



Product Name	GAOTek Anemometer Directional Wind Speed Sensor
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Contact us: sales@gaotek.com

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GAOTek Anemometer Directional Wind Speed Sensor

1. Air Velocity Sensor · High Response

Gaotek Anemometer Directional Wind Speed sensor is developed based on the basic principle that a high-sensitivity thermistor loaded with current has a corresponding functional relationship between its heat dissipation rate and wind speed. The sensor has the characteristics of omnidirectional testing and fast response time. It can quickly capture the dynamic changes of small air flow and can test wind speeds as low as 0.05m/s. 's test. The sensor adopts a rod-shaped integrated structure and reserves a standard aviation interface, which is suitable for the development and use of portable wind speed test instruments, and can also be integrated into the test system. The sensor has a standard RS485 communication interface, which is convenient for users to develop and use.

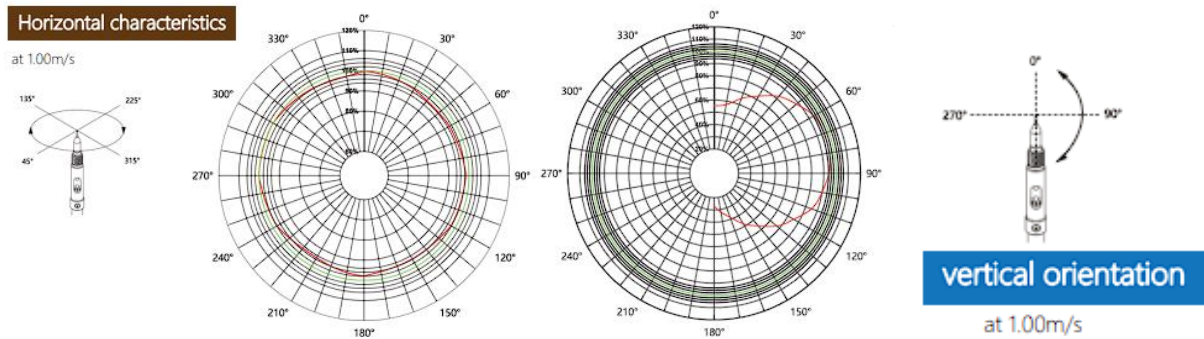
2. Functional features

- Omnidirectional test: 360° with good consistency.
- High sensitivity: can identify the dynamic change of wind speed of 0.01m/s
- High response: up to 0.2s (t63) response speed
- High precision: can be tested by national metrology institutions
- Standard output: Standard Modbus RS485 communication
- Compact structure: sensor and acquisition circuit are integrated, compact and flexible



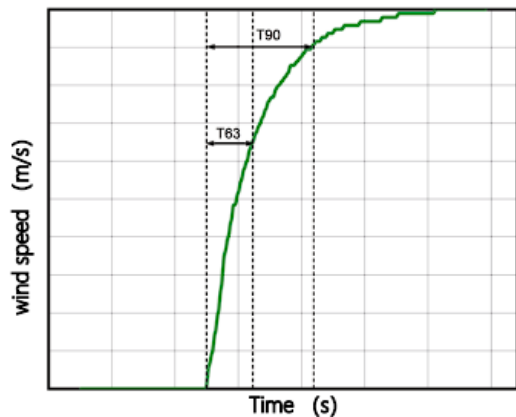
3. Performance

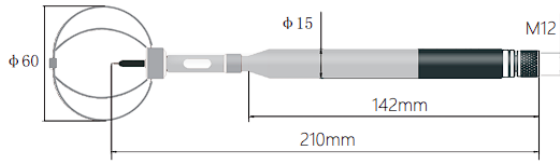
Omnidirectional measurement, independent of direction. Stable and reliable directional response



4. High Response Speed

Gaotek Anemometer Directional Wind Speed sensor has a very high response speed and can detect weakly changing airflow. This feature makes the wind speed sensor suitable for precision machining production line wind speed measurement, wind tunnel calibration, tobacco processing, tea processing and storage, aerospace, agriculture, etc. The field of airflow research and control



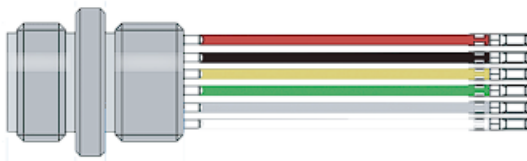


components

5. Shape & size

Removable protective ball cage and protective cover. Anti-collision protective cover, transport protective cover, effectively protect precision

