USER GUIDE FOR CDF-10A
3 CUP WIND SPEED SENSNOR

This document is applied for the following products

SKU	CDF	HW Ver.	1.0	FW Ver.	1.0
Item Code	CDF-10A	Wind Speed Sensor, Pulse 4-20mA RS485 0-5VOutput, Carbon fiber, 0-45m/s, ±(0.3+0.03V)m/s			

1. Introductions

The CDF-10A Wind Speed Sensor uses a sensitive 3-cup anemometer designed to measure wind speed and wind run. The cups are made of carbon fiber material, with high intensity and low starting threshold. The signal processing units are built in the housing shell. It can be widely used in meteorology, marine, environmental monitoring, airport, harbor, laboratory, industrial and agricultural areas.


2. Specification

Output	Pulses	4-20mA	0-5V	RS485
Supply Voltage	5V,12V-24V	5V,12V-24V	5V,12V-24V	5V,12V-24V
Load Capacity	>1kΩ	<500Ω(typ 250Ω)	>1kΩ	/
Range	0-45m/s	0-45m/s	0-45m/s	0-45m/s
Accuracy	±(0.3+0.03V)m/s; (V is the current wind speed)			
Starting Threshold	<0.5m/s			
Limit wind speed	50m/s			
Ingress Protection	IP65			
Operating Temperature	-40℃~ +50℃			
Cable Grade	Nominal voltage:300V ,Temperature grade:80℃			
Weight(unpacked)	170g			
Dimension	Cup rotor:ø179mm,Height:160mm			
Main material	Carbon fiber			

3.Working Process

Three-cup wind speed sensor is a common instrument used to measure wind speed, which is mainly composed of shell, wind cup and circuit module. The sensing part is usually composed of three or four conical or hemispherical empty cups, which are fixed on a trident star bracket at 120° each other or a cross bracket at 90° each other, and the concave surface of the cup is arranged in one direction, and the entire transverse arm is fixed on a vertical rotating axis.
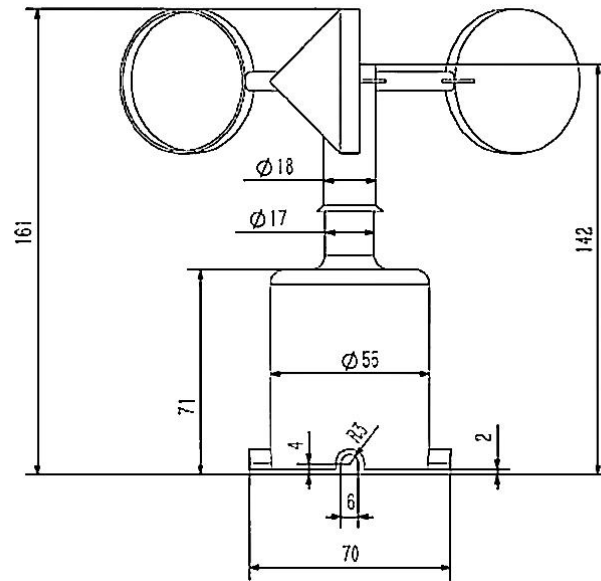
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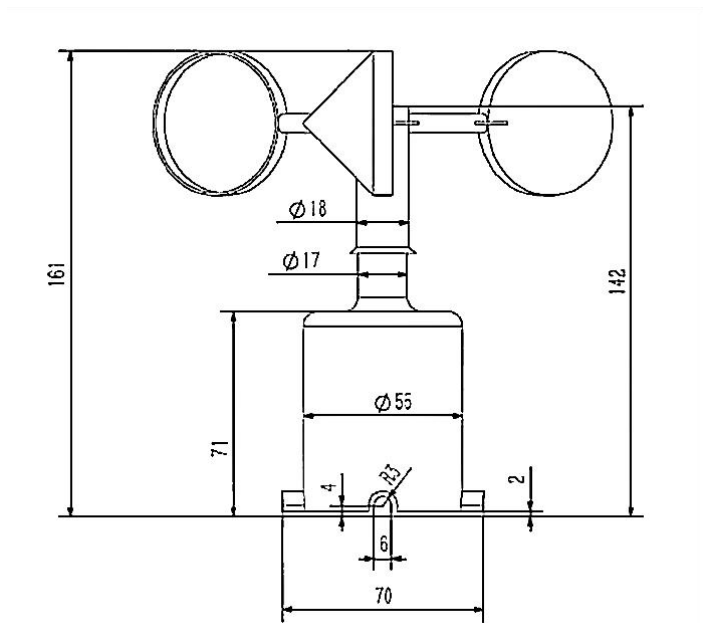
4. Electrical Connections

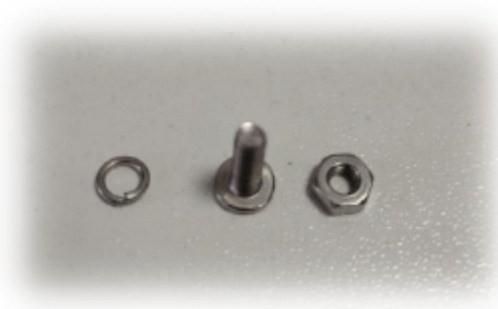| Connector(cable)	Pulses	Voltage	Current	RS485
Pin 1(red)	V+	V+	V+	V+
Pin 2(yellow)	Signal out	Vout	Iout	RS485A
Pin 3(black/green)	V-	V-	V-	V-
Pin 4(blue)				RS485B

