
INSTRUCTION MANUAL

Weather screen Operating instruction

JXBS-3001-BYX

VER1.1

I **PRODUCT INTRODUCTION**

1.1 Product Overview

Meteorological observation box is a fixed multi-in-one ground automatic observation equipment, observation items mainly include wind direction, wind speed, temperature, humidity, atmospheric pressure, illuminance, carbon dioxide concentration, PM2.5, PM10, oxygen concentration, ammonia concentration, hydrogen sulfide concentration, noise and other meteorological factors.

Meteorological observation boxes can be widely used in urban environment measurement, agricultural monitoring, industrial governance and other environments so as to collect more abundant and effective monitoring data.

1.2 Functional features

This product uses high sensitivity digital probe, signal stability, high precision. It has the characteristics of wide measuring range, good linear shape, good waterproof performance, easy to use, easy to install, long transmission distance and so on.

Waterproof weather shelter structure is adopted, so it can be used in various environments. The data acquisition system is accurate and stable. The product has excellent technology and good corrosion resistance.

1.3 parameters

1.3.1 Sensor parameter

Technical parameters	Measuring range	The resolution of the	precision	unit
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The temperature

- 40-80

0.1

+ / - 0.2

°C

humidity

0-100.

0.1

Plus or minus %RH

3

The wind speed

0-60

0.1

+ / - 0.3

m/s

The direction of the wind

16

the 1 direction

-

-

direction

CO2

0-5000.

1

Plus or minus ppm

50 + 3%

PM2.5

0-999.

1

Plus or minus Ug/m3

10 f. s

PM10	0-999.	1	Plus or minus 10 f. s	Ug/m3
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Atmospheric pressure 10-1200. 0.01 + / - 0.1 mbar

light	0-200000.	1	Plus or minus 7%	Lux
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Oxygen concentration 0 to 30 0.1 Plus or minus
3 f. s %

Ammonia concentration	0-100.	0.01	Plus or minus 3 f. s	ppm
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Hydrogen sulfide 0-100. 0.1 Plus or minus
3 f. s ppm

noise	30-130.	0.1	+ / - 1.5	dB
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Nitrogen dioxide 0-20 0.01 Plus or minus
3 f. s ppm

Nitric oxide is	0-250.	0.1	Plus or minus ppm 3 f. s
Sulfur dioxide	0-20	0.01	Plus or minus ppm 3 f. s

1.3.2 485 Communication parameters

The parameter name	Parameters of the content
Dc power supply (default)	12-24V DC
Power consumption	≤0.5W (@12V DC, 25°C)
The output signal	RS485 output (Mondbus protocol)
Operating pressure range	0.9 1.1 ATM

1.3.3 4G communication parameters

The parameter name	Parameters of the content
Dc power supply	12V-24V DC
The power consumption of the product	< 0.4 W.

Transport interface	4G wireless signal transmission
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Spectrum pattern	Fdd-lte, TDD-LTD, TD-SCDMA, UMTS, EV-DO, CDMA, GSM
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Operation support	China Mobile, China Unicom, China Telecom 4G, 3G, 2G full network
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1.3.4 Ethernet communication parameters

The parameter name	Parameters of the content
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Dc power supply	12V-24V DC
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POE power supply	48V standard POE power supply (optional)
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Transport interface	RJ45 10M/100M auto-sensing
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Communication protocol	Report /TCP Modbus
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1.4 System parameters