6. Electrical connections



The 6-pin aviation plug is used to connect the base, which can be directly installed on the instrument socket with the same specification, and can also reserve a bare wire connector to facilitate access to different specifications of the acquisition instrument.

color of cable	Red	Black	Yellow	Green	Grey	White
6-pin aviation socket	1	2	3	4	5	6
Definition	VCC	GND	B	A	GND	GND

6-pin aviation socket
Bare wire connectors can also be reserved





7. Modbus

	Function code/register number 1) [Decimal]	Register address 2) [hex]	parameter name
Integer data (read-only register)	30001	0x00	wind speed 3) [m/s]
	30002	0x01	temperature 3) [°C]
Integer data (read and write registers)	40003	0x00	Modbus address 4)
	40018	0x12	RS485 baud rate 5) [bps]

8. The corresponding relationship of the baud rate register

1:	9600	2:	14400	3:	19200
4:	38400	5:	43000	6:	57600
7:	76800	8:	115200	9:	128000

- 1) Register numbers start from 1
- 2) Register address starts from 0
- 3) The data is expanded by 100 times (eg: 2550 is 25.5)
- 4) The factory default Modbus address is 1. After modification, it will take effect after restarting the transmitter
- 5) The factory default RS485 baud rate register value is 3, representing 19200.

9. Various application scenarios

Secondary instrument development	Handheld anemometer supporting sensor
DC5V M12 standard six-pin aviation plug	HVAC, indoor environment measurement instrument supporting wind speed transmitter probe



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10. Building a wind speed measurement system

Connect multi-channel RS485 data acquisition instrument to construct wind speed measurement system.

Multiple wind speed sensors can be connected to the RS485 data acquisition instrument through the bracket to build a multi-channel wind speed measurement system, which is used for the measurement of indoor air flow organization, HVAC ventilation design, and can also be connected to PLC to control indoor air flow.

11. Specifications

Parameter	Technical indicators	Note
Structure type	Integrated structure, omnidirectional testing	
Wind speed range	0.05~5m/s	
Wind speed accuracy	0.05~2.0m/s \pm (0.05 m/s+2% of reading) 2.0~5.0m/s \pm (0.1 m/s \pm 2% of reading)	
Response time	0.2s (t63, @ 1m/s, 25°C, 1 atm)	
Temp-measurement	0~70°C	
Temperature accuracy	\pm 0.5°C	
Collection frequency	Probe Acquisition > 50Hz	
Output signal	RS485 standard MODBUS protocol	
Supply voltage	DC5V	
Power consumption	0.45W, < 90mA	
Use environment	0~70°C; 0~90%RH	without condensation
Temp compensation	0~80°C	

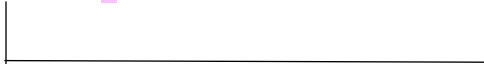
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Size	Φ15X 210mm (Without protective ball cage)	Structure can be customized
Interface form	Standard M12X1 six-core aviation connector	
Structural material	304 stainless steel + polymer material	
Protection class	IP54	
Storage temperature	-25~80°C	
Accessories	protective ball cage	Standard accessories
	protective cap	Standard accessories
		The cable length can be customized, see the selection method

12.Selection

Anemometer + 2



- 2 cable 2m
- 5 cable 5m
- X Custom Cable Lengths

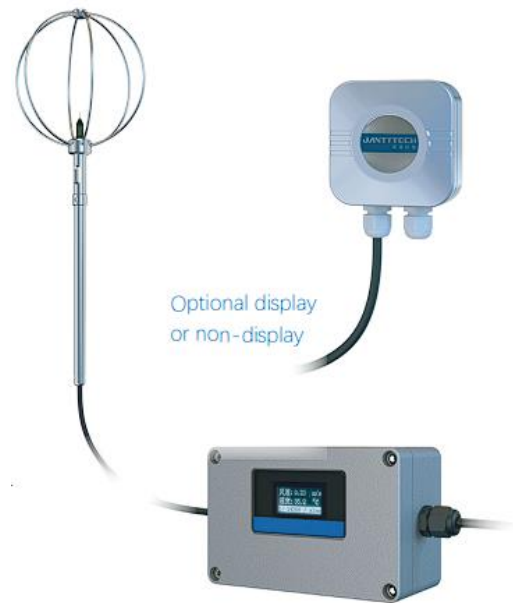


Model 2 :

