Aluminium Wind Direction Transmitter (Analog)

SN-FXA-*

Ver 2.0

directory

Chapter 1 Product Introduction

1.1 Product Overview

The aluminum-shell wind direction transmitter has a small and lightweight appearance, which is easy to carry and assemble. Through the new design concept, the wind direction information can be effectively obtained, and the shell is made of high-quality aluminum alloy profiles, and the outside is sprayed with plastic technology, which has a good anti-corrosion and anti-erosion effect, and can ensure that the transmitter is rust-free for long-term use. At the same time, the internal smooth bearing system ensures the accuracy of information collection. It is widely used in wind direction measurement in greenhouses, environmental protection, weather stations, ships, docks, aquaculture and other environments.

1.2 Functional features

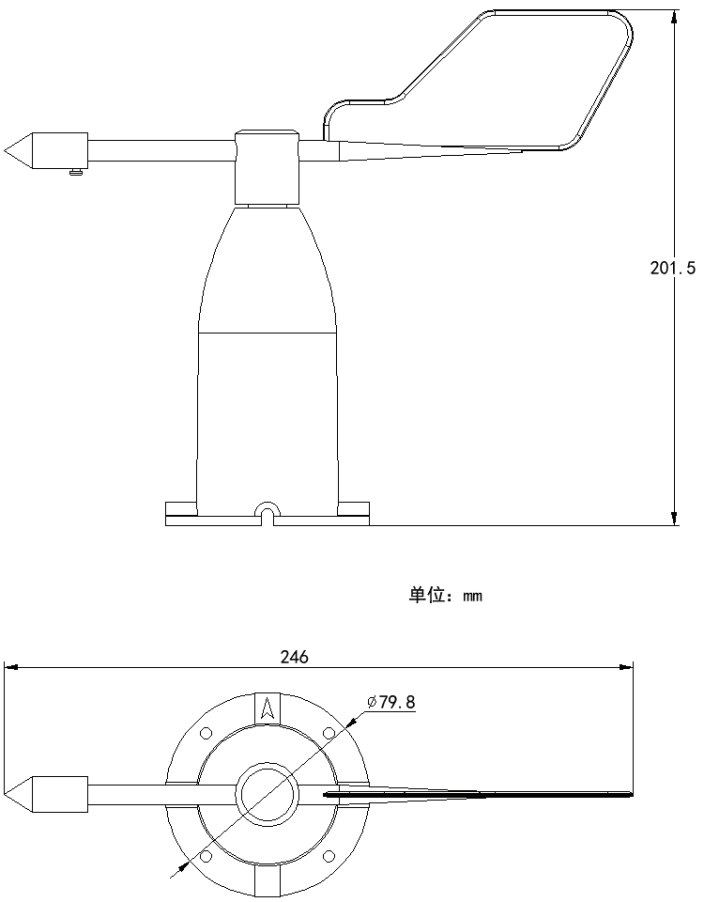
- Anti-electromagnetic interference treatment
- Using high-performance bearings, the rotational resistance is small and the measurement is accurate
- All-aluminum shell, high mechanical strength, high hardness, corrosion resistance, no rust and can be used outdoors for a long time
- The structure and weight of the equipment are carefully designed and distributed, with small moment of inertia and sensitive response
- It can be applied to both four-wire and three-wire connections

1.3 Main parameters

DC Power Supply (Default)	10~30V DC	
Maximum power consumption	Current output	0.6W
	Voltage output	0.6W
The operating temperature of the transmitter circuit	-40℃~+60℃，0%RH~80%RH	
Measuring range (360°)	0~359.9°	
Measuring range (16 directions)	16 indication directions	

Measuring range (8 directions)	8 indication directions	
Dynamic response time	≤0.5s	
Output signal	Current output	4~20mA
	Voltage output	0~5V/0~10V
Load capacity	Voltage output	The output resistance ≤ 250Ω
	Current output	≤600Ω

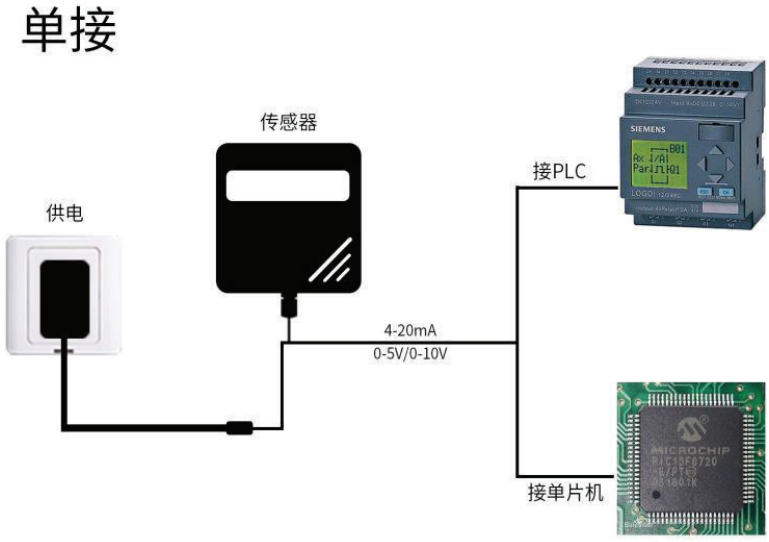
Product Size:



1.4 System Framework Diagram

When the system needs to connect an analog version of the sensor, you only need

to supply power to the device, connect the analog output line to the DI interface of the single-chip microcomputer or PLC, and write the corresponding acquisition program according to the conversion relationship below.



When the system needs to access multiple analog version sensors, it is necessary to connect each sensor to each different single-chip analog acquisition port or PLC DI interface, and at the same time write the corresponding acquisition program according to the conversion relationship in the following article.

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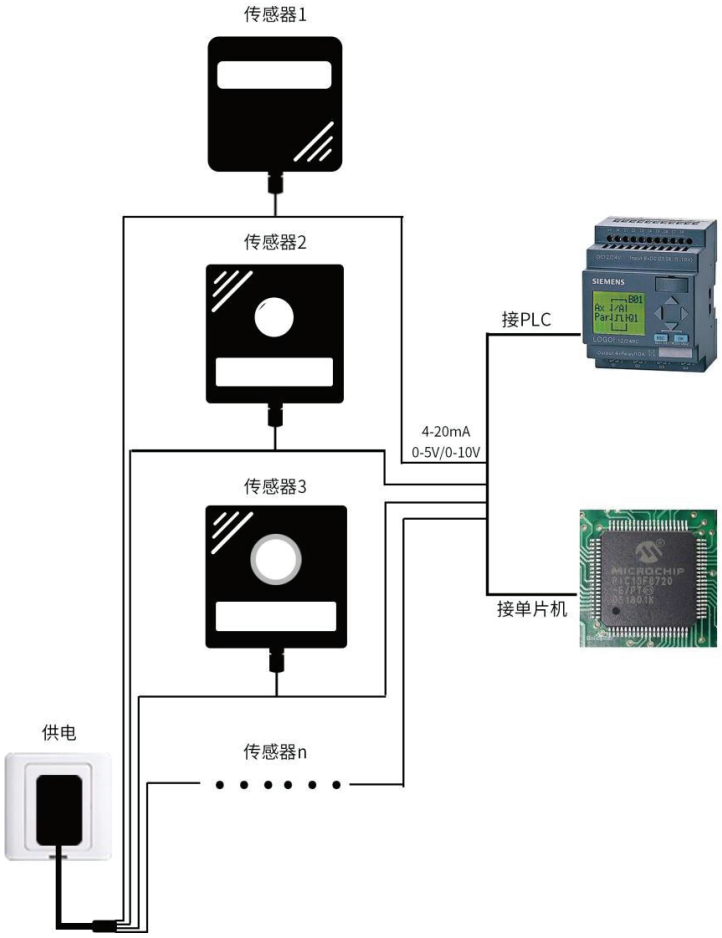


1.5 Product selection

SN-					Company code
	3000-				
		FXA-			Aluminium wind direction transmitter
			I20-		4~20 mA current output
			V05-		0~5V voltage output
			V10-		0~10V voltage output
				360	360°
				16	16 directions
				empty	8 directions

1.6 Product appearance

Chapter 2 Hardware Connections

2.1 Inspection before installation of the equipment

Equipment list:

■1 transmitter

■Four mounting screws

■Certificate, warranty card, wiring instructions, etc

■Install 1 drag blade

2.2 Interface Description

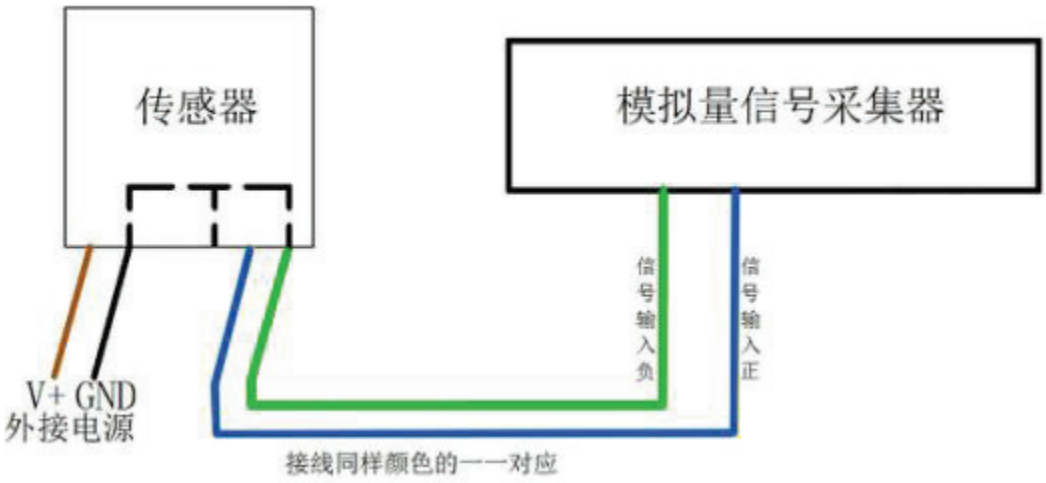
Wide voltage 10~30V DC power input. For 0-10V output devices, only 24V can be used.

