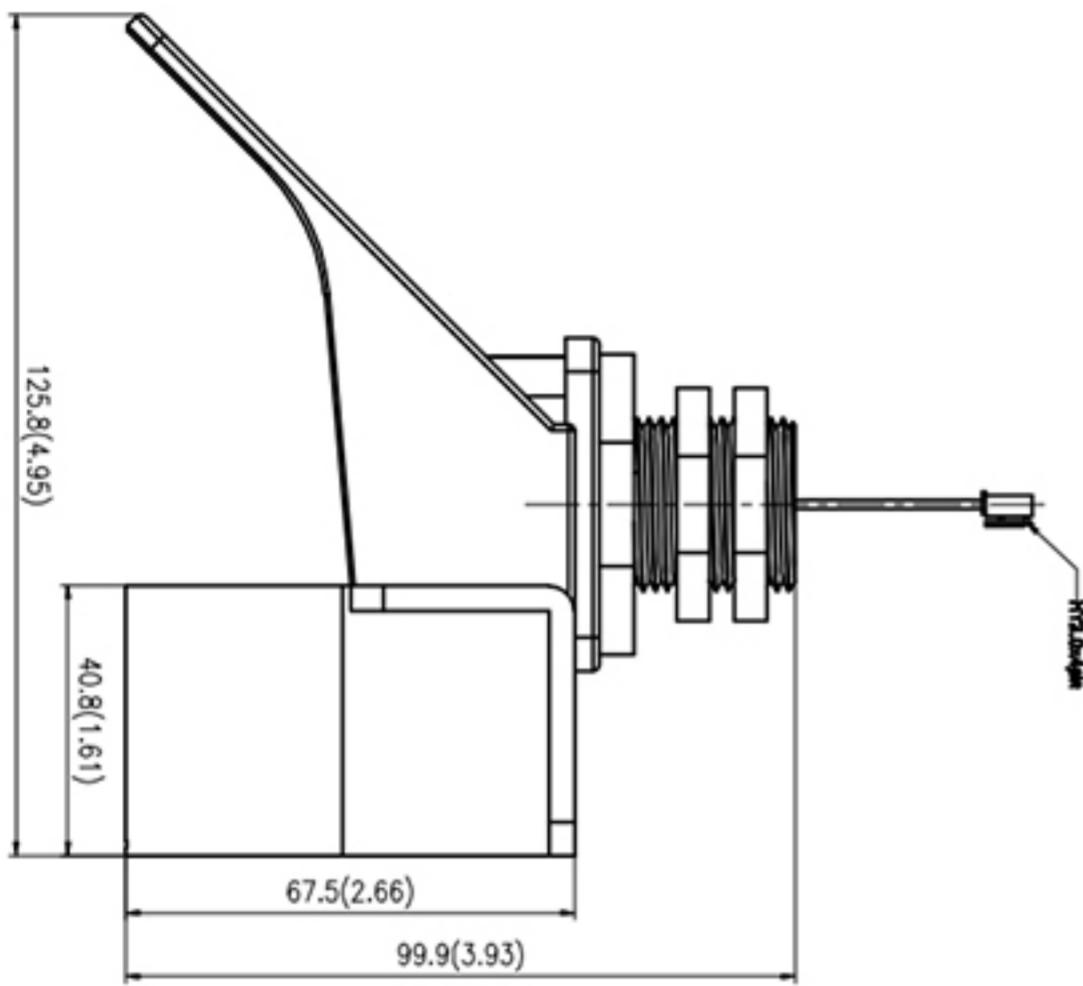
1. Mechanical Dimensions (mm-inch)

(1) Mechanical Dimensions(w/o bracket)



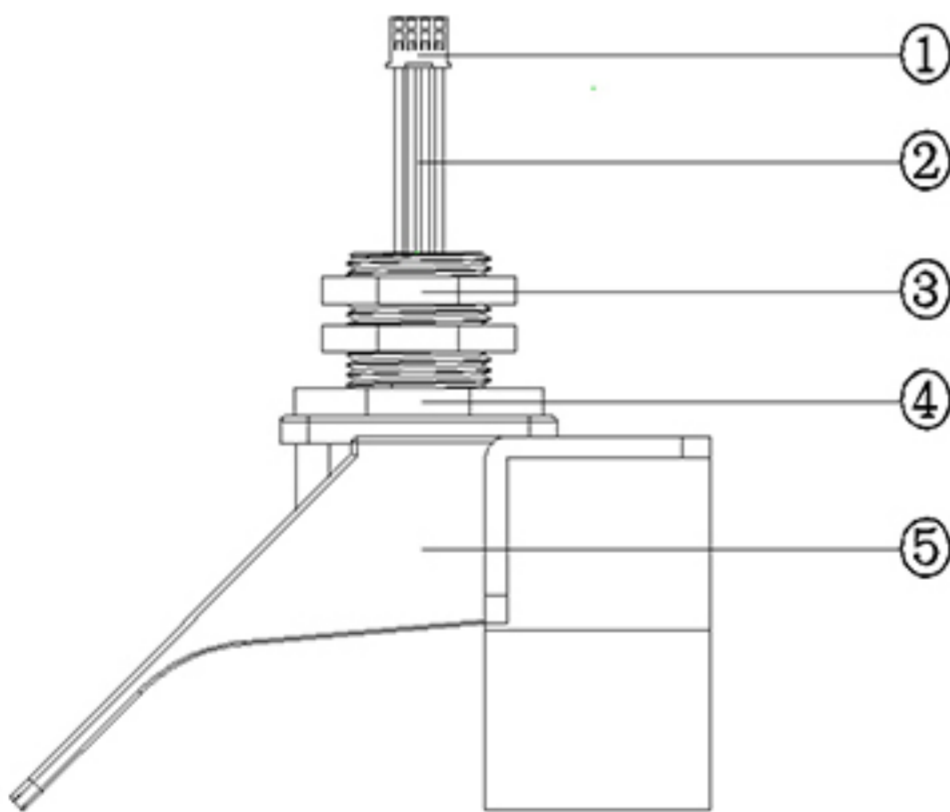
(2) Mechanical dimensions (With Bracket)





Note: The fixed bracket is an optional accessory, the default is no fixed bracket. If you need a fixed bracket, Pls contact sales when you place an order. the installation method of the fixed bracket is compatible with A07.

2. Parts Description



- ① HY2.0mm connector with lock
- ② Wire
- ③ Fixing Nut
- ④ Fixing bracket