13. Air and wind speed sensor

Can measure the minimum wind speed : 0.05m/s

The air speed sensor is developed based on the basic principle that a high-sensitivity thermistor loaded with current has a corresponding functional relationship between its heat dissipation rate and wind speed. The sensor has the characteristics of omnidirectional testing and fast response time. It can quickly capture the dynamic changes of small air flows, and can test wind speeds as low as 0.05m/s. It is suitable for testing scenarios of environmental breeze speeds, especially in building microclimate environments 's test. It has RS485, 4~20mA or 0~10V standard signal outputs. The sensor adopts a split structure design, and the sensor part is a rod-shaped structure with a ball-cage protective cover, which is connected to the processing circuit through extension leads. The casing is designed with a high degree of protection, and there are two specifications with display and without display. The installation forms include rail installation and wall-mounted installation, which are suitable for long-term online wind speed testing places.



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<ul style="list-style-type: none">• Split design• Omnidirectional test with high precision• High response• High precision• Standard output signal	<p>Convenient probe arrangement, optional display</p> <p>360° have good consistency</p> <p>Response speed up to 0.2s (t63)</p> <p>Can be tested by measuring institutions</p> <p>Standard Modbus RS485, 4~20mA, 0~10V output</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

14.Application Field

Dynamic wind fields with small temperature changes and large wind speed fluctuations are especially suitable for places with high wind speed response speed requirements.

Online monitoring and control of building ventilation environment, workshop and production line air velocity control, clean room air velocity control



HVAC



Wind Tunnel

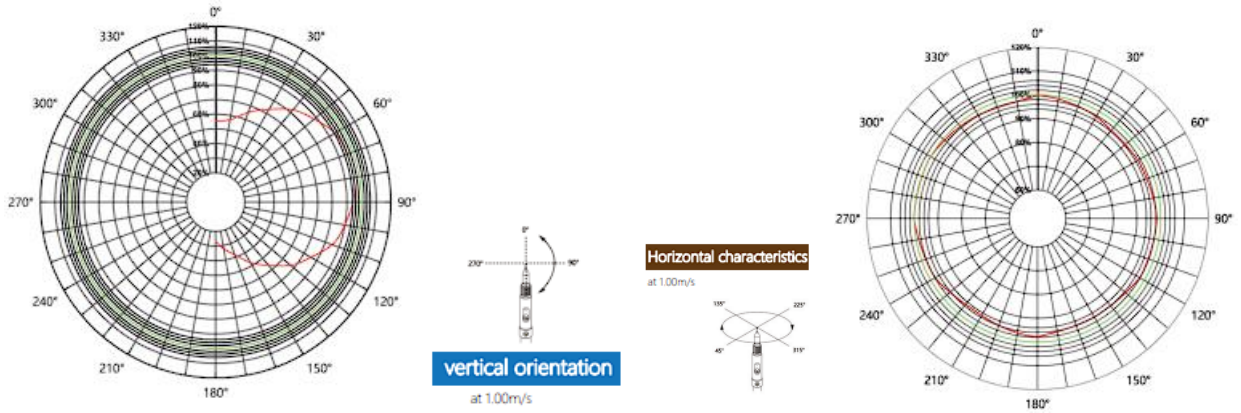


Clean Workshop



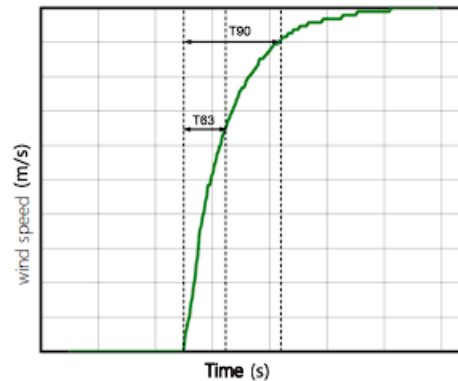
Public Built Environment

15. Technical Performance



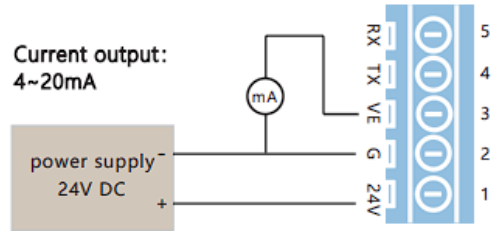
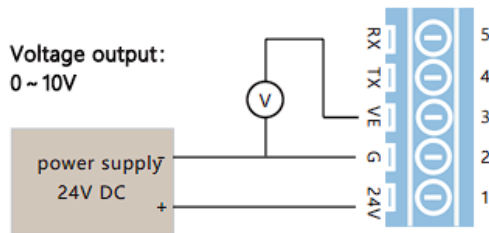
16. Quick Response

Gaotek Anemometer has a very high response speed and can detect weakly changing airflow, which makes the wind speed sensor suitable for precision machining production line wind speed measurement, wind tunnel calibration, tobacco processing, tea processing and storage, aerospace, agriculture, etc. The field of airflow research and control.



