



RS-FXA-N01-16
Aluminum housing 16
azimuth wind direction
transmitter

an instruction manual

(Type 485)



Catalogue

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1. Product introduction

1.1 Product Overview

RS-FXA-N01-16 wind direction transmitter is compact and light in appearance, and easy to carry and assemble. The wind direction information can be effectively obtained through the new design concept. The shell is made of high-quality aluminum alloy profiles, and the exterior is electroplated and sprayed with plastic, which has good anti-corrosion and anti-corrosion effects, and can ensure that the transmitter is free of rust and chipping in long-term use. At the same time, the internal smooth bearing system ensures the accuracy of information collection. It is widely used for wind direction measurement in greenhouse, environmental protection, weather station, ship, dock, aquaculture and other environments.

1.2 Features

1. Range: 16 indication directions
2. Anti-electromagnetic interference processing
3. High-performance bearing is adopted, with small rotating resistance and accurate measurement
4. All-aluminum shell with high mechanical strength, high hardness, corrosion resistance and rust resistance can be used outdoors for a long time
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, convenient access

1.3 Technical indicators

| | |
|---|---|
| DC power supply (default) | 5~30V DC |
| Maximum power consumption | 0.2W (12V supply electricity) |
| Transmitter circuit operating temperature | -40°C~+60°C, 0%RH~80%RH |
| communication interface | 485 communication (ModBus) protocol Data bit length: 8 bits Parity check method: none Stop bit length: 1 bit |

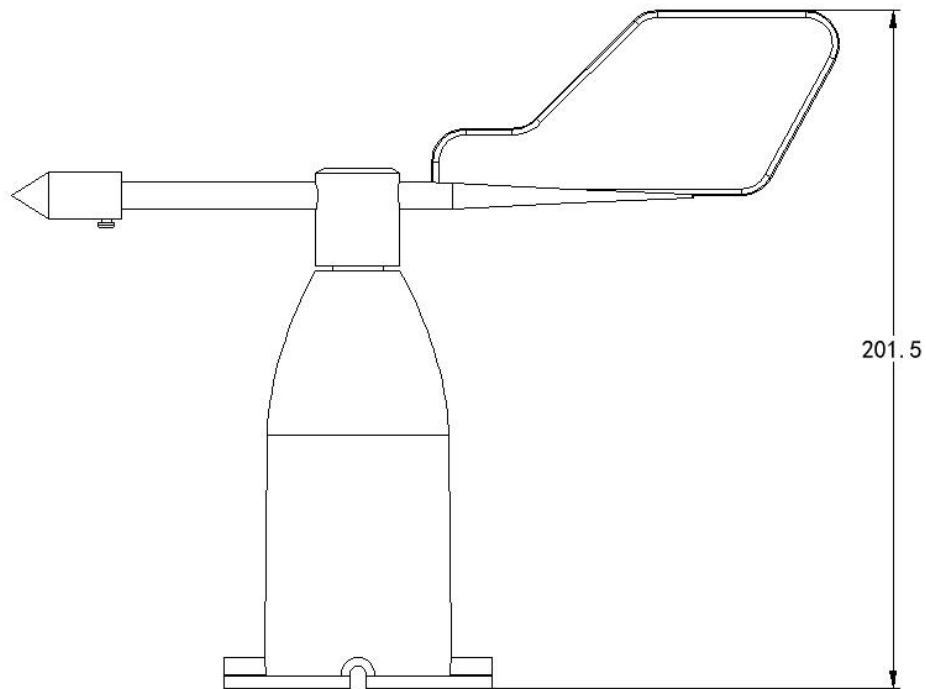


| | |
|------------------------|--|
| | Default ModBus communication address: 1 Baud rate: 2400, 4800 (default), 9600, 19200, 38400, 57600, 115200 |
| measuring range | 16 indication directions |
| Dynamic response speed | $\leq 0.5s$ |

