wind direction sensor User's guide

Model:YGC-FX

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Please read the instructions carefully before using them and keep them properly.

Thank you for choosing our products!

Due to the continuous improvement of our products, the products you purchased may differ from the illustrations in this manual without any notice. Please prevail in kind.

Introduction

The interior of the wind sensor uses a precision angle sensor, and selects the low inertia ABS wind vane to respond to the wind direction with good dynamic characteristics. The product has the advantages of good linearity, high precision, no dead spots, strong anti-lightning ability, convenient observation, stable and reliable. It can be widely used in the fields of weather, ocean, environment, airports, ports, laboratories, agriculture, industry and transportation.

Technical Parameters

Measurement range: 0～359°

Accuracy: ±3°

Resolution: 1°

Starting wind speed: ≤0.5m/s

Power supply:

☐DC 5V   ☐DC 12V   ☐DC 24V   ☐Other_____

Output:

☐Current: 4～20mA

☐Voltage: 0～5V

☐Voltage: 1～5V

☐Voltage: 0～2.5V

☐RS232: (☐ASCII   ☐ModBus)

☐RS485: (☐ASCII   ☐ModBus)

☐Other_____

Cable: ☐Standard: 2.5m ☐Other_____

Load capacity: Current output impedance≤250Ω

　　　　　　Voltage output impedance≥1KΩ

Operating environment: Temperature -20℃～60℃

　　　　　　Humidity≤100%RH, No condensation

Defend grade: IP54

Cable grade: Nominal voltage: 300V

Product weight: 210 g

Power dissipation: 150 mW

Calculation formula

1. Voltage type (0-5V):

$D=72 \times V$ ° (D: value of wind direction, V: voltage signal)

2. Current type (4～20mA output):

$D=22.5 \times (I-4)$ °

(D: value of wind direction, I: current type mA)

3. Other models of calculation formula:

$D=$ _____

Wind direction sensor 0/360 degree is positive north, 180 degree is positive south.

风向传感器16方位图
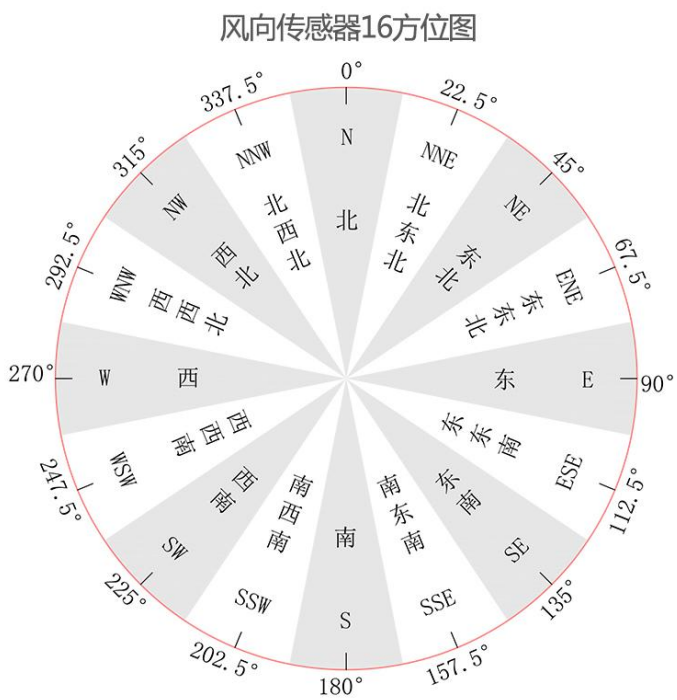
Wiring method

(1) If the sensor is equipped with our instrument, directly use the sensor cable to connect the sensor with the corresponding interface on the instrument.

