



DATASHEET

A20 Series Sensor Module

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Product Description

1. General

The A20 Series module adopts a closed split waterproof probe, structure designed with a water-proof technology to effectively reduce the condensation of the probe. It is adaptable to the working environment and has a certain level of dust and water resistance, suitable for wet and harsh measurements. The 3cm small blind zone is suitable for different detection conditions. It is a simple operation high-performance, high-reliability commercial-grade functional module.

2. Features

- 3cm small blind zone
- 3.3-5.0V input voltage(5-24V for RS485 output)
- 5 different output interfaces optional
- Closed split water proof probe
- Structure designed with water proof technology, effectively reduce the condensation of probe.
- Operating temperature from -15°C to +60°C
- Storage temperature from -25°C to +80°C
- 5uA Low power consumption design, standby current <5uA
- Anti-static electricity design in accordance with IEC61000-4-2 standard

3. Advantages

Small blind zone

Strong anti-interference ability

Reliable and stable data output

Low power consumption

Quick response time

Strong anti-static electricity ability

Widely operating temperature

High measurement accuracy

4. Applications

Horizontal distance sensing

Car parking management system

Robot obstacle avoidance, automatic control

Object proximity and presence awareness

Tank(container) fluid level monitoring

Module specification

1. Operating specification

Item	PWM Output	UART Controlled output	UART Auto output	Switch output	RS485 Output	Unit	Remark
Operating voltage	3.3~5	3.3~5	3.3~5	3.3~5	3.3~5	V	DC
Static current	≤5	≤5	-	-	-	uA	
Average operating current	≤8	≤8	≤8	≤8	≤15	mA	(1)
Peak current	≤40	≤40	≤40	≤40	≤75	mA	
Blind zone	3	3	3	3	3	cm	
Measuring range of flat object	3~300	3~300	3~300	3~300	3~300	cm	
Operating cycle	Controlled	Controlled	100	100	Controlled	ms	
Output interface	PWM	UART	UART	Switch	RS485	-	
Accuracy	$\pm(1+S*0.5\%)$	$\pm(1+S*0.3\%)$				cm	(2)
Temperature compensation	N/A	Support	Support	Support	Support	-	
Beam Angle	$\approx 30^\circ$						(3)

Remarks:

- (1) Typical data by testing with temperature of 25°C, humidity of 65% RH, power supply of 5V, and 100ms duty cycle;
- (2) The temperature is 25°C, humidity is 65% RH, measured object is a 50cm×60cm flat carton, the transducer should be as vertical as possible. S represents the measurement distance;
- (3) The measured object is the reference data obtained from the test of a $\varnothing 75\text{mm} \times 100\text{cm}$ white PVC pipe with a distance of 100cm.

2.Environment

Item	Minimum value	Typical value	Max value	Unit	Remark
Storage Temp	-25	25	75	℃	
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	3.1	5	5.25	V	(1)
	5	12	24	V	RS485 Output
Peak current			40	mA	(1)
			75	mA	RS485 Output
Input ripple			50	mV	Peak value
Input noise			100	mV	Peak value
ESD			±4K/±8K	V	Peak value

Remark:

