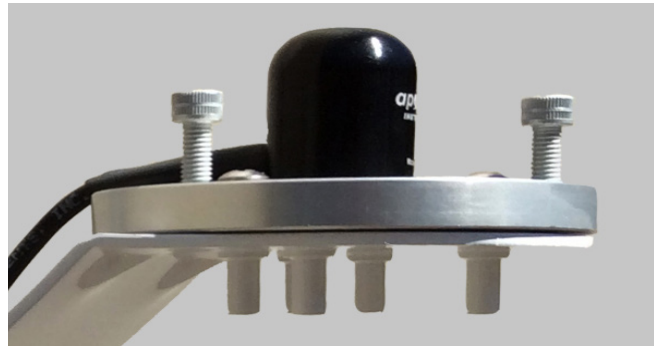


Various solar radiation sensors are available with the modular Capricorn FLX Weather Station and/or with the Weather MicroServer for all weather station models. Additionally, the Magellan MX and Pulsar Weather Stations offer all-in-one sensor modules with integrated solar radiation measurement.

ISO classifications "secondary standard," "first class," and "second class" correspond to the World Meteorological Organization categories "High quality," "Good quality," and "Moderate quality."

## Silicone-based Pyranometer



Part Number: 82601 (MicroServer), 82615 (Capricorn FLX)

The pyranometer or solar radiation sensor is calibrated to measure the shortwave radiation reaching the Earth's surface, measured in Watts per square meter. Self-cleaning dome-shaped head prevents water accumulation. Sensor head is potted solid to prevent internal condensation in humid environments.

### Advantages:

- Low cost
- Sensor head is potted solid to prevent internal condensation in humid environments
- Self-cleaning dome-shaped head prevents water accumulation

**Applications:** General purpose solar monitoring.

## Specifications

**ISO 9060:** 2018 Class C (previously known as second class)

**Range:** 0 to 2000 W m<sup>-2</sup>

**Calibration Uncertainty:** ± 5 %

**Measurement Repeatability:** Less than 1 %

**Non-stability (Long-term Drift):** Less than 2 % per year

**Non-linearity:** Less than 1 %

**Response Time:** Less than 1 ms

**Field of View:** 180°

**Spectral Range:** 360 to 1120 nm (wavelengths where response is 10 % of maximum)

**Directional (Cosine) Response:** ± 5 % at 75° zenith angle

Temperature Response: 0.04 ± 0.04 % per C

**Operating Environment:** -40 to 70 C; 0 to 100 % relative humidity

*Includes leveling plate, mounting bracket, and 50-foot cable.*

## Thermopile-based Pyranometer: Second Class



Part Number: 82605

This thermopile sensor meets ISO 9060 second class requirements. It measures solar radiation received by a plane surface, in  $W/m^2$ , from a  $180^\circ$  field of view angle. SR05 is ideal for general solar radiation measurements in meteorological networks and PV monitoring.

The pyranometer is easy to mount and install, in particular with SR05's ball levelling mechanism. The sensor outputs 0 to 1 VDC signal and can be interfaced directly to the Weather MicroServer's analog channels.

### Advantages:

- Easy mounting and installation

### Applications:

Ideal for general solar radiation measurements in meteorological networks and photovoltaic monitoring.

## Specifications

**ISO classification:** ISO 9060 Second Class

**Spectral range:** 280 to 3000 nm

**Calibration Uncertainty:** < 1.8% ( $k=2$ )

**Operating Temperature Range:** -40 to +80°C

*Includes a tube mounting bracket and 50-foot cable.  
Additional mounting brackets are available.*

## First Class Pyranometer



Part Number: 82603-6A

This thermopile sensor meets ISO 9060:1990 First Class requirements and features a sixty-four thermocouple junction sensing element. The sensing element is coated with a highly stable carbon based non-organic coating, which delivers excellent spectral absorption and long term stability characteristics. It has improved performance due to the increased thermal mass and the double glass dome construction.

The integral bubble level is raised to the top of the housing and can be viewed without removing the snap-on sun shield. The connector with gold-plated contacts allows for easy exchange and re-calibration. The screw-in drying cartridge is easy to remove and the replacement desiccant is supplied in convenient refill packets.

### Advantages:

- Accurate solar radiation measurements
- Durable

### Applications:

Operations that require accurate data for photovoltaic power.

