

FA13B

Wind Speed Sensor

Products description and application

The FA13B wind speed sensor is a wind measuring equipment specially developed for crawler cranes, bridge inspection vehicles and other large lifting and cantilever mobile rotating machinery. The product adopts a pendulum counterweight design, which can swing at will within $\pm 90^\circ$ and stabilize in the vertical direction to achieve real-time horizontal wind speed measurement. The product has built-in anti-radio frequency, anti-electromagnetic interference and lightning surge protection circuits. Built-in sensitive temperature sensor can automatically heat in low temperature environment. The wind cup and the main body are connected by a multi-layer labyrinth structure, using imported Japanese bearings, high-quality seawater corrosion-resistant anodized aluminum alloy and stainless steel 304. The internal circuit is sealed with glue, which can effectively prevent water, salt spray, sand and dust. The impact of product life. It has been widely used in large-scale equipment such as crawler cranes and bridge inspection vehicles at home and abroad.



Features

- Adopt non-contact magnetic sensor measurement principle.
- The collected data has high accuracy and strong reliability.
- Adopt gravity balance pendulum design, strong load capacity, stable in a vertical position.
- Wide wind speed measurement range, low start-up wind speed.
- Adopt all metal shell, good corrosion resistance and strong wind resistance of the wind cup.
- The wind cup is made of corrosion-resistant anodized aluminum alloy, which can be used under harsh conditions.
- Compact design, integrating wind speed measurement and heating device, easy to install and maintain on site.
- 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

Standards

CE:
IEC 61326

Electrical		Mechanical	
Rated voltage	12VDC~36VDC ¹	Colour	Anodized natural color
Operating current	50mA Max ²	Housing material	6061/ Anodized +SUS304/ Passivation
Heating voltage	18VDC~30VDC ³	Wind cup material	5052/ Anodized
Heating power	≤15W ⁴	Bearing material	SUS440C
Heating type	PTC auto-heating	reference weight	<1.5kg
Lightning surge	IEC61000-4-2	Installation method	Side flange installation
	Contact discharge: ±8kV		
	Air discharge: ±15kV		
	IEC61000-4-5	Operating	-40°C ~ +70°C
	Wire to wire: ±2kV	Working humidity	IEC60068-2-3 0~100% RH
	Wire to ground: ±4kV		
Principle	Non-contact magnetic scanning	Vibration resistance level	5-10Hz, d=3mm

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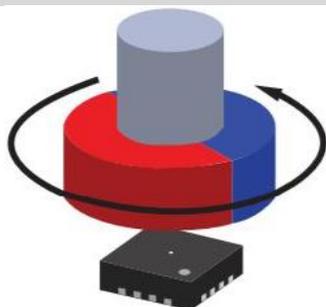
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Wiring	Aviation socket ⁵	10-500Hz, a=2g
Cable configuration ⁶	3-core shielded cable with aviation plug 3*0.5mm ²	Enclosure rating IEC60529 IP65 Salt spray grade ISO9227 720h

Meteorological parameters	
Starting wind speed	≤0.5m/s Vu=20 C
Anti-wind level	> 70m/s
Range	0~50m/s ⁷
Accuracy	±0.5m/s (VL<5m/s) ±3% (VL>5m/s)
Resolution	0.1m/s

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 heating power.
5. Refer to the selection table for specific outlet methods.
6. The cable is purchased separately, not included in the sensor.
7. Refer to the selection table for the specific measurement range.

Sensor measurement principle



FA13B uses the classic three-cup rotation to measure the wind speed. The electromechanical conversion circuit is realized by the combination of the magnet on the end of the rotating 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 wind speed output by the sensor. The signal is accurate and 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 61400-12-1 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. Side flange mounting sensor:

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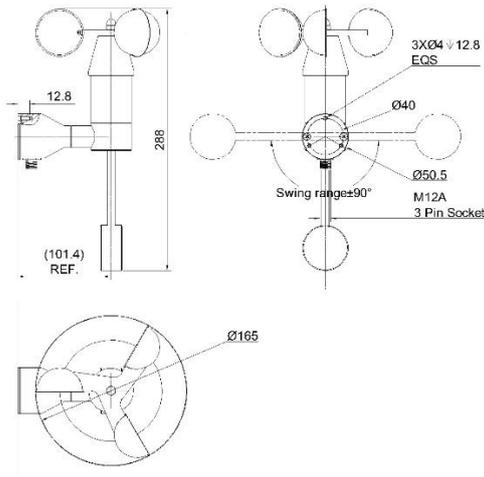
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1. For the side-mounted wind sensor, please make sure that the mounting side bracket is on the leeward side (leeward side) to avoid the influence of the mounting side bracket on the measurement accuracy.