PWM output, UART Controlled output, UART Auto output, Switch output

Contact wire and pin in accordance with IEC61000-4-2 standard

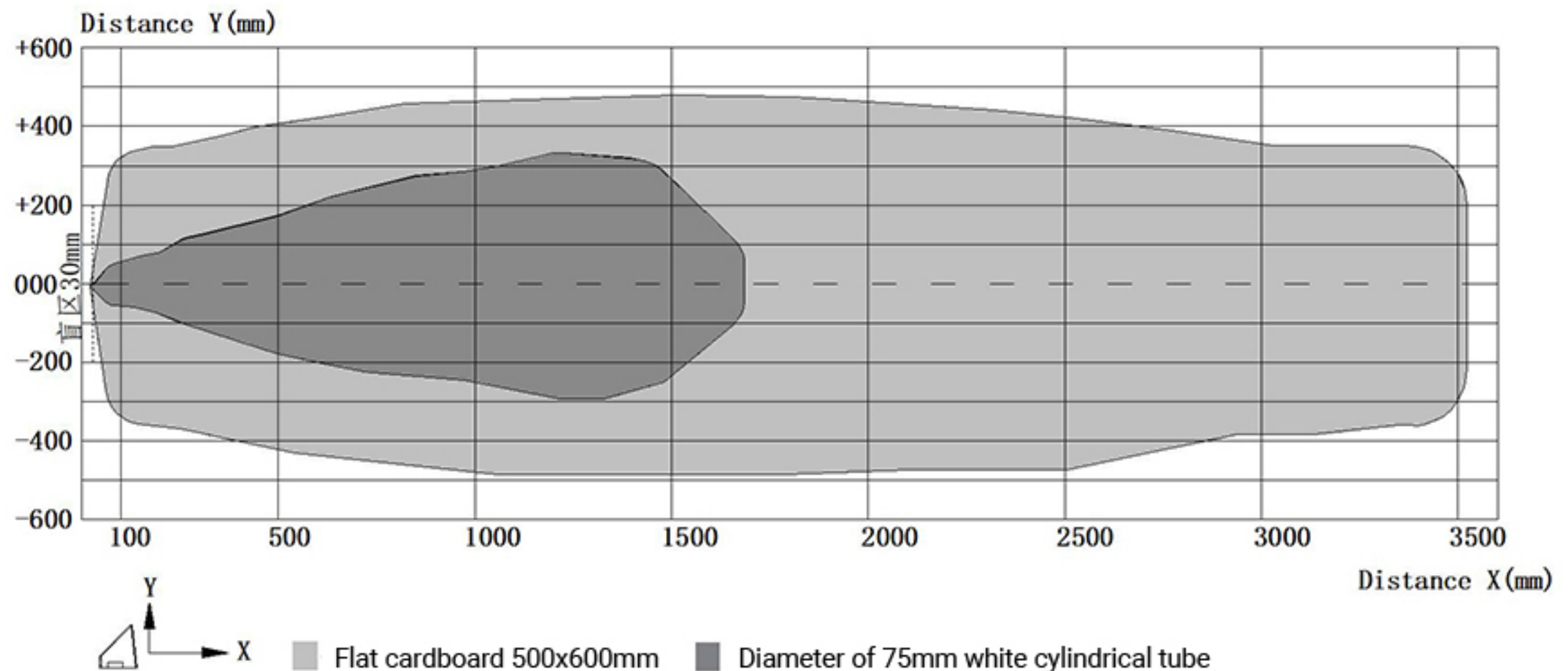
Sensor Selection Instruction

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

No.	Model No.	Output interface	Reamrk
1	DYP-A20NYUW-V1.0	UART Auto	
2	DYP-A20NYTW-V1.0	UART Controlled	
3	DYP-A20NYMW-V1.0	PWM Output	
4	DYP-A20NYGDW-V1.0	Switch Output	
5	DYP-A20NY4W-V1.0	RS485 Output	

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.



