

# **Wind speed sensor product manual**

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## Introduction

The three cup wind speed sensor, can be used for construction machinery (cranes, crawler cranes, gantry cranes, tower cranes etc.) areas, railways, ports, docks, power plants, cableway, environment, greenhouse, aquaculture, air-conditioning, energy monitoring, agriculture, health care, clean space and others

## Technical parameters

1. pulse output type: ☐ NPN output  
☐ PNP output  
☐ NPN output with internal pull  
(4.7K $\Omega$ )
2. RS485 communication type
3. Voltage output type: ☐ 0-5VDC  
☐ 0-10VDC
4. Current Output: 4-20mA
5. Power: ☐ DC 5 ~ 24V  
☐ DC 12 ~ 24 V
6. Range: ☐ 0-30m / s  
☐ 0-60m / s

7. Wind speed resolution accuracy: ☐ 0.5 m / s

☐ 0.2 m / s

☐ 0.1 m / s

8. Load capacity: ☐ other

☐  $< 500\Omega$

☐  $> 2k\Omega$

9. Maximum power (DC24V): pulse-type  $MAX \leq 0.2W$ ;  
voltage type  $MAX \leq 0.3W$ ; current- $MAX \leq 0.7W$ ;

10. Startup wind: 0.4 to 0.8m / s

11. Weight:  $\leq 0.5Kg$

## Features

- small easy to carry, simple to install, attractive appearance;
- strong corrosion resistance and weather resistance;
- high accuracy, wide measuring range, good stability;
- low power consumption, strong anti-interference ability, long-term stability;

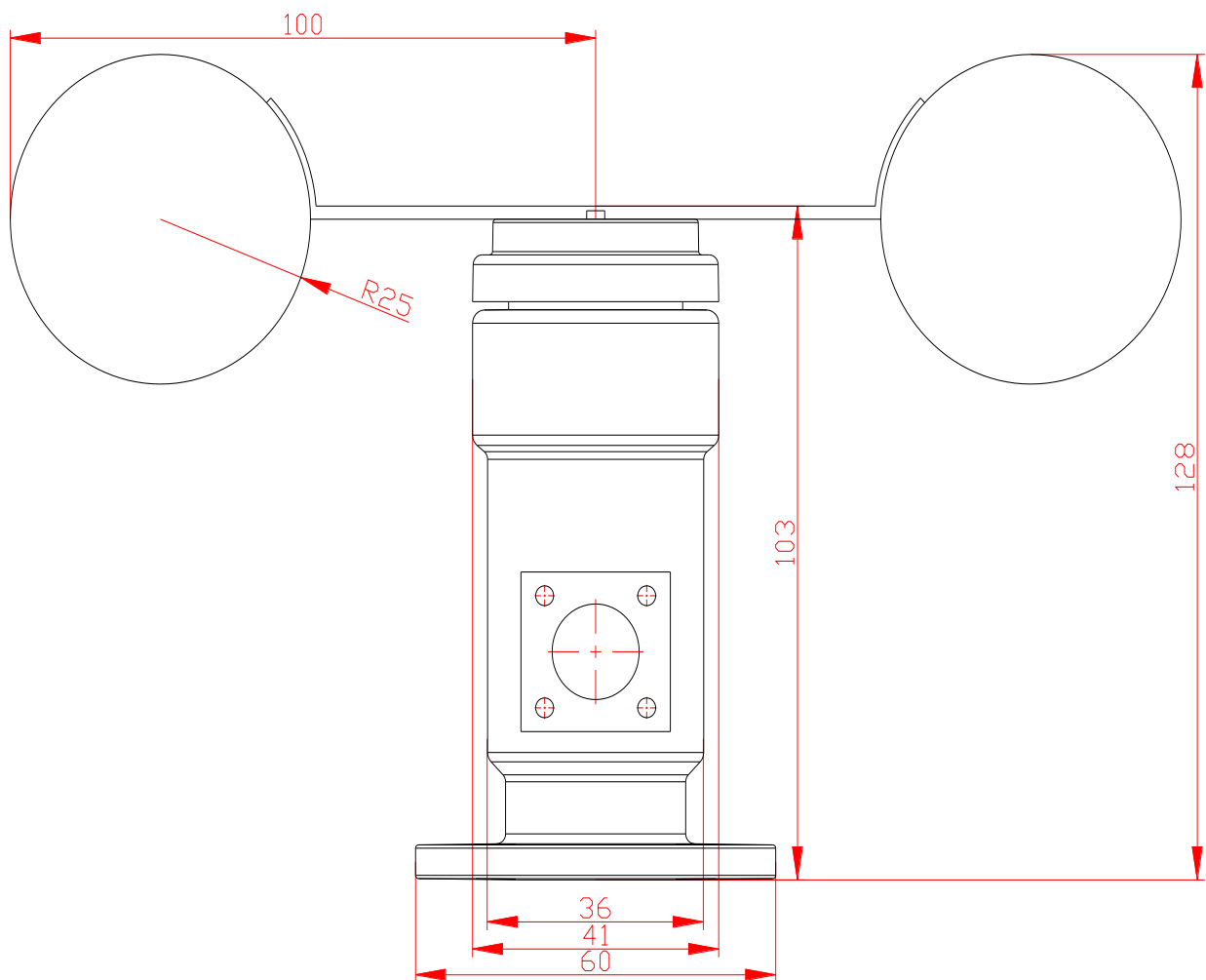
- power adaptation range is wide, good linearity of data, long distance signal transmission;

