



Compact all-in-one weather sensor with measurement of temperature, relative humidity, air pressure, wind direction, wind speed and radiation.

Parameters measured

Temperature, relative humidity, air pressure, wind direction, wind speed, radiation

Measurement technology

Ultrasonic/Wind, NTC/T, Capacitive/RH, MEMS capacitive/Pressure, Kipp&Zonen Pyranometer/Radiation

Product highlights

Wind detection with birdproof construction. Compact all-in-one weather sensor, 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

8375.1

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, air pressure, wind direction, wind speed and radiation. One external temperature or rain sensor is connectable.

General









WS501-UMB Smart Weather Sensor



Dimensions	Ø approx. 150 mm, height approx. 332 mm
Weight	Approx. 1.5 kg
Interface	RS485, 2 - wire, half - duplex
Power supply	1132 VDC
Power supply	511 VDC (electronics with limited precision of measurements)
Power supply	24 VDC +/- 10% (heater)
Power consumption	20 VA (heater)
Operating temperature	-5060 °C (with heater)
Operating rel. humidity	0100 % RH
Protection level housing	IP66
Standards/Regulations	Compliant to IEC 61724-1:2017 Class C
Mast mounting suitable for	Mast diameter 60 - 76 mm

Temperature	
Principle	NTC
Measuring range	-50 60 °C
Unit	°C
Accuracy	±0.2 °C (-2050 °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	٥
Accuracy	< 3° RMSE > 1.0 m/s
Resolution	0.1

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 m/s

Radiation











WS501-UMB Smart Weather Sensor



Response time (95%)	< 18 s
Non-stability (change/year)	<1%
Non-linearity (0 to 1,000W/m²)	<1%
Directional error (at 80° with	< 20 W/m ²
1,000W/m ²)	
Temperature dependence of	< 5 % ([10 +40 °C)
sensitivity	
Tilt error (at 1000W/m²)	<1%
Spectral range	3002800 nm
Measuring range	2000 W/m ²

Compass	
Measurement range	0 359°
Resolution	1.0°
Accuracy	+/-10°
Sampling rate	5 minutes









