

# Sensors • High Intensity UVA Probe for UV Curing

PMA2112

Designed to Withstand  
Temperatures Up to 400°C  
and Very High Radiation Levels



## Applications

- UV Curing, Printing and Photolithography
- Monitoring of UV Sources Stability and Lifetime
- Measurements in Hazardous Environment
- Industrial Radiometry

## Features and Benefits

- High Sensitivity
- High Dynamic Range
- High Temperature Operation
- Durable Construction
- Excellent Long-Term Stability
- NIST Traceable Calibration
- Radiometric Units
- Probe Electrically Isolated from the Meter
- Easy to Install

The PMA2112 is a UV-A radiometer sensitive to radiation in the range from 320 to 390nm with the peak sensitivity around the 365nm mercury emission line. The radiation is captured by a diffuser mounted at the end of 18" long probe and delivered to the sensor through a quartz light guide encapsulated in a metal envelope. This construction places the UV sensor far from the point of measurement, making the probe suitable for high temperature applications, up to 400°C.

### Calibration

The PMA2112 detector is calibrated spectroradiometrically. A high pressure xenon arc lamp with 1 mm SHOTT WG305 filter is measured spectroradiometrically and a total power in the 320-390nm region is integrated. The PMA2112 detector is then exposed to the same source and adjusted to read the same power as the spectroradiometric measurement. The PMA2112 detector will measure accurately broad band sources, such as xenon arc lamps, and mercury vapor sources with most of the energy centered around 365nm.

Since the spectral response of the PMA2112 detector differs from an ideal UV-A response (step function from 320 to 400nm) the reading of a source with substantially different spectral power distribution would have to be corrected with a multiplicative factor [ref. 1]. This correction factor can be calculated knowing the relative spectral power distribution of the source and the original detector calibration method.

Yearly re-calibration of the detector is required.

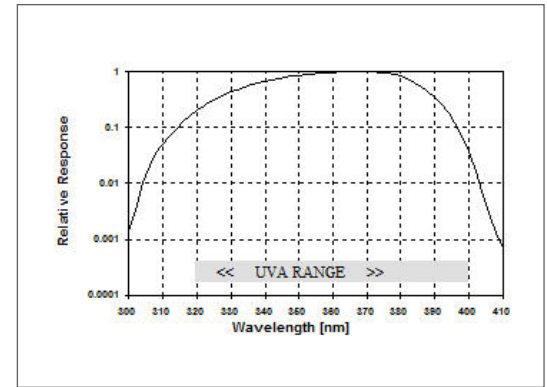


Fig. 1. PMA2112 Spectral Response

Specifications	
Spectral Response	320-390nm, Figure 1
Angular Response	Cosine Corrected
Range	20 [W/cm <sup>2</sup> ] = 200 [kW/m <sup>2</sup> ]
Display Resolution	00.1 [mW/cm <sup>2</sup> ]
Operating Environment	0 to 400°C (Tip of the Probe) 0 to +50 °C (UV Sensor)
Temperature Coefficient	<0.05%/°C
Cable	6 ft. Straight Cable (1.82m)
Diameter	1.6" (40.6mm)
Length	20" (50cm)
Weight	15 oz. (400 grams)
Irradiance from Typical Sources	Solar Radiation, 30°. SZA, 3mm Ozone, Clear Sky: Approx. 4 mW/cm <sup>2</sup>
150W Xenon Lamp at 8"	Approx. 0.5 mW/cm <sup>2</sup>
Solar Simulator Model 16S	50 mW/cm <sup>2</sup>
UV-Curing System	0.1-1 W/cm <sup>2</sup>
Wire Connections	
Wire Color	PMA112 Signal
White and Yellow	Analog Output • (0 to Supply - 0.5 Volts) • Connect Wires Together
Green and Blue	Analog/Power Ground, Connect Wires Together
Red	+5V to +12V Power Input
Braid	Cable Shield
Ordering Information	
PMA2112	High Intensity UV-A Probe
References	
<sup>1</sup> Nichodemus F., "Self study manual on optical radiation measurements", NBS Technical Note 910-1 (1976)	

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