## **Sensor structure and characteristics**

Sensor housing and wind cup is made of anodized aluminum with high precision, very small dimensional tolerances and high surface accuracy. The entire sensor has high strength, weather resistance, anti-corrosion and water resistance. Cable connectors are military plugs, with good anti-corrosion, anti-erosion performance to ensure long-term use. The bearing system is made to ensure the accuracy of the wind speed acquisition.

The circuit PCB uses military A grade material, to ensure the stability of the parameters and the quality of the electrical properties. Electronic components are used to import industrial grade chip, making the whole a reliable anti-electromagnetic interference capability. We guarantee the proper working conditions: temperature  $-20\text{ }^{\circ}\text{C} \sim +70\text{ }^{\circ}\text{C}$ , humidity 0% to 85% (non-condensing).

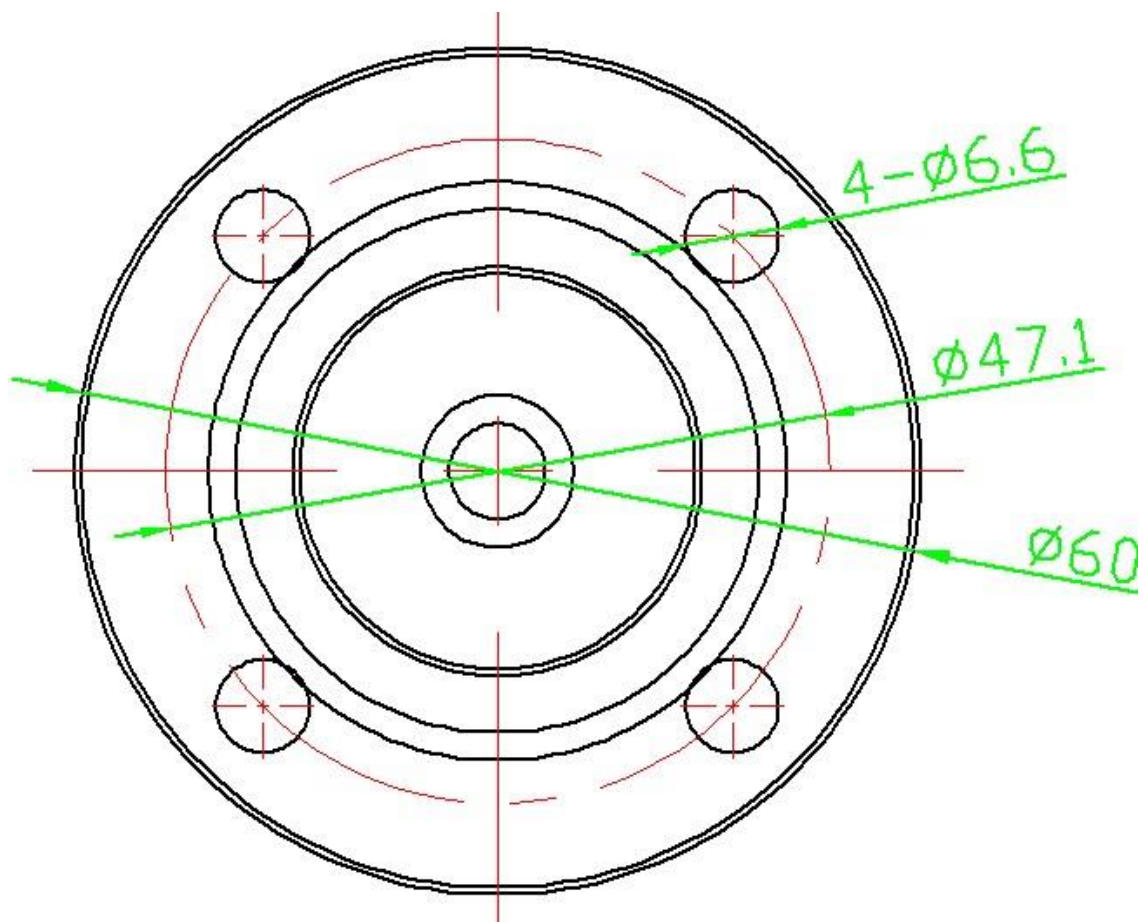
## Structural dimension drawings





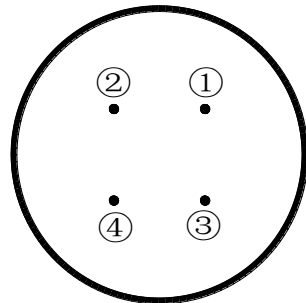
## Fixation

Sensor should be mounted horizontally to ensure the accuracy of the wind data. Flange mounting of the sensor you can see below. The mounting flange diameter is  $\Phi 60\text{mm}$ , three mounting holes  $\Phi 6.6\text{mm}$ . Installation dimensions are as follows:



## The signal output

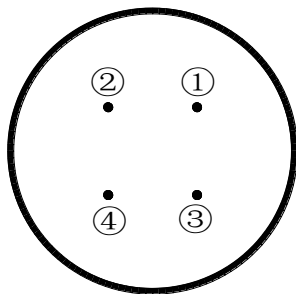
**Voltage and current output are defined as follows:**



