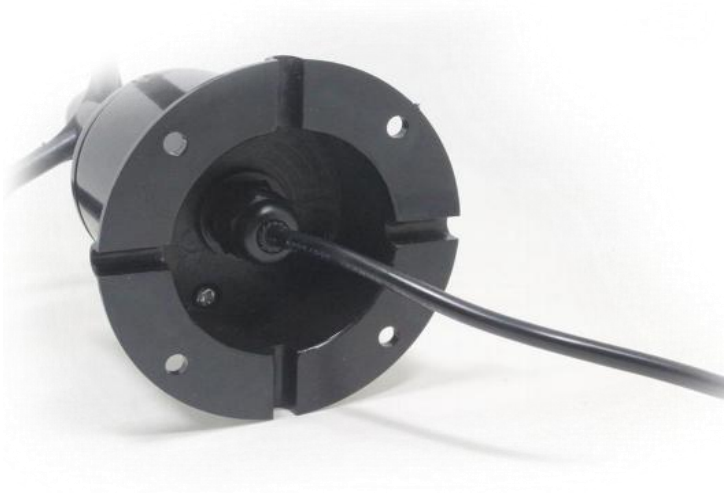
FX01
Wind direction transmitter user's manual (Type 485)





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1. product description

1.1product description

FX01 wind direction transmitter, compact and light, easy to carry and assemble. The new design concept can effectively obtain wind direction information. The shell is made of polycarbonate composite material, which has good anti-corrosion and anti-corrosion features. It can ensure that the transmitter is not deformed in long-term use, and at the same time, it is matched with the smooth internal bearing system to ensure the accuracy of information collection. It is widely used for wind direction measurement in greenhouses, environmental protection,weather stations, ships, docks, and breeding.

1.2Features

1.Range: 0~359.9 degrees.

2.Anti-electromagnetic interference treatment.

3.Using high-performance imported bearings, low rotation resistance, accurate measurement.

4.Polycarbonate shell, high mechanical strength, high hardness, corrosion resistance, no rust, and long-term use outdoors.

5.The structure and weight of the equipment are carefully designed and distributed, with small moment of inertia and sensitive response.

6.Standard ModBus-RTU communication protocol, easy to access.

1.3Main Specifications

DC powered (default)	10~30V DC
Power consumption	0.2W
Transmitter circuit operating temperature	-20℃~+60℃, 0%RH~80%RH
Communication Interface	485 communication (modbus) protocol Baud rate: 2400, 4800 (default), 9600 Data bit length: 8 bits Parity mode: None Stop bit length: 1 bit Default ModBus communication address: 1 Support function code: 03
parameter settings	Use the provided configuration software to configure through the 485 interface
Measuring range	0-359.9°
Precision	±1°
Dynamic response speed	≤0.8s

2. Equipment installation instructions

2.1 Check before equipment installation

Equipment List:

1.Transmitter equipment

2.4 mounting screws

3. Qualification certificate, warranty card, wiring instructions, etc. 4.USB to 485 (optional)

5.485 terminal resistance (optional)

2.2 Interface Description

Wide voltage power input can be 10 ~ 30V. When wiring the 485 signal line, pay attention that the two wires A \ B cannot be reversed, and the addresses of multiple devices on the bus must not conflict.

2.3 Electrical wiring

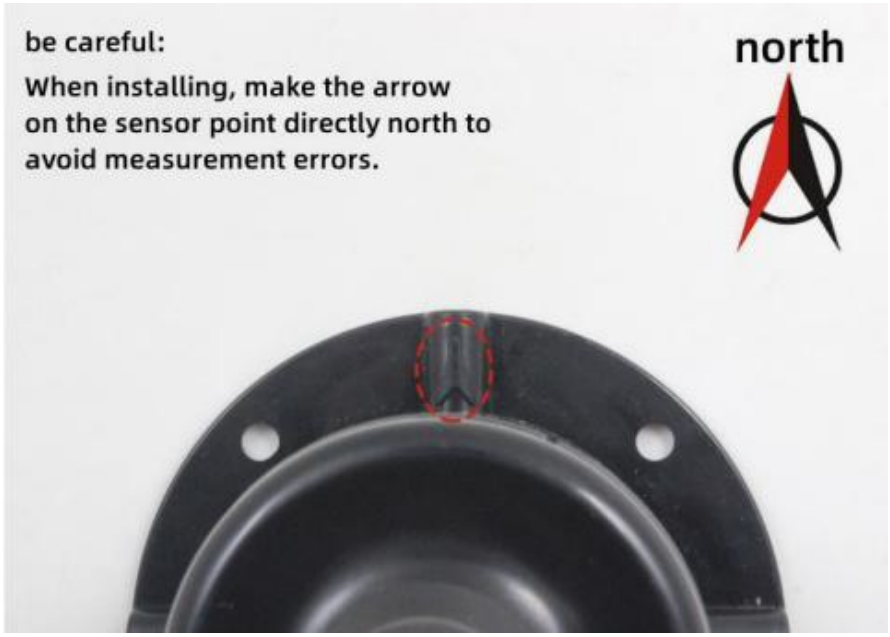
	Thread color	Description
power supply	brown	Power supply (10 ~ 30V DC)
	black	Negative power
Communication	green	485-A
	blue	485-B

2.4 Field wiring instructions

When multiple 485 models are connected to the same bus, there are certain requirements for field wiring. For details, please refer to the "485 Equipment Field Wiring Manual" in the reference package.