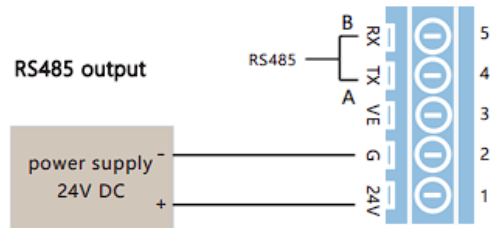
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17. Electrical Connections



Select the corresponding measuring range and output form via DIP switches

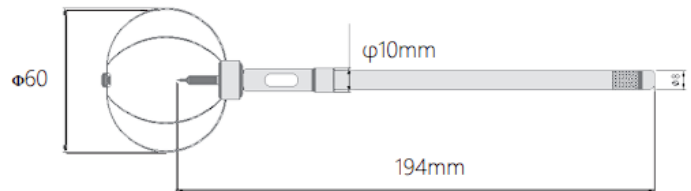
Choose a response time		Select range		Output signal selection	
0.2s	2s	0~5m/s	0~10m/s	0~10V	4~20mA

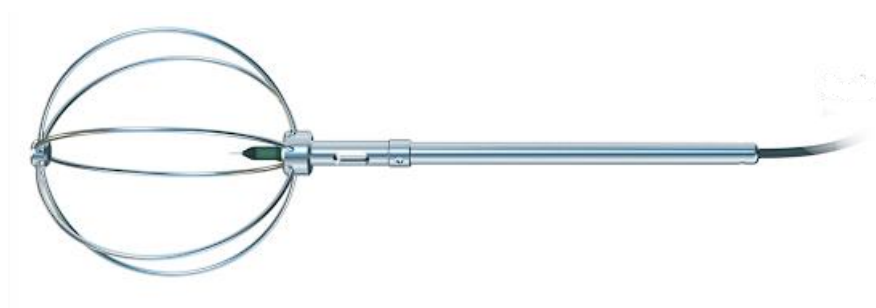


18. Shape Size

Compact, rugged housing

The shell of the host with a display screen is made of all-metal material, with high-level protection, and can adapt to work in harsh environments for a long time. The host without a display screen is a waterproof and dustproof resin shell, which is smaller and easier to arrange





19.Specification

Parameter Name	Technical indicators	Note
Structure type	Split structure, omnidirectional test	
Wind speed range	0.05~5m/s	
Wind speed accuracy	0.05~2.0m/s ± (0.05 m/s+2% of reading) 2.0~5.0m/s ±(0.1 m/s±2% of reading)	
Response time	0.2s (t63, 1m/s wind speed, at 25°C and 101 kPa)	
Temperature Test	0~70°C	
Temperature accuracy	±0.5°C	
Collection frequency	Probe acquisition>50Hz; data averaging period 0.2s, 2s optional	
Output signal	RS485 (standard MODBUS protocol); 0~10V; 4~20mA	
Supply voltage	DC24V (15~26V)	
Power consumption	Less than 0.5W (without display); less than 0.7W (with display)	
Use environment	-25~80°C; 0~90%RH	without condensation
Compensated temp	-25~80°C	
Connection Type	Built-in terminal block, bare wire connector	
Structural material	304 stainless steel + polymer material	

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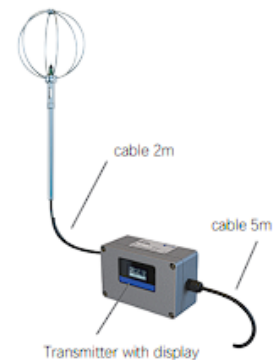


Protection class	probe IP54 circuit IP65	
Storage temperature	-25~80°C	
Accessories	protective ball cage	Standard accessories
	protective cap	Standard accessories
	Sensor to transmitter connecting cable 2m; transmitter output cable 2m	The cable length can be customized, see the selection method

20.Selection

Model 02 + X 2 5

X means host with display without X means no display host	1-5 Sensor to transmitter cable length 1-5m	1-10 output cable length 1m-10m
-----------------------------------------------------------	---------------------------------------------	---------------------------------



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Model : 03

21. Anemometer sensor

Faster acquisition frequency, smaller size, lower power consumption.