- ① 电源正极
- ② 电源负极
- ③ 信号
- ④ NC

1. Power +; 2. Power -; 3 Signal; 4. NC

### **RS485 output definition**



- ① 电源正极
- ② 电源负极
- ③ A+/RXD
- ④ B-/TXD

1. Power +; 2. Power -; 3 A+/RXD; 4. B-/TXD

### **Line color definition**

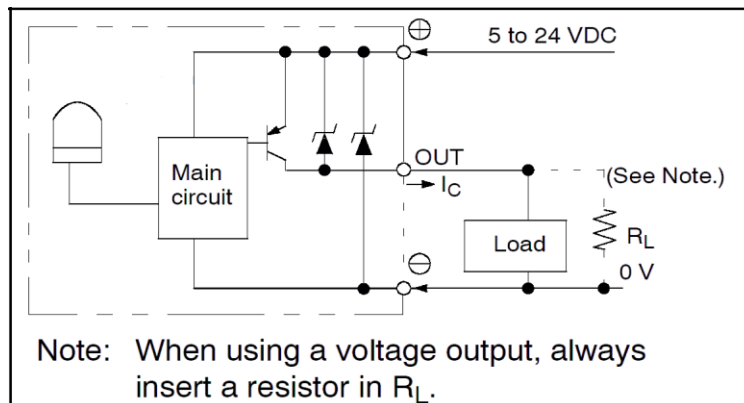
Power cord color: Brown

Ground line color: black

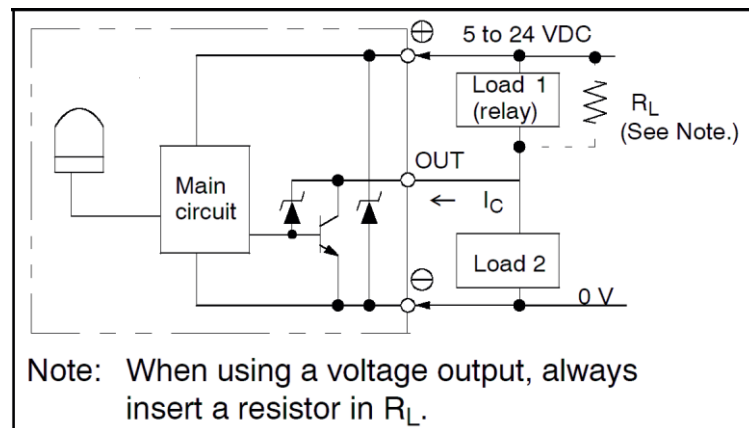
Signal line color: blue ----- A +, Green ----- B-

## Pulse-type wind speed output circuit diagram

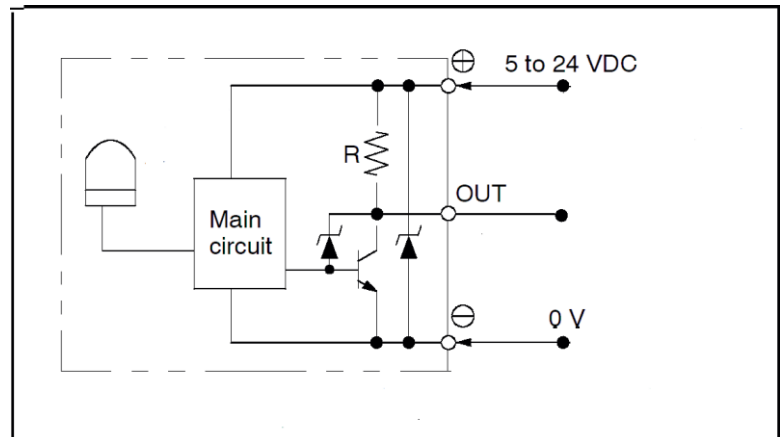
The PNP output circuit diagram as follows: (maximum output current  $I_{cmax} = 100mA$ ). When the voltage signal, need to connect a resistor  $R_L$



NPN output circuit diagram as follows: (the largest sink current  $I_{cmax} = 20mA$ ). When the voltage signal, need to connect a resistor  $R_L$



Internal pull-up resistor NPN output circuit diagram as follows: ( $R = 4.7K\Omega$ )



**Pulse output type**

**calculation:**

Winds = the number of pulses within a unit time X factor;

The formula: a unit time refers 1S;

Model suffix 4CM, the coefficient is 0.3 ( $1m / s = 3$  pulses)

Model suffix 8CM, the coefficient of 0.15 ( $1m / s = 6$  pulse)

Model suffix 12CM, the coefficient is 0.1 ( $1m / s = 10$  pulses)

Model suffix 16CM, and the coefficient of 0.075 ( $1m / s = 12$  pulses)

## RS485/232 Communication protocol

**data packet format**

( 1),function code 0x03 --- query from a device register contents of the main message

from the device address (0x01-0xFF 1 byte)

function code (0x03 1 byte)

the starting register address of the(2 bytes)

register number ( 2 bytes)

CRC checksum (2 bytes)

packets from the device correct  
from the device address (0x01-0xFF 1 byte)

function code (0x03 1 byte)

number of bytesdata area (2 \* number of registers 1st section)

data area (register contents \* register the number of bytes)