(2) If the sensor is purchased separately, the order of the wires as followed:

Cable color	Output signal		
	Voltage, current	RS485	RS232
Red	Power+	Power+	Power+
Black	Power-	A+	Connect equipment RX, computer serial port 2
Yellow	Signal output	B-	Connect equipment TX, computer serial port 3
Green		Power-	Power-

Installation method

1. Make sure the mounting bracket is parallel to the ground;

2. Connect the sensor line, as shown in the figure, the use of matching fasteners, mounting holes through the sensor, the sensor is fixed to the mounting bracket;

3. Wind direction sensor housing label has a fixed south line, the sensor axis and the South line of the installation of the South alignment (through the distribution of compass positioning);

4. Avoid removing the sensor during installation.
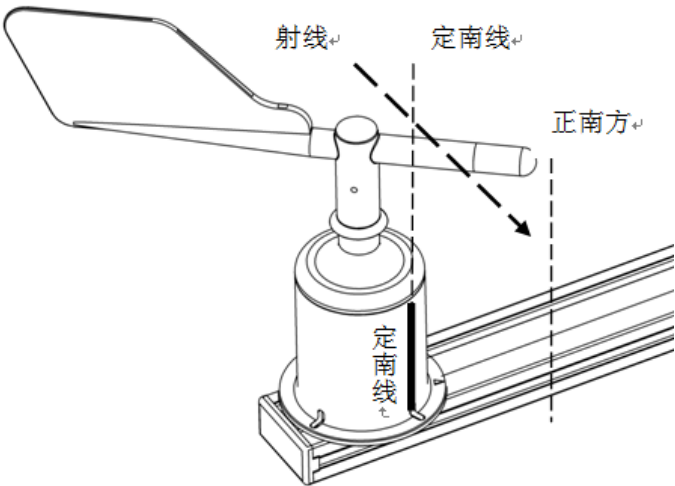
Structure size
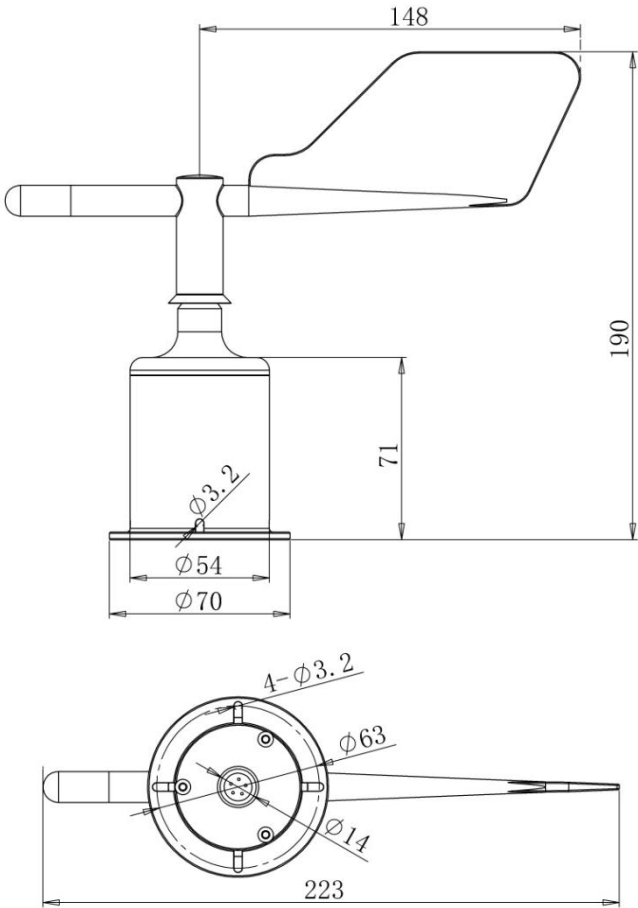
Communication protocol

1. If you are using a single sensor connected to the computer to read data directly, it is recommended to use the ASCII private protocol (see page 4), you can visual display in ASCII (hex send, non-hex receive);

2. If you are multi-sensor connected to the PLC, configuration or access programmable collector, it is recommended to use the Standard ModBus-RTU protocol (see page3, hex send and receive).

Standard ModBus-RTU protocol

一、The serial format

8 data bits, 1 stop bit, no parity bit.

Baud rate 9600 bps, serial debugging software set to send and receive hex, the two communication intervals of at least 1000ms above, the instructions in the CRC for the parity bit, two words Festival.