Mounting dimensions

Unit :mm



Installation method:

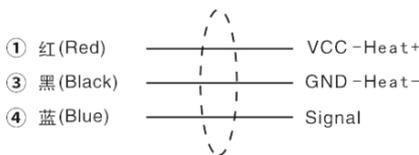
1. Install the wind speed sensor at the high point of the equipment to avoid obstructions that affect the accuracy of wind speed measurement.
2. Use 3 M4X161 screws to lock the sensor flange plate and the installation position tightly.
3. Insert the aviation plug with the cable into the aviation socket at the bottom of the sensor and lock it tightly (pay attention to the pin direction to avoid damage to the pin).

Precautions:

1. The actual length of the M4 screw depends on the thickness of the mounting plate. According to the three M4 threaded holes as shown in the figure, select the appropriate mounting position to keep the sensor always vertical within its own swing angle range.

Wiring diagram

heating function

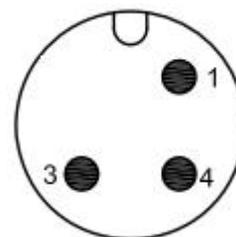
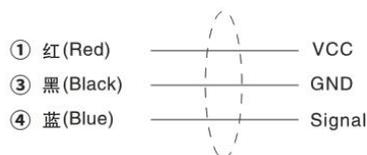


Note: The blue signal line number tube label of the outgoing line is always Signal, which means the wind speed signal output; When using a sensor with heating function, please note that the power supply is greater than the heating power of the sensor itself.

Precautions:

1. Make sure the wiring is correct before powering up
2. The cable shielding layer and shell must be reliably grounded
3. It is recommended to return to the factory for verification every 18 months
Cable and length need to be selected separately

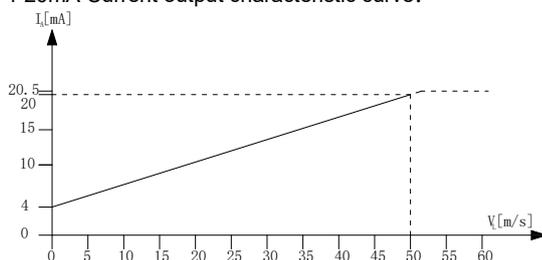
Without heating function



Aerial pin port diagram (viewed from the sensor)

Output characteristic curve

4-20mA Current output characteristic curve:



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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.

How to Order

P/N	Model	Rated voltage	Signal output	Heating	Mount	custom made
1000460_002	FA131B	12VDC -30VDC	Asynchronous serial output , Baud rate 300bps, Measuring range 0-60m/s	heating function (≤50W)	Side flange installation,3-pin M12A socket	
1000460_003	FA133B	12VDC -30VDC	4-20mA Current output; 0-30m/s	Heating function (≤50W)	Side flange Installation,3-pin M12A socket	
1000460_004	FA133B	12VDC -30VDC	4-20mA Current output, 0-50m/s	heating function (≤50W)	Side flange Installation,3-pin M12A socket	Zoomlion nameplate
1000460_005	FA133B	12VDC -30VDC	4-20mA Current output, 0-50m/s	heating function (≤50W)	Side flange Installation,3-pin M12A socket	
1000460_024	FA133B	12VDC -36VDC	4-20mA Current output, 0-40m/s	Without heating function	Side flange Installation,3-pin M12A socket	
1000460_025	FA135B	12VDC -30VDC	NPNT type pulse output, 0-50m/s	heating function (≤15W)	Side flange Installation,3-pin M12A socket	
1000460_026	FA133B	12VDC -36VDC	4-20mA Current output, 0-40m/s	Without heating function	Side flange Installation,3-pin M12A socket	

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