

Illuminance

VL-3701: Photopic with DIN Class A Parameters

The VL-3701 is a high quality detector for the measurement of illuminance. Its specifications satisfy the requirements for lux detector heads according to DIN 5032 Part 7. The VL-3701's spectral adaptation to the $V(\lambda)$ function for daylight vision is better than 3%. The precise adaptation of its spectral sensitivity to the ideal $V(\lambda)$ function makes this detector head appropriate where sharply different spectra need to be meas-

ured (arc lamps, color monitors, LEDs, etc.). The deviation from the cosine function is $< 1.5\%$. The low detector profile of 20 mm allows its use in applications where the height of the detectors surface over the illuminated surface is restricted. Calibration of the illuminance, in lux or fc is performed at Gigahertz-Optik's Calibration Laboratory for Optical Radiation Quantities, and is supported by a factory certificate.

VL-3702: Photopic with DIN Class B Parameters

The VL-3702 detector is constructed the same as the VL-3701 model, but has a lower precision of photometric adaptation, at 6 %, sufficient for DIN quality

class B, and a maximum deviation of 3 % from the cosine function. Available versions and calibration are the same as model VL-3701.

VL-3704: Photopic with DIN Class B Parameters

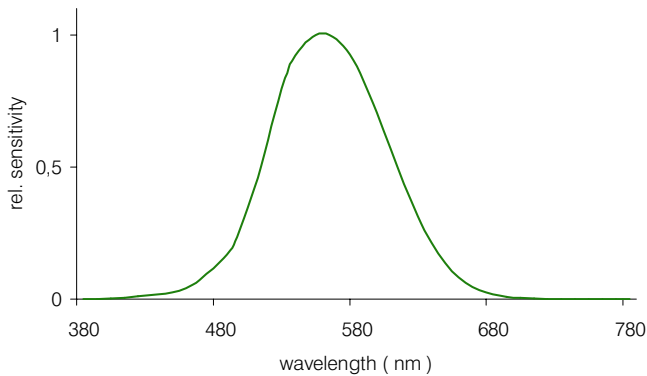
The VL-3704 detector specifications are equal to that of the VL-3702 detector except that it is less sensitive. This allows the VL-3704 detector to be used with

optometers like the X11, X91 and P-9802 with amplifiers having a limited signal range.

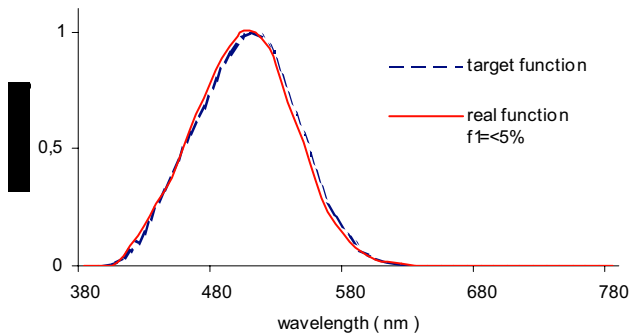
VL-3705: Scotopic

The spectral response of the human eye changes with light intensity. In daylight conditions >0.1 lx the photopic action spectrum applies. In low brightness applications 0.01 to 0.0001 lx the spectral eye response

changes to the scotopic (dark adapted) action spectrum. Light intensities below 0.0001 lx can not be detected by the human eye. The VL-3705 detector offers a precise scotopic spectral match



Photopic Spectral Response



Scotopic Spectral Response

with an $f_1 = < 5\%$. This is within DIN class B specifications qualifying the VL-3705 for use in most low light level application.

Ordering Information & typical Specifications										
Model	λ_{resp}	f_1	Typical Sensitivity		I_{max}	Sensing Area	cable	Operation	plug	package
		$\leq \%$	nA/lx	nA/fc						
VL-3701	$V(\lambda)$	3	0.5	5	1	7 mm Ø	2	5 - 40	1,2,4	90
VL-3702	$V(\lambda)$	5	0.5	5	1	7 mm Ø	2	5 - 40	1,2,4	90
VL-3704	$V(\lambda)$	5	20 pA/lx	200 pA/fc	1	7 mm Ø	2	5 - 40	4	90
VL-3705	$V'(\lambda)$	5	0.5	5	1	7 mm Ø	2	5 - 40	1,2,4	90
K-VL37xx-I	Calibration of illuminance sensitivity in lx or fc. Including K-SR with new detector order. xx = model number									
KDW-S	Calibration of spectral sensitivity with accessory components									
KDW-P	Calibration of integral photometric sensitivity in combination with accessory									
K-FOV	Calibration of cosine field of view function. Included with new detector order									

VL-37xx Illuminance Detectors comparison DIN 5032 Class Limits (%)						
Characteristic	Symbol	DIN 5032 Class A	DIN 5032 Class B	VL-3701	VL-3702	VL-3704
Calibration Uncertainty	U_{kal}	1.5	3	1.1	1.1	1.1
$V(\lambda)$ Match Characteristic	f_1	3	6	3	5	5
UV Response Characteristic	u	1	2	0.01	0.01	0.01
IR Response Characteristic	r	1	2	0.01	0.01	0.01
Directional Response (Cosine)	f_2	1.5	3	1.5	3	3
Linearity Characteristic	f_3	1	2	0.2	0.2	0.2
Fatigue Characteristic (at 1 klx)	f_5	0.5	1	0.1	0.1	0.1
Temperature Dependence Characterist.	f_6	2	10	1	1	1

Accessories:

Mating SRT-M37 front lens adapters allow VL-37 detectors to be adapted for luminance measurements. See page 89 for specifications.



VL-37 detectors can be combined with integrating spheres for luminous flux measurements. See integrating sphere chapter .

