



Instrument cable length: Standard: 2.5 meters
 Other
Load capacity: current type output impedance $\leq 250\Omega$
Voltage type output impedance $\geq 1K\Omega$
Working environment: temperature $-40^{\circ}\text{C}\sim 80^{\circ}\text{C}$,
humidity $\leq 100\%RH$
Protection class: IP45
Cable rating: Rated voltage: 300V Temperature rating:
 80°C
Product weight: 130 g
Product power consumption: 50 mW

Product introduction

The wind speed sensor adopts the traditional three-wind cup wind speed sensor structure, and the wind cup is made of carbon fiber material, which has high strength and good start-up; the built-in signal processing unit of the cup body can output the corresponding wind speed signal according to user needs, which can be widely used in meteorology, ocean, environment, airport, Ports, laboratories, industry and agriculture and transportation and other fields.

Technical Parameters

Measuring range:

0~45m/s

0~70m/s

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

Resolution: 0.1m/s

Start wind speed: $\leq 0.5m/s$

Power supply mode:

DC 5V

DC 12V-24V

Other

Output:

Pulse: pulse signal

Current: 4~20mA

Voltage: 0~5V

Voltage: 0~2.5V

RS485

Other

Calculation formula

Pulse type:

$W = 0; (f = 0)$

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

(W: wind speed indication (m/s); f: pulse signal frequency)

Current type (4~20mA):

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

(W: wind speed indication value (m/s); I: current signal (4-20mA); L: wind speed measurement range (m/s))

Voltage type (0~5V):

$W = V / 5 \times L$

(W: Wind speed indication (m/s); V: Voltage signal (0-5V); L: Wind speed measurement range (m/s))

Voltage type (0-2.5V):

$W = V / 2.5 \times L$

(W: Wind speed indication (m/s); V: Voltage signal (0-2.5V); L: Wind speed measurement range (m/s))

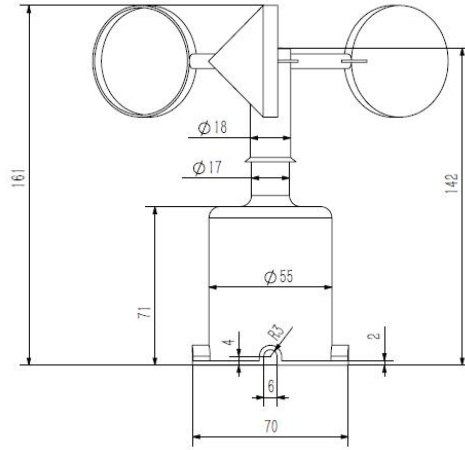
Connection method

(1) If equipped with the weather station produced by our company, directly use the sensor cable to connect the sensor to the corresponding interface on the weather station.

(2) If the transmitter is purchased separately, the matching line sequence of the transmitter is as follows:

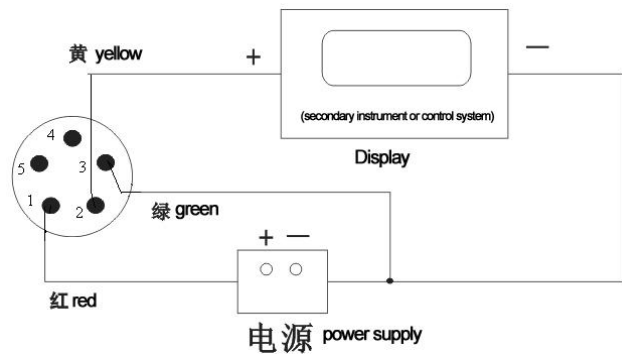
Line color	output signal			
	voltage	Current	Pulse	communication
red	+	+	+	+
Black (Green)	-	-	-	-
Yellow	Voltage signal	Current signal	Pulse Signal	A
Blue				B

Structural Dimensions

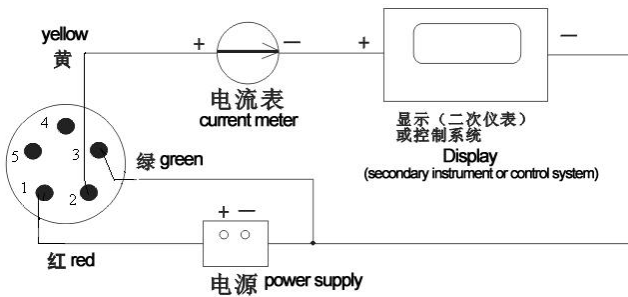


(3) Pulse voltage and current two output wiring methods:

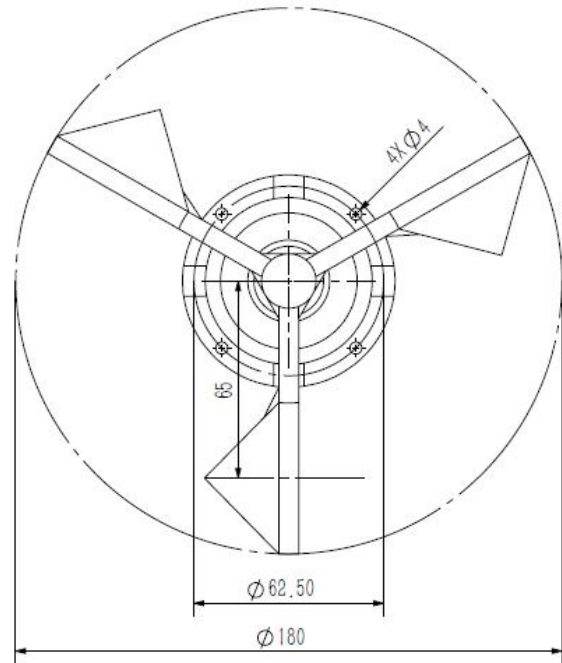
Base installation dimension drawing



(voltage, pulse mode wiring)



(Current output mode wiring)



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 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 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

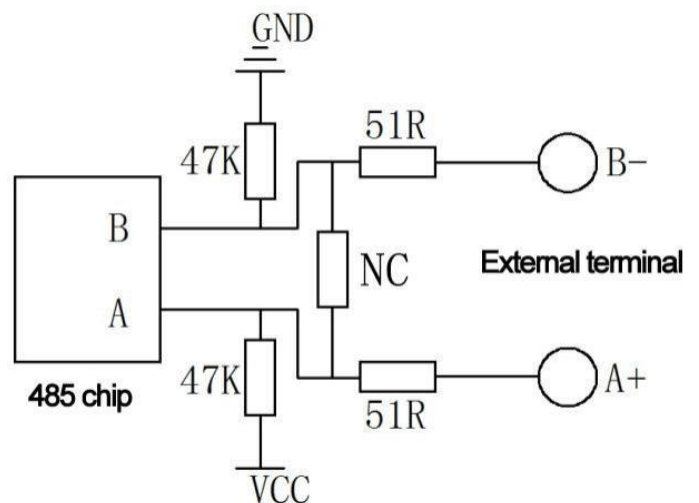
Return 01 03 02 00 B4 44 09

Note: 00 B4 converted to hexadecimal is 180. After data analysis, with one decimal point, it needs to be divided by ten. The actual wind speed value is 18.0m/s

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



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

NBL-W-SS/ Wind speed sensor
Changsha Zoko Link Technology Co., Ltd.



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 rotation of the wind rod is not working, and the hysteresis is large. Due to long-term use, there are foreign objects in the bearing or the lubricating oil is used up. 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-SS-			wind speed sensor (transmitter)
	5V-		5V Power supply
	12V-		12V Power supply
	24V-		24V Power supply
		V	0-5V
		V2	0-2.5V
		A1	4-20mA
		W2	RS485
		M	Pulse

For example: 5V-M: wind speed sensor (transmitter) 5V power supply, pulse output

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Attached table: wind (wind speed) rating

table

RATE	Characteristics of terrestrial objects	Wind speed (m/s)
0	The smoke goes straight up	0~0.2
1	The smoke can indicate the direction of the wind, and the leaves sway slightly	0.3~1.5
2	The human face feels the wind, and the leaves move slightly	1.6~3.3
3	Leaves and twigs swayed, flags spread, tall grass swayed	3.4~5.4
4	Can blow dust and paper from the ground, shake branches, and undulate tall grass	5.5~7.9
5	Small leafy trees sway, inland water surface has small waves, tall grass has distinct undulating waves	8.0~10.7
6	The big branches are shaking, the wires are whistling by the wind, it is difficult to hold an umbrella, and the tall grass falls to the ground from time to time	10.8~13.8
7	The whole tree shakes, the big branches bend down, and it is	13.9~17.1

	inconvenient to walk in the wind	
8	Small branches can be broken, and people feel great resistance when moving against the wind	17.2~20.7
9	The thatched house is damaged, the roof tiles are lifted, and the big branches can be broken.	20.8~24.4
10	Trees can be blown down and buildings in general damaged	24.5~28.4
11	Large trees can be blown down, and general buildings are severely damaged	28.5~32.6
12	There are few on land, and its destructing power is extremely large	>32.6