

FA132

Wind Direction Sensor

Products description and application



FA132 is an industrial wind direction sensor with strong environmental adaptability. The product has a built-in sensitive temperature sensor and can automatically heat environments to ensure reliable operation of the sensor. The weathercock and the main body of the product are connected by a labyrinth structure, using imported Japanese bearings, high-quality stainless steel and aluminum alloy materials, and the surface is anodized. The internal circuit is sealed with glue, which can effectively prevent water, salt spray, sand and dust. The impact of product life. There are multiple signal output modes, easy to install and maintenance-free. It has been widely used in ports, construction machinery, meteorological and environmental protection, electric power, transportation and other fields.

Features



- Using non-contact magnetic sensor measurement principle.
- The collected data has high accuracy and strong reliability.
- Low starting wind speed.
- Using a full metal shell, anodized surface, good corrosion resistance and strong wind blade resistance.
- The weather vane is made of carbon fiber.
- Compact design, integrating wind speed measurement, automatic heating functions in one, easy on-site installation and maintenance.
- Adopting fault-tolerant design, the sensor will not be damaged when the wrong wire is connected.
- Multi-level lightning and surge protection design.
- Can work in a wide voltage range.

General Specifications

standard

CE:
IEC 61326

Electrical		Mechanical	
Rated voltage	12VDC~30VDC ¹	colour	Anodized black
Operating current	50mA Max ²	Housing material	6061-T6/ Anodizing
Heating voltage	18VDC~30VDC ³	vane material	Carbon fiber +SUS304
Heating power	≤50W	Bearing material	SUS440C
Heating type	PTC auto-heating	reference weight	0.6kg
Lightning surge	IEC61000-4-2	Installation method	OD φ50mm pipe installation φ27-φ30mm through board installation
	Contact discharge: ±8kV	Operating	-40°C ~ +70°C
	Air discharge: ±15kV	Working humidity	IEC60068-2-3 0~100% RH
	IEC61000-4-5	Vibration resistance level	5-10Hz, d=3mm 10-500Hz, a=2g
	Wire to wire: ±2kV	Enclosure rating	IEC60529 IP65
	Wire to ground: ±4kV	Salt spray grade	ISO9227 720h
Measuring principle	Non-contact magnetic scanning		
Wiring	Aviation socket ⁴		
Cable configuration ⁵	6-core shielded cable with aviation plug 6*0.5mm ² +1*0.5mm ²		

Meteorological parameters

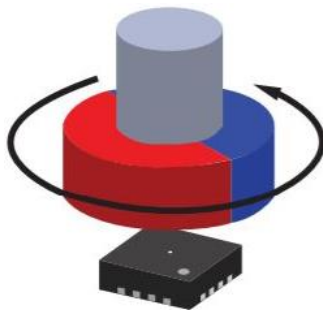
FA132

Wind Direction Sensor

Starting wind speed	$\leq 0.5\text{m/s}$ $V_u=20\text{ C}$
Anti-wind level	$> 70\text{m/s}$
Range	$0^\circ\sim 360^\circ$
Accuracy	$\pm 2^\circ$
Resolution	0.35°

- 1.Refer to the selection table for specific working voltage.
- 2.Signal terminal working current.
- 3.Insufficient sensor heating power will affect heating performance.
- 4.Refer to the selection table for specific outlet methods.
- 5.The cable is purchased separately and is not included in the sensor.

Sensor measurement principle



FA132 uses the classic tail wing to measure the wind direction. The electromechanical conversion circuit is realized by the combination of the magnet on the end of the measuring shaft and the imported magnetic encoder chip on the circuit board. The analog-to-digital conversion and data processing by the single-chip microcomputer can ensure the accuracy of the wind direction signal output by the sensor. reliable.

Installation Environment

In order to make the data measured by the wind sensor representative and reduce the uncertainty of the test data, the installation site environment should be selected reasonably. The specific requirements are as follows:

A. Meteorological industry use:

1. The wind sensor must be installed at a height of more than 10 meters from the ground and there are no obstacles on the ground, or the distance between the wind sensor and the obstacle is at least ten times the height of the obstacle itself. If this requirement cannot be met, then wind measurement The sensor should be placed about 6 to 10 meters above the obstacle.

B. General industrial applications:

1. When the wind sensor is installed on the roof, it should be installed in the center of the flat roof. Do not install it sideways to avoid the influence of a certain direction. It should be 6 meters higher than the roof, and at least 2 to 5 meters if it cannot be satisfied.
2. When the wind sensor is installed on the top of the tower, the installation height is greater than 2 times the tower diameter.
3. If there must be an obstacle around the installation plane, the distance from the obstacle is $L=4*$ (the height of the obstacle-the installation height of the wind sensor).

C. Wind power industry application:

1. If the instrument is installed on the wind tower, please refer to Appendix G of IEC 614000-12-1 for installation.
2. If the instrument is installed in the wind turbine cabin, please refer to Appendix A of IEC 61400-12-2 for installation.

D. The wind speed sensor and wind direction sensor crossbar are installed side by side:

1. When the wind speed sensor and the wind direction sensor are installed side by side through the crossbar, the distance between the installation centers of the two sensors should be greater than 1m~1.5m, or greater than the sum of the maximum gyration radius of the wind vane and twice the gyration radius of the wind cup.

