



Product introduction

The wind direction sensor adopts a high-precision magnetic sensor chip, and selects a low-inertia ABS wind vane to respond to the wind direction, with good dynamic characteristics. The product has the advantages of large range, good linearity, strong lightning resistance, convenient observation, stability and reliability, etc. It can be widely used in meteorology, ocean, environment, airport, port, laboratory, industry, agriculture and transportation and other fields.

Technical Parameters

Range: 0~360°

Accuracy: ±3°

Start wind speed: ≤0.5m/s

Power supply method:

- DC 5V
- DC 12V-24V
- Other _____

Output:

- Current: 4~20mA
- Voltage: 0~5V
- RS485
- Other

Instrument cable length:

- Standard: 2.5 meters
- Other

Load capacity:

current type output impedance ≤ 250Ω

Voltage type output impedance ≥ 1KΩ

Working environment: temperature -40℃~80℃,
humidity ≤100%RH

Protection class: IP45

Cable rating: Rated
voltage: 300V

Temperature rating: 80℃

Product weight: 210 g

Product power consumption: 0.15W

Calculation formula

Voltage type (0~5V output):

$$D=360^{\circ} \times V / 5$$

(D is the wind direction indication, V is the output voltage (V))

Current type (4~20mA output):

$$D=360^{\circ} \times (I-4) / 16$$

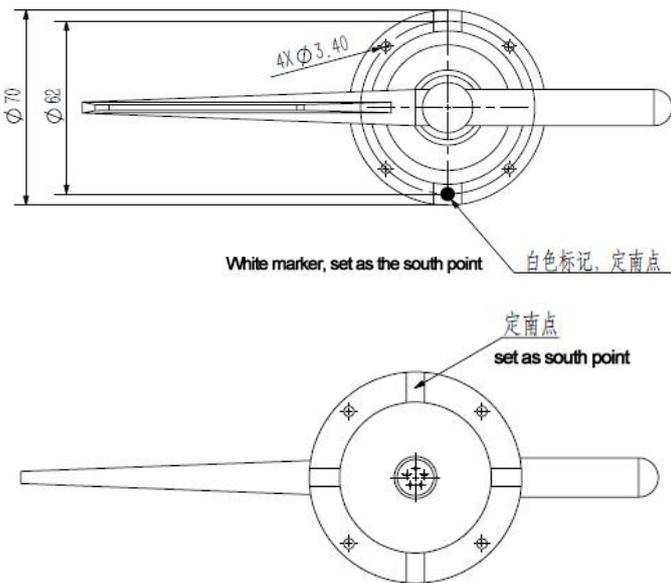
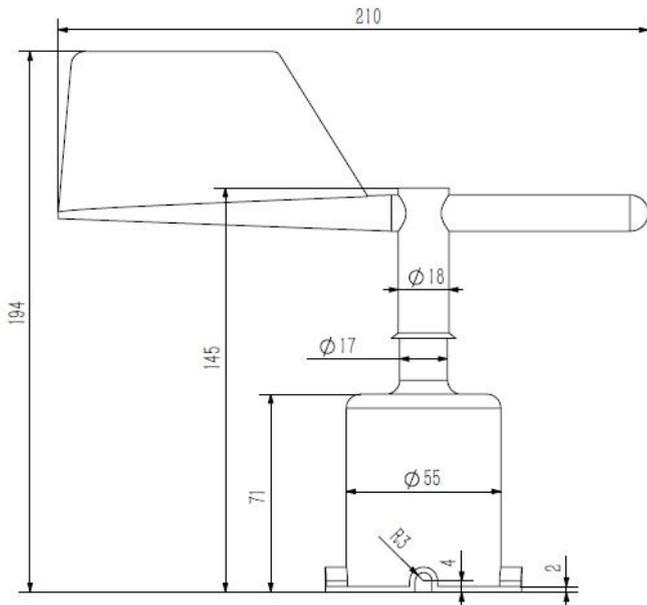
(D is wind direction indication, I is output current (mA))

Connection method

- (1) If equipped with the collector produced by our company, directly connect the sensor to the corresponding interface on the collector using the sensor cable.
- (2) If the transmitter is purchased separately, the matching line sequence of the transmitter is as follows:

Line color	output signal		
	Voltage	Current	Communication s
Red	+	+	+
Black (Green)	-	-	-
Yellow	Voltage Signal	Current Signal	A
Blue			B

Structural dimensions



MODBUS-RTU Communication

Protocol

- I . Serial format
- 8 data bits
- stop bit 1 or 2
- no check digit
- The baud rate is 9600, and the interval between

two communications is at least 1000ms.

II . Communication format

[1] Write the device address

Send: 00 10 Address CRC (5 bytes)

Returns: 00 10 CRC (4 bytes)

Instructions:

1. The address bit of the read/write address command must be 00.
2. Address is 1 byte, the range is 0-255.

For example: send 00 10 01 BD C0

return 00 10 00 7C

[2] Read the device address

Send: 00 20 CRC (4 bytes)

Returns: 00 20 Address CRC (5 bytes)

Description: Address is 1 byte, the range is 0-255

For example: send 00 20 00 68

Return 00 20 01 A9 C0

[3] Read real-time data

Send: Address 03 00 00 00 01 XX XX

Description: As shown in the figure below:

CODE	Functional Definition	Remark
Address	Station number (address)	
03	Function code	
00 00	Start address	
00 01	Read points	
XX XX	CRC Check code, low front and high back	

Return: Address 03 02 XX XX XX XX

Description:

CODE	Functional Definition	Remark
Address	Station number (address)	
03	Function code	
02	Read unit bytes	
XX XX	Date (low front and high back)	hex
XX XX	CRC Check code	

