# RainWise Inc. **Professional Weather Instruments**

www.rainwise.com



**Inverter companies worldwide** have chosen RainWise as the #1 provider of meteorological stations for our proven reliablity, easy deployment and accurate data.

#### **Performance Benefits**

- EKO precision solar sensors for efficient monitoring
- Operates over a broad range of temperature
- Easy set-up & fully assembled

#### **Tested Tough**

- Durable & weather resistant Ultra-violet inhibited
- Stainless steel hardware Optional add-on sensors

#### **Multiple Communication Protocols**

- SunSpec certified or compliant
- Integration via MODBUS RTU interface using RS-485

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& OPTIONS

#### **SUPPORTS**

- (3) Irradiance Sensors
- (3) Back-of-Panel Temp Sensors

#### **SENSORS**

Ultra Sonic Anemometer (Optional) Mini-Aervane (Optional) Ambient Temperature Relative Humidity Barometric Pressure



All RainWise PVmet Weather Stations are available with high-precision EKO pyranometers



# SPECSHEET PVmet 500

**Power Requirements** 10 to 30 VDC at 50mA

**Operating Environment** 

- 40° to 60°C (- 40° to 140°F) Temperature: 0-100%, Condensing Relative Humidity:

#### **Solar Irradiance Sensor Capabilities**

Silicon Diode Thermopile Reference Cell

Sensitivity: Down to 5uV per W/m<sup>2</sup>

0 to +/-2.5VAnalog Input: Update Rate: Resolution: 1W/m<sup>2</sup>

**Ambient Air Temperature Sensor** 

- 40° to 80°C (- 40° to 176°F) Range: Accuracy +/- 0.3°C (.54°F)

Thermal Time Constant: 30 sec. Resolution:

**Ultra Sonic Anemometer (Optional)** 

0.25-45 m/s (0.56 -100 MPH) Range: Speed

Sensitivity: 0.13 m/s (0.29 MPH)

Direction Range: Range: 0-359°

Sensitivity:

Independent of weather conditions Resolution: 0.1 m/s

#### Mini Aervane (Optional)

Range: 0 ~ 67 m/s

Greater of 0.45m/sec.or Accuracy:

5% of Reading

Resolution: 1 m/s

Threshold: 0.45 m/s at a 10° Deflection

Direction

Range: 0 ~ 360° ±3° Accuracy:

Resolution: 1°

#### Back of Module (BOM) Temperature Sensors

Range:

- 40° to 80°C(- 40°

to 176°F)

Accuracy: +/- 0.3°C (.54°F) Thermal Time Constant: 270 sec.

7.62m (25 ft) Cable Length: Resolution:

#### **RS-485 Serial Port**

2-Wire Half Duplex Mode:

Baud Rate: 9600, 19.2k Termination: Selectable





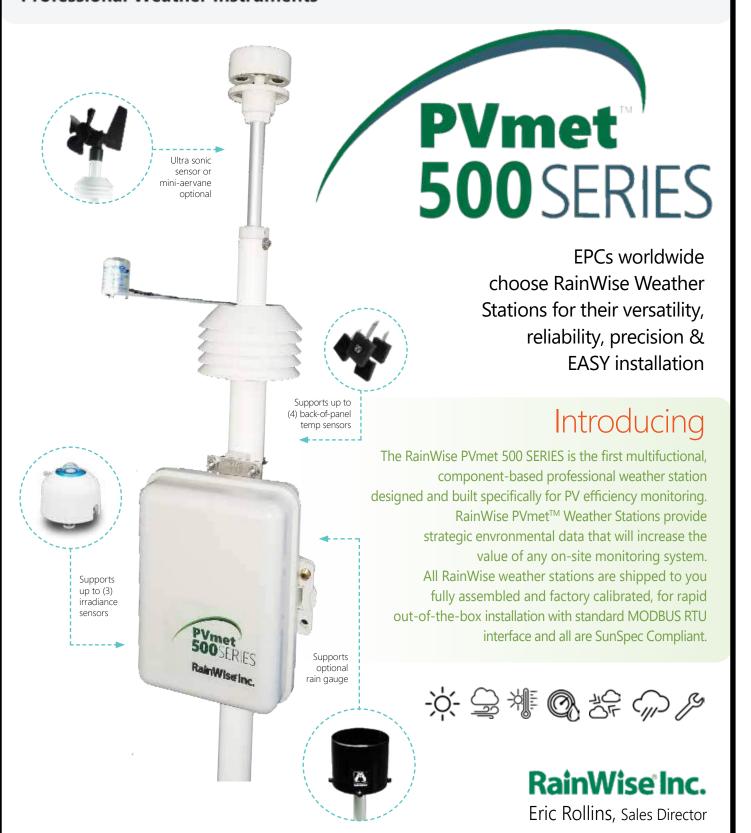


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## Mini Aervane

#### **Features**

- All weather sensor
- Durable ABS plastic
- Stainless steel hardware
- RoHS Compliant
- Fully-assembled