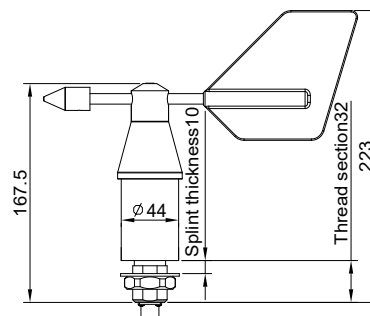
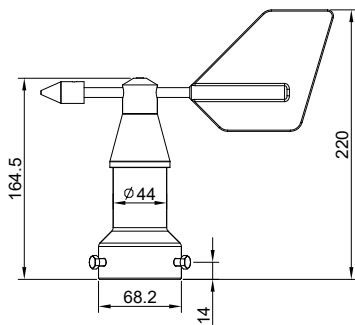
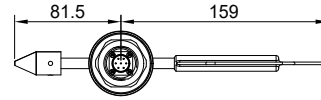
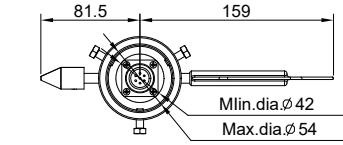
FA132

Wind Direction Sensor



Mounting dimensions

Unit :mm



Tube installation method:

1. Insert the aviation plug with the cable into the aviation socket at the bottom of the sensor and lock the thread(Pay attention to the direction of the pins to avoid damaging the pins).
2. Install the wind direction sensor at the high point of the device, and the north indicator is aligned with the geographic magnetic pole (you can use a compass to check) or set the zero position according to the device requirements (see the sensor north point for details).
3. Fasten the sensor with three M6 hexagon head bolts.

G3/4 threaded plate installation method:

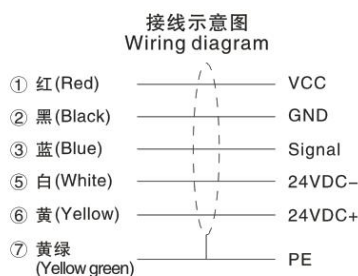
1. Install the bulkhead mounting kit in the mounting hole ($\phi 27 \sim \phi 30 \text{mm}$) of the equipment bracket; fix the bulkhead mounting kit with a serrated lock washer and G3/4" hex nut.
2. Pass the aviation plug with the cable through the hole of the mounting kit, then insert it into the aviation socket at the bottom of the sensor and lock it(Pay attention to the direction of the pins to avoid damaging the pins). When installing the wind direction sensor, the north indicator needs to be aligned with the geographic magnetic poles (check with a compass) or correspond to the equipment requirements.

North Mark

The marked point on the sensor is N, which means that when the head of the wind vane coincides with this point, the corresponding wind direction angle is 0° or 360° . For example, when the wind vane 4-20mA signal is output, 4 mA corresponds to the wind direction. 0°



Wiring diagram



FA132

Wind Direction Sensor



4-20mA current signal output: it is recommended to use RVVP/0.5mm² /copper core/high and low temperature resistant shielding cable, maximum communication distance is 1000m.

Caution:

1. Blue wire is the signal line, marked as *Signal*, indicates the wind speed signal output.
2. Actual communication distance is in accordance with onsite environment.

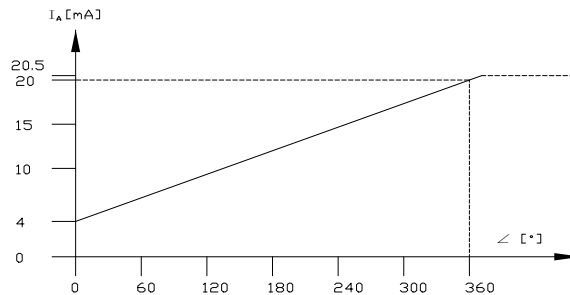
RS485 signal output: it is recommended to use RVVP/0.5mm²/copper core/high and low temperature resistant shielding cable, maximum communication distance is 1000m.

Caution:

1. The outgoing green signal line number tube is marked as A+, and the blue signal line is B-.
- The actual communication distance is related to the field application.

Output characteristic curve

4-20mA Current output characteristic curve:



Precautions

1. Please connect to the rated working voltage when using.
2. The cable shielding layer must be reliably grounded.
3. The sensor cable must be bound firmly.
4. The sensor should be installed vertically upwards on a horizontal surface, and it must be fixed firmly and stably to prevent it from falling off.
5. The sensor should be installed in the lightning protection zone LPZ 0B, and be reliably grounded through the shielded ground wire of the sensor cable.
6. Direct lightning strikes or induced lightning may cause damage to the sensor or malfunction. It is recommended that customers install a separate lightning protection device.
7. When replacing and maintaining the sensor, the power supply should be cut off first, and the operation should be performed by professionals.
8. Please read the manual carefully before use, if you have any questions, please contact our company.

P/N	Model	Rated voltage	Signal output	Heating	Mount
1000461_001	FA132	12VDC-30VDC	4-20mA Current, 0-360°	Heating power ($\leq 50W$)	$\varnothing 54$ mast tube mount, 7-pin aviation socket
1000461_002	FA132	/	No PCB board	Without heating function	
1000461_004	FA132	12VDC-30VDC	4-20mA Current, 0-360°	Heating power ($\leq 50W$)	G3/4 threadmount, 7-pin aviation socket
1000461_005	FA132	5VDC-30VDC	RS485, modbus protocol, Baud rate 9600bps, 0-360°	Heating power ($\leq 50W$)	$\varnothing 54$ mast tube mount, 7-pin aviation socket
1000461_006	FA132	5VDC-30VDC	RS485, modbus protocol, Baud rate 9600bps, 0-360°	Heating power ($\leq 50W$)	G3/4 threadmount, 7-pin aviation socket

Thanks for choosing our products, NANHUA Electronics is the professional brand of signal transmission and high quality industrial lighting which is trusted and loved by global users from various industries. Read and understand these instructions completely and carefully. Wrong installation and operation may lead to fires, electric shock, and others. Due to our continued efforts to improve our products, product specifications are subject to change without notice. ©NANHUA Electronics Co., Ltd. All rights reserved. www.nanhua.com