

Solar Light's **Model PMA1101 Analog Biologically-Weighted Erythema UV Sensor** provides an accurate measurement of SUV radiation (also known as "sunburning UV") from sunlight or artificial light sources. Its spectral response follows closely the Erythema Action Spectrum (also referred to as the CIE 1987 Action Spectrum,) which represents the sensitivity of human skin to sunburn. This sensor has angular response very close to an ideal cosine function (Lambertian response,) making it suitable for measurements of diffuse radiation or radiation generated by extended sources. Its design is based on phosphor technology, and proven to be extremely stable over long periods of time. Several packages are available for different types of environments, including standard, low profile, weatherproof, and waterproof applications.



Applications

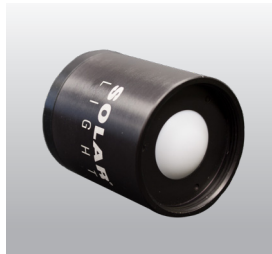
- Laboratory and Industrial Radiometry
- Skin and SPF Testing
- Clinical Studies
- Phototherapy
- Environmental Monitoring
- Material Testing
- UV-B Transmission Measurements
- Agriculture

Features and Benefits

- High Sensitivity
- Excellent Long-Term Stability
- Cosine Corrected
- NIST Traceable Calibration
- Radiometric and Biological Units

Common Sources of UVA Include:

- Low Pressure Fluorescent Lamps
- High Pressure Mercury and Metal Halide Lamps
- High Pressure Xenon Lamps
- Sunlight

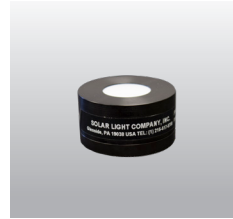




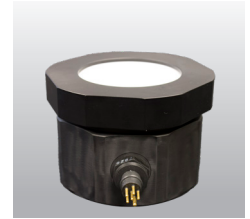
Standard Chassis - IP60
1.8" (45.8mm) High x 1.6" (40.6mm) Diameter



Weatherproof Standard Chassis - IP68
Can be submersed up to 3 meters deep
1.8" (45.8mm) High x 1.6" (40.6mm) Diameter



Low Profile Chassis - IP60
0.8" (21mm) High x 1.6" (40.6mm) Diameter



Waterproof Underwater Housing - IP68
Can be submersed up to 100 meters deep
3.3" (83.4 mm) High x 4.7" (119.7 mm) Diameter

Options:

- Tripod Mounting Plate
- Weatherproof Chassis (submersible up to 3 meters)
- Low Profile Chassis
- Waterproof Underwater Housing (submersible up to 100 meters)
- Digital Model for interface with PMA Series Meters (Model PMA2101)

