

Solar Light's **Model PMA2101 Digital 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 closely follows 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. The angular response of the PMA2101 sensor is cosine corrected, and suitable for measurements of diffuse radiation or radiation from extended sources. Several packages are available for different types of environments, including standard, low profile, weatherproof, and waterproof applications.



Applications

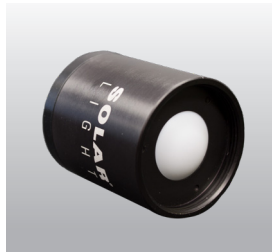
- Laboratory and Industrial Radiometry
- Skin and SPF Testing
- Clinical Studies
- Phototherapy
- Environmental Monitoring
- Material Testing
- UV-B Transmission Measurements
- Agriculture
- Biological Studies

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



SOLAR[®] LIGHT

Digital Sensors Erythema Sensor PMA2101

Measures Biologically Effective Ultraviolet
Radiation from Sun and Artificial Sources



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 Chassis - 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 Chassis (submersible up to 100 meters)
- Analog Model Also Available (Model PMA1101)

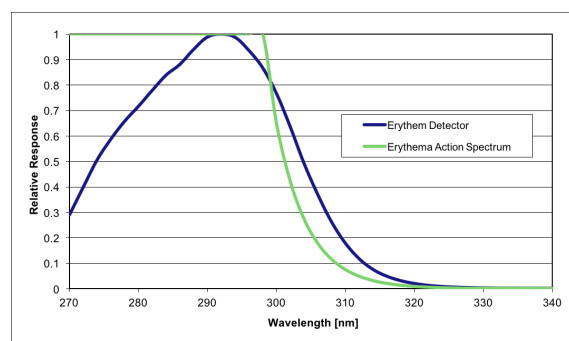


Fig. 1. Linear Spectral Response

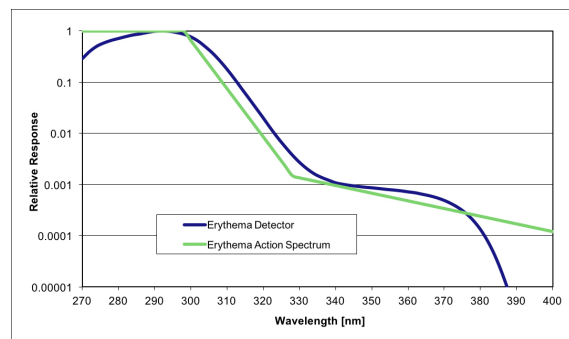


Fig. 2. Log Spectral Response

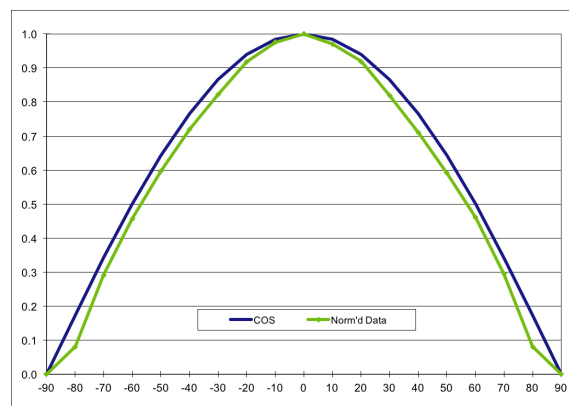


Fig. 3. Cosine Response

SPECIFICATIONS	
Spectral Response	Follows Erythema Action Spectrum, Figure 1
Cosine Response	5% for Angles <60° (Standard Chassis)
Range	*See model chart on the next page
Display Resolution	*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 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. 2 [MED/hr]
16S-Series Solar Simulator	6 [MED/hr]
REFERENCES	
McKinlay A.F. and B.L. Diffey, "A reference action spectrum for ultraviolet induced erythema in human skin", CIE Journal, 6, 17-22, 1987 Morys M., D. Berger, "Accurate measurements of biologically effective ultraviolet radiation" SPIE Proc. 2049, pp. 152-161, 1993. Parrish J.A., K.F.Jaenicke, R.R. Anderson "Erythema and melanogenesis action spectra of normal human skin" Photochem. Photobiol. 36, pp. 87-191 (1982)	

Part Number: 210004

Revision Level: C

Specifications subject to change without notice.