This omnidirectional wind speed sensor with high three-dimensional directional uniformity. At the same time, it adopts a miniature special package structure with a maximum diameter of about 5mm, which is suitable for small internal Spaces such as electrical equipment and FFU. The anemometer has standard RS485 output, and the length of the circuit is only 93mm, which has certain protection performance and is easy to integrate.

This is designed to integrate equipment with a smaller, lowerpower circuit, 12V voltage supply, and has a higher acquisition speed (10Hz), the anemometer sensor probe CAN also be optional with analog signal output transmitter, and can be customized CAN output, to maximize the use of different users under harsh conditions



High precision measurement

$\pm(0.05\text{m/s}+2\% \text{ reading})$

Tiny probe size

The maximum diameter of the probe is only 5mm

Ultra-low power circuit design

Specially designed low power circuits

Ultrafast acquisition frequency

The fastest acquisition frequency is 10Hz

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22. Application

Dynamic wind field with small temperature change range and large wind speed fluctuation, especially for places with high wind speed response speed requirements. Test scenario with large randomness of wind speed direction

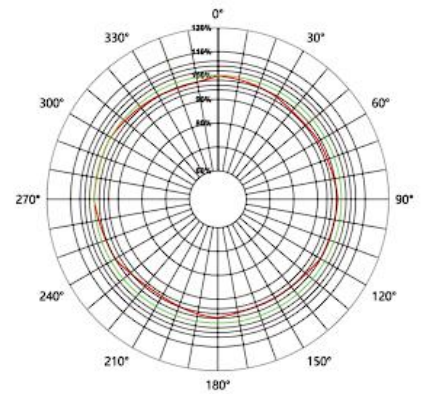
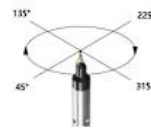
Building wind environment, locomotive, automobile, HVAC, industrial workshop, equipment wind environment monitoring, system integration, etc.

23. Performance

Omnidirectional testing, no directional constraints
stable and uniform directional response

The anemometer sensor probe is omnidirectional response, this performance is particularly important for unknown wind direction or unstable wind direction, random wind direction measurement, has excellent directional response

Horizontal characteristic
At 1.00m/s wind speed



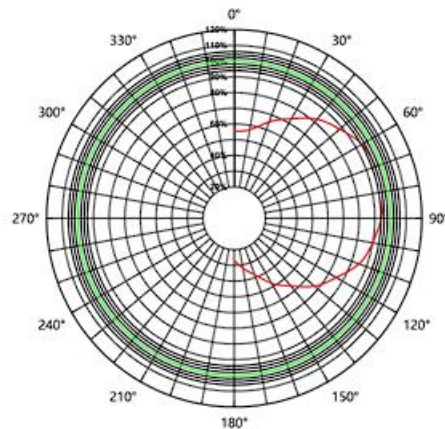
characteristics in the horizontal direction, in different angles (wind direction perpendicular to the probe) to the direction of the wind can maintain fast response and accurate measurement.

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Vertical characteristic

At 1.00m/s wind speed



24. Quick Response

The probe has a high sensitivity and can sense weak air flow changes, and has a wide range of applications in the study of air flow organization and electrical heat dissipation.

The fast response wind speed probe with high-speed acquisition circuit will provide better data results for precision test scenarios.

25. Size

Probe diameter is about 5mm.

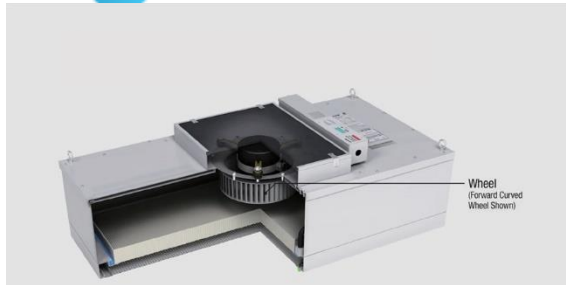
Probe cable length can be customized according to user requirements.