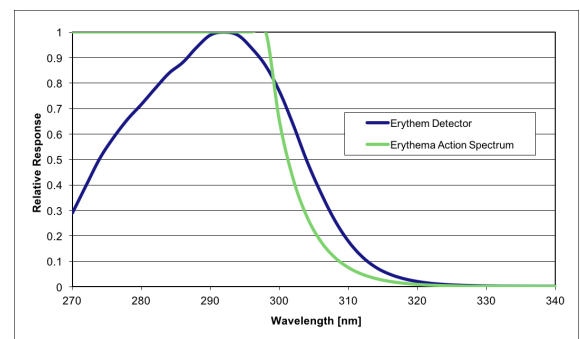


Fig. 1. Linear Spectral Response

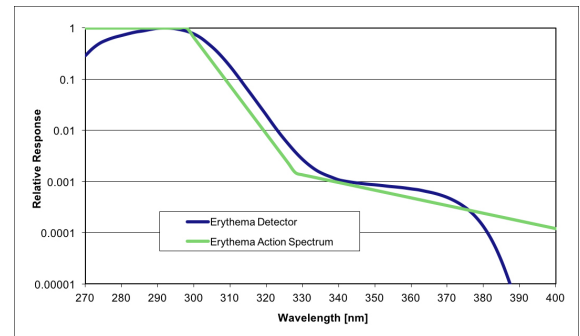


Fig. 2. Log Spectral Response

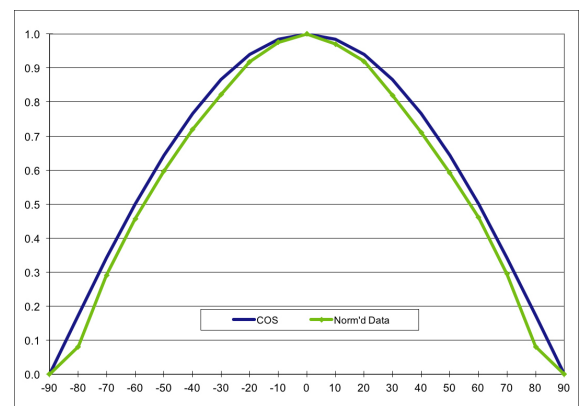


Fig. 3. Cosine Response

| SPECIFICATIONS | |
|--|--|
| Spectral Response | Follows Erythema Action Spectrum, Figure 1 |
| Cosine Response | 5% for Angles <60° (Standard Chassis) |
| Output Signal/Range | *See model chart on the next page |
| Input Power | *See model chart on the next page |
| Operating Environment | 32 to 120°F (0 to +50°C) |
| Temperature Coefficient | 1% /°C for Solar Radiation |
| Cable Length | *See model chart on the next page |
| Dimensions and Weight | *See outline drawings |
| IRRADIANCE FROM TYPICAL SOURCES | |
| Solar Radiation | 30°. SZA, 3mm Ozone, Clear Sky: Approx. 4 [MED/Hr] |
| 150W Xenon Lamp at 8" (20.3 cm) | Approx. 20 [MED/Hr] |
| 16S-Series Solar Simulator | 8-50 [MED/Hr] |

Part Number: 210030

Revision Level: B

Specifications subject to change without notice.

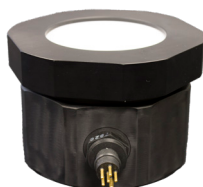
Partial Model Selection Chart



| STANDARD CHASSIS - IP60 | | | | |
|-------------------------|------------------------|---------------|---|-------------------------------------|
| Model | Input Power | Output Signal | Range | Cable Type |
| PMA1101-S-05-20 | 9-24 VDC @ 30 mA | 0-5 VDC | 20 [MED/Hr] or 117 [μ W/cm ²] | Pigtail w/ 2 meter detachable cable |
| PMA1101-S-420-20 | 9-24 VDC @ 70 mA | 4-20 mA | 20 [MED/Hr] or 117 [μ W/cm ²] | Pigtail w/ 2 meter detachable cable |
| PMA1101 | \pm 5-12 VDC @ <1 mA | *0-5 VDC | 200 [MED/Hr] or 1,170 [μ W/cm ²] | 6' cable stripped/tinned |



| WEATHERPROOF CHASSIS - IP68 | | | | |
|-----------------------------|------------------------|---------------|--|-------------------------------------|
| Model | Input Power | Output Signal | Range | Cable Type |
| PMA1101-WP-05-20 | 9-24 VDC @ 30 mA | 0-5 VDC | 20 [MED/Hr] or 117 [μ W/cm ²] | Pigtail w/ 2 meter detachable cable |
| PMA1101-WP-420-20 | 9-24 VDC @ 70 mA | 4-20 mA | 20 [MED/Hr] or 117 [μ W/cm ²] | Pigtail w/ 2 meter detachable cable |
| PMA1102 | \pm 5-12 VDC @ <1 mA | *0-5 VDC | 20 [MED/Hr] or 117 [μ W/cm ²] | 15' cable stripped/tinned |



| WATERPROOF UNDERWATER CHASSIS - IP68 | | | | |
|--------------------------------------|------------------------|---------------|--|------------------------------------|
| Model | Input Power | Output Signal | Range | Cable Type |
| PMA1104 | \pm 5-12 VDC @ <1 mA | *0-5 VDC | 20 [MED/Hr] or 117 [μ W/cm ²] | Customer to define length required |



