

wind speed sensor

User's guide

Model:YGC-FS



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

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Introduction

The wind speed sensor adopts the traditional three wind cup structure, the wind cup is made of ABS material, and has high strength and small starting wind speed. The cup body built-in signal processing unit can output the corresponding wind speed signal according to the user demand.

With the function of the relay wind sensor can directly switch the other devices according to the wind speed value, but also can output 485 signal, pulse and voltage signal at the same time, which can be widely used in advertising barrier, meteorology, ocean, environment, airports, ports, laboratories, Industry and agriculture and transportation and other fields.

Technical Parameters

Measurement range: ☐ 0~45m/s ☐ 0~70m/s

Accuracy: $\pm(0.3+0.03V)$ m/s (V: wind speed)

Resolution: 0.1m/s

Starting wind speed: ≤ 0.5 m/s

Power supply mode: ☐ DC5V ☐ DC12V ☐ DC24V

Output: ☐ Pulse: Pulse signal

☐ Current: 4~20mA

☐ Voltage: 0~5V

☐ Voltage: 1~5V

☐ Voltage: 0~2.5V

☐ RS232: (☐ ASCII ☐ ModBus)

☐ RS485: (☐ ASCII ☐ ModBus)

☐ Reply

Cable: ☐ Standard: 2.5m ☐ Other_____

Load capacity: Current output impedance $\leq 600\Omega$

Voltage output impedance $\geq 1K\Omega$

Operating environment: Temperature $-20^{\circ}\text{C} \sim 60^{\circ}\text{C}$

Humidity $\leq 100\%\text{RH}$, No condensation

Defend grade: IP54

Cable grade: Nominal voltage: 300V, 80°C

Product weight: 130 g (Different model is slightly different)

Power dissipation: 100 mW

(The specific model is slightly different)

* Action time: below 10ms

* Reset time: below 5ms

* Insulation resistance: below 1000M Ω

* Power consumption: 400mW

* Rated and maximum load: AC250V 5A, DC30V 5A

* Electrical life: more than 70,000

(2A up to 300,000 times or more)

Note: In this document, *is the relay-output wind speed sensor.

Calculation formula

1. Implusive (0-5V): $W = 0$, ($F = 0$)

$$W = 0.1 + 0.0875 \times F \quad (F \neq 0)$$

(W: value of wind speed m/s; F: pulse signal frequency)

2. Current type (Range 45m/s):

$$W = (I - 4) \times 45 / 16$$

(W: value of wind speed m/s; I: current type 4-20mA)

3. Voltage type (Range 45m/s):

$$W = V / 5 \times 45$$

(W: Range m/s; V: voltage signal 0-5V)

4. Other models of calculation formula:

$$W = \underline{\hspace{2cm}}$$

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:

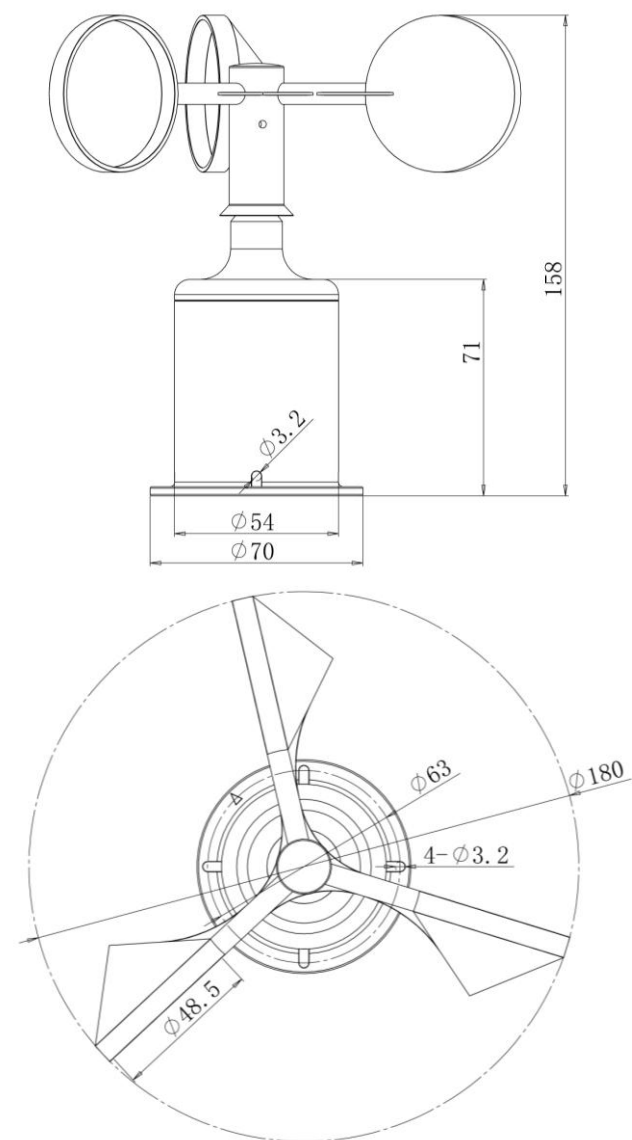
Cable color	Output signal		
	Voltage, current, pulse	RS485	RS232
Red	Power+	Power+	Power+
Black	Power-	A+	Connection equipment RX, computer serial port 2
Yellow	Signal output	B-	Connection equipment RX, computer serial port 3
Green		Power-	Power-

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(3) With relay function the bottom of the wind speed is the waterproof connector, and the 6-pin or 8-pin cable is connected to the GND of the communication signal.