26. Applications

Its small probe size, used in a wide range of air conditioning equipment and closed areas of accurate low-velocity air flow measurement, not only to adapt to smaller installation space, while its high response speed is essential for precision measurement, it not only has RS485 Modbus protocol output, At the same time, we also provide customized services for customers with higher requirements of the CAN agreement (CAN agreement requires you to agree with our company before purchase)



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For FFU filter wind speed monitoring to determine its ventilation efficiency and decide when it needs to be replaced. Determine the degree of filter blockage through the change of wind speed, and feed this information to the operating cloud platform to

intelligently track the FFU replacement cycle.

It is used to study the performance of automobile air conditioning and the comfort inside the car. When validating the product, the OEM or automotive air conditioning supplier will need to simulate the operation of the air conditioning during the ride and adjust the design based on the wind speed measurements.



Air conditioning control and vehicle/cabin comfort research for high-speed train and aircraft cabin. Aircraft and high-speed trains have more stringent requirements for air conditioning in the cabin, and it is necessary to strictly design the air output volume, wind speed and temperature of the air conditioner to

ensure the best comfort for passengers.

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27.Specification

Parameter Name	Technical index	Instructions
Sensor	Needle probe	
Wind speed range	0.05—20m/s	
Precision	0.05~5.0m/s $\pm(0.05 \text{ m/s}+2\%\text{reading})$ 5.0~20.0m/s $\pm(0.1 \text{ m/s}\pm 2\%\text{reading})$	
Temperature range	0-70°C	
Precision	$\pm 0.5^\circ\text{C}$	
Wind speed respons	0.2s	
Resolution	Wind speed: 0.01m/s Temperature: 0.1°C	
Gather Ingredients	Probe acquisition 10Hz	
Output signal	RS485 standard MODBUS protocol; Custom CAN protocol	
Supply	DC12V (12—15V)	
Power dissipation	0.6W	
Using environment	0—70°C; 0—100%RH	
Compensate	Temperature compensation 0—70°C	
Basic size	Circuit about 95x20x10mm, probe: length 70mm, maximum diameter: $\phi 5\text{mm}$	
Interface form	Bare wire joint	
Class of protection	IP54	
Storage temperature	-10-70°C	
Attachment	Shield	Standard configuration
	Sensor bracket	Optional/customized
	Input lead 1m; Output lead 2m	Length can be customized

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28. Selection

Model + 2 5

1-5 :Sensor to transmitter lead wire length 1-5m	1-10: transmitter output lead length 1m-10m
--------------------------------------------------	---------------------------------------------



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Model : 04

29. Wind Speed sensor

The omnidirectional wind speed sensor is a miniature wind speed sensor in a spherical package with high three-dimensional directional uniformity and flexible arrangement. The miniature special package structure with a maximum size of less than 7mm is suitable for testing in small spaces such as circuits and electrical equipment. The transmission circuit has standard RS485, 4~20mA, 0~10V and other output waterproof, which is convenient for integrated use. The casing is designed with waterproof aluminum alloy. The sensor and the casing are connected by waterproof joints, and the connection form of butt joints can also be selected (the default specification is the form of no butt joints). The overall protection level is IP65. There are two installation methods: rail installation and wall installation, which are suitable for any place where long-term online wind speed testing is required.



30. Application

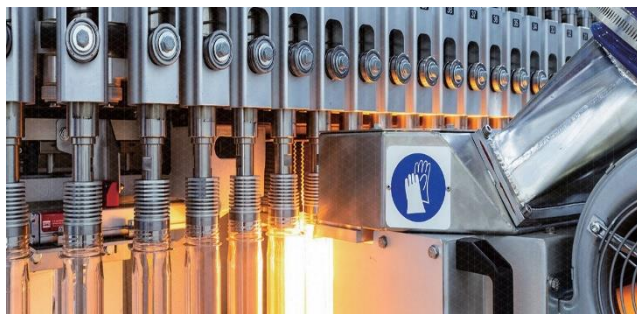


Data room air velocity measurement

The cooling of the data room is very important, and ensuring air circulation and cooling is one of the important indicators to ensure the operation of the server

Circuit board measures air velocity in real time

The small form factor can be fixed on the circuit board, and the heat dissipation can be precisely controlled by measuring the air flow rate around the heating components in real time.



Air speed control in blow molding workshop

Precise control of air flow for optimum machining results

Thermal control inside the cabinet

Installing sensors with wind speed and wind temperature inside the cabinet can monitor the heating status of the equipment in real time and provide early warning reference at the first time.





