485 type weather shutter instruction manual

JXBS-8001-BYX
Ver1.0

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Chapter 1 Product Introduction

1.1 Product overview

Meteorological shutter is a fixed all-in-one ground automatic observation equipment. The observation items mainly include wind direction, wind speed, temperature, humidity, atmospheric pressure, light intensity, carbon dioxide concentration, PM2.5, PM10, oxygen concentration, ammonia concentration, hydrogen sulfide Meteorological factors such as concentration and noise.

Meteorological shutters can be widely used in various environments such as urban environmental measurement, agricultural monitoring, industrial treatment, etc., in order to collect more abundant and effective monitoring data.

1.2 Features

This product adopts a high-sensitivity digital probe with stable signal and high precision. It has the characteristics of wide measurement range, good linearity, good waterproof performance, convenient use, easy installation, and long transmission distance.

It adopts a waterproof weather shutter structure, which can adapt to various environmental applications. The data acquisition system has accurate accuracy and stable and reliable operation. Sophisticated workmanship and good corrosion

resistance.

1.3Detection parameters

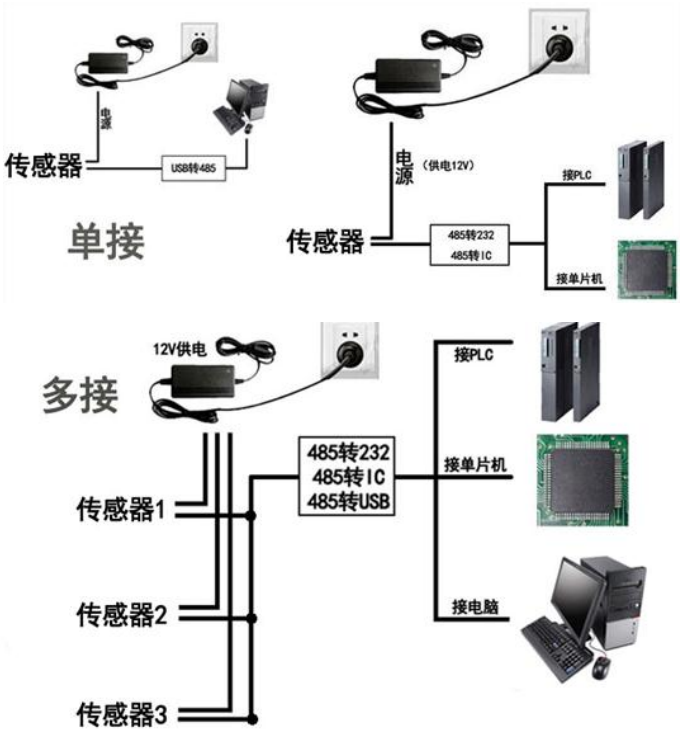
Technical Parameters	Measuring range	Resolution	Precision	unit
temperature	-40-80	0.1	±0.2	℃
humidity	0-100	0.1	±3	%RH
Wind speed	0-60	0.1	±0.3	m/s
wind direction	16direction	1direction	-	-
CO2	0-5000	1	±50+3%	ppm
PM2.5	0-999	1	±10F.s	Ug/m3
PM10	0-999	1	±10F.s	Ug/m3
Atmospheric pressure	10-1200	0.01	±0.1	mbar
Illuminance	0-200000	1	±7%	Lux
Oxygen concentration	0-30	0.1	±3F.s	%
Ammonia concentration	0-100	0.01	±3F.s	ppm
Hydrogen sulfide	0-100	0.1	±3F.s	ppm
noise	30-130	0.1	±1.5	dB
Nitrogen Dioxide	0-20	0.01	±3F.s	ppm
Nitric	0-250	0.1	±3F.s	ppm

oxide				
Sulfur dioxide	0-20	0.01	±3F.s	ppm

1.1 System parameters

parameter	range
System power supply	12-24V
way of communication	RS485
Operating temperature	-40-70℃
Working humidity	0-95%RH No condensation

