

CDF-20B
Integrated Wind Speed
And Wind Direction Sensor

Manual

Catalogue

Product Brief.....	1
Application	1
Features	1
Technical Parameters	2
Product Size	3
Accessories:	4
MODBUS RTU Communication Protocol (Apply to CDF-20B product)	5
1.1 CRC Description:	5
1.2 Return Error Code Rule:	5
1.3 Standard MODBUS register description	5
1.4 Electrical Connections	6
1.5 Communication Example	6
Other Weather Sensors	8



CDF-20B Integrated Wind Speed And Wind Direction Sensor

◆ Product Brief

CDF-20B Integrated Wind Speed and Wind Direction Sensor adopts the traditional three-cup wind speed sensor structure, which is suitable for measuring and monitoring wind speed and wind direction. The built-in signal processing unit of the device can output different wind speed signal according to the user's demand, and the wind direction adopts the concept of large wind tail wing, which can effectively measure the real-time wind direction. The wind cup is made of PC material with high strength, short response time and good performance; Moreover, the cup is designed for better balance.

◆ Application

- Meteorological Monitoring
- Micro Environmental Monitoring
- Grid Environment Monitoring
- Agricultural Meteorological Monitoring
- Meteorological Traffic Monitoring
- Photovoltaic Environment Monitoring
- Meteorological Environment Monitoring for Smart Cities

◆ Features

- Small in size
- High integration
- Easy to install
- Free testing software MODBUS - poll V1.0 (ask your salesperson for it)
- Integrated design
- Low starting threshold
- One year warranty

CSDA Technical Data

CDF-20B Integrated Wind Speed And Wind Direction Sensor

◆ Technical Parameters

Parameters	Measuring Range	Accuracy	Resolution
Wind Speed	0-60m/s	$\pm(0.3+0.03V)$ m/s; (V is the current wind speed)	0.01m/s
Wind Direction	0-360°	$\pm 3^\circ$	0.1°
Operating Temperature	-20°C—80°C		
Output	Standard product with RS485 interface, MODBUS RTU;		
Power Supply	DC12-24V		
Protection Level	IP65		
Consumption	≤ 200 mW		
Working Environment	-20~80°C		
Dimension	Cup rotor: $\phi 135$ mm, Height: 210mm		
Starting Threshold	<0.5m/s		
Response Time	<1s		
Main material	ABA		
Principle	Hall principle		

★ Specifications may be updated without prior notice.

CSDA Technical Data

CDF-20B Integrated Wind Speed And Wind Direction Sensor

◆ Product Size



CSDA Technical Data

CDF-20B Integrated Wind Speed And Wind Direction Sensor

- ◆ **Accessories:**
Mounting Manner:



MODBUS RTU Communication Protocol

(Apply to CDF-20B product)

Baud Rate: 9600
Data Bits: 8
Stop Bit: 1
Check Bit: None

1.1 CRC Description:

Among all the following instructions, the two bytes of CRC16 in MODBUS RTU protocol are as follows: the low byte comes before and the high byte comes after.

In the following instructions, the assumed sensor address is 0xFF (the default sensor address is FF).

1.2 Return Error Code Rule:

When receive error instruction (including CRC16 validation error), no error codes will be returned. It is considered to be a failure, when there is no return data in 200ms after the instruction is issued. Upper computer may resend instruction.

1.3 Standard MODBUS register description

Special Notice:

The quantity or length of the register in MODBUS is two bytes with 16 bits as a unit (the high byte comes first, and the low bytes follows), instead of one byte with 8 bits as a unit.

User shall ensure that the address and quantity of register in command are confined within the range specified by the system. Otherwise, the output of the sensor will be unpredictable. Users shall ensure that the MODBUS command complies with the requirements of this manual in the software design of the upper computer and the minimum query period supported is 1s/ time.

