# BKWSH-100 Heating Wind Speed Sensor Manual (metal)



## Andishe sazan Sanat Electronic Asia

Tel: 021-28424171 – 09106010116 Web : www.biarkala.ir Email: info@biarkala.ir Add : Biar kala , Imam Khomeini Science and Technology Park , Hemmat Street, Mahdasht Road, Karaj , Alborz Province, Iran

### Introduction

1

The three-cup heating wind speed sensor is a heating wind speed measuring instrument independently developed and produced by our company. The product has built-in sensitive temperature sensor and high performance heater. The shell of the sensor is made of aluminum, with very small dimensional tolerance, high weather resistance, high strength, corrosion resistance and water resistance. Internal integrated photoelectric conversion element, industrial microcomputer processor, standard current generator, current driver and so on.

The circuit PCB adopts military grade A material. To ensure the stability of measurement parameters and electrical performance. Electronic components are imported industrial grade chips. The whole has a very reliable ability to resist electromagnetic interference. It can ensure that the host can work normally in the range of  $-30^{\circ}$ C ~  $75^{\circ}$ C and 5% ~ 95%RH (no condensation).

After product upgrade have many output:Analog output(voltage and current),digital RS485.

## 2 Features

(1) The sensor has compact design and high measurement accuracy

(2) Built-in sensitive temperature sensor and high performance heating plate, suitable for harsh conditions

(3) Fast response and good interchangeability

(4) Truly achieve low cost, low price, high performance

(5) Flange installation, can realize the lower outlet, side outlet, simple and convenient.

(6) High data transmission efficiency, reliable performance, to ensure normal work.

(7)Wide range of power supply, good linearity of data information, long signal transmission distance

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(8) With wind speed and wind level two parameters, reliable data.

## 3 Application

This product is widely used in greenhouse, environmental protection, weather station, construction machinery, ships, docks, aquaculture and other environmental wind speed measurement.

## 4 Product Parameter

#### 4.1 Technical Data

Measuring range:  $0 \sim 30$  m/s;  $0 \sim 50$  m/s;  $0 \sim 60$  m/s; (Other ranges can also be customized) Start wind speed: ≤0.3m/s Accuracy:  $\pm$  (0.3+0.03V) m/s Output: A: Voltage  $(0 \sim 2V, 0 \sim 5V, 0 \sim 10V \text{ chose one})$ B:  $4 \sim 20 \text{mA}$  (Current) C: RS485 (Standard Modbus-RTU protocol, Default Device Address: 01) Sensor supply voltage (red and black line):  $5\sim$ 24V DC (Output:0 $\sim$ 2V, RS485) 12~24V DC (Output0~5V, 0~10V, 4~20mA) Heating supply voltage (Brown and white line):  $12 \sim 24 \text{V DC}$ Heat: average: 15W; peak: 18W Stability time: <1s Reponse time: <1s Working temperature: Temperature:  $-40^{\circ}C \sim 70^{\circ}C$ ; Humidity:  $\leq$ 100%RH Storage temperature: Temperature:  $-40^{\circ}C \sim 70^{\circ}C$ ; Humidity:  $\leq$ 100%RH Cable specification: five wires with 2m cable (Analog); 6 wires with 2m

cable (RS485) (Cable length optional)

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### 4.2 Impedance requirement of current signal

Power	9V	12V	20V	24V
Resistance-	125Ω	250Ω	500Ω	>500Ω
Maximum				

# 5 Wiring connection



RS485 two circuit power supply



RS485 single circuit power supply



Voltage ,4-20mA two circuit power supply



Voltage ,4-20mA singal circuit power supply

## 6 Size



## 7 Data conversion method

- V: Voltage valuecollected by the collector,Unit: V;
- A: Current value collected by the collector, Unit: mA;

Quatera ta cina a ch	Data conversion me	thod of each range	
Output singal	0 $\sim$ 30m/s	0 $\sim$ 60m/s	
0 $\sim$ 2V DC	Wind speed=15*V	Wind speed=30*V	
0 $\sim$ 5V DC	Wind speed=6*V	Wind speed=12*V	
0~10V DC	Wind speed=3*V	Wind speed=6*V	
4 00	Wind speed=1.875*A	Wind speed=3.75*A	
4~20mA	-7.5 -15		
Pulse (NPN or PNP)	One pulse in 1 second means 0.1m/s		



Bottom with debugging port

Data cable (optional)

### Note: When analog output, can use the data line to debug the sensor

RS485 Singal (default address01):

Standard Modbus-RTU protocol, Baud rate: 9600; parity bit: no; Data bits: 8; Stop bit: 1

## 7.1 Modify address

Example: Change the address from 1 to 2, and then the host  $\rightarrow$  slave

Original address	Function code	Start register high	Start register low	Start address high	Start address low	CRC16 Low	CRC16 High
0X01	0X06	0X00	0X30	0X00	0X02	0X08	0X04

If the sensor receives correctly, the data is returned in the original way

Note: If you forget the original address of the sensor, use the broadcast address 0XFE instead, If 0XFE is used, the host can only have one slave, and the return address is still the original address, which can be used as the method of address query.

