

Products description and application

FA 20 is a maintenance-free wind direction sensor for offshore use. The Special corrosion-resistant bearings can ensure it work in the harsh marine corrosion environment of C5-M level. Multiple straight-through labyrinths and multiple staggered labyrinth non-contact seals with depth-optimized cavity aspect ratio and depth-to-height ratio can obtain IP66 rating. All-metal body, the main body is aluminum alloy with hard anodized, resistant to strong wind, corrosion and abrasion. It is suitable for accurate wind measurement in harsh environments such as strong winds, sandstorms, and seas. It can be used in wind power generation, railway, highway, weather monitoring of ships or vessels, disaster prevention systems and other industries to provide reliable wind speed measurement data.



Features

- Adopt non-contact magnetic sensor measurement principle & imported non-contact magnetic sensor chip to ensure high measurement accuracy and strong anti-interference ability.
- Deeply optimized multiple straight-through mazes and multiple staggered mazes to achieve IP66 protection rating.
- Adopt all-metal body, the main body is aluminium alloy with hard anodized treatment, and the other stainless steel parts are made of 316 material, which has excellent corrosion resistance.
- Special material corrosion-resistant bearings, suitable for harsh offshore corrosion environment of C5-M level.
- Adopting fault-tolerant design, the sensor will not be damaged if the wrong wire is connected.
- Multi-level lightning and surge protection design.
- Wide voltage range.

General Specifications

Standards

CE:
IEC 61326

Electrical		Mechanical	
Rated voltage	12VDC~30VDC ¹	Color	Hard anodized natural color
Operating current	50mA Max ²	Body material	6061/ Hard anodized
Electrostatic discharge	IEC61000-4-2 ESD	Wind cup material	5052/ Hard anodized
	Contact discharge: ±8kV Air discharge: ±15kV	Bearing material	Special material corrosion resistant bearings
	IEC61000-4-5 SURGE	Weight	0.35kg
Measuring principle	Line to line: ±6kV Line to ground: ±4kV	Mounting type	Φ 27- Φ 30mm Through plate installation (G 3/4 external thread)
	Non-contact magnetic code scanning	Operating temperature	-40°C ~ +70°C
Wiring ³	Aviation socket	Humidity	IEC60068-2-3 0~100% RH
Cable ⁴	6-core shielded cable with aviation plug	Anti-vibration level	5-10Hz, d=3mm
	4*0.5mm ² +2*1mm ²		10-500Hz, A=2g

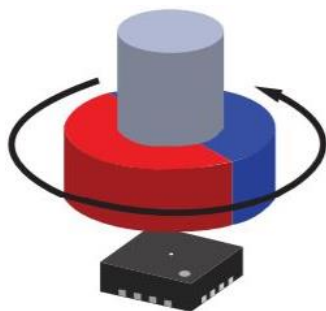
Rated voltage	12VDC~30VDC ¹	IP rate	IEC60529 IP66
		Color	Hard anodized natural color

Meteorological

Starting Threshold	$\leq 0.5\text{m/s}$ $V_u=20^\circ\text{C}$
Anti-wind ability	$> 75\text{m/s}$
Range	$0^\circ\sim 360^\circ$
Accuracy	$\pm 2^\circ$
Resolution	0.35°

1. Rated voltage, see How to Order table.
2. Current at signal end.
3. Wirig type, see How to Order table.
4. The cable has to be purchased separately.

Sensor measurement principle



FA20 adopts 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 encoding 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 10 meters or more from the ground and there is no obstacle 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, the 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 above 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 obstacles around the installation plane, the distance from the obstacle is $L=4*$ (obstacle height-wind sensor installation height).

C. Wind power industry application:

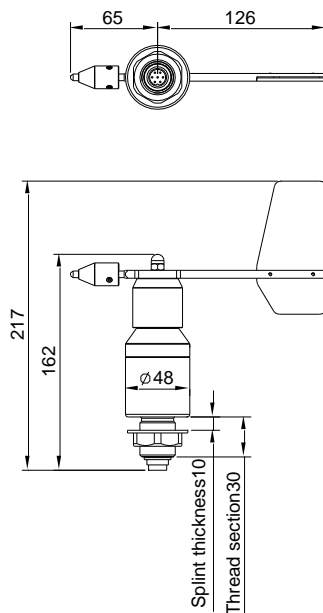
1. If the instrument is installed on the wind measuring tower, please refer to IEC 614000-12-1 Appendix G for installation.
2. If the instrument is installed in the wind turbine cabin, please refer to Appendix A of IEC 61400-12-2 for installation.

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

1. When the wind speed sensor and 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.

Mounting dimensions

Unit:mm



G3/4 threaded through plate installation method:

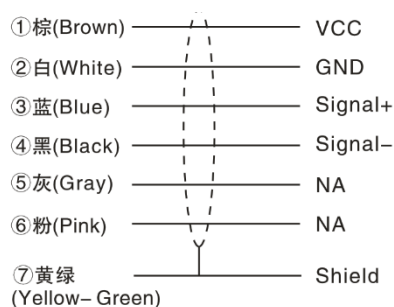
1. Install the sensor in the mounting hole ($\phi 27 \sim \phi 30 \text{mm}$) of the equipment bracket; fix the sensor with a serrated lock washer and a G3/4 hex nut.
2. Insert the aviation plug with the cable into the aviation socket at the bottom of the sensor and lock it (Pay attention to the pin direction to avoid damaging the pins).

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



Communication cable:

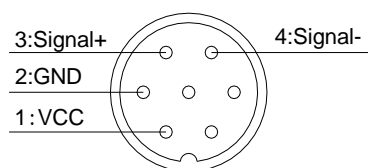
Use RVVP/6 core/ $4 \times 0.3 \text{mm}^2 + 2 \times 1 \text{mm}^2$ /copper core/high and low temperature resistant shielded cable;

The maximum communication distance is 1000m.

Note: The actual communication distance is related to the field application.

Precautions:

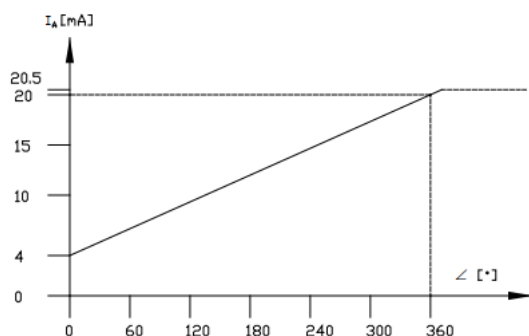
1. Make sure the wiring is correct before powering on.
 2. The cable shielding layer and shell must be reliably grounded.
- It is recommended to return to the factory for verification every 18 months.



Aviation socket at the bottom of the sensor

Output characteristic curve

4-20mA Current output characteristics 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 us by phone: +86 21 39126868 or email sales@nanhua.com

How to Order

P/N	Model	Rated voltage	Signal output	Mounting
1000487_001	FA20-3D00SB7	12VDC-30VDC	4-20mA current output, 0-360°	Through-board installation, opening $\phi 27-\phi 30$ (G3/4 external thread), 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