parameter	The scope of
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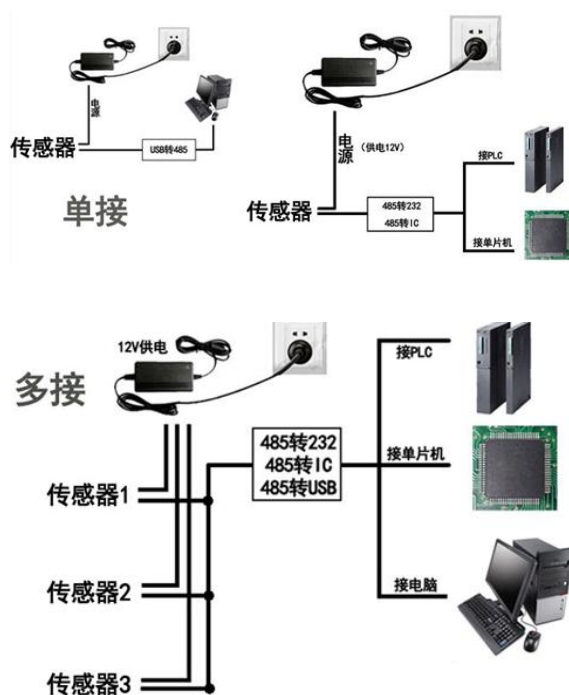
System power supply	12-24V
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Communication mode RS485/4G

Working temperature - 40-70 °C

Working humidity 0-95% RH without condensation

1.5 485 system framework diagram



2.HARDWARE CONNECTION

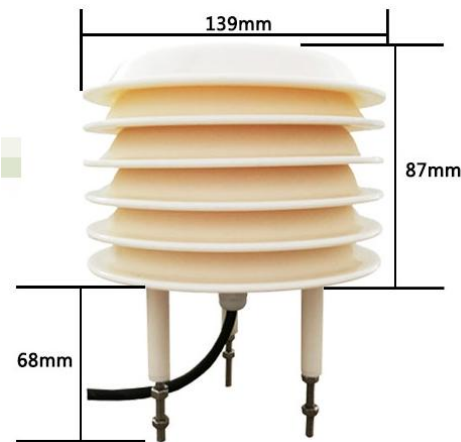
2.1 Check the equipment before installation

Check the device list before installing the device:

The name of the	The number of
High precision sensor	1
12V waterproof power supply	1 set (optional)
USB to 485 devices	1 set (optional)
Warranty card/certificate of conformity	1
Special shelter for thermometer shelters	1 piece (optional)

2.2 Product appearance

The following is the appearance and size of the sensor, which can be reasonably installed according to the size and structure, as shown in the figure:



2.3 Interface specification

2.3.1 485 communication equipment

Power interface for wide voltage power input, 12-24V can be used. Attention should be paid to A/B two lines should not be inversely connected, but multiple devices address should not conflict; The sequence description is shown in the following figure (table) :

RS485接线说明

	线色	说明
电源	棕色	电源正 (12-24VDC)
	黑色	电源负
通信	黄色	485-A
	蓝色	485-B

The line		instructions
color		
The power supply	brown	Positive power supply (12-24VDC)
	black	The power negative
communication	yellow	485-A
	blue	485-B

Note: Do not connect the wrong cable sequence, or the device may be burnt down.

The factory provides 0.6 meter long wire by default, and customers can extend the wire or connect it in sequence according to their needs.

2.3.2 4G communication equipment

The power supply interface of the equipment is DC power supply interface, directly connected with 12-24V DC power supply can work.



2.3.3 Ethernet communication equipment

The device is classified into common DC power adapter power supply type and POE centralized power supply type. The specific ports are as follows:



	style	instructions
The power supply	Round mouth DC head	12-24V DC power supply
so	RJ45 interface	Connect the 10/100M network cable

The device has a DC power supply port and a waterproof RJ45 cable port, as shown in the preceding figure.

The sensor in the common power supply mode must be connected to the DC power supply at the same time as the network cable. The factory provides the default 50cm wire.



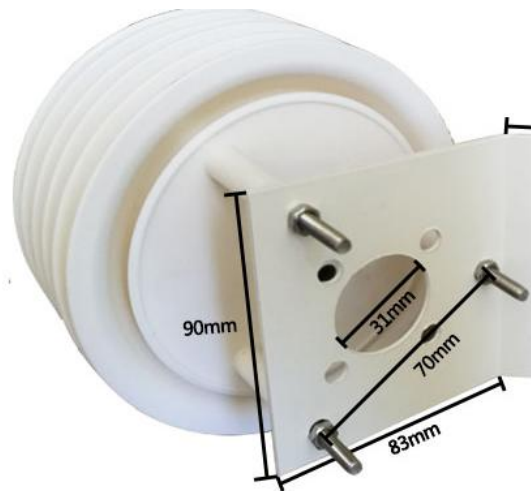
	style	instructions
so	RJ45 interface	Connect a 10/100m cable standard POE cable

The figure in the preceding figure shows a POE powered device with a waterproof RJ45 port. For POE power supply, the network sensor has only one network port. You only need to connect the POE cable to the network port.