## 7.2 Query data

Query the data (wind speed, wind scale) of sensor (address 1), host  $\rightarrow$  slave

Address	Function code	Start register high	Start register low	Register length high	Register length Low	CRC16 low	CRC16 high
0X01	0X03	0X00	0X00	0X00	0X02	0XC4	0X0B

If the sensor receives correctly, the following data is returned, from the machine to the host

Address	Function code	Data length	Register 0,data high	Register 0,data Iow	Register1 Data high	Register1 Data low	CRC16 Low	CRC16 High
0X01	0X03	0X04	0X00	0X24	0X00	0X03	0XFA	0X39
			Wind sp m	eed: 3.6 n/s	Wind scale	e: 3 grade		

#### 7.3 Setting temperature

Take the stop temperature set to 30°C as an example, host  $\rightarrow$  slave

Address	Function code	Register address high	Register address low	Register data high	Register data low	CRC16 low	CRC16 high
0X01	0X06	0X00	0X6C	0X01	0X2C	0X49	0X9A

If the sensor receives correctly, the data is returned in the original way Take setting startup temperature 5  $^{\circ}$ C as an example, host  $\rightarrow$  slave

Address	Function code	Register address high	Register address low	Register data high	Register data low	CRC16 low	CRC16 high
0X01	0X06	0X00	0X6D	0X00	0X32	0X99	0XC2

If the sensor receives correctly, the data is returned in the original way.

#### 7.4 Query the start/stop heating temperature data

Query the data (stop heating temperature, start heating temperature) of sensor (address: 1), host  $\rightarrow$  slave

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Address	Function code	Register address high	Register address low	Register length high	Register length low	CRC16 Low	CRC16 High
0X01	0X03	0X00	0X6C	0X00	0X02	0X04	0X16

If the sensor receives correctly, the following data is returned, from the machine to the host

Address	Function code	Data length	Register 0 data high	Register 0 data low	Register 1 data high	Register 1 data Iow	CRC16 low	CRC16 high
0X01	0X03	0X04	0X01	0X2C	0X00	0X32	0XBB	0XD3
			Stop I	neating	Starting	heating		
			temperat	ure: 30℃	temperat	ure: 5℃		

# 8 Wind scale

wind scale	Wind name	Wind (m/s)	( <b>km/h</b> )	Land phenomenon	sea condition
0	No wind	0~0.2	<1	Quite, smoke up straight	a glassy calm
1	gentle breeze	0.3~1.5	1~5	Smoke shows wind direction, but a va	Minuette
				does not turn	
2	gentle breeze	1.6~3.3	6~11	The face feels the wind, the leaves ha	wavelet
				a slight noise, the weathervane can	
				turn	
3	gentle breeze	3.4~5.4	12~19	Leaves and twigs flutter, flags	wavelet
				unfurl	
4	moderate breez	5.5~7.9	20~28	Can blow dust and paper on the	slight sea
				ground, tree twigs fretting	
5	fresh breeze	8.0~10.7	29~38	Leafy twigs sway, and inland water	moderate sea
				waves	
6	strong breeze	10.8~13.8	39~49	It was difficult to lift an umbrella	Big wave
				because of the swinging branches	
				and the whirring wires	
7	Hayate	13.9~17.1	50~61	The whole tree shaking, windward	very rough sea
				walking feel inconvenient	

8	high wind	17.2~20.7	62~74	The micro branch is broken, the perso	Big Wave
				moves forward to feel the resistance	
				very big	
9	strong gale	20.8~24.4	75~88	Building damage (chimney top and ro	very high sea
				tiles removed)	
10	storm	24.5~28.4	89~102	Rarely seen on land, it can uproot	very high sea
				trees and cause serious damage to	
				buildings	
11	violent strom	28.5~32.6	103~117	It's rare on land, but there's always	Special
				major damage	phenomenon
12	hurricane	32.7~36.9	118~133	It's rare on land, and it's extremely	Special
				destructive	phenomenon
13	hurricane	37.0~41.4	134~149	It's rare on land, and it's extremely	Special
				destructive	phenomenon
14	hurricane	41.5~46.1	150~166	It's rare on land, and it's extremely	Special
				destructive	phenomenon
15	hurricane	46.2~50.9	167~183	It's rare on land, and it's extremely	Special
				destructive	phenomenon
16	hurricane	51.0~56.0	184~201	It's rare on land, and it's extremely	Special
				destructive	phenomenon
17	hurricane	56.1~61.2	202~220	It's rare on land, and it's extremely	Special
				destructive	phenomenon
Ο Δ	ttention				

((1) Please check whether the package is intact, and check whether the sensor model and specifications are consistent with the products you choose.

(2) Can not be charged wiring, after connecting the line check is correct, can be energized.

(3) The user should not change the components that have been welded and the wires that have been connected before the production.

(4) The sensor is a precision device, please do not disassemble when the user is in use, not to touch the diaphragm, so as not to cause damage to the product.

(5) Avoid viscous particles into the inside of the sensor, prevent moisture, so as

not to affect the measurement performance.

## 10 Warranty

This product is guaranteed for one year. From the date of shipment, within twelve months, due to sensor quality problems (non-human damage) caused by the fault, the company is responsible for free repair or replacement (the buyer bears the round-trip freight), after the warranty period only charge the cost.