

HL-3 Series Calibrated Vis-NIR Light Sources

Calibrated Light Sources for the Highest Level of Confidence



The HL-3 and HL-3 *plus* series of calibrated Vis-NIR light sources can be used to calibrate the absolute spectral response of a spectrometer system. By using these new sources and Ocean Optics software, you can determine absolute intensity values -- to a high degree of accuracy -- at wavelengths from 350-2400 nm.

The HL-3 and HL-3 *plus* sources are specifically calibrated for use with a cosine corrector or an integrating sphere. Additionally, these sources are calibrated using a procedure and documentation patterned after the ISO 17025, IEC Guide 115 and JCGM100:2008 (GUM) protocols*.

HL-3 *plus* Options

The HL-3 *plus* series offers an industry-leading 3% maximum uncertainty at 900 nm and a calibration over the range of 350-1100 nm with the option to select an extended calibration to 2400 nm. These sources also feature an integrated shutter controlled by either TTL pulses or manually on the front of the instrument. The internal shutter blocks light completely from the sampling device, providing the most accurate dark measurements.

HL-3 *plus* Vis-NIR Calibrated Light Source Options

Features	HL-3 <i>plus</i> Models			
	HL-3 <i>plus</i> -CAL	HL-3 <i>plus</i> -CAL-EXT	HL-3 <i>plus</i> -INT-CAL	HL-3 <i>plus</i> -INT-CAL-EXT
Extended calibration:	No	Yes	No	Yes
Calibrated wavelength range:	350-1100 nm	350-2400 nm	350-1100 nm	350-2400 nm
Calibrated for:	Absolute irradiance [μW/nm/cm ²]	Absolute irradiance [μW/nm/cm ²]	Absolute radiance [μW/nm]	Absolute radiance [μW/nm]
Shutter:	Yes	Yes	Yes	Yes
Spectrometer system connection:	cosine corrector	cosine corrector	integrating sphere	integrating sphere
Calibration uncertainties for one standard deviation (k=1):	HL-3 <i>plus</i> -CAL	HL-3 <i>plus</i> -CAL-EXT	HL-3 <i>plus</i> -INT-CAL	HL-3 <i>plus</i> -INT-CAL-EXT
@ 400 nm	5.1%	5.1%	9% (preliminary value)	9% (preliminary value)
@ 500 nm	3.7%	3.7%		
@ 600 nm	3.0%	3.0%		
@ 900 nm	3.0%	3.0%		
@ 1300 nm	NA	3.1%		
@ 1600 nm	NA	3.0%		
@ 2200 nm	NA	10.9%		

HL-3 Options

The HL-3 series of light sources offers as low as 10% uncertainty at 900 nm and a calibration over the range of 350-1100 nm with the option to select an extended calibration to 2400 nm.

HL-3 Standard Vis-NIR Calibrated Light Source Options

Features	HL-3 Models			
	HL-3-CAL	HL-3-CAL-EXT	HL-3-INT-CAL	HL-3-INT-CAL-EXT
Extended calibration:	No	Yes	No	Yes
Calibrated wavelength range:	350-1100 nm	350-2400 nm	350-1100 nm	350-2400 nm
Calibrated for:	Absolute irradiance ($\mu\text{W}/\text{nm}/\text{cm}^2$)	Absolute irradiance ($\mu\text{W}/\text{nm}/\text{cm}^2$)	Absolute radiance ($\mu\text{W}/\text{nm}$)	Absolute radiance ($\mu\text{W}/\text{nm}$)
Calibration uncertainty for one standard deviation ($k = 1$) from 400-1600 nm:	10%	10%	15% (preliminary value)	15% (preliminary value)
Shutter:	No	No	No	No
Spectrometer system connection:	cosine corrector	cosine corrector	integrating sphere	integrating sphere

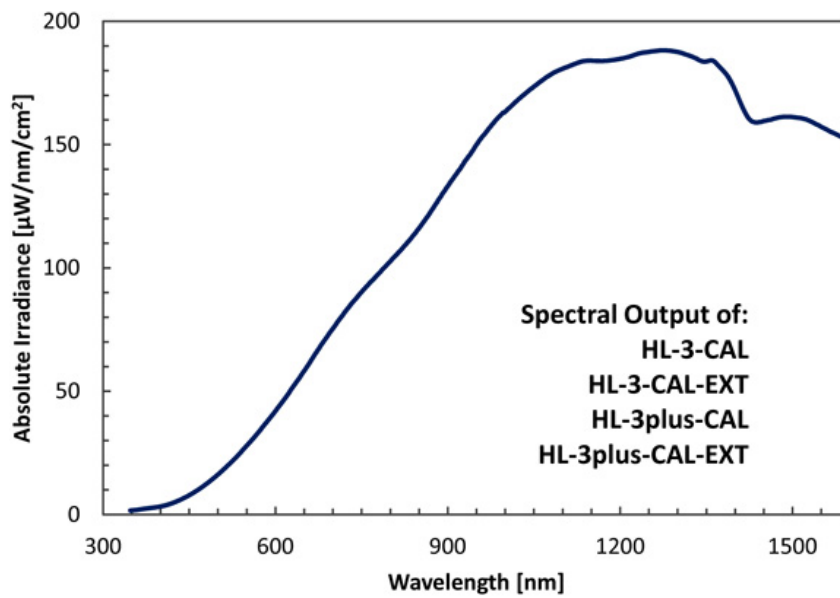
HL-3 Recalibration Service

Item	Description
HL-RECAL	Recalibration of HL-3 and HL-3 <i>plus</i> Vis-NIR light sources
HL-EXT-RECAL	Extended-range recalibration of HL-3 and HL-3 <i>plus</i> Vis-NIR light sources
HL-INT-RECAL	Recalibration of HL-3 and HL-3 <i>plus</i> Vis-NIR light sources for integrating spheres
HL-INT-EXT-RECAL	Extended-range recalibration of HL-3 and HL-3 <i>plus</i> Vis-NIR light sources for integrating spheres

HL-3 Calibrated Sources -- Specifications

Calibration valid for:	50 hours
Bulb life:	900 hours
Power consumption:	600 mA @ 12 VDC
Time to stabilized output:	~30 minutes
Connector:	CC-3-UV-S or 6.35 mm barrel for cosine corrector or integrating sphere with minimum port diameter of 6 mm (INT types)

HL-3-CAL Calibrated Sources Spectral Output



HL-3-CAL-INT Calibrated Sources with Integrating Sphere Spectral Output