For example: send 01 03 00 00 00 01 84 0A

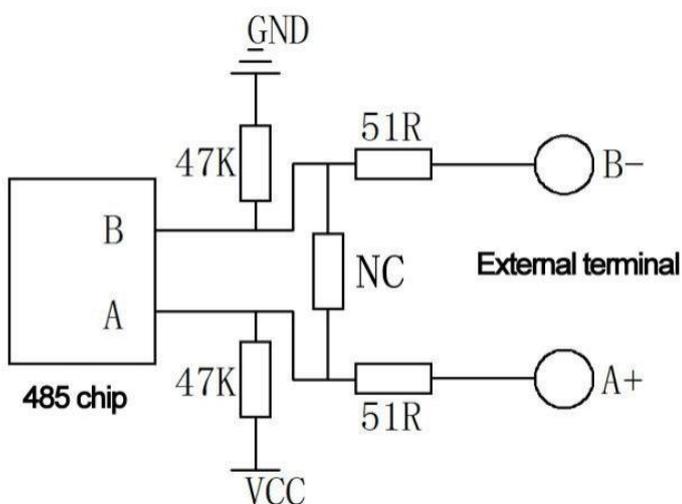
Return 01 03 02 00 B4 44 09

Note: 00 B4 converted to hexadecimal is 180, after data analysis, the actual wind direction value is 180°

Steps to calculate CRC code:

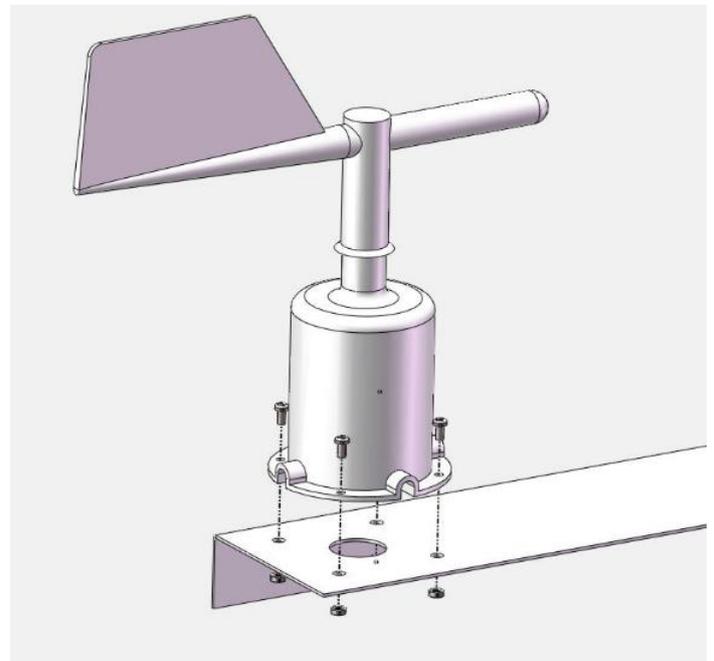
1. The preset 16-bit register is hexadecimal FFFF (that is, all 1s). Call this register the CRC register;
2. XOR the first 8-bit data with the lower bits of the 16-bit CRC register, and place the result in the CRC register;
3. Shift the contents of the register one bit to the right (toward the lower bit), fill the highest bit with 0, and check the shifted out bit after the right shift;
4. If the shift out bit is 0: repeat step 3 (shift right one bit again)
If the shift-out bit is 1: XOR the CRC register with the polynomial A001 (1010 0000 0000 0001);
5. Repeat steps 3 and 4 until the right shift is performed 8 times, so that the entire 8-bit data is processed;
6. Repeat steps 2 to 5 to process the next 8-bit data;
7. The final CRC register is the CRC code;
8. When the CRC result is put into the information frame, the high and low bits are exchanged, and the low bits are first.

RS485 Circuit



Installation

1. Make sure the mounting bracket is parallel to the ground;
2. As shown in the picture, use M3 screws and nuts to pass through the sensor 4 mounting holes. Fix the sensor on the mounting bracket;
3. There is a white Dingnan mark on the wind direction sensor housing. Point it to the south when loading (can be determined by the delivery compass bits);
4. Connect the air plug connector to the sensor through the reserved M23 route hole connected to the air port;
5. Please avoid disassembling the sensor during installation.



Notice

1. Please check whether the packaging is in good condition, and check whether the product model is consistent with the selection;
2. Do not connect with live power. After the wiring is completed and checked, the power can be turned on;
3. The length of the sensor line will affect the output signal of the product. Do not arbitrarily change the components or wires that have been soldered when the product leaves the factory. If

you need to change it, please contact the manufacturer;

4. The sensor is a precision device, please do not disassemble it by yourself, or touch the surface of the sensor with sharp objects or corrosive liquid, so as not to damage the product;

5. Please keep the verification certificate and qualification certificate, and return it together with the product during maintenance.

Trouble Clearing

1. The wind vane does not rotate well, and the hysteresis is large. There may be foreign objects in the bearing or the lubricating oil runs out due to long-term use. Please inject the instrument oil from the upper bearing of the sensor or send the sensor back to the company for oil injection;
2. During analog output, the display device indicates that the value is 0 or not within the range. The collector may not be able to obtain information correctly due to wiring problems. Please check whether the wiring is correct and firm;
3. If not for the above reasons, please contact the manufacturer.

Selection table

No.	Power supply	output signal	explanation
NBL-W-DS			wind direction sensor (transmitter)
	5V		5V Power supply
	12V-24V		12V-24V Power supply
		V	0-5V
		A1	4-20mA
		W2	RS485
Example: 5V-V: Wind direction sensor (transmitter) 5V power supply, 0-5V output			

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