



PRO 200Z

Ultrasonic 3D wind sensor

USER MANUAL

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1. Purpose

The ultrasonic three-dimensional wind sensor PRO 200Z is designed to measure the speed and direction of air flow in horizontal and vertical directions.

The sensor uses advanced ultrasonic measurement technology. The unique dual-rod design significantly reduces wind resistance and improves measurement accuracy. Durability is ensured by its all-metal construction with no moving parts. The sensor can be used for urban environmental monitoring, wind energy production, weather monitoring, bridges and tunnels, marine vessels, airports, and other applications.

Peculiarities:

- Can work 24 hours a day;
- Resistant to heavy rain, ice, snow and frost;
- High accuracy and stability of measurements;
- Robust construction;
- High corrosion resistance;
- Small dimensions and weight, easy to install and dismantle.

2. Appearance of the device



Figure 1. External appearance of the ultrasonic three-dimensional wind sensor PRO 200Z

3. Technical specifications

Table 1. Technical characteristics of the ultrasonic three-dimensional wind sensor PRO 200Z

Parameter name, unit of measurement	Meaning
Air flow velocity measurement range: – in the horizontal direction, m/s – in the vertical direction, m/s	from 0 to 60 from 0 to 60
Limits of permissible error in air flow velocity measurements: – absolute in the range from 0 to 5 m/s inclusive, m/s – relative in the range from over 5 to 60 m/s inclusive, %, no more than	±0.5 10
Air flow direction measurement range: – in the horizontal direction, degree – in the vertical direction, degree	from 0 to 359.9 from -90 to +90
Limits of permissible absolute error in air flow direction measurements: – in the horizontal direction, degree – in the vertical direction, degree	±6 ±8
DC supply voltage, V	24
Current consumption, mA, no more than	60
Data interface	RS-485, RS-232
Communication protocol	Standard Modbus
Bitrate, bps	From 2400 to 57600 (9600 default)
Weight, kg, no more than	2
Overall dimensions: – Diameter, mm – Length, mm	280 883
Degree of protection of the shell	IP66
Terms of Use: – Ambient air temperature, °C – Relative air humidity, %	From -40 to +70 From 0 to 100

4. Installation sensor

In order for the weather station to display accurate data, it must be placed correctly.

Before installing the sensor, it is necessary to determine the north direction using an accurate direction measuring instrument (such as a compass) as a reference.

Next, the sensor must be correctly oriented. For this purpose, a special sticker—the north line—is located on the sensor body (see Figure 2).



Figure 2 Special sticker – north line

To accurately determine wind direction, this line on the sticker on the sensor body must point to true north, previously determined using an accurate directional measuring device (such as a compass). After this, the sensor must be secured.

Note Since the magnetic north indicated by the compass differs from the geographic north pole, the declination at the installation site (magnetic declination) must be taken into account when orienting the sensor. Depending on the location, for example, in North America, the deviation can exceed 15°. In central Europe, the deviation is negligible (< 3°).

5. Electrical connection

On the bottom of the sensor is a 12-pin screw connector, which is used for power supply and communication via the interfaces provided with the weather station. A diagram of the connector is shown below, and Table 2 shows the cable pinout.

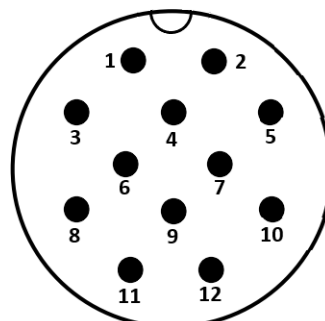


Figure 3 Connector for connecting the power cable and interfaces

Table 2 – Designation of the cable terminals of the ultrasonic three-dimensional wind sensor PRO 200Z

Pin number and color	Purpose
1 – Red	Power supply "+24 V"
4 – Black	GND power supply
7 – Yellow	RS-485 A
8 – Blue	RS-485 B

6. Completeness

Table 3 – Completeness

No.	Name	Quantity
1	Ultrasonic 3D wind sensor PRO 200Z	1 pc.
2	Power and interface cable	1 pc.
3	Passport	1 pc.
4	User manual	1 piece per batch
5	Package	1 pc.

7. Maintenance

The sensor is a maintenance-free device and is designed to operate indefinitely under the following operating conditions: stable power supply within the specified voltage range, proper humidity and temperature, non-aggressive gas environment, and absence of shock and vibration. The sensor has no parts requiring periodic inspection and/or maintenance.

8. Storage and transportation rules

The sensor must be stored only in the manufacturer's packaging in heated rooms at temperatures ranging from +5°C to +40°C and relative humidity no more than 80%. Storage areas must be free of aggressive impurities (acid or alkali vapors) that could cause corrosion.

9. Manufacturer's (supplier's) warranties

The warranty period for the sensor is 12 months, counting from the date of transfer of the product to the buyer.

During the warranty period of the sensor, the manufacturer has the right to supervise the correct operation in order to improve the quality and efficiency of operation.

Sensor components that fail during the warranty period are subject to replacement or repair by the manufacturer at the manufacturer's expense.

The user loses the right to free repairs during the warranty period in the event of broken seals, mechanical damage by the user, or if the sensor malfunction was repaired by a person who is not authorized to perform repairs and maintenance.