1.1 System framework diagram



Chapter 1 Hardware Connection

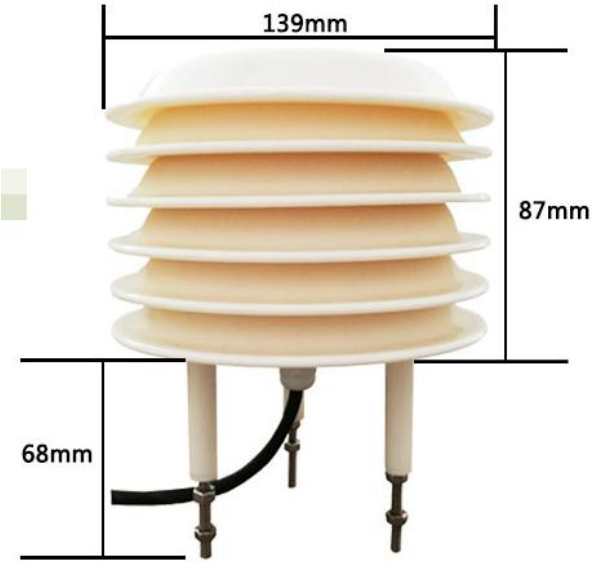
1.1 Inspection before equipment installation

Please check the equipment list before installing the equipment:

name	Quantity
High precision sensor	1 set
12V waterproof power supply	1 set（Optional）
USB to 485 device	1 set（Optional）
Warranty card/certificate	1 serving
Special bracket for louver box	1 件（Optional）

1.1 Interface description

The power interface is a wide-voltage power input that can be 12-24V. When wiring the 485 signal line, pay attention to the A/B two lines can not be reversed, and the address of multiple set devices on the bus can not conflict.

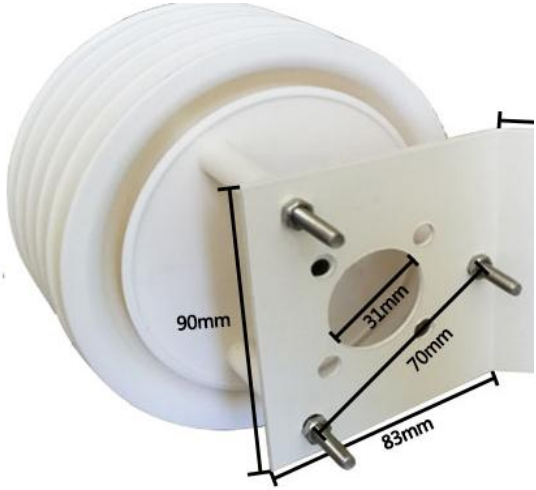


	Thread color	Description
power supply	brown	Power is positive（12-24VDC）
	black	Power negative
Communication	yellow	485-A
	Blue	485-B

The factory default provides 0.6 meters long wire, customers can extend the wire as needed or wire in order.

1.1 Installation matters

The equipment is fixed by three mounting screws at the bottom. Customers can use screws to fix the louver equipment. The fixing holes are located as shown in the figure below.



The installation location needs to pay attention to the following:

1. The transmitter should be installed as horizontally as possible to ensure that the installation is perpendicular to the horizontal plane.

2. The installation height is the human sitting height or the environmental area where the

measurement is mainly required.

At the same time, please pay attention to the following precautions:

1. Avoid installing in areas that are easy to transfer heat and will directly cause a temperature difference with the area to be measured, otherwise the temperature and humidity measurement will be inaccurate.

2. Install in an area with a stable environment, avoid direct sunlight, stay away from windows, air conditioning, heating and other equipment, and avoid directly facing windows and doors.

3. Keep away from high-power interference equipment as far as possible to avoid inaccurate measurement, such as inverters and motors.