2.2.1 Sensor wiring

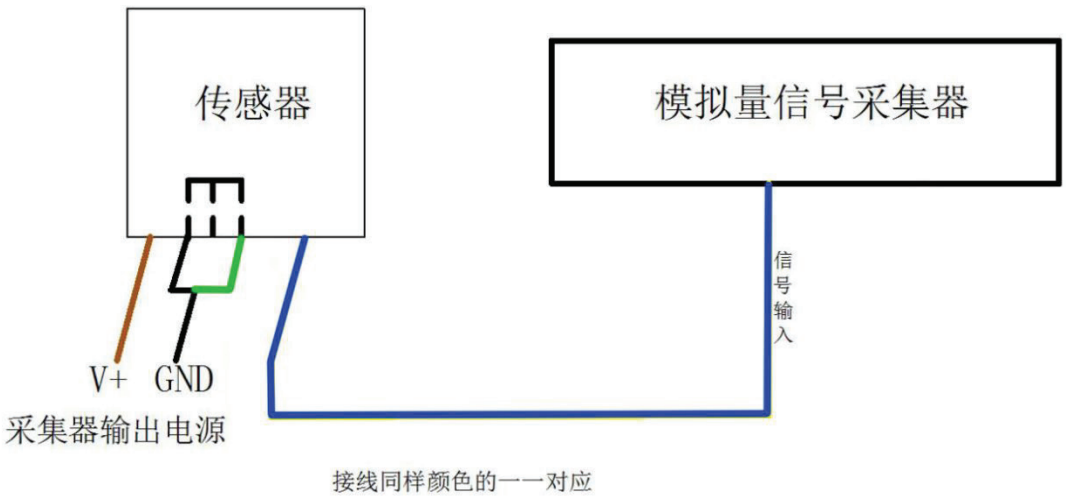
	Line color	illustrate
power supply	brown	The power supply is positive
	black	Power supply negative
output	blue	The wind direction signal is

		positive
	Yellow (green) color	The wind direction signal is negative

2.2.2 Examples of wiring methods



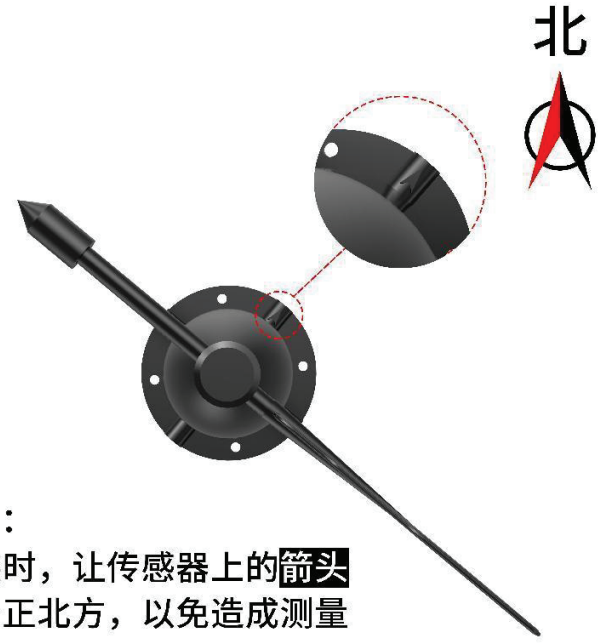
Schematic diagram of the four-wire connection method



Schematic diagram of the three-wire connection method

2.3 Installation

Flange installation, threaded flange connection makes the wind direction sensor firmly fixed on the flange, chassis Ø79.8mm, evenly open four Ø6mm mounting holes on the circumference of Ø68mm, and use bolts to tightly fix it on the bracket, so that the whole set of instruments, keep at the best level, ensure the accuracy of wind direction data, flange connection is easy to use, can withstand greater 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。

2.4 Precautions

1. The user shall not disassemble it by himself, let alone touch the sensor core, so as not to cause damage to the product.

