



## First and only compact all-in-one weather sensor with detection of lightning strikes

- **Parameters measured**  
temperature, relative humidity, air pressure, wind direction, wind speed, precipitation intensity, precipitation quantity, radiation, lightning strikes
- **Measurement technology**  
Ultrasonic/Wind, NTC/T, Capacitive/RH/Pressure, Thermopile/Radiation, Radar/Precipitation, radio wave emission/Lightning strikes
- **Product highlights**  
First and only compact all-in-one weather sensor with lightning detection, low power, heater, aspirated radiation shield, maintenance-free operation, open communication protocol
- **Interfaces**  
RS485 with supported protocols UMB-Binary, UMB-ASCII, Modbus-RTU, Modbus-ASCII, XDR and SDI-12
- **Article number**  
8381.U01

From the WS product family of professional intelligent measurement transducers with digital interface for environmental applications. Integrated design with ventilated radiation protection for measuring: Air temperature, relative humidity, precipitation intensity, precipitation type, precipitation quantity, solar radiation, lightning detection, air pressure, wind direction and wind speed. One external temperature sensor is connectable.

| General                    |   |
|----------------------------|---|
| Dimensions                 | Ø approx. 150 mm, height approx. 317 mm |
| Weight                     | Approx. 1.5 kg                          |
| Interface                  | RS485, 2 - wire, half - duplex          |
| Power supply               | 4...32 VDC                              |
| Operating temperature      | -50...60°C                              |
| Operating rel. humidity    | 0...100% RH                             |
| Heating                    | 40 VA at 24 VDC                         |
| Cable length               | 10 m                                    |
| Protection level housing   | IP66                                    |
| Mast mounting suitable for | Mast diameter 60 - 76 mm                |

| Lightning detection |                            |
|---------------------|----------------------------|
| Lightning detection | Number of lightning events |
| Coverage area       | 5 - 10 km                  |

| Air temperature |   |
|-----------------|---|
| Principle       | NTC   |
| Measuring range | -50...60 °C                                       |
| Unit            | °C  |
| Accuracy        | ±0.2°C (-20...50°C), otherwise ±0.5 °C (> -30 °C) |

| Relative humidity |                |
|-------------------|----------------|
| Principle         | Capacitive     |
| Measuring range   | 0 ... 100 % RH |
| Unit              | % RH           |
| Accuracy          | ±2 % RH        |

| Air pressure    |                      |
|-----------------|----------------------|
| Principle       | MEMS capacitive      |
| Measuring range | 300 ... 1200 hPa     |
| Unit            | hPa                  |
| Accuracy        | ±0.5 hPa (0...40 °C) |

| Wind direction  |                     |
|-----------------|---------------------|
| Principle       | Ultrasonic          |
| Measuring range | 0 ... 359.9 °       |
| Unit            | °                   |
| Accuracy        | < 3° RMSE > 1.0 m/s |

| Wind speed      |  |
|-----------------|--|
| Principle       | Ultrasonic                                       |
| Measuring range | 0...75 m/s                                       |
| Unit            | m/s  |
| Accuracy        | ±0.3 m/s or ±3 % (0...35 m/s) ±5 % (>35 m/s) RMS |
| Resolution      | 0.1  |

## Precipitation intensity

|            |          |
|------------|----------|
| Resolution | 0.1 mm/h |
|------------|----------|

## Precipitation quantity

|                           |              |
|---------------------------|--------------|
| Resolution                | 0.01         |
| Reproducibility           | Typical >90% |
| Measuring range drop size | 0.3...5 mm   |
| Type of precipitation     | Rain/snow    |

## Radiation

|                     |                       |
|---------------------|-----------------------|
| Unit                | W/m <sup>2</sup>      |
| Accuracy            | 5%                    |
| Response time (95%) | < 1s                  |
| Spectral range      | 300 to 1100 nm        |
| Measuring range     | 1400 W/m <sup>2</sup> |