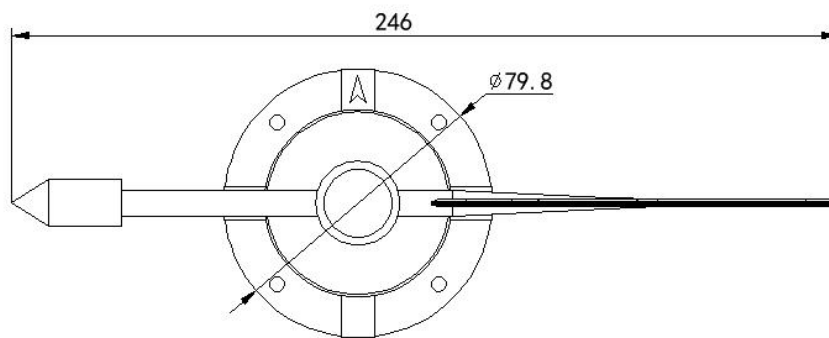
1.4 Product selection

| | | | |
|-----|------|------|---|
| RS- | | | Company code |
| | FXA- | | Aluminum shell wind direction transmitter |
| | | N01- | RS485 (ModBus-rtu) |
| | | | 16 azimuth |

1.5 Equipment size



单位: mm



2. Equipment installation instructions

2.1 Inspection before equipment installation

Equipment list:

- 1 transmitter
- 4 mounting screws
- Certificate of conformity, warranty card, wiring instructions, etc
- USB to 485 (optional)



- 485 terminal resistance (optional)
- Install 1 trailer

2.2 Interface description

Wide-voltage power input is 5~30V. When wiring the 485 signal line, pay attention to that the two lines A B cannot be connected reversely, and the addresses of multiple devices on the bus cannot conflict.

2.3 Electrical wiring

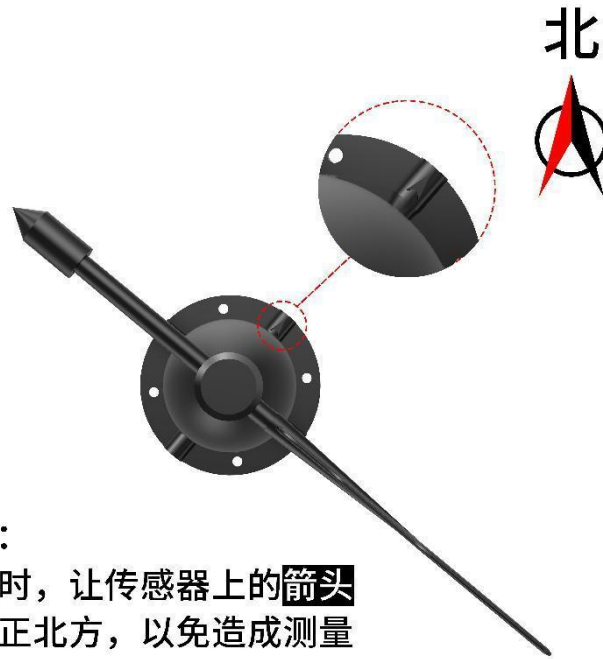
| | Linear color | explain |
|---------------|--------------|----------------|
| power | brown | V+ (10~30V DC) |
| | black | V- |
| communication | green | 485-A |
| | blue | 485-B |

2.4 Field wiring instructions

When multiple 485 devices are connected to the same bus, there are certain requirements for field wiring. Please refer to the 485 Device Field Wiring Manual in the data package for details.

2.5 Installation method

The wind direction sensor is firmly fixed on the flange plate by flange installation and threaded flange connection. The chassis is 79.8mm thick, and four mounting holes of 6mm are evenly opened on the circumference of 68mm thick. The bolts are used to tightly fix it on the bracket, so that the whole instrument can be kept at the best level, and the accuracy of wind direction data can be guaranteed. The flange connection is convenient to use and can withstand large pressure.



注意：
安装时，让传感器上的箭头
冲着正北方，以免造成测量
误差。

2.6 matters needing attention

1. Users are not allowed to disassemble the sensor by themselves, let alone touch the sensor core to avoid damage to the product.
2. Keep away from high-power interference equipment as far as possible to avoid inaccurate measurement, such as frequency converter, motor, etc. When installing and disassembling the transmitter, the power supply must be disconnected first. Water entering the transmitter can cause irreversible changes.
3. Prevent chemical reagents, oil, dust, etc. from directly damaging the sensor. Do not use it for a long time under the conditions of condensation and extreme temperature, and strictly prevent cold and hot shock.

3. Installation and use of configuration software

3.1 Software selection

Open the data package and select "Debugging software" - "485 parameter configuration

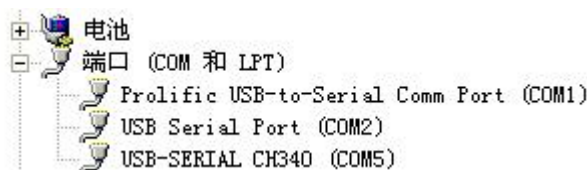


software", find  Open it.

