

Weather Stations

FOR SOLAR ENERGY MONITORING

Temperatures | Solar Radiation | Relative Humidity | Barometric Pressure | Wind



Solar Project Weather Stations

Professional Weather Monitoring for Solar Energy

Environmental monitoring is critical to the optimizing the efficiency of solar panels. Columbia Weather Systems offers three weather station options, all of which include key parameters of panel temperature, air temperature and solar radiation. These weather stations interface with industrial monitoring and automation systems as well as web-based weather networks through the Weather MicroServer.

Features

- Professional-grade sensors
- Preferred for ease of installation
- Multiple interfaces and monitoring options
- No programming or special training required
- No long-term contract - you own the equipment and data



Solar 1 Weather Station includes:

- Orion Weather Station all-in-one sensor package with
 - + Ultrasonic Wind Sensors
 - + Temperature
 - + Pressure
 - + Humidity
 - + Rainfall
- Panel Temperature
- Solar Radiation



Solar 2 Weather Station Includes:

- Capricorn FLX Weather Station modular sensor package with
 - + Mechanical Wind Sensors
 - + Temperature
 - + Pressure
 - + Humidity
 - + Optional Rainfall
- Panel Temperature
- Solar Radiation



Solar 3 Weather Station Includes:

- Air Temp
- Panel Temp
- Solar Radiation

"Your weather stations are quality and your service is outstanding. Way to go!"
~Solar Construction Project Manager

All Solar Weather Stations include Weather MicroServer in Weatherproof Enclosure and 50' Sensor Cables



This weather station installation shows two radiation sensors, one at plane of array and one at GHI, as well as the Orion weather sensor module on the mast at right. This utility-scale Ontario, Canada solar energy project required our highest accuracy pyranometers.

Photo courtesy of Industrial Electrical Contactors Ltd.

Solar 1 Specifications

Air Temperature

Range: -60 to 140°F (-52 to +60°C)
Accuracy: ±0.5°F (±0.3°C) at 68°F (+20°C)
Resolution: 0.1°F (0.1°C)
Units Available: °F, °C

Barometric Pressure

Range: 17.50 to 32.50 InHg (600 to 1100 mbar)
Accuracy: ±0.015 InHg (0.5 mbar) at +32 to 86°F (0 to 30°C)
Resolution: 0.01 InHg (0.1 mbar)
Units Available: KPa, mbar, InHg, hPa

Wind Speed

Range: 0 - 135 mph (0 - 60 m/s)
Accuracy: ±0.7 mph (±0.3 m/s)
Resolution: 1 mph (1 m/s)
Units Available: knots, mph, km/hr, m/s

Wind Direction

Azimuth: 0 - 360°
Accuracy: ±2°
Resolution: 1°

Relative Humidity

Range: 0 - 100%RH
Accuracy: ±3%RH (0-90%), ±5% (90-100%)
Resolution: 1%RH
Units Available: %RH

Rainfall

Range: cumulative
Collection Area: 60 cm²
Accuracy: ±5% (spatial variations may exist)
Resolution: 0.001 in. (0.0245mm)
Units Available: mm, inches

Solar Radiation*

ISO classification: ISO 9060 Second Class (Class C)
Spectral range: 280 to 3000 nm
Transmitted range: 0-1600 W/m²
Calibration Uncertainty: < 1.8% (k=2)

Panel Temperature

Range: -40 to +257°F (-40 to +125 °C)
Accuracy: ±1.8°F typical at 77°F (±1°C at 25°)
Resolution: 0.1° C (±0.1° F)

Solar 2 Specifications

Air/Panel Temperature

Range: -67° to 257°F (-55° to 125°C)
Accuracy: ± 0.9°F from +14° to 185°F ± 3.6°F from -67° to 257°F
Resolution: 0.1°F

Barometric Pressure

Range: 14.8 to 32.5 in.Hg (500 to 1100 hPa)
Accuracy: ± 0.03 in. Hg (1 hPa)
Resolution: 0.001 in. Hg (0.01 hPa)

Wind Speed

Range: 0 to 160 mph (139 knots)
Accuracy: ± 0.25 mph from 0 to 23 mph ± 1% from 24 to 160 mph
Starting Threshold: 0.9 mph
Resolution: 1 mph

Wind Direction

Range: 0 - 360°
Accuracy: ±4°
Resolution: 2°

Relative Humidity

Accuracy: ± 3% (or better) from 10-90% RH
Temperature Effect: less than <±1.5% RH
Stability: ± 2% RH over 2 years
Reporting Resolution: 1% RH

Solar Radiation*

ISO classification: ISO 9060 Second Class (Class C)
Spectral range: 280 to 3000 nm
Transmitted range: 0-1600 W/m²
Calibration Uncertainty: < 1.8% (k=2)

Optional Tipping Bucket Rain Gauge

Accuracy: ±1% at 2 in/hr or less
Resolution: 0.01 inch

*For all weather stations, higher category pyranometers are available. Please contact us or visit our website for additional information.

Contact us today for a free quotation!



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