## Specifications

**ISO classification:** ISO 9060:1990 First Class

**Spectral range (20% point):** 280 to 3000 nm

**Spectral range (50% point):** 285 to 2800 nm

**Response time (63%):** <1.5 s

**Response time (95%):** <12 s

**Zero offset A:** <10  $W/m^2$

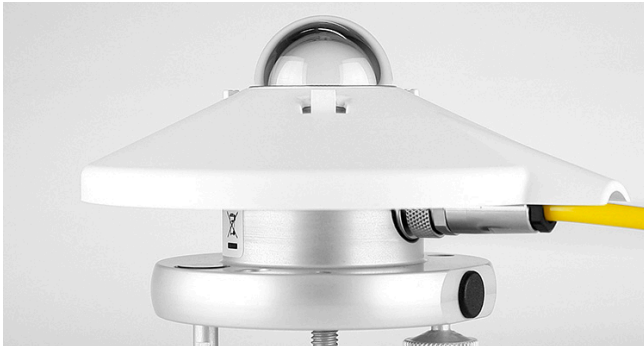
**Zero offset B:** <4  $W/m^2$

**Directional response** (up to  $80^\circ$  with 1000  $W/m^2$  beam): <15  $W/m^2$

**Temperature dependence of sensitivity (-40°C to +70°C):** <3%

*Includes 50-ft. cable. Optional mounting brackets available.*

## Secondary Standard Pyranometer



Part Number: 82603-10A

This thermopile sensor meets ISO 9060:1990 Secondary Standard requirements (highest possible ISO pyranometer performance category).

The SMP10 extends this quality to applications where maintenance is difficult and/or forms a major part of the cost of ownership. The Internal drying cartridge is rated to 10 years if the housing is not opened. The sensor uses a temperature compensated detector and has better linearity and long-term stability, lower thermal offset and faster response than a first class pyranometer.

The faster response time meets the requirements for solar energy monitoring.

### Advantages:

- Accurate solar radiation measurements
- Internal drying cartridge that will last for at least 10 years if the housing is not opened

**Applications:** Operations that require accurate data for photovoltaic power.

### Specifications

**ISO classification:** ISO 9060:1990 First Class

**Spectral range (50% point):** 285 to 2800 nm

**Response time (63%):** <0.7 s

**Response time (95%):** <2 s

**Zero offset A:** <7 W/m<sup>2</sup>

**Zero offset B:** <2 W/m<sup>2</sup>

**Directional response (up to 80° with 1000 W/m<sup>2</sup> beam):** <10 W/m<sup>2</sup>

**Temperature dependence of sensitivity (-40°C to +70°C):** <1%

*Includes 50-ft cable. Optional mounting brackets available.*

## Magellan MX501 Weather Station



Magellan MX Weather Station model 501 incorporates a silicon photodiode radiation sensor in the all-in-one sensor configuration including wind speed/direction, air pressure, temperature, relative humidity, compass and GPS.

### Specifications

**Solar Radiation Sensor Specs**

**Wavelength Sensitivity:** 300 to 3000 nm

**Output Range:** 0 to 1600 W/m<sup>2</sup>

**Resolution:** 1 W/m<sup>2</sup>

**DIN Standard:** ISO 9060 Second Class

**Sampling Rate:** 1 Hz

**Units:** W/m

## Pulsar 501 Weather Station



Pulsar Weather Station model 501 integrates a second class thermopile solar radiation sensor in an all-in-one sensor housing with ultrasonic wind speed and direction, temperature, relative humidity, air pressure, and electronic compass.

### Solar Radiation Sensor Specs

**ISO classification:** Second Class  
**Response time (95%):** <18s  
**Non-stability (change/year):** <1%  
**Non-linearity (0 to 1,000 W/m<sup>2</sup>):** <1%  
**Directional error (at 80° with 1,000 W/m<sup>2</sup>):** <20 W/m<sup>2</sup>  
**Temperature dependence of sensitivity:** ±5% (-10 to +40°C)  
**Tilt error at 1,000 W/m<sup>2</sup>:** <1%  
**Spectral range (50% points):** 300 to 2800 nm  
**Maximum irradiance:** 1400 W/m<sup>2</sup>

## Pulsar 800, 700, 502 Weather Stations



Pulsar 502

Pulsar 800/700

Pulsar Weather Station models 800, 700, and 502 incorporate a silicon photodiode radiation sensor in the all-in-one multi-parameter sensor configuration. Model 502 offers ultrasonic wind speed and direction, temperature, relative humidity, air pressure, electronic compass. Model 700 and 800 add Doppler Radar precipitation measurement. Model 800 also adds lightning detection.

### Solar Radiation Sensor Specs

**Response time (95%):** <1 s  
**Unit:** W/m<sup>2</sup>  
**Accuracy:** 5%  
**Spectral range (50% points):** 300 to 1100 nm  
**Measuring range:** 1400 W/m<sup>2</sup>

*Please contact us to help determine which solar radiation sensor is best for your application. Our job is to make weather monitoring easy so you can do your job better.*