Input register: read with function code 03

Address	Operation	Contents	Note
0x0000	Read-only	Wind Speed, a hexadecimal number magnified by 100 times. For example, 0x0160 indicates 352/100=3.52m/s	
0x0001	Read-only	Wind Direction, a hexadecimal number magnified by 10 times. For example, 0x0384 indicates 900/10=90°	

1.4 Electrical Connections

Connector(cable)	RS485
Pin 1(red)	V+
Pin 2(yellow)	RS485A
Pin 3(black)	V-
Pin 4(blue/green)	RS485B

1.5 Communication Example

The following is an example of how to use MODBUS RTU commands to access system registers:

1. Read multiple input registers (real time data) command

Send: FF 03 00 00 00 02 91 D4

FF	03	00 00	00 02	91 D4
System Address	Function Code	Register Address	Number of Registers	CRC16 check digit automatically generated by software

Answer: FF 03 04 01 60 03 84 E4 8D

FF	03	04	01 60	03 84	E4 8D
System Address	Function Code	The number of bytes in a data segment	Wind Speed Data	Wind Direction Data	CRC16 check bit

Analytical Data:

$$0x00B4 = 0x01 * 256 + 0x60 = 352$$

$$\text{Wind Speed} = 352/100 = 3.52\text{m/s}$$

$$0x0384 = 0x03 * 256 + 0x84 = 900$$

$$\text{Wind Direction} = 900/10 = 90^\circ$$

2. Read address register command

Send: 00 03 00 00 00 01 85 DB

00	03	00 00	00 01	85 DB
Sensor Address	Function Code	Register Start Address	Number Of Registers	CRC16 Check Bit

Answer: 00 03 02 00 FF C5 C4

00	03	02	00 FF	C4 C5
Sensor Address	Function Code	Data Length	Address Data	CRC16 Check Bit

Segment data 0xFF = 255 Sensor address 255

3. Modify internal register (system address) command (change the address to 0x01)

Send: 00 06 00 00 00 01 49 DB

00	06	00 00	00 01	49 DB
Address	Function Code	Register Address	Sensor New Address	CRC16 Check Bit

Answer: 00 06 00 00 00 01 49 DB (indicates that the modification is successful)

00	06	00 00	00 01	49 DB
Address	Function Code	Register Address	Sensor New Address	CRC16 Check Bit

Warranty and After-sales Service:

Warranty: The product warranty period is 12 months from the delivery date (except for the product problems caused by not operating in accordance with corresponding technical requirements or other artificial behavior).

After-sales telephone: 86-0731-86117089 www.codasensor.com Molly@codasensor.com

Other Weather Sensors

Model number	Type	Output	Special features
CDF-10A	Wind speed	Pulses(PNP) RS485 4-20MA 0-5V	Three cup plastic wind speed
CDF-11A	Wind direction	RS485 4-20MA 0-5V	Plastic wind direction sensor
CDF-12A	Pipe wind speed	RS485 4-20MA 0-5V 0-10V	Duct type wind speed sensor
CDF-13B	Wind speed display controller	LED display	Wireless output relay output
CDF-15A	Digital Anemometer	LCD display	Hand-held anemometer
CDF-20B	Combined Wind Speed & Direction	RS485 4-20MA 0-5V 0-10V	Integrated wind speed and direction
CDF-21A	Ultrasonic Wind Speed & Direction	RS232/RS485(Modbus/NMEA-0183), Voltage(0-5V),Current(4-20mA) optional	Ultrasonic principle
CDF-22A	Mini Ultrasonic Wind Speed & Direction	4-20mA,RS232/RS485(Modbus or NMEA-183), SDI-12	Ultrasonic principle
CDF-26B	Recorder station for wind	LCD display & 4G WIFI Ethernet	Wind speed & direction recorder
CDQ-T6A	Miniature Ultrasonic Automatic Weather	RS485	Wind speed & direction temp & humidity & pressure
CDW-33A	Atmospheric Temperature, Humidity & Pressure	RS485	Shelter installation
CDY-12A	Economical Tipping Bucket Rainfall	Pulses(@10kΩ&0.01uF),RS485	Diameter :φ200mm, height: 271mm
CDG-10B	Solar Radiation	0-5V,4-20mA,RS485	Spectral range:300~1100nm