3.2 Parameter setting



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



② . Connect and power on only one device separately, click the test baud rate of the software, and 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 as needed, and query the current function status of the device.

④ . If the test is not successful, please recheck the equipment wiring and 485 drive installation.



4. communication protocol

4.1 Basic communication parameters

| | |
|------------|--------------|
| code | 8-bit binary |
| Data bits | 8bit |
| Parity bit | - |
| Stop bit | 1bit |



| | |
|-------------|--|
| Error check | CRC (Redundant cyclic code) |
| Baud rate | 2400bit/s, 4800bit/s, 9600bit/s, 19200bit/s, 38400bit/s, 57600bit/s, 115200bit/s can be set, and the factory default is 4800bit/s |

4.2 Data frame format definition

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

Time of initial structure \geq 4 bytes

Address code=1 byte

Function code=1 byte

Data area=N bytes

Error check=16-bit CRC code

Time to end structure \geq 4 bytes

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

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

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

CRC code: two-byte check code.

Host query frame structure:

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

Slave response frame structure:

| Address code | Function code | Number of valid bytes | Data Zone 1 | Second data area | Nth data area | Check code |
|--------------|---------------|-----------------------|-------------|------------------|---------------|------------|
| 1byte | 1byte | 1byte | 2byte | 2byte | 2byte | 2byte |

4.3 Register address

| Register address | PLC or configuration address | content | operate |
|------------------|------------------------------|---------------------------|-----------|
| 0000 H | 40001 | wind direction (0-359.9°) | read only |
| 0001 H | 40002 | (0-15 gear) | read only |



| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

4.4 Conversion relation of numerical value

| Acquisition value (0-15 gears) | Acquisition value (0-360 °) | Corresponding direction |
|--------------------------------|------------------------------|--------------------------|
| 0 | 348.75° ---11.25° | north wind |
| 1 | 11.25° ---33.75° | Northeasterly wind |
| 2 | 33.75° ---56.25° | northeasterly wind |
| 3 | 56.25° ---78.75° | Easteast-north wind |
| 4 | 78.75° ---101.25° | east wind |
| 5 | 101.25---123.75° | Southeast wind |
| 6 | 123.75° ---146.25° | Southeast wind |
| 7 | 146.25° ---168.75° | Southeast wind |
| 8 | 168.75° ---191.25° | souther |
| 9 | 191.25° ---213.75° | Southwest-southwest wind |
| 10 | 213.75° ---236.25° | Southwest wind |
| 11 | 236.25° ---258.75° | Southwest wind |
| 12 | 258.75° ---281.25° | westerly wind |
| 13 | 281.25° ---303.75° | West-northwest wind |
| 14 | 303.75° ---326.25° | northwest China |
| 15 | 326.25° ---348.75° | North-northwest wind |

4.5 Communication protocol example and explanation

For example, read the wind direction of the device address 0x01

Query frame:

| Address code | Function code | Start address | Data length | Check code low bit | Check code high bit |
|--------------|---------------|---------------|-------------|--------------------|---------------------|
| 0x01 | 0x03 | 0x00 0x00 | 0x00 0x02 | 0xC4 | 0x0B |

Answer frame:

| Address code | Function code | Returns the number of valid bytes | wind direction (0-360 °) | wind direction (0-15 gear) | Check code low bit | Check code high bit |
|--------------|---------------|-----------------------------------|---------------------------|----------------------------|--------------------|---------------------|
| 0x01 | 0x03 | 0x04 | 0x01 0x29 | 0x00 0x01 | 0xEB | 0xC7 |

Wind direction calculation:



(0-360 °): 0129H (hex)=297=>29.7 degrees

(0-15 gears): 0001H (hex)=1=>Wind direction=NE

5. Common problems and solutions

5.1 The device cannot be connected to PLC or computer

Possible causes:

- 1) The computer has multiple COM ports. The selected port is incorrect.
- 2) The device address is incorrect, or there are devices with duplicate addresses (all are 1 by default).
- 3) Baud rate, check method, data bit, stop bit error.
- 4) The polling interval and waiting time of the host are too short, and they need to be set above 200ms.
- 5) The 485 bus is disconnected, or the A and B lines are connected reversely.
- 6) If the number of equipment is too large or the wiring is too long, power supply shall be provided nearby, and 485 intensifier shall be added, and 120 Ω terminal resistance shall be added at the same time.
- 7) USB to 485 drive is not installed or damaged.
- 8) Equipment damage.



6. contact information

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