



ATMOS-41 Gen 2 ALL-IN-ONE WEATHER STATION

METER

ATMOS-41 Gen 2 weather station packages 12 weather sensors into a single, compact device for atmospheric conditions. It was designed for continuous deployment in harsh climates, such as sub-Saharan Africa and extreme conditions around photovoltaic (PV) systems. There is only one moving part, eliminating virtually all failure points. No oiling or replacing bearings. Just reliability you can continue to count on.



More weather station sensors than other solutions

Most all-in-one weather stations give you the option to measure solar radiation or precipitation, but not both. ATMOS-41 Gen 2 weather station provides both measurements in one device, so you never have to compromise.

Only one moving part

The one moving part on the Gen 2 is the tipping cup to provide better resolution at both high and low precipitation thresholds. Gold-plated pins measure each drop of rain using electric conductivity, ensuring a consistent 0.017 mm resolution for dew, rain, and heavy precipitation events. A sonic anemometer and internal accelerometer both ensure consistent, precise measurements without constant maintenance by insuring the stays level and motionless. Limiting the number of moving parts means the ATMOS 41 Gen 2 anemometer is also accurate at low wind speeds. It even has an accelerometer, so you'll always know the sensor is level and you're getting accurate data. And leveling the weather station is easier than ever with the new built-in leveling bracket.

Features

- Research weather station measures 12 weather variables including: air temperature, relative humidity, vapor pressure, barometric pressure, wind speed, gust and direction, solar radiation, dual precipitation, precipitation EC, lightning strike counter and distance
- Wind speed measurements up to 60 m/s
- Easy installation with built-in levelling bracket
- Easy maintenance and serviceability with new side panel for accessing internal components
- Only one moving part
- All weather station data transmitted over a single wire
- Digital SDI-12 communication or combined MODBUS and Digital SDI-12 communication
- WMO-compliant sensor scan rate
- Connect to ZL6 for data capture and management
- Designed for continuous deployment in harsh climates
- No louvered radiation shield to attract bugs
- Accurate at low wind speeds because of limited moving parts will cause friction or fail
- Detects fine-scale wind speed variations with 0.01 m/s resolution
- Integrated weather station accelerometer detects if sensor is off-level
- Integrated spring acts as a rain gauge filter to keep out large particles but still allow enough water flow
- Optional bird deterrent fits perfectly on the weather station funnel



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Specifications

MEASUREMENT SPECIFICATIONS

Solar Radiation	Range: 0-1750 W/m ² Resolution: 1 W/m ² Accuracy: ±5% of measurement typical
Precipitation	Range: 0-1,500 mm/h Resolution: 0.017 mm Accuracy: ±5% of measurement from 0 to 1000 mm/h
Relative Humidity (RH)	Range: 0-100% RH (0.00-1.00) Resolution: 0.1% RH Accuracy: Varies with temperature and humidity, ±3% RH typical. Hysteresis: ±0.80% RH, typical RH Long-term Drift: ±0.25% RH/year, typical
Air Temperature	Range: -50 to 60°C Resolution: 0.1°C Sensor Accuracy: ±0.2°C Measurement Uncertainty: ±0.6°C from -20 to 50°C
Humidity Sensor Temperature	Range: -40 to 50°C Resolution: 0.1°C Accuracy: ±1°C
Vapor Pressure	Range: 0-47 kPa Resolution: 0.01 kPa Accuracy: Varies with temp. and humidity ±0.2 kPa typical below 40°C
Barometric Pressure	Range: 1-120 kPa Resolution: 0.01 kPa Accuracy: ±0.05 kPa at 25°C Equilibration: <10 ms Long-term Drift: <0.1 kPa/year, typical
Horizontal Wind Speed	Range: 0-60 m/s Resolution: 0.01 m/s Accuracy: the greater of 0.3 m/s or 6% of measurement
Wind Gust	Range: 0-60 m/s Resolution: 0.01 m/s Accuracy: the greater of 0.3 m/s or 6% of measurement
Wind Direction	Range: 0-359° Resolution: 1° Accuracy: ±5°
Tilt	Range: 0° to 180° Resolution: 0.1° Accuracy: ±1°
Lightning Strike Count	Range: 0-65,535 strikes Resolution: 1 strike Accuracy: variable with distance, >25% detection at <10 km typical
Lightning Average Distance	Range: 0-40 km Resolution: 3 km Accuracy: variable



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COMMUNICATION SPECIFICATIONS

Output	SDI-12 communication , Modbus RS485
Data logger compatibility	METER ZL6 and EM60 data loggers or any data acquisition systems capable of switched 3.6-15.0 VDC excitation and SDI-12 communication Modbus RS-485 enabled ATMOS 41 Gen 2s are capable of SDI-12 communication and Modbus RS-485 with excitation 4 to 24 VDC

PHYSICAL SPECIFICATIONS

Dimensions	Diameter: 10 cm Height: 28 cm, includes rain gauge filter
Operating temperature range	Minimum: -50°C Maximum: 60°C Note: Barometric pressure and relative humidity sensors operate accurately at a minimum of -40°C
Cable length	5 m (standard) 1.5 m (5-pin and 8-pin M12) 75 m (maximum custom cable length)
Connector types	3.5-mm stereo plug connector or stripped and tinned wires 5-pin M12 connector or 5 stripped and tinned wires 8-pin M12 connector or 5 stripped and tinned

ELECTRICAL AND TIMING CHARACTERISTICS

Supply voltage (VCC to GND)	Minimum: 3.6 VDC continuous Maximum: 15 VDC continuous Note: ATMOS-41 Gen 2 weather station must be continuously powered in order to work properly. Note: For ATMOS-41 Gen 2 weather station to meet digital logic levels specified by SDI-12, it must be excited at 3.9 VDC or greater.
Measurement duration	Typical: 240 ms Maximum: 3000 ms
COMPLIANCE	EM ISO/IEC 17050:2010 (CE Mark)