The characteristics of extremely small size and multi-signal output make the product have more application possibilities

Can output various signals of RS485/4-20mA/0-10V

Multiple measurement points need to be arranged in the HVAC dummy model. The traditional wind speed sensor is difficult to arrange due to its large size and easy damage. It can use its small and durable features to arrange multiple points on the surface of the dummy model, and because it is only 7mm high, so that they will not affect the measurement of each other, we also support full customization services, can provide wind speed, temperature integrated circuit design and manufacturing.

For HVAC dummies



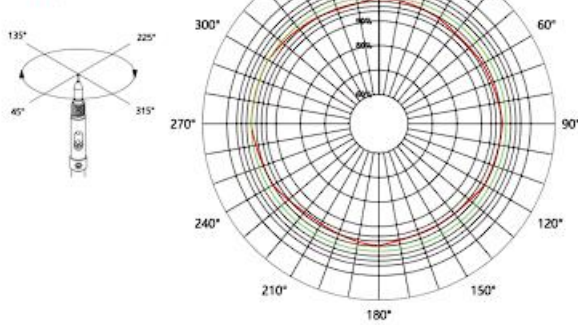
We support customized services of wind speed sensors, including shape, size, accuracy, measurement range, signal output form, etc., and customize the most suitable wind speed sensor for their own measurement needs according to the actual measurement needs of users.