## **About**

Our mini aervane utilizes an internal, contact free magnetic system that provides constant horizontal wind tracking, leaving no mechanical parts to wear out over time and require replacement. Sturdy construction can withstand the most aggressive conditions from -  $40^{\circ}$  ~  $140^{\circ}$  F. Each sensor is individually tested before shipping and comes with a Best-in-Industry 2 year warranty.

# **SPECSHEET MINIAERVANE**

Manufacturer: **RainWise** Wind Speed

Range:  $0 \sim 67 \text{ m/s}$ Anemometer Type: (Reed Switch)

Accuracy: Greater of 0.45m/sec. **Operational Temp:** -40 ~ 85°C (-40 ~ 185°F) or 5% of Reading

Anemometer Resolution: 1 m/s

Extension: Up to 15.24m (50ft) Threshold 0.45 m/s at a 10° Deflection

Wind Direction

0 ~ 360° (No Deadband) Range:

Accuracy: ±11.25° Resolution: 22.5°

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# CV7 Ultrasonic Wind Sensor

#### **Features**

- All-weather, durable sensor
- Ultra light weight
- Highly responsive
- Low latency
- Easily integrated
- CE Compliant

## **About**

This ultrasonic sensor has been designed to avoid any mechanical part to ensure the best possible and most reliable operation. The sonic wind–vane/anemometers shows very stable results over the long term and with little-to-no maintenance required. Every LCJ sensor is fully tested before shipping the results are logged against the serial number. The sensor is placed in our wind tunnel on a rotating bracket which rotates by 9 degrees steps. The sensor is aligned in the wind direction and set at 0 degrees and 40 measure points are logged with both angle and speed.

# **SPECSHEET ULTRASONIC ANEMOMETER**

Wind module sensitivity: 0,13m/s Operating temperature range

Operating temperature range without icing: -15°C/55°C

Wind module resolution: 0,05m/s
Wind module dynamic: 0,13-41.6 m/s
Direction sensitivity: +/-1,5°
Direction resolution: 1°

Direction accuracy:  $>3m/s = +/-1^{\circ}$ Speed accuracy: >3m/s = +/-2%

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## RainWise Inc.

# Back of Module (BOM) Temperature Sensors

#### **Features**

- All-weather, durable sensor
- Light weight
- · Anodized aluminum housing
- Easy installation
- Factory tested
- Fully-assembled

### **About**

The back of module teperature sensor is designed to attach directly to any solar panel. When placed on the center back side of thepanel, it accurately measures the temperature of the panel. The sensor is encased in an aluminum housing with self-adhesive thermal conductive tape for easy installation and precise monitoring. Each sensor is individually tested before shipping and comes with a Best-in-Industry 2 year warranty.

# SPECSHEET BACK OF MODULE (BOM) Temp sensor

Manufacturer: RainWise Inc.

Range: - 40° to 80°C(- 40° to 176°F)

Accuracy: +/- 0.3°C (.54°F)

Thermal Time Constant: 270 sec.

Cable Length: 7.62m (25 ft)

Resolution: 0.1°C

# RainWise Inc.

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Rainfall Gauge on custom aluminum post



### **Features**

- Durable construction
- Hand calibrated
- Superior accuracy
- Easy installation
- Self-emptying
- Fully-assembled
- 1.315" Outside Diameter of Pole
- 12" Long Pole
- Hole spacing on pole: 1"-5", 4" apart

### **About**

The RainWise Tipping Bucket Rain Gauge has an extra large 8" diameter collector that meets the NWS (US) specifications for statistical accuracy. Every tip of the bucket is hand calibrated to count one hundredth of an inch of rainfall. Our rain gauge is available in wired and wireless models and provide an economical solution to the annual collection and recording of rainfall data even in remote locations. A built-in bubble level allows for easy intallation of post mounted units.

# **SPEC**SHEET Rainew™ Rainfall Gauge

Manufacturer: RainWise Inc.