2. Try to stay away from high-power interference equipment, so as not to cause inaccurate measurement, such as inverter, motor, etc., when installing and disassembling the transmitter, the power supply must be disconnected first, and water entering the transmitter can lead to irreversible changes.

3. Prevent chemical reagents, oil, dust, etc. from directly infringing on the sensor, do not use it for a long time in condensation and extreme temperature environment, and strictly prevent cold and heat shock.

Chapter 3 Calculation Methods

【360°】Calculation Method:

4-20mA output comparison table		0-10V output comparison table		0-5V output comparison table	
Output Value (mA)	Corresponding angle value	Output Value (V)	Corresponding angle value	Output Value (V)	Corresponding angle value
≈4	0°	≈0	0°	≈0	0°

≈20	359.9°	≈10	359.9°	≈5	359.9°

The range is 0~360, taking the 0-10V output as an example, when the output signal is 5V, the current wind direction is calculated. The span of the wind direction range is 360, which is expressed by a 10V voltage signal, 360/10V=36/V, that is, every 1V change in voltage corresponds to a 36 degree change in wind direction. Measured value 5V-0V=5V. 5V*36/V=180 degrees. The current wind direction is 180 degrees.

【16 Directions】Calculation Method:

4-20mA output comparison table		0-10V output comparison table		0-5V output comparison table	
Output Value (mA)	Corresponding to the wind direction	Output Value (V)	Corresponding to the wind direction	Output Value (V)	Corresponding to the wind direction
19.5-4.5	north wind	9.68-0.31	north wind	4.84-0.15	north wind
4.5-5.5	North north-northeast wind	0.31- 0.93	North north-northeast wind	0.15-0.46	North north-northeast wind
5.5-6.5	Northeast winds	0.93-1.56	Northeast winds	0.46-0.78	Northeast winds
6.5-7.5	East northeast wind	1.56-2.18	East northeast wind	0.78-1.09	East northeast wind
7.5-8.5	East wind	2.18-2.81	East wind	1.09-1.40	East wind
8.5-9.5	East-southeast wind	2.81-3.43	East-southeast wind	1.40-1.71	East-southeast wind
9.5-10.5	Southeasterly wind	3.43-4.06	Southeasterly wind	1.71-2.03	Southeasterly wind
10.5-11.5	South-southeast wind	4.06-4.68	South-southeast wind	2.03-2.34	South-southeast wind
11.5-12.5	southerly	4.68-5.31	southerly	2.34-2.65	southerly
12.5-13.5	South-southwest	5.31-5.93	South-southwest	2.65-2.96	South-southwest

	wind		wind		wind
13.5-14.5	Southwesterly winds	5.93-6.56	Southwesterly winds	2.96-3.28	Southwesterly winds
14.5 -15.5	West southwest wind	6.56-7.18	West southwest wind	3.28-3.59	West southwest wind
15.5-16.5	zephyr	7.18-7.81	zephyr	3.59-3.90	zephyr
16.5-17.5	West northwest wind	7.81-8.43	West northwest wind	3.90-4.21	West northwest wind
17.5-18.5	Northwest wind	8.43-9.06	Northwest wind	4.21-4.53	Northwest wind
18.5-19.5	North northwest wind	9.06-9.68	North northwest wind	4.53-4.84	North northwest wind

【8 Directions】Calculation Method:

4-20mA output comparison table		0-10V output comparison table		0-5V output comparison table	
Output Value (mA)	Corresponding to the wind direction	Output Value (V)	Corresponding to the wind direction	Output Value (V)	Corresponding to the wind direction
≈4	north wind	≈0	north wind	≈0	north wind
≈6.2857	Northeast winds	≈1.4286	Northeast winds	≈0.7143	Northeast winds
≈8.5714	East wind	≈2.8571	East wind	≈1.4286	East wind
≈10.8571	Southeasterly wind	≈4.2857	Southeasterly wind	≈2.1429	Southeasterly wind
≈13.1429	southerly	≈5.7143	southerly	≈2.8571	southerly
≈15.4286	Southwesterly winds	≈7.1429	Southwesterly winds	≈3.5714	Southwesterly winds
≈17.7143	zephyr	≈8.5714	zephyr	≈4.2857	zephyr
≈20	Northwest wind	≈10	Northwest wind	≈5	Northwest wind

Chapter 4 Common Problems and Solutions

Symptom: No output or output error

Possible causes:

1) The corresponding error of the measuring range leads to the error of PLC calculation, please refer to the technical indicators in the first part of the measuring range.

2) The wiring method is wrong or the wiring sequence is wrong.

3) The power supply voltage is wrong (24V power supply for 0-10V type).

4) The distance between the transmitter and the collector is too long, resulting in signal disorder.

5) The PLC collection port is damaged.

6) Damage to the device.