Reliable testing Instruction

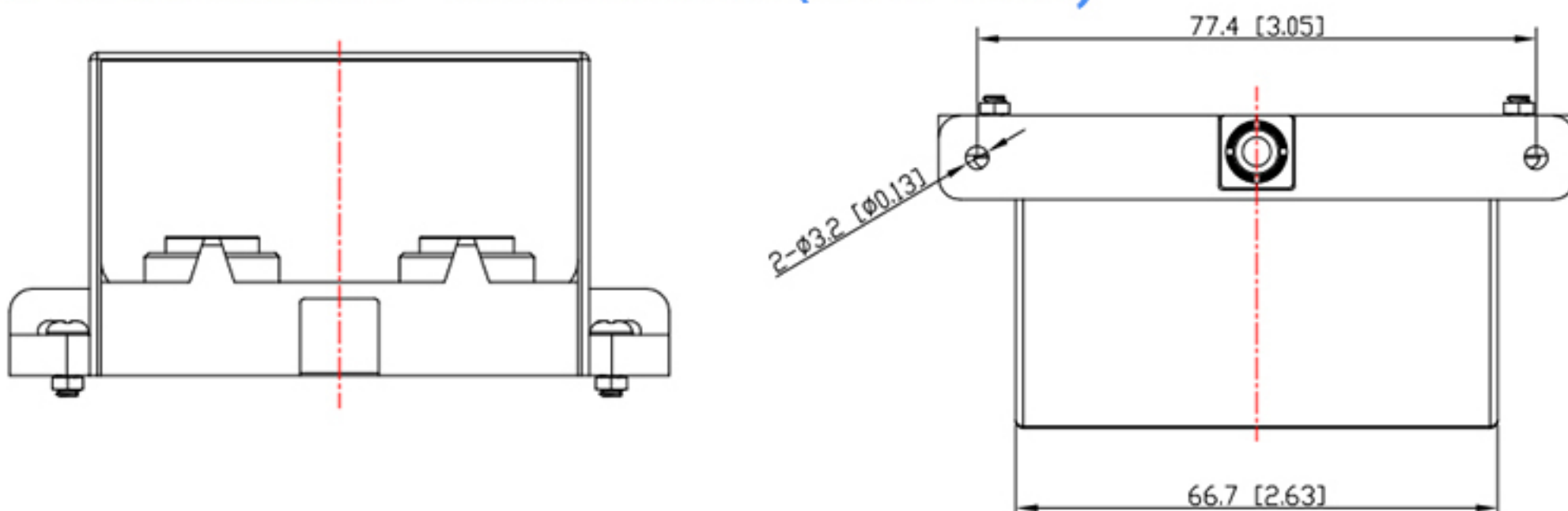
No.	Description	Testing condition	sample QTY	remark
1	High temperature and humidity	65°C, 85%RH, Power ON@5V, 72hrs	3	
2	low temperature	-20°C, Power ON@5V,72hrs	3	
3	High temperature and humidity storage	80°C, 80%RH, storage, 72hrs	3	
4	Low temperature storage	-30°C, storage, 72hrs	3	
5	Vibration test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