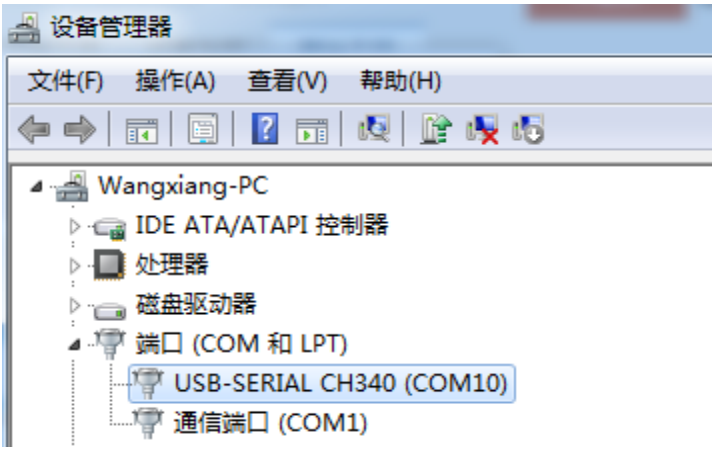
Chapter 1 Configuration Software Installation and Use

Our company provides supporting "sensor monitoring software", which can easily use the computer to read the sensor parameters, and flexibly modify the device ID and address of the sensor.

1.1 Connect the sensor to the

computer

After connecting the sensor to the computer through USB to 485 and supplying power, you can see the correct COM port in the computer (check the COM port in "My Computer—Properties—Device Manager—Port").

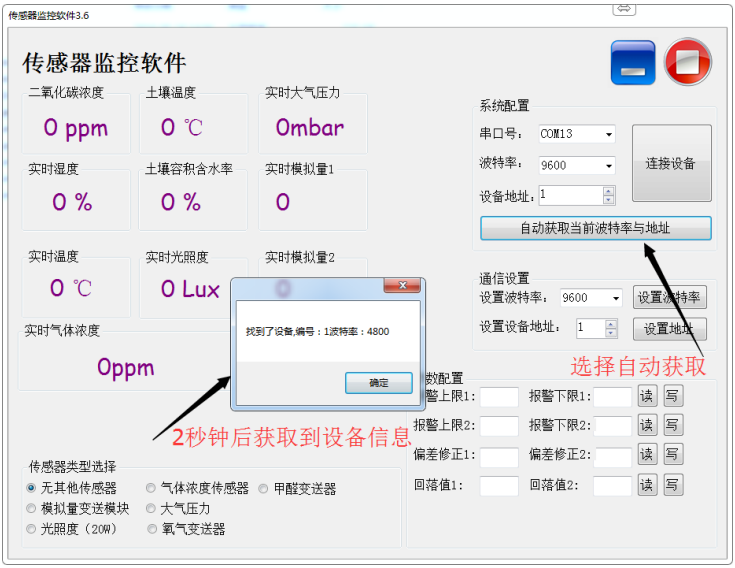


As shown in the figure above, your serial port number is COM10 at this time, please remember this serial port, you need to fill in this serial port number in the sensor monitoring software.

If the COM port is not found in the device manager, it means that you have not plugged in the USB to 485 or the driver has not been installed correctly, please contact a technician for help.

1.1 Use of sensor monitoring software

The configuration interface is as shown in the figure. First, obtain the serial port number and select the correct serial port according to the method in chapter 3.1, and then click to automatically obtain the current baud rate and address to automatically detect all devices and baud rates on the current 485 bus . Please note that you need to ensure that there is only one sensor on the 485 bus when using the software to automatically obtain it.



Then click to connect the device to get the sensor data information in real time.

If the device is to start the concentration sensor, please select "gas concentration sensor" in the sensor type, "formaldehyde transmitter" for formaldehyde sensor, "analog

transmitter module" for analog transmitter, and "atmospheric pressure sensor for atmospheric pressure sensor ", the illuminance sensor selects "illuminance 20W", Oxygen sensor selects "Oxygen Transmitter", other sensors select the default "No other sensor".