5. Dimensions

6. Installation

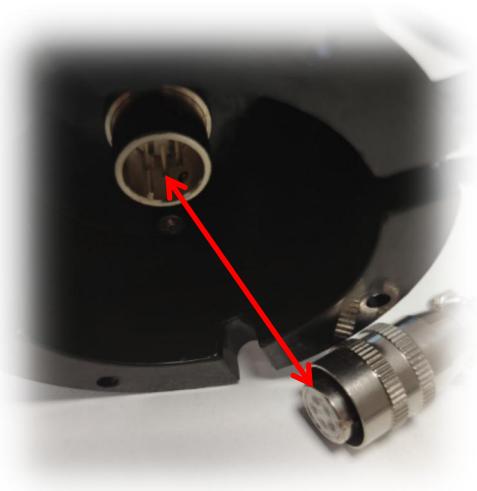**Step 1:** Open the box and take out the wind sensor.

Step 2: Prepare the brackets, [screws(M3), nuts, and gaskets]*4pcs to be installed.

Step 3: Align the screw holes on the wind speed sensor with the holes on the mounting support, and lock the screws(4psc).

Step 4: Connect the navigation connector to the sensor base connector.

7. Communication Protocol（MODBUS）

Transmission mode: MODBUS-RTU,**Baud rate:** 9600bps,**Data bits:**8,**Stop bit:**1,**Check bit:**no

Slave address:the factory default is 01H (set according to the need,00H to FFH)

7.1 The 03H Function Code Example: Read The Wind Speed

Host Scan Order(slave address:0x01)
01 <u>03 00 00 00 01</u> 840A

Slave Response
01 <u>03 02</u> 00 B4 B833

Wind Speed:(00B4)H=(180)D, 180/10=18(m/s)

7.2 The 10H Function Code Example: Modify the slave address

Host Scan Order (Changed to 01H,read and write address must be 00H):
<u>00 10</u> 01 BD C0

Slave Response:
<u>00 10</u> 007C

7.3 The 20H Function Code Example: Read The Slave Address

Host Scan Order:
<u>00 20</u> 00 68

Slave Response(addr.=01H):
<u>00 20</u> 01 A9C0

Note:
1. All underlined is fixed bit;

2. The last two bytes is CRC check command.

Note: This product has been tested and complies with European CE requirements for EMC directive.

7.3 OUTPUT CHARACTERISTICS

- **Pulses**

Characteristic transfer function: F=0,V=0; F≠0,V=0.1+0.0875×F
   (where V = wind speed (m/s),F = output frequency(Hz))

- **Current(4-20mA)**

Characteristic transfer function: V=(I-4)/(20-4)*45(Range:0-45m/s)
   (where V = wind speed (m/s),I = output current(mA))

- **Voltage(0-5V,0-2.5V)**

Characteristic transfer function: V=U/5*45(Range:0-45m/s), V=U/2.5*45(Range:0-45m/s)
   (where V = wind speed (m/s),U = output voltage(V))

- **RS485**

If the transmission distance is over 100m, please add a 120Ω terminal matching resistances on the front end and back end of bus interface respectively.See appendix for communication protocol
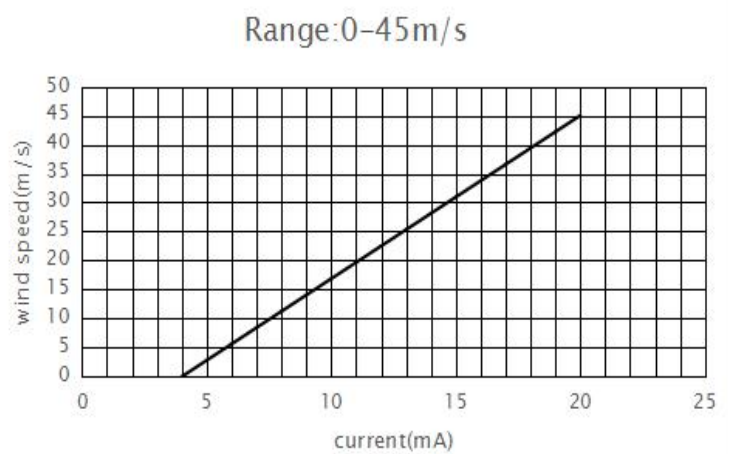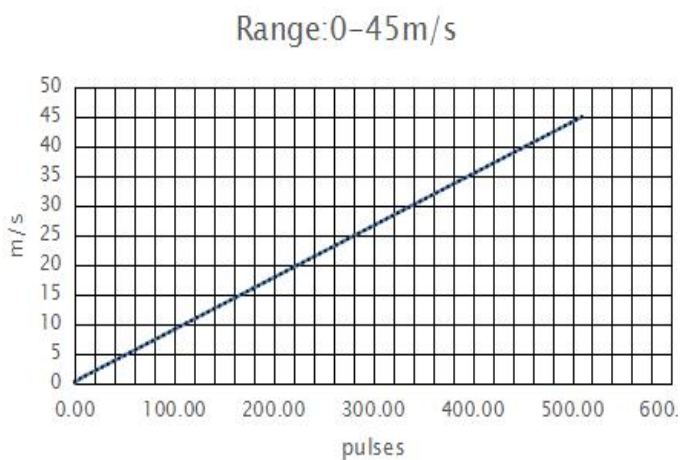
8. Troubleshooting

If some error occurs, such as no output or unreliable. Please disconnect the sensor first, then check if the sensor installation and connection is correct with the instruction manual.

If still not successful, please contact our company.

9. Support contacts:

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