

Specification

BX- CSFF Ultrasonic Weather Station



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Function instruction

Product Overview

BX-CSFF (485) Ultrasonic Weather Station features a compact and lightweight design for easy portability and assembly. It integrates wind speed and wind direction sensor functions into one unit, enabling precise measurement of wind speed and direction values.

The housing utilizes premium aluminum alloy profiles with an electroplated and powder-coated exterior, offering excellent corrosion and erosion resistance. This ensures long-term rust-free operation of the transmitter. Combined with a smooth internal bearing system, it guarantees precise data acquisition. Widely used for environmental value measurement in greenhouses, environmental protection, weather stations, ships, docks, aquaculture, and similar settings.

Product photos



Features

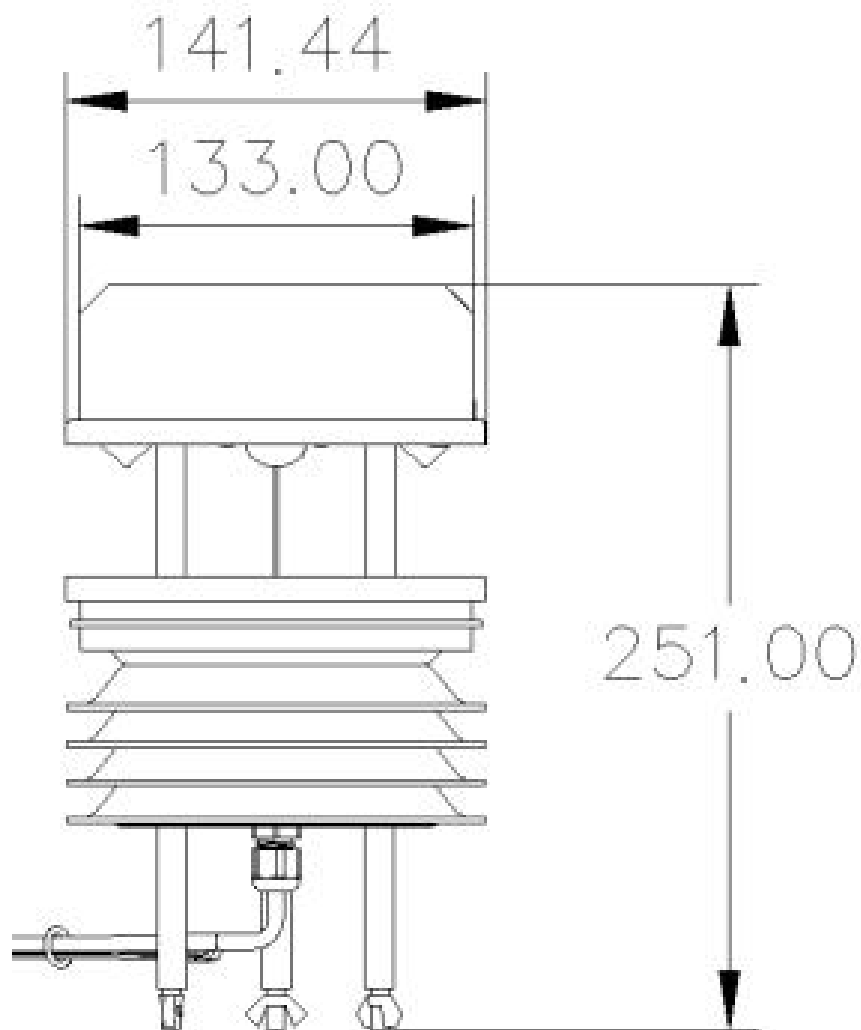
- Compact and lightweight design with premium UV-resistant materials ensures extended service life. Equipped with a high-sensitivity probe for stable signals and high accuracy. Key components utilize imported devices for stable and reliable performance. Features include a wide measurement range, excellent linearity, superior waterproofing, user-friendly operation, easy installation, and long transmission distance.
- Features an integrated multi-sensor design for easy installation.
- Utilizes ultrasonic technology to measure wind speed and direction, with no minimum wind speed requirement, zero-wind operation capability, and unrestricted 360° coverage. Simultaneously captures wind speed, direction, and force data.
- Incorporates RS485 circuitry for stable communication.