Housing: High Impact Polypropylene, UV Inhibited Transducer: Tipping Bucket of specially formulated

plastic for low surface tension

Switch: Dry reed switch

Output: Less than 0.1 sec. switch closure

Capacity: 6 to 24 VDC @ 500ma

Resolutions

Available: 0.01 inches

Accuracy: 2% at 1.5" per hour

Diameter: 16mm

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## PVmet 500/Base Model

#### **Features**

- Robust & Reliable
- Fully assembled
- SunSpec Compliant
- CE Certified
- Factory tested
- Easy installation



## **Base Model Sensors Include:**

**Ambient Temperature** Relative Humidity Barometric Pressure



## **About**

The RainWise PVmet 500 SERIES is the first multifunctional, component-based professional weather station thats designed and built specifically for PV efficiency monitoring. RainWise PVmet<sup>™</sup> Weather Stations provide strategic environmental data that will increase the value of any on-site monitoring system. All RainWise weather stations are shipped to you fully assembled and factory calibrated, for rapid out-of-the-box installation with standard MODBUS RTU interface and all are SunSpec Compliant.

# SPECSHEET PVmet500 Base Model

**Barometric Pressure** Manufacturer: RainWise Inc.

552 to 1084 hPa (mbar) Range:

+/- 1.7 hPa (mbar) Accuracy: Ambient Air Temperature Sensor

Resolution: 1 hPa (mbar) - 40° to 80°C (- 40° to 176°F) Range:

Accuracy: +/- 0.3°C (.54°F) Thermal Time Constant: 30 sec. Resolution: 0.1°C

1%

Relative Humidity

Resolution:

Eric Rollins, Sales Director Range: 0 to 100%

+/- 5% Ph: +1 207.266.8465; Fax: +1 207.288.3477 Accuracy:

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RainWise Inc.











# ML-01 Si Pyranometer

#### **Features**

- Fast Response Time (10ms)
- CIE Photopic Response
- Glass Dome Plus Diffuser Optics
- Low Temperature Dependency

### **About**

The ML-01 Si sensor is the link between the reference cell and broadband thermopile pyranometer. Compared to the reference sensors it has a proper cosine repose and it is relatively compact, but benefits from the same characteristics as a PV module (Response time, Spectral and temperature response). The ML - 01 is an industrial grade solar sensor specially made for performance ratio measurements as well as irradiance measurement applications for the meteorological, agricultural and environmental studies. The compact dimensions of the sensor body make it easy to integrate within any application using it with or without the mounting plate.

# SPECSHEET EKO ML-01 Si

Manufacturer EKO Specifications (Typical) ML-01

ISO 9060 classification N/A
Response time 95% < 1 ms

Zero offset - Thermal radiation (200W/m²) 0 W/m² Zero offset - Temperature change (5K/hr) 0 W/m²

Non-stability (change/year)  $\pm 2\%$ Non-linearity (at 1000W/m<sup>2</sup>) < 0.2%Directional response error (0 - 80°)  $< 10 \text{ W/m}^2$ 

Spectral selectivity (0.35-1.5µm) Si- Photo diode response

Temp. response (for 50°C band) < 0.15 %°C Tilt response (at 1000W/m<sup>2</sup>) 0 %

Sensitivity ( $\mu$ V/W/m<sup>2</sup>) 50 Impedance ( $\Omega$ ) 50

Operating temperature range (°C) - 30 to +70 Cable length 5 m

Wavelength range (nm) 400 - 1100

(Mono-Crystalline)

Mounting Plate Standard

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## PV PROMOUNT

#### **Features**

- Adjusts for global and plane-of-array
- Anodized aluminum construction
- Stainless steel hardware
- Lightweight
- Fully-assembled, easy to install



The **PV PRO**MOUNT is compact, lightweight, corrosion resistant and ships fully-assembled ready to install.

The RainWise PV PROMOUNT is made exclusively for the following **EKO** pyranometers:

# **SPEC**SHEET **PV PRO**MOUNT

Manufacturer RainWise Inc.

construction is

guaranteed for 2 years

Weight: 1.3 lbs/.6 kg Length: 15.75 in/40 cm Construction: Aluminum/anodized Hardware: Stainless steel

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MS-80 MS-80A MS-80M MS-402 MS-602 MS-802 MS-410 ML-01



EKO's broad-band pyranometer product line includes instruments of all ISO classes, ranging from the second class MS-40, via the first class MS-60, up to the top class secondary standard MS-80