Wind direction sensor introduce

RD-WDM-O-1

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1. Product introduce

The wind direction sensor is used to measure the direction value of the wind and convert it into an electrical signal, which can be directly transmitted to the recording device for processing.

The sensor housing is made of aluminum material, with very small dimensional tolerances and high surface accuracy. At the same time, it has high weather resistance, high strength, corrosion resistance and water resistance; the internal circuits are all protected, and the entire sensor has good resistance to harsh environments. Adaptability. The cable connector is a military plug, which has good anti-corrosion and anti-corrosion performance, which can ensure the long-term use of the instrument, and cooperates with the internal imported bearing system to ensure the accuracy of the wind direction collection.

The wind direction sensor adopts low inertia wind vane and precision potentiometer, with high sensitivity and high precision. The precision signal processing unit can output various signals according to user needs. The circuit module PCB uses military-grade A-grade materials to ensure the stability of the parameters and the quality of electrical performance; the electronic components are all imported industrial-grade chips, which makes the whole have extremely reliable anti-electromagnetic interference ability, which can ensure the host at -30 ℃ ~ + It can work normally in the range of 50℃, humidity 35% ~ 85% (non-condensing).

2. Product features

1. The sensor has a compact design, high measurement accuracy, fast response speed, and good interchangeability.

2. Realize low cost, low price and high performance.

3. Flange installation method, can achieve the lower outlet, side outlet, simple and convenient.

4. Reliable performance, ensure normal work and high data transmission efficiency.

5. Wide range of power supply adaptability, good linearity of data information, and long signal transmission distance.

3. Application scenario

This product can measure indoor or outdoor environment in any direction, resolution: 1°, can be widely used in the field of construction machinery (crane, crawler crane, door crane, tower crane, etc.), railway, port, wharf, power plant, meteorology, ropeway, environment, Wind direction measurement in the fields of

greenhouse, aquaculture, air conditioning, energy conservation monitoring, agriculture, medical treatment, clean space, etc.