Note the device only supports standard 48V POE switches, but does not support 24V non-standard switches. If you have special requirements, contact the manufacturer. The POE power supply is compatible with 1236 and 4578 power supply modes.

2.4 Installation matters

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



Note the following for the installation position:

1, the transmitter should be horizontal security as far as possible, to ensure that the installation is vertical to the horizontal plane.

2, the installation height of the human body sitting height or the main requirements of the measurement of the environmental area.

Meanwhile, please pay attention to the following precautions:

1. Avoid installation in the zone where heat transfer is easy and temperature difference will be directly caused with the area to be measured, otherwise temperature and humidity measurement will be inaccurate.

2. Install in a stable environment area, avoid direct sunlight, away from Windows and air conditioning, heating and other equipment, avoid direct to Windows and doors.

3, as far as possible away from high-power interference equipment, so as not to cause inaccurate measurement, such as frequency converter, motor, etc..

3.CONFIGURE SOFTWARE INSTALLATION AND USE

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

This section only applies to thermometer shelters of 485 communication mode.

3.1 Sensor access computer

After the sensor is correctly connected to the computer through USB to 485 and provided with power, the correct COM port can be seen in the computer (see the COM port in "My computer - Properties - Device Manager - Ports").



As shown in the figure above, your serial port number is COM10. Please remember this serial port and fill this serial port number in the sensor monitoring software.

If the COM port is not found in device Manager, it indicates that the USB converter 485 is not inserted or the driver is not properly installed. Contact technical support personnel for help.

3.2 Use of sensor monitoring software

The configuration interface is as shown in the figure. Firstly, obtain the serial port number according to the method in Section 3.1 and select the correct serial port. Then click Auto Obtain current baud rate and address to automatically detect all devices and baud rate on the current 485 bus. Please note that there is only one sensor on the 485 bus when using software automatic acquisition.



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

If the concentration sensor equipment is started, at the sensor type, please choose "gas concentration sensor", formaldehyde sensor selection "formaldehyde transmitter, analog transducer selection" analog quantity to send module ", choose "air pressure sensor" atmospheric pressure sensor, light sensor select 20 w "light", the oxygen sensor selection "oxygen transmitter", Select No Other sensor by default for other sensors.

3.3 Change the baud rate and device ID

When the device is disconnected, click the device baud rate and set address in Communication Settings to complete the related Settings. After setting the device, restart the device. After "Automatically obtain the current baud rate and address", you can find that the address and baud rate have been changed to the required address and baud rate.

4. 485 COMMUNICATION PROTOCOL

4.1 Basic communication parameters

parameter	content
coding	8-bit binary
Data bits	eight
Parity bit	There is no
Stop bit	1 a
Error calibration	CRC long loop code
Baud rate	2400Bps, 4800bps, and 9600 BPS are available. The factory default value is 9600 BPS
coding	8-bit binary

4.2 Data frame format definition

Modbus-rtu protocol is adopted in the following format:

Time for initial structure ≥ 4 bytes

Address code = 1 byte

Function code = 1 byte

Data area = N bytes

Address code: for the function indication of the transmitter, the transmitter only uses the function code 0x03 (read register data).

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

Function code: host instruction communication data, pay attention to the 16bits data high bytes in the first!

