

LP\_\_01 SERIES



**LPPHOT01 - LPPAR01 - LPRAD01- LPUVA01 - LPUVB01 - LPUVC01 - PHOTOMETRIC/RADIOMETRIC PROBES**

The probes of the series LP...01 allow measurement of photometric and radiometric quantities such as illuminance (lux), irradiance (W/m<sup>2</sup>) across VIS-NIR, UVA, UVB, UVC spectral regions, the number of photons per time unit and area in the PAR region (400 nm...700 nm).

In probes LP...01 there is no need for external power supply. The output signal in mV is given through a resistor shunting the photodiode ends. The photocurrent generated by the photodiode when hit by light, is converted to a potential difference, which is read by a voltmeter. Once the DDP (Potential Difference) is known, the measured value can be calculated through the calibration factor.

Each probe is individually calibrated. The sensitivity factor is marked on the housing of the probe and is specific to that probe. LPPHOT01 and LPPAR01 probes are equipped with cosine corrected diffuser.

LP...01 probes are suitable for **indoor applications** which requires the constant monitoring of the quantities specified. The output signal can be amplified or converted into a 4...20 mA or 0...10 Vdc signal by using a converter of the series HD978TR3 (4...20 mA) or HD978TR4 (0...10 Vdc) for DIN rail attachment, or the wall mounting types HD978TR5 (4...20 mA) and HD978TR6 (0...10 Vdc).

**LPPHOT01**

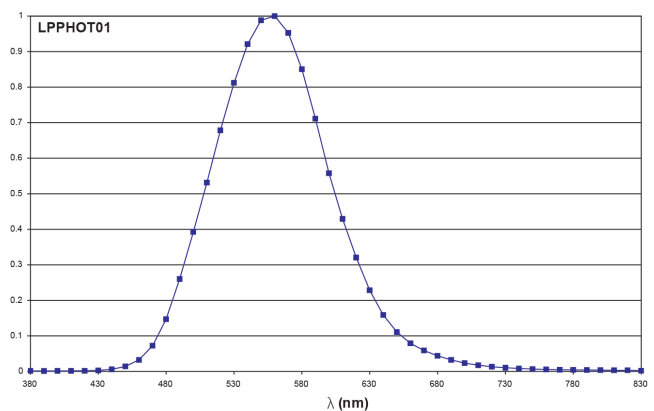
The LPPHOT01 probe (class B luxmeter) measures **illuminance** (lux) defined as the ratio between the luminous flux (lumen) passing through a surface and the surface area (m<sup>2</sup>).

The spectral response curve of a photometric probe is equal to the one of the human eye, known as standard photopic curve V(λ).

The difference in spectral response between LPPHOT01 and the standard photopic curve V(λ) is calculated by means of the error f<sub>1</sub>'.

The calibration of the probe is performed by comparing it to a luxmeter calibrated by a Primary Metrological Institute and is carried out by illuminating the probe with a standard illuminant A (a reference incandescent lamp with a colour temperature of 2856K).

Technical specifications	
Typical sensitivity	0.5...1.5 mV/klux
Measuring range	0...200000
Spectral range	V(λ)
Calibration accuracy	<4%
f <sub>1</sub> ' (V(λ) match error)	<6%
f <sub>2</sub> (cosine response/directional error)	<3%
f <sub>3</sub> (linearity)	<1%
f <sub>5</sub> (fatigue)	<0.5%
Operating temperature	0...50°C
Output impedance	0.5...1 kΩ
Dimensions	Ø 30 mm x 38 mm height



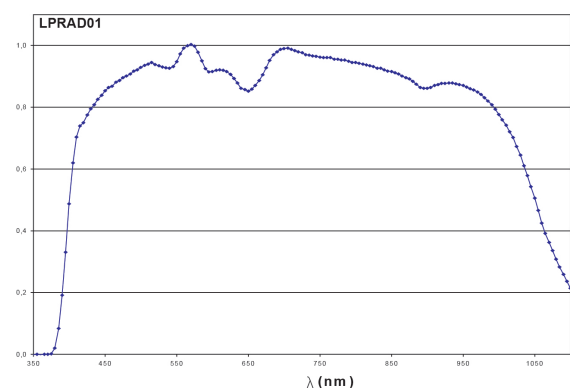
LPPHOT01 spectral response curve

**LPRAD01**

The LPRAD01 probe measures **irradiance** (W/m<sup>2</sup>) defined as the ratio between the flow of energy (W) crossing a surface and the area of the surface considered (m<sup>2</sup>) in the spectral region of the VIS-NIR (400 nm...1050 nm).