Key Technical Specifications

DC power supply (default)	DC12V 2A	
Response speed	2s	
Rated Power	≤1.2W	
Output signal	RS485(Modbus protocol)	
Accuracy	Wind speed	$\pm(0.2\text{m/s}\pm0.02*v)$ (True Wind Speed)
	Wind direction	$\pm3^\circ$
Range	Wind speed	0~60m/s
	Wind direction	0~359°

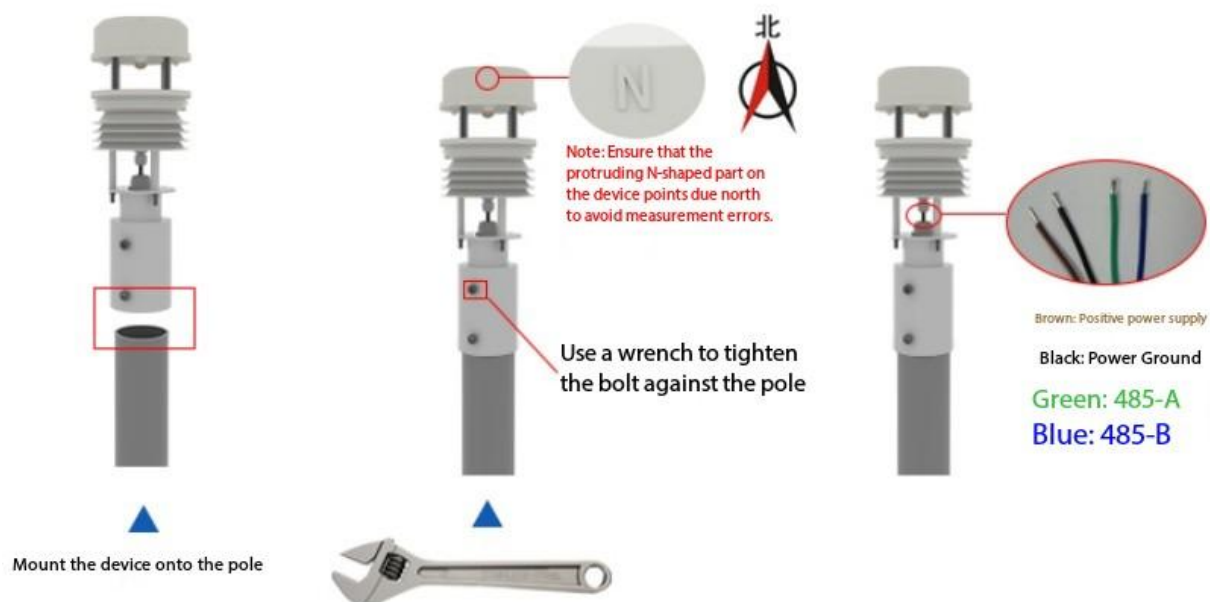
Dimension Diagram

Unit: mm



Installation Diagram

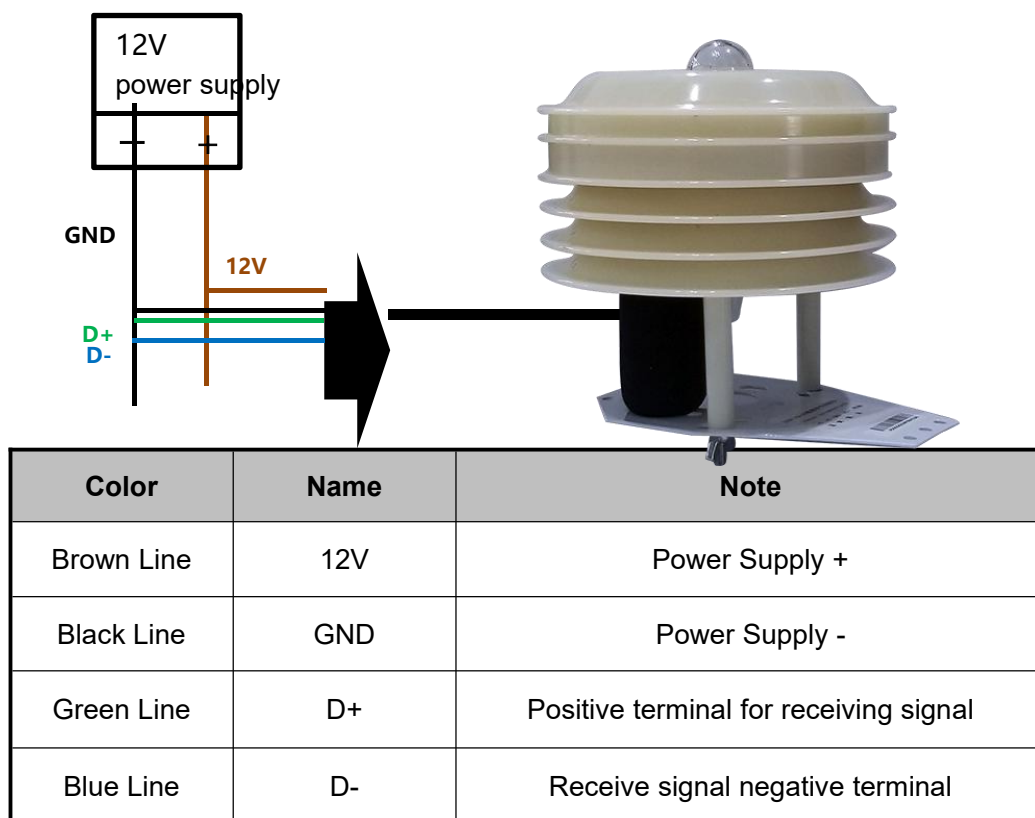
Clamping Base Installation::