Check code	Address	Function	Register	start	Register	Check code
low level	code	code	address		length	high
1 byte	1 byte	1 byte	2 -		2 -	1 byte

Address	Function	Number of	First data area	Second data	NTH	...
code	code	valid bytes		area	block	
1 byte	1 byte	2 -	2 -	2 -	2 -	

4.3 Register address

Register address	PLC configuration address	content	unit
0000H	40001	humidity	0.1% RH
0001H	40002	The temperature	0.1 °C
0002H	40003	Soil moisture	0.1% RH
0003H	40004	Soil temperature	0.1 °C
0004H	40005	PM2.5	1ug/m3
0005H	40006	CO2 concentration	1ppm
0006H	40007	Gas concentration	0.1 parts per million
0007H	40008	High illuminance	1Lux
0008H	40009	Low illuminance	1Lux
0009H	40010	PM10 concentration	1ug/m3
000aH	40011	High atmospheric pressure	0.01 kpa
000bH	40012	Low atmospheric	0.01 kpa

pressure			
000cH	40013	The noise value	0.1 dB

4.4 Communication protocol examples and explanations

Read the temperature and humidity value of device address 0x01

Information frame

Address code	Function code	The starting address	The length of the data	Check code low level	Check code high
0x01	0x03	0 x00 to 0 x00	0 x00 to 0 x02	0xC4	0x0B

Reply frame (e.g., read temperature of -10.1°C, humidity of 65.8%RH)

Address code	Function code	Effective -	Humidity value	Temperature value	Check code low	Check code high
0x01	0x03	0x04	0x02 0x92	0xFF 0x9B	0x5A	0x3D

Temperature:

When the temperature is lower than 0 ° C, it is uploaded in the form of complement

FF9B H(hex)= -101 => Temperature = -10.1 ° C

Humidity:

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

5. 485 COMMUNICATION FAQs

5.1 Device cannot connect to PLC or computer

Possible causes are as follows:

- The computer has multiple COM ports, the selected port is not correct.
- The address of the device is incorrect or the address of the device is the same (1 by default).
- Baud rate, check mode, data bit, stop bit error.
- The polling interval and waiting for reply time of the host are too short, and must be set to more than 200ms.
- The 485 bus is disconnected, or the A and B lines are connected inversely.
- If the number of devices is too large or the wiring is too long, power supply should be provided nearby. Add 485 intensifier and 120 Ω terminal resistance at the same time.
- The USB to 485 driver is not installed or damaged.
- The device is damaged.

6. 4G COMMUNICATION SCREEN

CONNECT TO SCREEN CLOUD

6.1 System is introduced

Essence cloud, dispatch and developed a iot commonality cloud platform, on the basis of industry solutions, solve the problem of traditional heavy link light experience cloud platform, based on the link to upgrade the front display effect and the style, the integration of more than 10 industry template interface, is a set of solutions, data acquisition, warning issued, remote control, data analysis and so on as one of the Internet system. Jingxun Cloud provides data recording, query, export, comparison and other functions, mainly providing one-stop service for customers at the application layer.

6.2 Intelligence cloud advantage

(1) Stability: High stability, the overall system availability rate is greater than 99.7%, database application availability rate is greater than 99.8%, and regular maintenance.

(2) Easy operation: to provide friendly user management and use of the world

(3) Reliability: during the system design, we should ensure the reliability of the system by selecting excellent products and adopting necessary technical means

(4) Compatibility: Products of other companies can be produced on our platform according to our server protocol

(5) "Thousand people and thousand Faces" : with privatized deployment, it also provides two entrances, normal entrance and neutral entrance. After entering from the neutral entrance, the interface information seen by customers is the information set by customers themselves

(6) wechat mini program: it is easy to check the status, data and binding

location of the device through wechat.

6.3 Thermometer box data query

When you buy 4G communication screen, screen with reporting function, you can see the data through the cloud server remote, convenient and fast.

The screen device connects to the Cloud server by 4G network module and reports data to the cloud server according to the default frequency (frequency adjustable).

You only need to log in to the server with your registered jinx cloud account, by using each host's unique "ID" to query data of the screen.

At the same time, the platform also has the alarm function. You only need to set the alarm value through the platform. If the monitoring data exceeds the alarm value, the platform will notify you through SMS or QQ mailbox, so that you can monitor the data more conveniently and quickly.

Note: You can contact our after-sales staff to know the specific functions of the platform.