CRC checksum (2 bytes)

(2), the function code 0x10 ---from the device registers set the number of  
messagemaster

device address (0x01-0xFF 1 byte)

function code (0x10 1 byte),

the starting register address(2 bytes)

register number(2 bytes)

number of bytes of the data area (2 \* 1 byte) of the number of registers

of data written to the register (the\* register the number of bytes)

CRC checksum (2 bytes)

from the device correctly packet

from the device address (0x01-0xFF 1 byte)

function code (0x10 1 byte)

(2 bytes starting register address )

register number (2 bytes)

CRC checksum (2 bytes)

Note: CRC check code the previous low, high in the register address, register number, the data are high front and low in the rear ;  
register word length for 16bit (two bytes);

### Register Description Order Format

(1), parametric data register definition table

register address (Hex)	register contents	register number	register state	data range (16 decimal)
------------------------	-------------------	-----------------	----------------	-------------------------

0x0010	wind speed of	a	read-only	0 to 3000 (0x00-0x0BB8). the
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data range 0-3000 behalf of the 0-30.00m / s wind speed.

(2) read data command For example: the

command register address byte, register the number of bytes, data bytes high front and low in the post; the CRC checksum endian, in high byte;

( 02, from the device address, baud rate is 9600, N, 8,1)

from the device address	function code	starting register address	register number	CRC-L CRC-H	
----------------------------	------------------	------------------------------	--------------------	----------------	--

0x02	0x03	0x000x00	0x10		0x01	0x85	0xFC
------	------	----------	------	--	------	------	------

response from the device:

from equipment address	function code	data area and the number of bytes of	register data	CRC-L	CRC-H
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0x0	0x03	0x02	0x00	0x00	0xFC the	0x44
-----	------	------	------	------	----------	------

## A correspondence table of the wind speed and the output signal

wind speed (m / s)	voltage			
	current output 4-20mA	output (0- 5V )	voltage output (1-5V)	voltage output (0-2V)
1	4.52	0.17	1.13	0.07
2	5.08	0.33	1.27	0.13
3	5.6	0.5	1.4	0.2
4	6.12	0.67	1.53	0.27
5	6.68	0.83	1.67	0.33
6	7.2	1	1.8	0.4
7	7.72	1.17	1.93	0.47
8	8.28	1.33	2.07	0.53
9	8.8	1.5	2.2	0.6
10	9.32	1.67	2.33	0.67
11	9.88	1.83	2.47	0.73
12	10.4	2	2.6	0.8
13	10.92	2.17	2.73	0.87
14	11.48	2.33	2.87	0.93
15	12	2.5	3	1
16	12.52	2.67	3.13	1.07
17	13.08	2.83	3.27	1.13
18	13.6	3	3.4	1.2

19	14.12	3.17	3.53	1.27
20	14.68	3.33	3.67	1.33
21	15.2	3.5	3.8	1.4
22	15.72	3.67	3.93	1.47
23	16.28	3.83	4.07	1.53
24	16.8	4	4.2	1.6
25	17.32	4.17	4.33	1.67
26	17.88	4.33	4.47	1.73
27	18.4	4.5	4.6	1.8
28	18.92	4.67	4.73	1.87
29	19.48	4.83	4.87	1.93
30	20	5	5	2



## **Care and maintenance**

This instrument is of superior design and functional principles of technology products. However you should pay attention to the maintenance. The following suggestions will help you effectively use and do maintenance services.

Avoid scratching the instrument. Maintain external protective film integrity to increase the service life of the instrument.

All joints must be fixed firmly to avoid damage to the instrument. Otherwise it will break internal circuit boards and fine mechanics instruments against discourteous treatment;

Do not paint the instrument. Paint moving parts clog and prevent proper operation;

The use of clean, dry, soft cloth to clean the outside of the instrument;

Timing power electricity, other configuration devices to ensure that the instrument is working properly