Probe calibration is carried out by using 577/579 nm lines of a Xe-Hg lamp, filtered through a special interferential filter. The temperature has a negligible influence on the spectral response of the probe.

Technical specifications	
Typical sensitivity	2.6 μV/μW/cm <sup>2</sup>
Measuring range	0...200 mW/cm2
Spectral range	≈400 nm...≈1050 nm
Calibration accuracy	<6%
f <sub>2</sub> (cosine response/directional error)	<6%
Operating temperature	0...50°C
Output impedance	1 kΩ
Dimensions	Ø 30 mm x 38 mm height



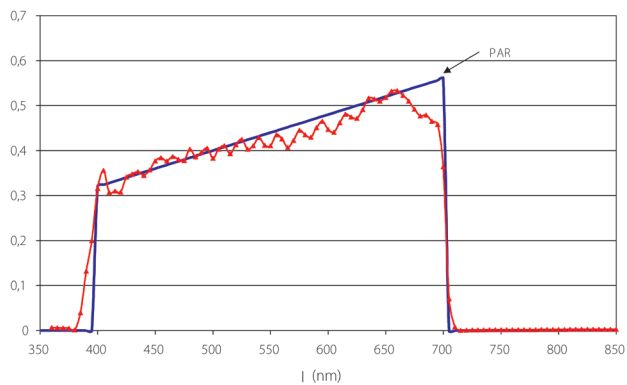
LPRAD01 spectral response curve

## LPPAR01

The LPPAR01 probe measures the ratio between the number of photons that strike a surface in one second, in the 400 nm...700 nm spectral range and the surface area (m<sup>2</sup>). This quantity is defined as **PAR: Photosynthetically Active Radiation**.

The probe calibration is carried out by using an halogen lamp, with a known spectral irradiance in a specific spectral range.

Technical specifications	
Typical sensitivity	30 $\mu\text{V}/\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$
Measuring range	0...5000 $\mu\text{mol}\cdot(\text{m}^{-2}\cdot\text{s}^{-1})$
Spectral range	400 nm...660 nm
Calibration accuracy	<6%
$f_2$ (cosine response/directional error)	<6%
Operating temperature	0...50°C
Output impedance	1 k $\Omega$
Dimensions	$\varnothing$ 30 mm x 38 mm height



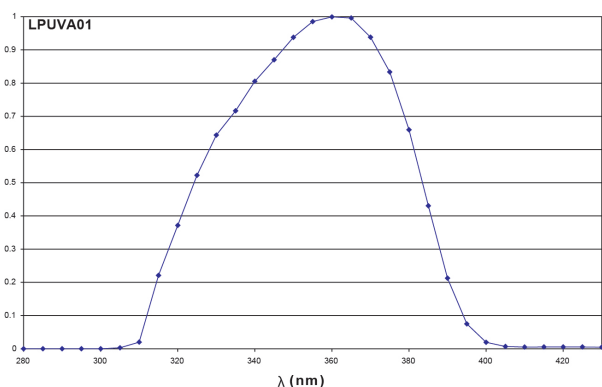
LPPAR01 spectral response curve

## LPUVA01

The LPUVA01 probe measures **irradiance** (W/m<sup>2</sup>) defined as the ratio between the radiant flux (W) passing through a surface and the surface area (m<sup>2</sup>) in the **UVA (315 nm...400 nm)** spectral range. Thanks to a new type of photodiode, LPUVA01 is blind to visible and infrared light.

The calibration is performed by reference to our primary standard with monochromatic light at 365 nm obtained separating the emission line of a Xe-Hg lamp with an inferential filter.

