



Mobile weather stations

Professional mobile weather station IMETEOLABS PWS 800M

IMETEOLABS PWS-800M is the most complete instrument of the range. The device measures 7 environmental indicators:

- air temperature,
- relative humidity,
- atmospheric pressure,
- wind direction and speed,
- precipitation intensity,
- solar radiation power,

- UV index.

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. Air humidity

The device measures relative humidity of the air with the help of a capacitive sensing element in the range from 1 to 100%.

3. Atmospheric pressure

Absolute atmospheric pressure is calculated 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 $\pm 3\%$.

5. Precipitation intensity

An optical rain gauge calculates the intensity of rainfall over a given period. It can also calculate the total amount of precipitation for a day.

6. Solar radiation power, UV index

The instrument is equipped with a pyranometer, a meteorological sensor for measuring radiation. It is installed in the dome of the weather station and can record the UV-index (ultraviolet radiation).

Additional sensors

The IMETEOLABS PWS-800M weather station can also be extended with an additional radar precipitation sensor. It records the speed of falling raindrops (or snowflakes) and calculates the amount of precipitation by comparing the size of a drop (snowflake) and its speed of fall.

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-800M 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-800M 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 |
|---|----------------------------|
| Measuring range of air flow velocity, m/s | from 0.3 to 60 |
| Limits of permissible error of air velocity measurements: absolute in the range from 0.3 to 10 m/s incl., m/s; relative in the range from 10 to 60 m/s incl., % | $\pm 0,3 \%$ $\pm 3 \%$ |
| Measurement range of air flow direction, degree | 0 to 360 |

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| Limit of allowable absolute error of air velocity measurements, degree | ± 3 |
| Measuring range of air temperature, °C | from -50 to +60 |
| Limit of allowable absolute error of air temperature measurements, °C | ± 0,1 |
| Measuring range of relative air humidity, % | from 1 to 100 |
| Tolerance limit of absolute error of relative air humidity measurements, % | ± 3 |
| Measuring range of atmospheric pressure, hPa | from 300 to 1200 |
| Tolerance limit of absolute error of atmospheric pressure measurements, hPa | ± 1 |
| Measuring range of precipitation intensity, mm/min | 0.1 to 2.4 |
| Tolerance limit of absolute error of precipitation intensity measurements, mm/min | 0,2 |
| Measuring range of energy illuminance, W/m ² | from 0 to 2000 |
| Tolerance limit of relative error of energy illuminance measurements, % | < 5% |
| UV index display | 0 to 15 |
| Average MTBF, h | 8000 |
| Service life, years | 8 |
| Operating conditions: <ul style="list-style-type: none"> • air temperature, °C; • relative humidity, %; • atmospheric pressure, hPa | from - 50 to + 60; 0 to 100; 300 to 1200 |
| GPS | built-in |
| Overall dimensions, weight <ul style="list-style-type: none"> • length, mm • diameter, mm • weight, kg | 360 140 1,5 |