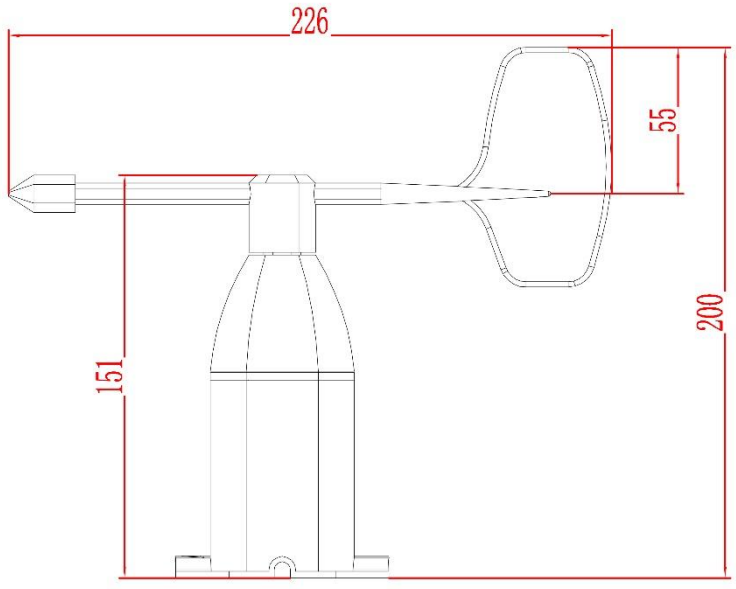
4. Technical Parameters

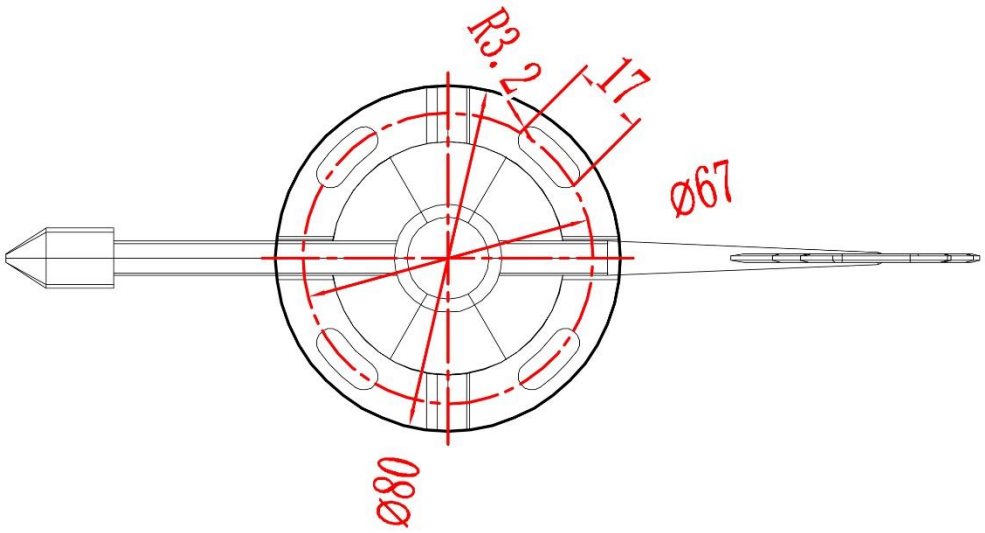
Measure range	0-360 º
Start wind	≥0.5m/s
Accuracy	±1°
Resolution	0.1°
Maximum turning radius	200mm
Output signal	Voltage signal (choose one of 0～2V, 0～5V, 0～10V)
	4～20mA (current loop)
	RS485 (standard Modbus-RTU protocol, device default address: 01)
Power	5～24V DC (when the output signal is 0～2V, RS485)
	12～24V DC (when the output signal is 0～5V, 0～10V, 4～20mA)
Maximum power consumption	RS485 ≤300mW；Voltage type≤300mW；Current type≤700mW
Working temperature	-40~75℃; Humidity ≤100%RH
Signal output	0-2V,4-20mA,RS485
Protection class	IP65
Wireless transmission	GPRS, LoRa. LoRaWAN, NB-IOT

5. Current signal impedance requirements

Supply voltage	9V	12V	20V	24V
Maximum impedance	125Ω	250Ω	500Ω	>500Ω

6. Product size





7. Wiring definition

1.RS485 output

Wire colour	**Interface**
Red	Power positive (12-24VDC)
Black	Power negative
Yellow	RS485A
Green	RS485B

2. Analog output

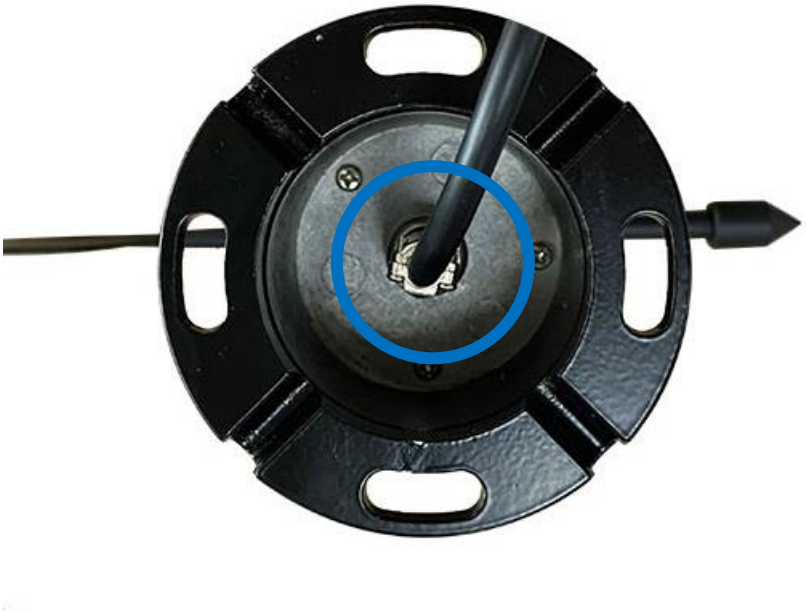
Wire colour	**Interface**
Red	Power positive (12-24VDC)
Black	Power negative , Analog output common end
Yellow	Analog output