Technical specifications	
Typical sensitivity	2.6 $\mu\text{V}/\mu\text{W}/\text{cm}^2$
Measuring range	0...200 $\text{mW}/\text{cm}^2$
Spectral range	peak at $\approx$ 360 nm and FWHM 60 nm
Calibration accuracy	<6%
Operating temperature	0...50°C
Output impedance	1 k $\Omega$
Dimensions	$\varnothing$ 30 mm x 38 mm height



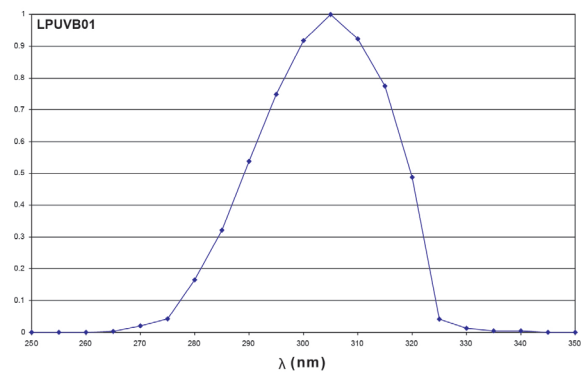
LPUVA01 spectral response curve

## LPUVB01

The LPUVB01 probe measures **irradiance** (W/m<sup>2</sup>) defined as the ratio between the radiant flux (W) passing through a surface and the surface area (m<sup>2</sup>) in the **UVB (280 nm...315 nm)** spectral range. Thanks to the use of a new type of photodiode, the LPUVB01 probe is blind to visible and infrared light.

Probe calibration is carried out by using a 313 nm line of a Xe-Hg lamp, filtered through a special interferential filter. Measurement is carried out by comparison with the primary standards, assigned to Delta OHM Metrological Laboratory.

Technical specifications	
Typical sensitivity	0.19 $\mu\text{V}/(\mu\text{W}/\text{cm}^2)$
Measuring range	0...200 $\text{mW}/\text{cm}^2$
Spectral range	peak at $\approx$ 305 nm and FWHM 31 nm
Calibration accuracy	<8%
Operating temperature	0...50°C
Output impedance	2 k $\Omega$
Dimensions	$\varnothing$ 30 mm x 38 mm height



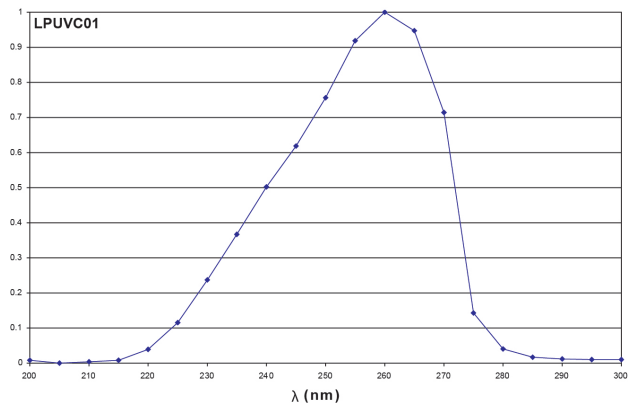
LPUVB01 spectral response curve

## LPUVC01

The LPUVC01 probe measures **irradiance** (W/m<sup>2</sup>) defined as the ratio between the radiant flux (W) passing through a surface and the surface area (m<sup>2</sup>) in the **UVC (200 nm...280 nm)** spectral range. Thanks to the use of a new type of photodiode, the LPUVC01 probe is blind to visible and infrared light.

The probe calibration is carried out by measuring irradiance coming from an Hg lamp at 254 nm.

Technical specifications	
Typical sensitivity	0.25 $\mu\text{V}/(\mu\text{W}/\text{cm}^2)$
Measuring range	0...200 $\text{mW}/\text{cm}^2$
Spectral range	peak at 260 nm and FWHM 32 nm
Calibration accuracy	<10%
Operating temperature	0...50°C
Output impedance	2 k $\Omega$
Dimensions	$\varnothing$ 30 mm x 38 mm height



LPUVC01 spectral response curve