二、Communication format

1. Write device address (eg write address 02)

Send	00	10	01	02	81	B0
Description	Old address			New address	CRC check	
Return	00	10	01	01	C1	B1
Description	Old address			01 Success 00 Fail	CRC check	

2. Read device address (eg read address 02)

Send	00	03	00	01	00	01	D4	1B
Description	Address						CRC check	
Return	00	03	02	00	02		04	45
Description	Address			Device address			CRC check	

3. Read register data (eg read address 02)

Send	02	03	00	00	00	01	84	39
Description	Address		Initial address		Read points		CRC check	
Return	02	03	02	00	26		7D	9E
Description	Address		Data bytes	Device data			CRC check	

The sensor returns data 0x0026 converted to decimal 38, indicating a wind direction of 38 degrees, no decimal places.

4. Read device baud rate (eg read address 02)

Send	02	03	00	10	00	01	85	FC
Description	Address						CRC check	
Return	02	03	02		25	80	E7	74
Description	Address		Data bytes		Baud rate		CRC check	

The return baud rate is 0x2580, Converted to decimal 9600.

5. Write device baud rate (For example: write 2400 baud rate)

Send	02	10	10	09	60	5E	BD
Description	Address			New baud rate		CRC check	
Return	02	10	01	01		C0	09
Description	Address			01 Success 00 Fail		CRC check	

Note: The baud rate of the device is 4800,9600 (default), 19200. After baud rate modification, the device needs to be powered off and restarted. If other baud rates are not supported, the device automatically reverts to 9600 after rebooting.

ASCII private protocol

一、the serial format

Data bit 8, stop bit 1, parity bit none. Baud rate 9600bps, two communication intervals at least 1000ms above.

二、Communication format

1. Write device address (eg write address 02)

Send	AA	00	10	00	02
Description		Broadcast address			New address （1-255）
Return	OK				
Description	Write new address successfully				

2. Read device address

Send	AA	00	03	00	00
Description		Broadcast address			
Return	Address=002				
Description	Address read: 2				

3. Read real-time data

Send	AA	02	03	0F	00
Description		Device address			
Return	WD=125 °				
Description	Return wind angle value of 125 degrees				

In the above description, the transition characters such as spaces are ignored.

Serial software (such as SSCOM3.3) check HEX sent, do not check the HEX display, the device will return to power on.

ModBus CRC check steps

1. Preset 16-bit register hexadecimal FFFF, said the register for the CRC register;

2. The first 8-bit data and CRC register low or XOR, the result placed in the CRC register;

3. The contents of the register to the right one (toward the low), with 0 to fill the most significant bit, check the lowest bit;

4. If the least significant bit is 0: Repeat step 3 (shift again) If the least significant bit is 1: The CRC register is XOR'ed with the polynomial A001 (1010 0000 0000 0001)

5. Repeat steps 3 and 4 until 8 shifts to the right so that the entire 8-bit data is completely processed;

6. Repeat step 2 to step 5 for the next 8-bit data processing;

7. The resulting CRC register is the CRC code (the resulting CRC code is low after high).

Precautions

1. Please check the packaging is intact, and check the product model is consistent with the selection;

2. Do not live wiring, check the wiring is completed after the correct power;

3. Sensor length will affect the product output signal, do not use when changing products, if there is a need to change, please contact with the manufacturer;

4 Sensor is a precision device, the user when in use, please do not disassemble, with sharp objects or corrosive liquid contact with the sensor surface, so as not to damage the product;

5. Please save the test certificate and certificate, repair with the return of the product.

Troubleshooting

1. Wind vane rotation is not working, hysteresis large. Due to long-term use lead to foreign body bearing or stuck, please send the sensor back to the company;

2. Analog signal or RS232, RS485 output instrument display value is not correct. May not be able to get the correct data due to wiring problems or communication serial port failure. Please check the wiring is correct, solid, serial port is occupied, the serial port settings are correct;

3. If not for the above reasons, please contact the manufacturer.

Selection table

Model	Power	Output	Description
FS			Wind direction sensor
	5V		5V
	12V		12V
	24V		24V
		V	0-5V
		V1	1-5V
		V2	0-2.5V
		A1	4-20mA
		A2	0-20mA
		W1	RS232 ModBus / ACSII
		W2	RS485 ModBus / ACSII