

Sensors • Bilirubin Phototherapy Detector

PMA2123

Custom Designed Detector
for Phototherapeutic Applications



Applications

- Jaundice Phototherapy
- Phototherapy Lamp Monitoring
- Determining Length of Exposure
- Clinical Studies

Features and Benefits

- High Sensitivity
- Dynamic Range 2×10^5
- Excellent Long-Term Stability
- Cosine Corrected
- NIST Traceable Calibration
- Ease of Use
- Selectable Units

The PMA2123 is an accurate, stable detector designed to measure the output of phototherapy lamps in the blue light portion of the spectrum. Blue lights, or bili lights, are used in neonatal wards to treat infant hyperbilirubemia (jaundice).

Blue light in the spectral range of 425-475nm chemically alters bilirubin below the surface of the skin into products the infant can eliminate in urine. The standard PMA2123 detector has a narrow spectral response from 425-475nm.

The response closely matches the action spectrum of bilirubin breakdown. The response to the blue light action band will be accurate when measuring the output of any lamp, in particular, daylight florescent lamps and quartz halogen lamps, also commonly used for treatment. The PMA2123 detector is calibrated to read in $\mu\text{W}/\text{cm}^2$.

The radiation from bili lights is measured before and during treatment to check the condition of the lamps, and to set the radiation level for the prescribed treatment level. The 425-475nm blue action band is considered to be the most efficient for neonatal jaundice treatment. However, broader wavelength bands of light are in use. For those using a wider bandwidth the PMA2123W bilirubin phototherapy detector covers the spectral range of 400-520nm.

Calibration

The PMA2123 detector is calibrated by means of a NIST traceable quartz standard lamp.

Specifications	
Spectral Response	425-475nm, Figure 1
Angular Response	5% for Angles <60°, Figure 2
Range	2000 [mW/cm ²] or 20,000 [W/m ²]
Display Resolution	0.01 [MED/Hr], 0.01[μW/cm ²]
Operating Environment	15 to 140 °F (-10 to +60 °C) No Precipitation
Temperature Coefficient	<0.1% /°C for Solar Radiation
Cable	1 ft. Retractable to 5 ft. (0.3m/1.5m)
Diameter	1.6" (40.6mm)
Height	1.8" (45.8mm)
Weight	7.1 oz. (200 grams)
Ordering Information	
PMA2123	Bilirubin Phototherapy Detector
See list of accessories for mounting hardware available	
References	
¹ ACGIH Technical Affairs Office, 1330 Kemper Meadow Drive, Cincinnati, Ohio 45240.	

SL/Sensors/PMA2123_09/2014

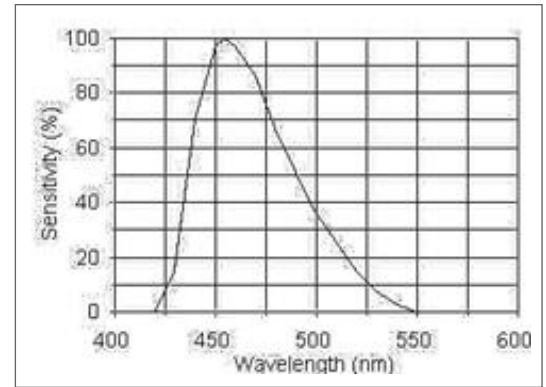


Fig. 1. PMA2123 Spectral Response

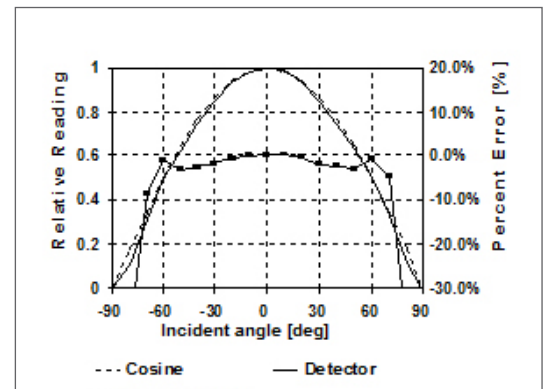


Fig. 2. PMA2123 Solar Simulator Spectral Output