Cable color	Function Description
Red	Power+
Black	A+
Yellow	B-
Green or gray	Power- (connect with instrument signal GND)
White or brown	Relay switch tentacles
Blue	Voltage signal (optional)

Structure size



Installation aperture: 3.2mm

Distribution diameter: 63mm

Interface dimension: 15mm (suggest reserving 25mm for wiring, fix sensor after wiring and installing)

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 below, 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 01)

Send	00	10	01	01	C1	B1
Descripti on	Old address			New address	CRC check	
Return	00	10	01	01	C1	B1
Descripti on	Old address			01 Success 00 Fail	CRC check	

2. Read device address (eg read address 01)

Send	00	03	00	01	00	01	D4	1B
Descrip tion	Address						CRC check	
Return	00	03	02	00	01		44	44
Descrip tion	Address				Device address		CRC check	

3. Read register data (eg read address 01)

Send	01	03	00	00	00	01	84	0A
Descrip tion	Address		Initial address		Read points		CRC check	
Return	01	03	02	00	26	39	9E	
Descrip tion	Address		Data bytes	Device data		CRC check		

The sensor returns data 0x0026 converted to decimal 38, indicating a wind speed of 3.8m / s, with a decimal place.

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4. Read device baud rate

Send	01	03	00	10	00	01	85	CF
Description	Address						CRC check	
Return	01	03	02		25	80	A3	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	01	10	10	09	60	1A	BD
Description	Address			New baud rate		CRC check	
Return	01	10	01	01		C0	4D
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.

Relay ModBus-RTU protocol

The model sensor can also have the relay switch output, 485 output and voltage output (optional), the relay is normally open, including [1-5] command, add the following command, among them [7.9.11] Electric restart:

6. Read the alarm wind speed value (reach the value after the relay pull)

eg: Read the address of the alarm speed of 5.0m/s equipment

Send	01	03	00	20	00	01	85	C0
Description	Address						CRC check	
Return	01	03	02		00	32	39	91
Description	Address		Data bytes		Alarm value		CRC check	

7. Write alarm wind speed value (reach the value after the relay pull)

eg: Set the device with address 1 to pull in the relay when the wind speed is 5.0m/s

Send	01	10	20	00	32	9D	1F
Description	Address			Alarm value		CRC check	
Return	01	10	20	01		D8	1D
Description	Address			01 Success 00 Fail		CRC check	

8. Read the relay pull-in time 0-3600 seconds (to reach the alarm wind speed value, the relay continues to pull the time)

eg: read the address of 1 pull-in time 3S equipment

Send	01	03	00	21	00	01	D4	00
Description	Address						CRC check	
Return	01	03	02		00	03	F8	45
Description	Address		Data bytes		Closing time		CRC check	

9. Write relay pull-in time

eg: set the address to 1 relay single pull-in time is 3S

Send	01	10	21	00	03	0D	0B
Description	Address			Closing time		CRC check	
Return	01	10	21	01		D9	8D
Description	Address			01 Success 00 Fail		CRC check	

10. Read the wind speed value detection waiting time (how long to wait for the second wind speed value to reach the alarming value again after the closing of the relay is completed)

eg: read address 1 detection time for the device 3S

Send	01	03	00	22	00	01	24	00
Description	Address						CRC check	
Return	01	03	02		00	03	F8	45
Description	Address		Data bytes		waiting time		CRC check	

11. Write speed value detection waiting time

eg: Set the device detection latency of address 1 to 3S

Send	01	10	22	00	03	FD	0B
Description	Address			waiting time		CRC check	
Return	01	10	22	01		D9	7D
Description	Address			01 Success 00 Fail		CRC check	

This command is added to prevent frequent operation of relay-terminated devices. When the alarm wind speed value is reached, the relay will pull in. When the pull-in time expires, the relay will be disconnected. At this moment, the sensor will wait until the wind speed value detection waiting time (the relay has been disconnected within this time), the sensor will once again judge whether the alarm wind speed is reached Value, and decide whether the relay action.

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 01)

Send	AA	00	10	00	01
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=001				
Description	Address read: 1				

3. Read real-time data

Send	AA	01	03	0F	00
Description		Device address			
Return	WS=3.8m/s				
Description	Return wind speed 3.8 meters per second				

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, with the return of the product.

Troubleshooting

1. Blade is not rotating, large hysteresis. Due to long-term use of foreign bodies or stuck within the bearing. Please send the sensor back to the company for processing;
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 speed 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
		M	pulse
		J	Relay