2.5Installation method

It adopts flange installation and threaded flange connection to firmly fix the lower pipe of the wind direction sensor to the flange. The chassis is Ø80mm. Four Ø4.5mm mounting holes are opened on the Ø68mm circumference, and it is firmly fixed with bolts. The bracket keeps the entire set of instruments at the optimal level to ensure the accuracy of the wind direction data. The flange connection is easy to use and can withstand large pressures.


be careful:
When installing, make the arrow
on the sensor point directly north to
avoid measurement errors.
north


Bottom outlet
Side outgoing line
* Please choose the appropriatepresentation method based
on the actual application environment on site

2.6Precautions

1. The user is not allowed to dismantle by himself, nor touch the sensor core, so as not to cause damage to the product.

2. Try to stay away from high-power interference equipment to avoid inaccurate measurements, such as inverters, motors, etc. When installing and removing the transmitter, you must first disconnect the power supply. Water entering the transmitter can cause irreversible changes.

3. To prevent chemical reagents, oil, dust and other direct damage to the sensor, do not use it for a long time in the environment of condensation, extreme temperature, and prevent cold and heat shock.

3. Configuration software installation and use

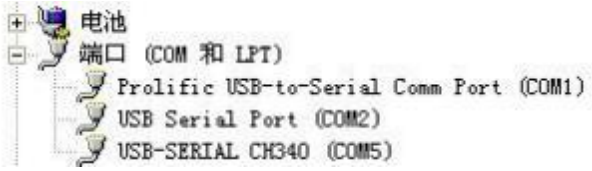
3.1 Software selection

Open the package and select "Debugging Software" --- "485 Parameter Configuration Software" and find 

Just open it.

3.2 parameter settings

① Select the correct COM port (check the COM port in "My Computer-Properties-Device Manager-Port"). The following figure lists several different 485 converter driver names.



② Connect only one device and power on. Click the software to test the baud rate. The software will test the baud rate and address of the current device. The default baud rate is 4800bit / s and the default address is 0x01.

③ Modify the address and baud rate according to the needs of use, and can query the current function status of the device.

④ If the test is unsuccessful, please recheck the equipment wiring and 485 driver installation.



4. letter of agreement

4.1 Basic communication parameters

Code	8-bit binary
Data bit	8-bit
Parity bit	no
Stop bit	1 person
Error checking	CRC (Redundant Cyclic Code)
Baud rate	2400bit / s, 4800bit / s, 9600 bit / s can be set, the factory default is 4800 bit / s

4.2 Data frame format definition

Modbus-RTU communication protocol is adopted, 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

Ending structure ≥ 4 bytes of time

Address code: It is the address of the transmitter, which is unique in the communication network (factory default 0x01).

Function code: The function instruction of the command issued by the host, this transmitter only uses the function code 0x03 (reading register data).

Data area: The data area is the specific communication data. Note that the high byte of the 16bits data comes first!

CRC code: two-byte check code. Host inquiry frame structure:

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

Slave response frame structure：

address code	function code	Number of valid bytes	Data area	Second data area	Nth data area	Check code
1byte	1byte	1byte	2byte	2byte	2byte	2byte

4.3 Register address

Register address	PLCOr configuration address	content	operating
0000 H	40001	Angle value with one decimal place (0-3599) The uploaded data is 10 times the angle value with one decimal place	Read-only
0001 H	40002	Integer angle value (0-359) Uploaded data is	Read-only

		actual value	

4.4 Communication protocol example and explanation Example: Read wind direction at device address 0x01

Inquiry frame:

address code	function code	starting address	Data length	Low check bit	Check code high
0x01	0x03	0x00 0x00	0x00 0x02	0xC4	0x0B

Response frame: (for example, read that the angle value with one decimal place is 160.8 degrees)

address code	function code	Returns the number of valid bytes	The angle value with one decimal place is expanded 10 times (0~3599)	The actual value of the angle value of integer bits (0~359)	Check code low bit	High bit of check code
0x01	0x03	0x04	0x06 0x48	0x00 0xA0	0x7A	0xD5

Angle calculation:

The angle value with one decimal place is expanded by 10 times (0~3599): 0648H (hexadecimal) = 1608

=> angle value = 160.8 degrees

The actual value of the angle value of integer bits (0~359): 00A0H (hexadecimal) = 160 degrees

5. Common problems and solutions

5.1 Device cannot be connected to PLC or computer

possible reason:

1) The computer has multiple COM ports, and the selected port is incorrect.

2) The device address is wrong, or there are devices with duplicate addresses (the factory defaults are all 1).

3) The baud rate, check method, data bit, stop bit are wrong.

4) The host polling interval and waiting response time are too short, and both need to be set above

200ms.

5) The 485 bus is disconnected, or the A and B wires are connected reversely.

6) If the number of equipment is too much or the wiring is too long, power supply should be nearby, add 485 booster, and add 120 Ω terminal resistance at the same time.

7) The USB to 485 driver is not installed or damaged.

8) The equipment is damaged.

6. Dimensions