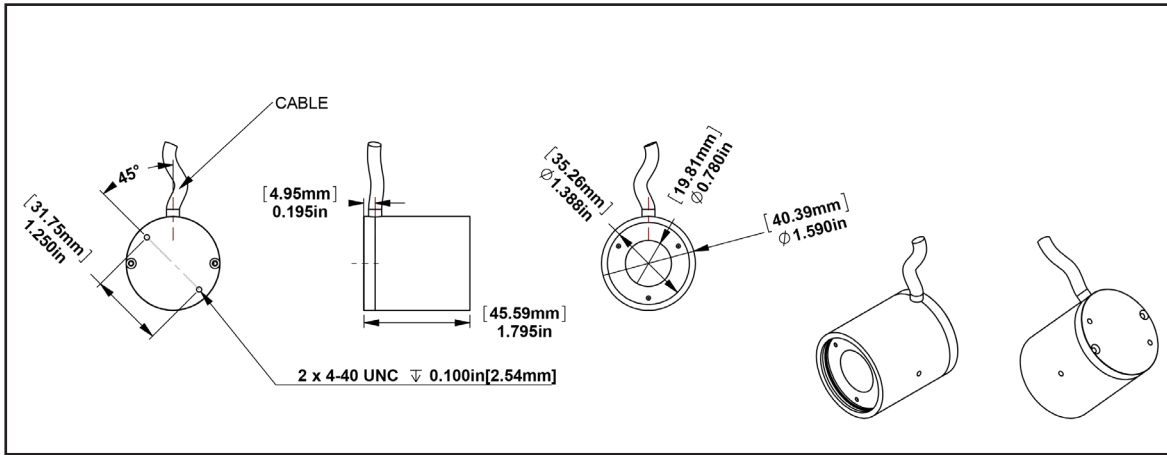
| LOW PROFILE CHASSIS - IP60 | | | | |
|----------------------------|------------------------|---------------|---|-------------------------------------|
| Model | Input Power | Output Signal | Range | Cable Type |
| PMA1101-F-05-20 | 9-24 VDC @ 30 mA | 0-5 VDC | 20 [MED/Hr] or 117 [μ W/cm ²] | Pigtail w/ 2 meter detachable cable |
| PMA1101-F-420-20 | 9-24 VDC @ 70 mA | 4-20 mA | 20 [MED/Hr] or 117 [μ W/cm ²] | Pigtail w/ 2 meter detachable cable |
| PMA1101-F | \pm 5-12 VDC @ <1 mA | *0-5 VDC | 200 [MED/Hr] or 1,170 [μ W/cm ²] | 6' cable stripped/tinned |

*0 to Supply -0.5 Volts

One minimal erythema dose (MED) equals 21 [mJ/cm²]

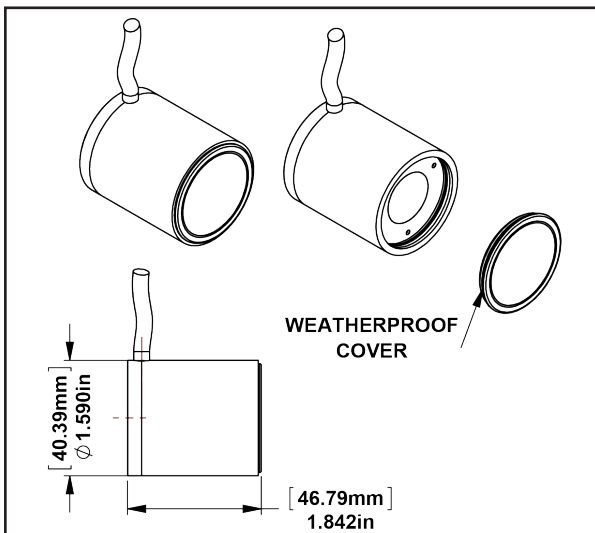
Custom ranges, cable lengths, and cable types are available upon request – please consult factory for details

Standard Chassis



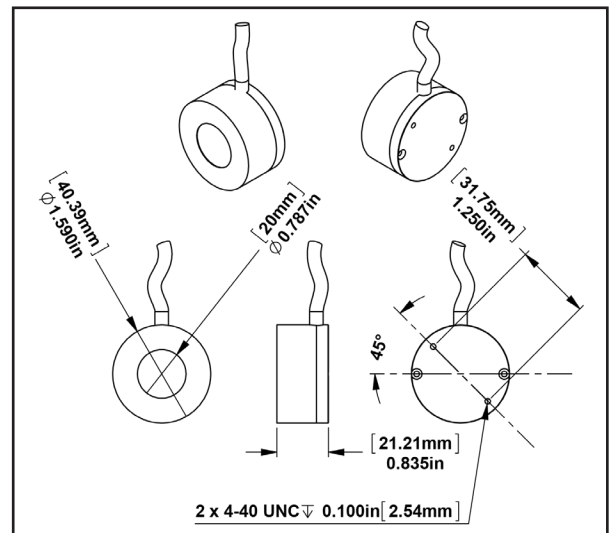
Est. Weight: 4 oz. (113 g)

