

USER GUIDE FOR CDF-22A MINI ULTRASONIC WIND SPEED & DIRECTION

CDF-22A-01-MN-10

SEP-2024

This document is applied for the following products

SKU	CDF	HW Ver.	1.0	FW Ver.	1.0
Item Code	CDF-22A	Ultrasonic Wind Speed&Direction Sensor, RS485 SDI NMEA Output, ABA,0-40m/s 0-360° , ±3% ±3°			

1. Introductions

CDF-22A The wind speed and direction meter are a kind of measuring instrument which uses the time difference of ultrasonic wave in the air to measure the wind speed and direction. CDF-22A uses low-power chip with power consumption of only 0.2W, which is especially suitable for solar or battery powered environment with high power consumption requirements. Due to the adoption of new technology and new process, the structure is more compact and compact. Optional temperature and air pressure modules.



2. Specification

Item	Technical Specification		
Power Supply	12-24VDC		
Power consumption	1.7W		
Output Signal	4-20mA①,RS232/RS485(Modbus or NMEA-0183), SDI-12		
Operating Temperature	-30℃~+60℃		
Ingress Protection	IP65		
Dimension	Φ82*108mm		
Weight(unpacked)	0.8kg		
Main material	ABS		
Item	Technical Specification		
	Range	Resolution	Accuracy
Wind speed	0-40m/s	0.1m/s	±3%
Wind direction	0-360°	1°	±3°
Starting Threshold	0.1m/s	0.1m/s	
Extreme Wind Speed	60m/s		

3. Working Process

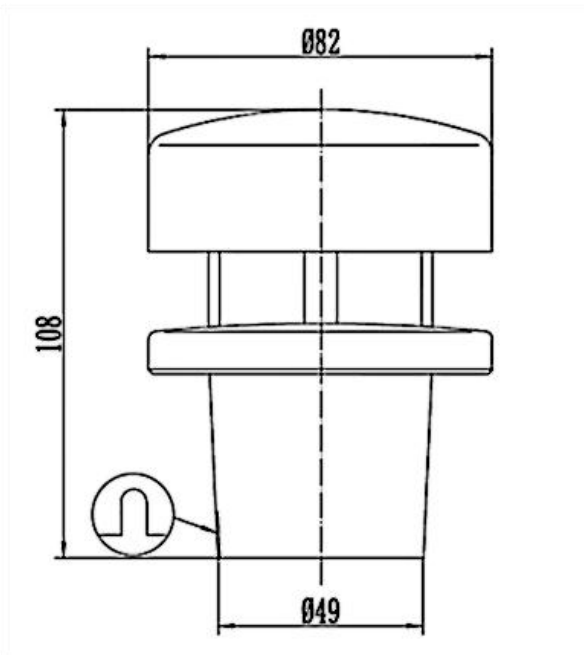
It mainly calculates the wind speed by measuring the time difference between the propagation of ultrasonic waves in the air. The sensor generally has two pairs of ultrasonic probes, which are mounted opposite each other. One of the pair of probes transmits ultrasonic waves and the other receives them.



4. Electrical Connections

Cable	Voltage/Current	RS485	RS232	SDI-12
Red(Pin1)	V	V+	V+	V+
Black/Blue(Pin2)	V-	V-	V-	V-
Yellow(Pin3)	/	RS485A	RXD	/
Green (Pin4)	/	RS485B	TXD	/
Gray	Signal+(WD)	/	/	/
Black	Signal-(WD)	/	/	/
White	Signal+(WS)	/	/	/
Brown	Signal-(WS)	/	/	/

5. Dimensions



6. Installation

Step 1: Vertical pole bracket fixing method&Holding hoop fixing method.



Step 2: There is rotary adjustable mounting holes at the top of the sensor,when mounting the sensor, to ensure the indicator on ultrasonic wind sensor on the sensor **comply with the geographic north**

7. Communication Protocol (MODBUS)

Transmission mode: MODBUS-RTU, **Baud rate:** 9600bps, **Data bits:** 8, **Stop bit:** 1, **Check bit:** Even

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 & Direction

Host Scan Order(slave address:0x01)

01 03 00 00 00 04 4409

Slave Response

01 03 08 00 02 00 0E 36 F0 40 89 200B

Wind direction:(000E)H=(14)D=14(°)

Wind speed:(36F04089)H=(4.28)D=4.28(m/s);

7.2 Command one: Enter the Settings mode

Sent

(ASCII) >*\r\n
(Hex) 3E 2A 0D 0A

Response

(ASCII) \n>CONFIGURE MODE\r\n
(Hex) 0A 3E 43 4F 4E 46 49 47 55 52 45 20 4D 4F 44 45 0D 0A

7.3 Command two: Set the address

Sent

(ASCII) >CUS 9600 8-N-1\r\n
(Hex) 3E 43 55 53 20 39 36 30 30 20 38 2D 4E 2D 31 0D 0A

Response

(ASCII) >CMD IS SET\r\n
(Hex) 3E 43 4D 44 20 49 53 20 53 45 54 0D 0A

Note: This 2 is the address you want to set(set according to the need, 1-255), which must be in decimal format, If 'ID' is not followed by address, the command becomes the current query address(Such as sent: >ID\r\n, Response: ID(HEX) : 02\r\n)

7.4 Command three: Manually exit the Settings mode

Sent

(ASCII) >!\r\n
(Hex) 3E 21 0D 0A

Response

(ASCII) \n>NORMAL MODE\r\n

After setting, power off and restart.

Note:

1. All underlined is fixed bit;
2. The last two bytes is CRC check command.

8. Communication Protocol (SDI-12)

①:"a", "b" is the sensor address.

Note: Band rate: 1200, Start bit:1,Data bits:7,Check bit: EVEN, Stop bit:1,sensor address: factory default 0

No.	Command	Sensor return	Command name
1	?!	0!	Read sensor address
2	a!!	014HONGYUV 1000002.3000	Distinguish sensor
3	aAb!	b!	Change the address, Change address a to b
4	aM!	00015	Start measuring wind speed and direction
5	aD0!	0+078+03.40+ reserve+ reserve+ 1100	The value status indicates the validity of the data items in order from left to right 0- invalid, 1- valid 1-Wind direction:78°, valid 1-Wind speed:3.4m/s, valid 0- reserve, invalid 0- reserve, invalid
6	aM2!	00013<CR><LF>	Start measuring atmospheric pressure
7	aD0!	0+0929.0+0000050.3+11<CR><LF>	Address+pressure+Altitude
8	aM3!	00013<CR><LF>	Start measuring Electronic compass angle
9	aD0!	0+012+11<CR><LF>	Address+ Electronic compass angle

9. Support contacts:



Complies with applicable CE directives.

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