Partial Model Selection Chart



STANDARD CHASSIS - IP60

Model	Range	Display Resolution
PMA2101S-UVS	50 [MED/Hr] or 300 [μ W/cm ²]	0.001 [MED/hr] or 0.01 [μ W/cm ²]
PMA2101	200 [MED/Hr] or 1,160 [μ W/cm ²]	0.001 [MED/hr] or 0.01 [μ W/cm ²]



WEATHERPROOF CHASSIS - IP68

Model	Range	Display Resolution
PMA2102C-WP	20 [MED/Hr] or 120 [μ W/cm ²]	0.001 [MED/hr] or 0.01 [μ W/cm ²]



WATERPROOF UNDERWATER CHASSIS - IP68

Model	Range	Display Resolution
PMA2104-UW	20 [MED/Hr] or 120 [μ W/cm ²]	0.001 [MED/Hr] or 0.01 [μ W/cm ²]



LOW PROFILE CHASSIS - IP60

Model	Range	Display Resolution
PMA2101-F	200 [MED/Hr] or 1,160 [μ W/cm ²]	0.001 [MED/Hr] or 0.01 [μ W/cm ²]

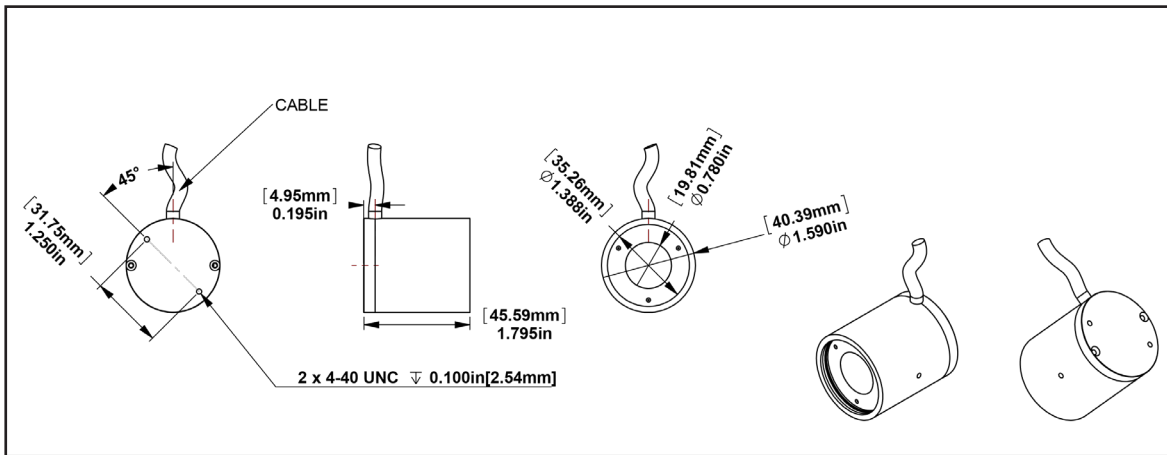
CABLE LENGTHS

Standard Chassis	6ft Straight Cable (1.82m) (Custom Lengths Available)
Weatherproof Chassis	15ft Standard Cable (4.57m) (Custom Lengths Available)
Waterproof Underwater Chassis	Cable Length by Request. Specify up to 100 Meters.
Low Profile Chassis	6ft Straight Cable (1.82m) (Custom Lengths Available)