Weatherproof Chassis



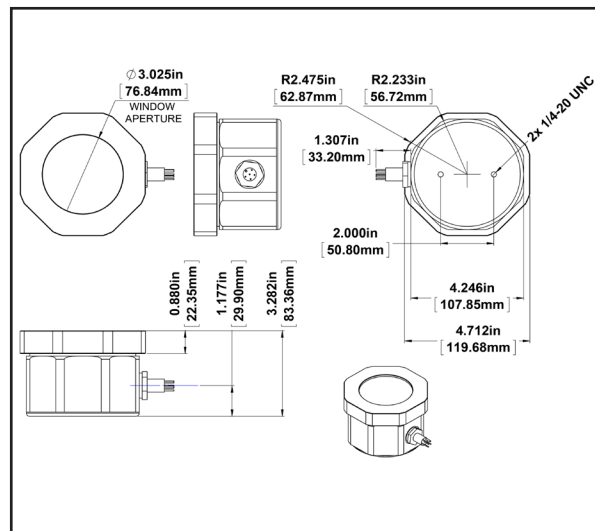
Est. Weight: 4.2 oz. (119 g)

Low Profile Chassis



Est. Weight: 2.2 oz. (62 g)

Waterproof Underwater Housing



Est. Weight: 3.7 lbs. (1678 g)

Analog Wiring Chart

| WIRE COLOR | PMA11xx-420 | PMA11xx-05 | PMA11xx |
|---------------|---------------|--------------------|-----------------------------|
| White | Power Ground* | Signal Out 0-5 VDC | Signal Out 0 to Vin-0.5 VDC |
| Blue | | Power Ground | Power Ground |
| Green | | | Analog Ground |
| Red | | | Vin +5-12 VDC |
| Orange | | | Vin -5-12 VDC |
| Yellow | | | Signal Out 0 to Vin-0.5 VDC |
| Black | | Analog Ground | |
| Pink | | Vin 9-24 VDC | |
| Brown | Vin 9-24 VDC* | | |
| Bare or Braid | | Shield | Shield |
| A/C Plug | | | |

*Current meter is connected in series with power supply and sensor

Since 1967, Solar Light Company, LLC has been recognized worldwide as America's premier manufacturer of Precision Solar Simulators and Light Sources, Light Measurement Instrumentation, UV Transmittance Analyzers, Meteorological Instrumentation, and Digital and Analog Sensors. Our advanced line of UV, visible, and IR radiometers and light meters measure laboratory, industrial, environmental, and health related light levels with NIST traceable accuracy. Column ozone, aerosol, and water vapor thickness measurements, in addition to long-term global ultraviolet radiation studies all over the world are performed using our atmospheric line of instrumentation. Solar Light also provides NIST traceable spectroradiometric analyses, calibrations for light meters and light sources, accelerated ultraviolet radiation degradation testing of materials, and OEM instrumentation and monitors. Please visit our website for more details, specifications, and pictures!



State Of The Art Solar Simulators available in 150-1000+ watt UV or AM variations for a variety of applications including PV Cell Testing, Materials Testing, Pre-Irradiation for *In Vitro* Broad Spectrum Sunscreen Testing, SPF Testing, and much more.



Multi-Functional Professional Grade Radiometers available with and without data logging, and compatible with over 130 Solar Light PMA-Series Sensors to measure UV, Visible and IR wavelengths. Specialty Meters also available to measure UV Radiation, SUV/UVA, Scotopic/Photopic Spectra, and much more.



Advanced NIST-Traceable Sensors for accurate measurement of UVA, UVB, UVA+B, UVC, Visible, IR, Photostability, Temperature, and Custom Wavelength – well over 130 models in both digital and analog configurations, all compatible with our Radiometers.



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