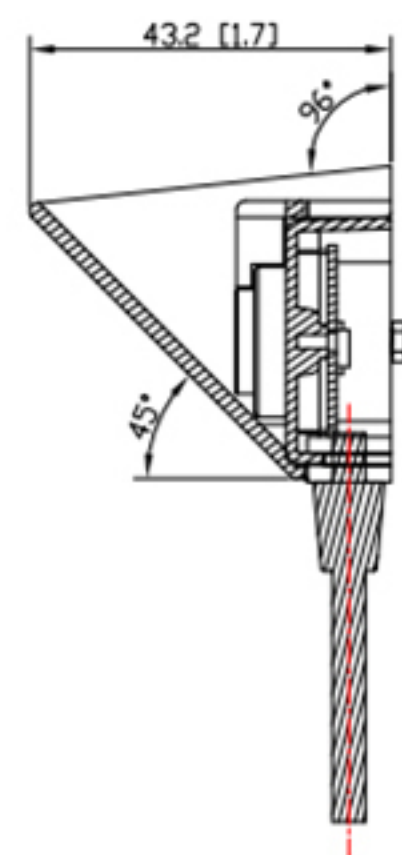
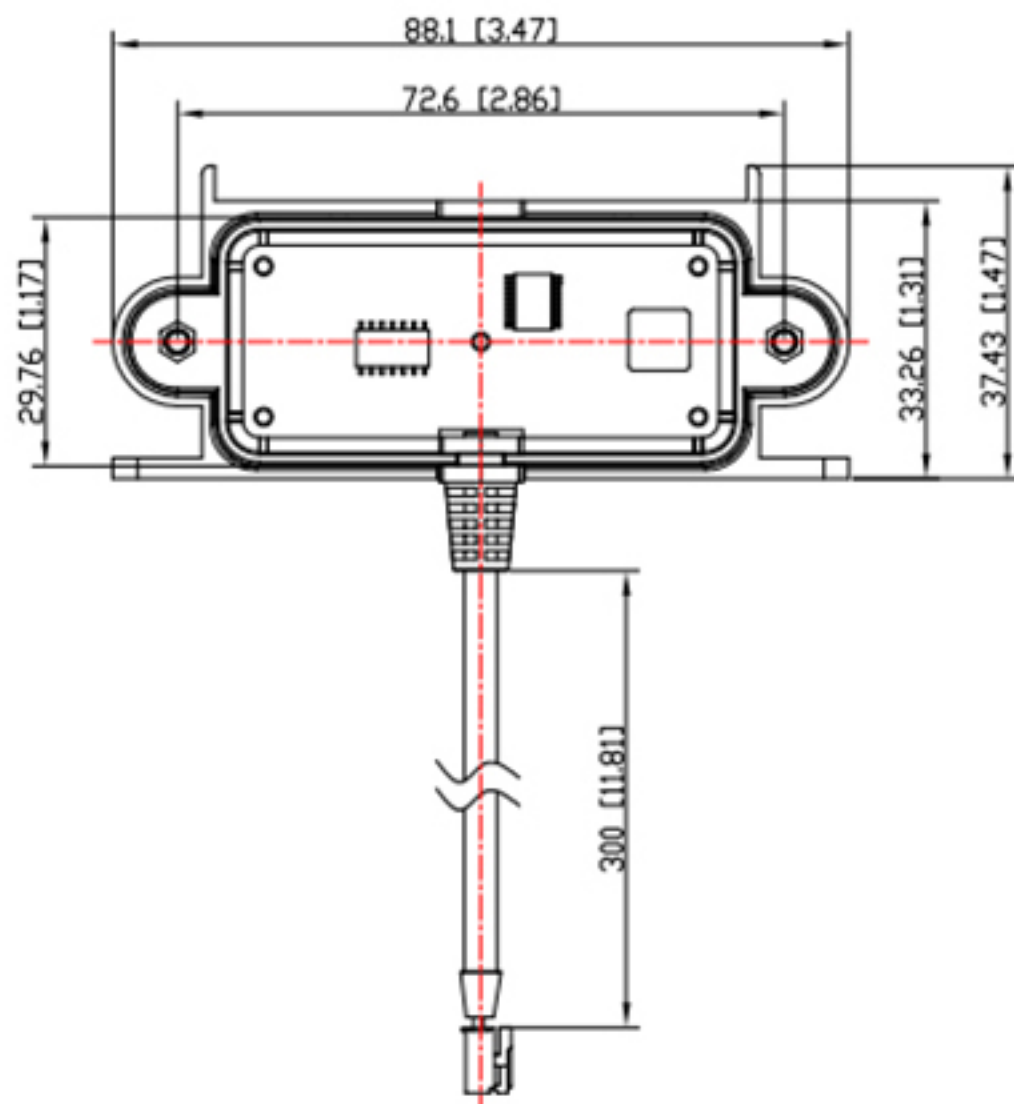
Notice

- (1). The company reserves the right to change this document and update the functions without prior notice.
- (2). Please pay attention to structural tolerances when designing. Unreasonable structural design may cause transient abnormalities.
- (3). Please pay attention to the evaluation of electromagnetic compatibility when designing. Unreasonable system design may cause malfunction of the module.
- (4). When it comes to the application of the module limit parameter boundary, you can contact our engineer to confirm the relevant precautions.

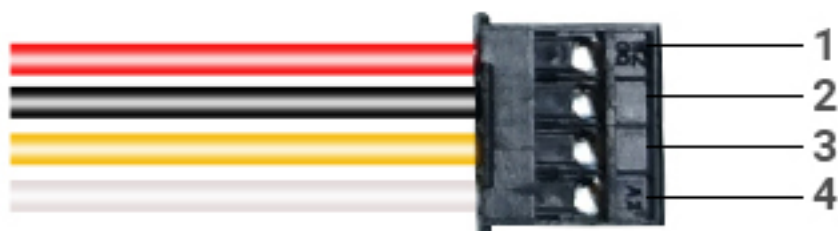
Mechanics

1. Mechanical Dimensions (mm-inch)





2. 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.