31. Directional response

Stable and reliable directional response

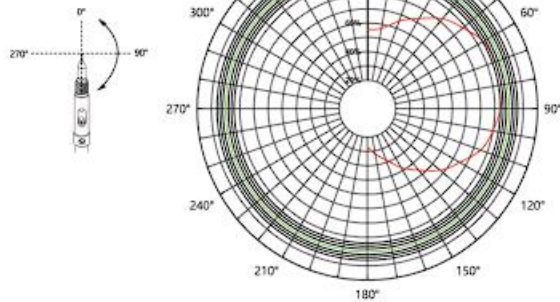
Horizontal characteristics

at 1.00m/s



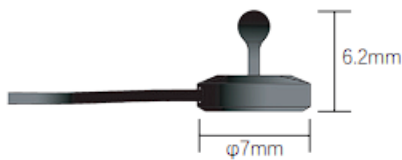
vertical orientation

at 1.00m/s

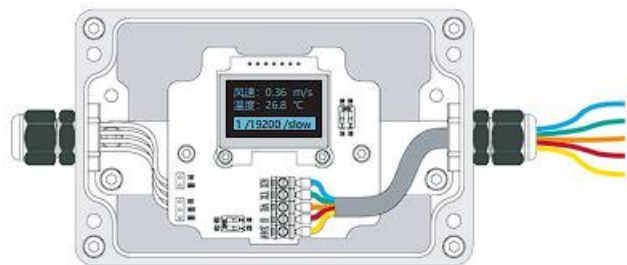


32. Shape Size

Customizable cable length

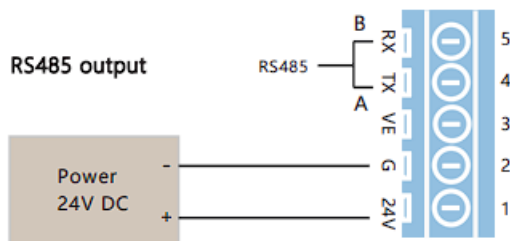


33. Electrical Connections

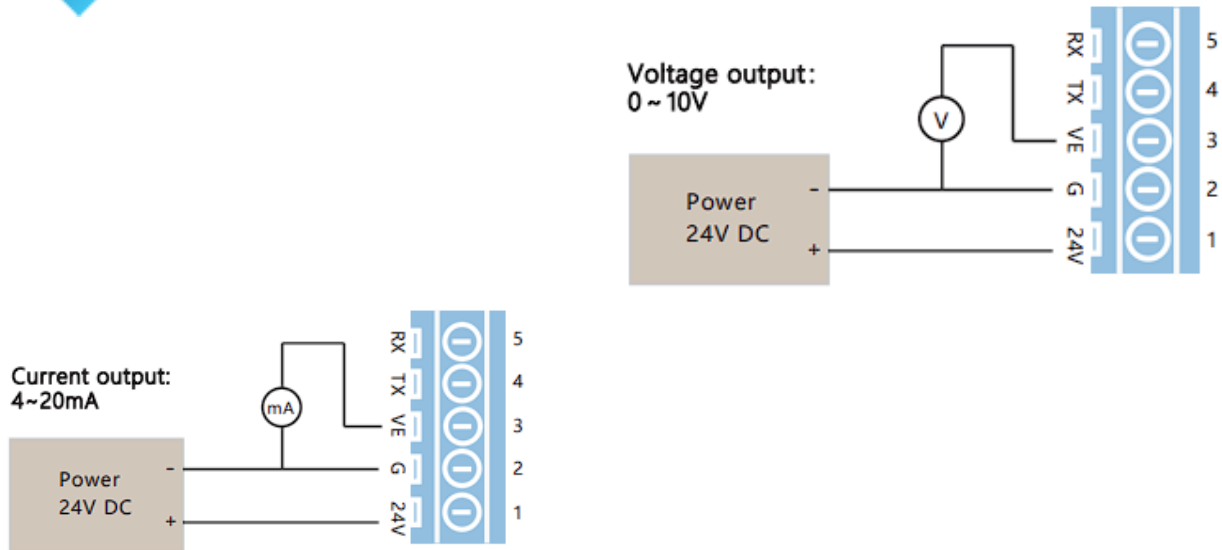


Supply voltage: 15~26V DC

Rated voltage: 24V DC



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34.Signal Output

Open the case of the sensor host, you can see the DIP switch, and the corresponding options have been marked on the circuit board.

Through double DIP switches or single DIP switches, different output forms, response times and measurement ranges

can be selected, and the maximum user-specific measurement needs can be achieved through different combinations.

Choose a response time		Select range		Output signal selection	
					
S4 S3	S4 S3	S4 S3	S4 S3	S2 S1	S2 S1
0.2s	2s	0~5m/s	0~10m/s	0~10V	4~20mA



35. Modbus Communication Protocol

	Function code/register number [Decimal]	Register address [hex]	Parameter name
Integer data (Read only register)	30001	0x00	Wind speed 3) [m/s]
	30002	0x01	temperature 3) [°C]
Integer data (read-write registers)	40003	0x00	Modbus address 4)
	40018	0x12	RS485 Baud rate 5) [bps]

1:	9600	2:	14400	3:	19200
4:	38400	5:	43000	6:	57600
7:	76800	8:	115200	9:	128000

- 1) Register number starts from 1
- 2) Register address starts from 0
- 3) The data is expanded by 100 times (e.g. 2550 is 25.5)
- 4) The factory default Modbus address is 1. The change takes effect after the transmitter is restarted
- 5) The factory default RS485 baud rate register value is 8, representing 11520



36. Specification

Parameter	Technical indicators	Note
Structure type	Split structure, spherical omnidirectional test	
Wind speed range	0.05~5m/s; 0~20 m/s optional	Set via transmitter
Wind speed accuracy	0~2m/s:±(0.05±2% of reading) 2~5m/s:±(0.1±2% of reading) 5-20m/s:±(0.2±2% of reading)	
Collection frequency	> 50Hz	
Response time	5s (t63, @ 1m/s , 25°C, 1 atm)	
Temperature range	-25~80°C	
temperature accuracy	±0.5°C	
Collection frequency	Probe acquisition > 50Hz; data averaging period 0.2s, 2s optional	
Output signal	RS485 (standard MODBUS protocol); 0~10V; 4~20mA	
Supply voltage	DC24V (15~26V)	
Rated power consumption	Less than 0.5W (without display); less than 0.7W (with display)	
Use environment	-25~80°C; 0~90%RH	without condensation
Temperature compensation	-25~80°C	
Interface form	Built-in terminal block, bare wire connector	
Structural material	The sensor part is stainless steel, and the transmitter is aluminum alloy;	

Based in New York City & Toronto, GAO Tek Inc. is ranked as one of the top 10 global B2B technology suppliers. GAO ships overnight within the U.S. & Canada & provides top-notch support thanks to its 4 decades of experience.

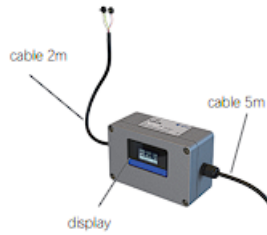


Protection class	Probe IP54 Circuit IP65	
storage temperature	-25~80°C	
Accessories	protective ball cage	
	protective cover	
	Sensor to transmitter cable 2m; transmitter output cable 2m	

37.Selection

Model 06 + 2 5

Ability to choose numbers between 1-5 Sensor to transmitter cable 1-5m	Ability to choose numbers between 1-5 Transmitter output cable 1m-10m
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