



Mobile weather stations

Professional mobile weather station IMETEOLABS PWS 500M

IMETEOLABS PWS-500M measures 4 meteorological parameters:

- air temperature,
- relative humidity,
- atmospheric pressure,
- wind direction and speed.

1. Air temperature

The temperature in the weather station is measured by an NTC thermistor (NTC - Negative Temperature Coefficient). The NTC-thermoresistor is a semiconductor which decreases in resistance as the

temperature increases. The sensor works in the range from -50 °C to +60 °C.

2. Relative humidity

Relative humidity is measured by the device using a capacitive sensing element in the range from 1 to 100%.

3. Atmospheric pressure

Absolute atmospheric pressure is counted from absolute zero (absolute vacuum) and is measured using sensors with microelectromechanical components (MEMS).

Relative pressure is calculated relative to the earth's atmosphere depending on the altitude of the weather station site above sea level.

4. Wind direction and wind speed

Wind direction and wind speed are measured using 4 ultrasonic sensors (ultrasonic anemometer). They cyclically record the airflow readings in the 4 directions of light. The device then calculates the result with an **accuracy of $\pm 3\%$** .

Weather station housing

The construction of the weather station is compact and robust due to the absence of obsolete mechanical elements.

The plastic, ventilated housing is designed to protect the sensors from environmental influences and to ensure trouble-free operation of the weather station. The warranty period is 1 year from the date of commissioning.

Software and communication interface

To manage the weather station, Jcom-iot programmers have developed a software called "IMETEOLABS PWS Configurator". It allows you to view the data collected by the device in the form of tables and graphs.

IMETEOLABS PWS 500M weather station works in 2 encodings: ASCII format and MODBUS protocol.

The RS485 (twisted pair) interface is used for connection with other devices.

Working principle

Smart weather station IMETEOLABS PWS-500M is connected to one of three devices:

- controller of data collection and transmission units (wireless data transmission via NB-IoT/LoRaWAN/3G);
- interface converter (data transmission via Ethernet cable);
- computer (using RS-485/USB adapter).

These devices are used to transfer data from the weather station to the software "IMETEOLABS PWS Configurator".

The software is available as an application for one PC or as an IoT platform on a separate server. The second option is more flexible: you can connect from any PC via a web browser and store data from other smart devices in a single system.

Technical specifications

| Name of characteristic | Value |
|--|--|
| Power supply | 12 V DC |
| Measuring range of wind speed | 0...60 m/s |
| Measurement range of air flow direction, degree | 0 to 360 |
| Measuring range of air temperature | -50 °C to 60 °C |
| Atmospheric pressure measurement range | 300 hPa to 1200 hPa |
| Service life | 8 years |
| Weight of the device | 1.2 kg |
| Device height | 311 mm |
| Instrument diameter | 140 mm |
| Interfaces | RS-485 (RS-232 on request) |
| Operating conditions: <ul style="list-style-type: none">• air temperature, oC;• relative humidity, %;• atmospheric pressure, hPa | from - 50 to + 60; 0 to 100; 300 to 1200 |
| GPS | built-in |