8. Installation method

1. Side outlet

2. Bottom outlet

3. Aviation joint

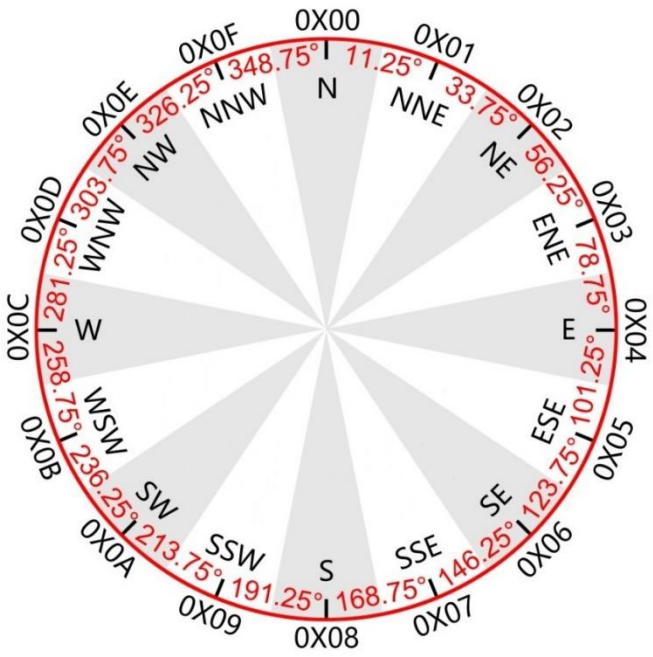


4. Waterproof connector

9. Data conversion method

1. Analog output conversion method

	0 ~ 2V	0 ~ 5V	0 ~ 10V	4 ~ 20mA	RS485
N	1.9375 ~ 0.0625	4.84368 ~ 0.156255	9.6875 ~ 0.3125	19.5 ~ 4.5	0X00
NEN	0.0625 ~ 0.1875	0.156255 ~ 0.46875	0.3125 ~ 0.9375	4.5 ~ 5.5	0X01
EN	0.1875 ~ 0.3125	0.46875 ~ 0.781245	0.9375 ~ 1.5625	5.5 ~ 6.5	0X02
EEN	0.3125 ~ 0.4375	0.781245 ~ 1.09374	1.5625 ~ 2.1875	6.5 ~ 7.5	0X03
E	0.4375 ~ 0.5625	1.09374 ~ 1.406235	2.1875 ~ 2.8125	7.5 ~ 8.5	0X04
EES	0.5625 ~ 0.6875	1.406235 ~ 1.71873	2.8125 ~ 3.4375	8.5 ~ 9.5	0X05
ES	0.6875 ~ 0.8125	1.71873 ~ 2.031225	3.4375 ~ 4.0625	9.5 ~ 10.5	0X06
SES	0.8125 ~ 0.9375	2.031225 ~ 2.34372	4.0625 ~ 4.6875	10.5 ~ 11.5	0X07
S	0.9375 ~ 1.0625	2.34372 ~ 2.656215	4.6875 ~ 5.3125	11.5 ~ 12.5	0X08
SWS	1.0625 ~ 1.1875	2.656215 ~ 2.96871	5.3125 ~ 5.9375	12.5 ~ 13.5	0X09
WS	1.1875 ~ 1.3125	2.96871 ~ 3.281205	5.9375 ~ 6.5625	13.5 ~ 14.5	0X0A
WWS	1.3125 ~ 1.4375	3.281205 ~ 3.5937	6.5625 ~ 7.1875	14.5 ~ 15.5	0X0B
W	1.4375 ~ 1.5625	3.5937 ~ 3.906195	7.1875 ~ 7.8125	15.5 ~ 16.5	0X0C
WWN	1.5625 ~ 1.6875	3.906195 ~ 4.21869	7.8125 ~ 8.4375	16.5 ~ 17.5	0X0D
WN	1.6875 ~ 1.8125	4.21869 ~ 4.531185	8.4375 ~ 9.0625	17.5 ~ 18.5	0X0E
NWN	1.8125 ~ 1.9375	4.531185 ~ 4.84368	9.0625 ~ 9.6875	18.5 ~ 19.5	0X0F



2 .RS485 Digital output method

1. Basic agreement

RS485 signal, standard Modbus-RTU protocol

Baud rate: 9600bps can be set, factory default is 9600bps; Check digit: none; Data bit: 8; Stop bit: 1

2. Communication protocol examples and explanations

(1) Query data (wind direction angle, wind direction) of the transmitter (address 1), host→slave

- Inquiry frame

Address code	Function code	Register start address	Register length	CRC16 low	CRC 16 high
0X01	0X03	0X00 0X00	0X00 0X02	0XC4	0X0B

- Response frame

Address code	Function code	Data length	Wind direction angle	Wind direction	CRC16 low	CRC 16 high
0X01	0X03	0X04	0x02 0x9A	0x00 0x03	0x9B	0XA5

Calculation instructions:

Data representation method:

A. Wind direction angle: after converting the data into decimal data ÷10

B. Wind direction: For the specific orientation, please refer to "16 Direction Map of Wind Direction Sensor"

The above data shows that the wind direction angle: 66.6°, the wind direction: northeast and northeast

(2) Modify the address, for example: change the address of the transmitter with address 1 to 2, host → slave

Original address	Function code	Start register address high	Start register address low	Reserved 3	New address	CRC16 low	CRC16 high
0X01	0X06	0X00	0X30	0X00	0X02	0X08	0X04

The data returned from the slave to the master is the same as the sent data, the same means that the setting is successful

Note: If you forget the original address of the sensor, you can use the broadcast address 0xfe instead. When using the broadcast address 0xfe, the master can only connect one slave at a time.