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

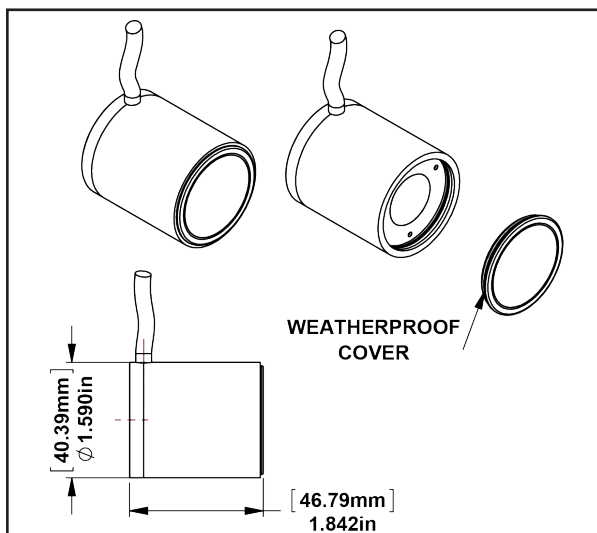
Custom ranges, cable lengths, and cable types are available upon request – please consult factory for details

Standard Chassis



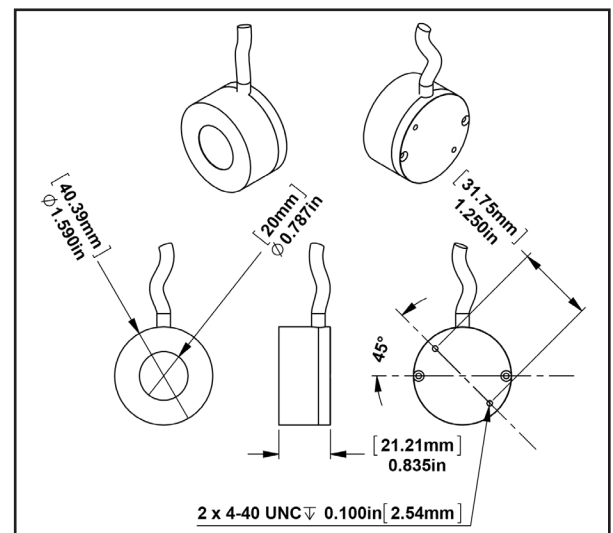
Est. Weight: 4 oz. (113 g)

Weatherproof Chassis



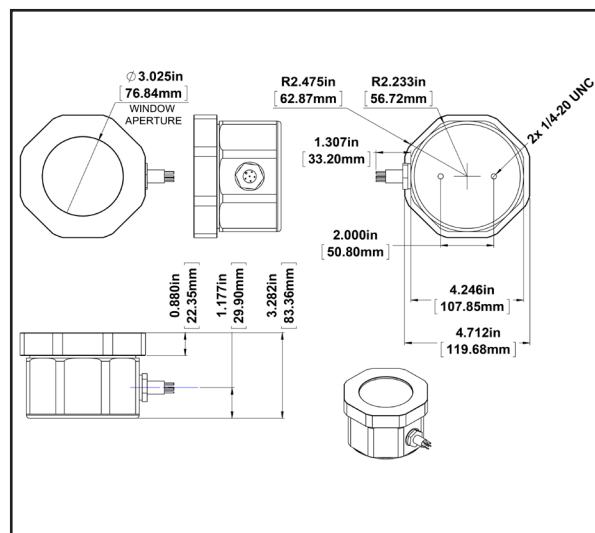
Est. Weight: 4.2 oz. (119 g)

Low Profile Chassis



Est. Weight: 2.2 oz. (62 g)

Waterproof Underwater Chassis



Est. Weight: 3.7 lbs. (1678 g)

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.



Ultraviolet Transmittance Analyzers available as complete integrated turnkey systems to meet the latest ISO24443 requirements.



Handheld Ozonometers and Sunphotometers for fast and dependable Column Ozone, Aerosol, and Water Vapor Thickness measurements, in addition to long-term global ultraviolet radiation studies.