Crossbeam Installation:

Connection Cable Specifications

When wiring, the numbers on the terminals of this unit must correspond to the numbers on the label affixed to the product body.



Communication Protocol

Basic Communication Parameters

Code	8-bit binary
data bit	8 bits
Parity bit	None
Stop bit	1 bit
Error Checking	CRC (Redundant cyclic code)
Baud rate	4800 bit/s, 9600 bit/s, 19200 bit/s, 38400 bit/s, 57600 bit/s, 115200 bit/s are configurable. The factory default is 4800 bit/s.

Data Frame Format Definition

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

Initial structure ≥ 4 bytes of time

Address code = 1 byte

Function code = 1 byte

Data area = N bytes

Error check = 16-bit CRC code

End structure ≥ 4 bytes of time

Address Code: The transmitter's starting address, unique within the communication network (factory default 0x01).

Function Code: Indicates the command function sent by the host. This transmitter only uses function code 0x03 (read register data).

Data Area: Contains the specific communication data. Note: For 16-bit data, the high byte comes first!

CRC Code: A two-byte check code.

Host Inquiry Frame Structure:

Address code	Function code	Register Start Address	Register Length	Checksum Low Byte	Checksum High Byte
1 byte	1 byte	2 byte	2 byte	1 byte	1 byte

From-machine response frame structure:

Address code	Function code	Number of valid bytes	Data area 1	Data area 2	Data area N	Checksum Low Byte	Checksum High Byte
1 byte	1 byte	1 byte	2 byte	2 byte	2 byte	1 byte	1 byte

Communication Register Address Specifications

The contents of the registers are shown in the table below. (support 03 Function code) :

Register Address	PLC or configuration address	Content	Operation	定义说明
22	40023	Wind speed value	Read only	100 times the actual value
23	40024	Wind	Read only	Actual Value(Wind force corresponding to the current wind speed)
24	40025	Wind direction (0-360°)	Read only	Actual value (0° at true north, increasing clockwise; 90° at true east)
25	40026	Wind direction (0-7 档)	Read only	Actual value (0 for true north, increasing clockwise; 2 for true east)

Communication Protocol Examples and Explanations

Example: Read the real-time wind speed value from the transmitter device (address 0x06)

Interrogation Frame

Address code	Function code	Starting Address	Data Length	Checksum Low Byte	Checksum High byte
0x06	0x03	0x00 0x16	0x00 0x01	0x 64	0x79

Response Frame

Address code	Function code	Number of valid bytes returned	Wind speed value	Checksum Low Byte	Checksum High byte
0x06	0x03	0x02	0x00 0x34	0x0C	0x53

Real-time Wind Speed Calculation:

Wind Speed: 0034 (hexadecimal) = 52 => Wind Speed = 0.52 m/s

Example: Read the wind direction angle value from the transmitter device (address 0x06)

Interrogation Frame

Address code	Function code	Starting Address	Data Length	Checksum Low Byte	Checksum High byte
0x06	0x03	0x00 0x18	0x00 0x01	0x05	0xBA

Response Frame

Address code	Function code	Number of valid bytes returned	Wind direction value	Checksum Low Byte	Checksum High byte
0x06	0x03	0x02	0x01 0x5C	0x0C	0x2D

Wind Direction Angle Calculation:

Wind Direction: 015C (hexadecimal) = 348 => Wind Direction = 348°