1.1 ID1.1 Modify the baud rate and device ID

When the device is disconnected, click the device baud rate and set address in the communication settings to complete the related settings. Please note that after setting, please restart the device, and then "automatically obtain the current baud rate and address" to find the address And the baud rate has been changed to the address and baud rate you need.

Chapter 2 Communication Protocol

1.2 Basic communication parameters

parameter	content
coding	8-bit binary
Data bit	8-bit
Parity bit	no
Stop bit	1-bit
Wrong calibration	CRC lengthy cyclic code
Baud rate	2400bps, 4800bps, 9600 bps can be set, the factory default is 9600bps
coding	8-bit binary

1.2 Data frame format definition

Using Modbus-RTU communication protocol, the format is as follows:

Time of initial structure ≥ 4 bytes

Address code = 1 byte

Function code = 1 byte

Data area = N bytes

Error check = 16-bit CRC code

Time to end structure ≥ 4 bytes

Address code: It is the function indicator of the transmitter. This transmitter only uses the function code 0x03 (read register data).

Data area: The data area is a specific address, which is unique in the communication network (factory default 0x01).

Function code: command communication data sent by the host, pay attention to the 16bits data high byte first!

CRC code: two-byte check code.

Interrogation frame

Check code low bit	address code	function code	Register start address	Register length	Check code high
1byte	1byte	1byte	2byte	2byte	1byte

Reply frame

address code	function code	Effective bytes	First data area	Second data area	Nth data area
1byte	1byte	2byte	2byte	2byte	2byte

1.2 Register address

Register address	PLC configuration	content	unit

	address		
0000H	40001	humidity	0.1%RH
0001H	40002	temperature	0.1℃
0002H	40003	Soil moisture	0.1%RH
0003H	40004	Soil temperature	0.1℃
0004H	40005	PM2.5	1ug/m3
0005H	40006	CO2concentration	1ppm
0006H	40007	Gas concentration	0.1ppm
0007H	40008	High illuminance	1Lux
0008H	40009	Low illumination	1Lux
0009H	4000a	PM10 concentration	1ug/m3
000aH	4000b	High atmospheric pressure	0.01kpa
000bH	4000C	Low atmospheric pressure	0.01kpa
000cH	4000D	Noise value	0.1dB

1.2 Communication protocol example and explanation

Read the temperature and humidity value of the device address 0x01

Interrogation framead dress code	function code	initial address	Data length	Check code low bit	Check code high
0x01	0x03	0x00,0x00	0x00,0x02	0xC4	0x0B

Response frame (for example, the temperature is -10.1℃ and the humidity is 65.8%RH)

address code	function code	Effective words	Humidity value	Humidity value	Check code Low	Check code High

						position
0x01	0x03	0x04	0x02 0x92	0xFF 0x9B	0x5A	0x3D

temperature:

Upload in the form of complement when the temperature is lower than 0℃

FF9B H (hexadecimal) = -101 => temperature = -10.1℃

Humidity:

292 H (hexadecimal) = 658 => humidity = 65.8%RH

Chapter 2 Frequently Asked Questions and Quality Assurance

1.2 The device cannot connect to the PLC or computer

The possible reasons are as follows:

- ・The computer has multiple COM ports and the selected port is incorrect.
- ・The device address is wrong, or there are devices with duplicate addresses (the factory default is all 1).
- ・Baud rate, check method, data bit, stop bit error.
- ・The host polling interval and waiting time for response are too short, and both need to be set above 200ms.
- ・The 485 bus is disconnected, or the A and B wires are connected reversely.
- ・There are too many devices or the wiring is too long.

You should supply power nearby, add a 485 booster, and add a 120Ω terminal resistance.

- USB to 485 driver is not installed or damaged
- Equipment damage

1.2 Warranty and after-sales

The warranty clauses follow the sensor after-sales clauses of Weihai Jingxun Changtong Electronic Technology Co., Ltd., the sensor host circuit part is guaranteed for two years, the gas-sensitive probe is guaranteed for one year, and the accessories (shell, plug, cable, etc.) are guaranteed for three months.