

**Description**

**X1-1-RCH-116-4**



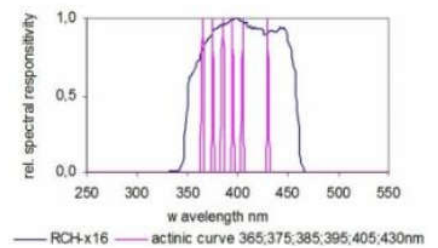
In UV-A and blue light radiation curing, liquids (e.g. inks, coatings and adhesives) are excited by irradiation with high-intensity UV-A and blue light radiation. The curing process is activated by photoinitiators absorbing the UV or blue light energy which triggers the polymerization reactions (crosslinking). In the past, only gas discharge lamps provided sufficient intensity within the photoinitiators' wavelength range for this purpose. Today, these are increasingly being replaced by LEDs that emit in the UV and blue spectral range. In order to ensure optimal triggering of the polymerization, the irradiance of the UV lamp must be set in accordance with the corresponding process parameters. In continuous operation, the constancy of the irradiance must be regulated and readjusted when necessary depending on the aging of the lamps. The required UV radiometer, especially its detector, must be able to withstand the high-intensity UV and blue light radiation as well as the relatively high temperatures.



**Radiometer with detector for measurement of UV-A and blue light**

The X1-1 radiometer from Gigahertz-Optik features an RCH-116-4 detector and is ideal for measurement of the irradiance of high power LEDs in the UV-A and blue light range. The device can accurately measure irradiance levels of up to 40,000 mW/cm<sup>2</sup>. One of the outstanding features of the RCH-116-4 detector is its proven concept of a passive radiation absorber coupled to a UV sensor. This provides stability even in high temperature and intense UV radiation environments. In addition to the passive radiation absorber, the device also has a cosine-corrected field of view. The sensor's housing also serves as a handle. The battery-powered X1-1 optometer supports a usable dynamic range from less than 1 mW/cm<sup>2</sup> to 40,000 mW/cm<sup>2</sup> thanks to its high-end signal amplifier. It can be used to perform precise measurements of up to 5 standard LED wavelengths for which the detector was calibrated for active irradiance. In addition to the CW measurement function, the device also has a dose measurement function. The radiometer can be used with other detectors from the [RCH series](#) . e.g. for gas discharge lamps. Remote control of the device is possible via its user software and a software development kit is offered for integration of the device in the user's own software.

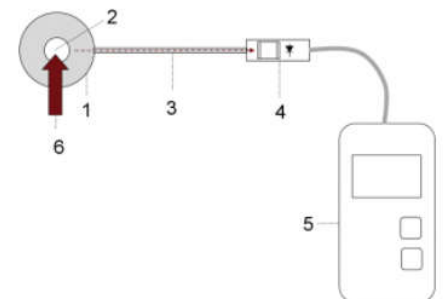
*X1-1 Handheld radiometer with a separate RCH-116-4 detector for measurement of high-power LED lamps in UV-A and blue light radiation curing*



*Typical spectral responsivity of detector RCH-116 with the six calibration wavelength for common LEDs in UV and Blue-light curing application*

**Calibration of the X1-1 RCH-116-4**

One essential quality feature of photometric devices is their precise and traceable calibration. The RCH-116-4 detector is calibrated for standard LED wavelengths: 365 nm, 375 nm, 385 nm, 395 nm, 405 nm, and 430 nm. The calibration is performed by Gigahertz-Optik's calibration laboratory that is accredited by DAkkS (D-K-15047-01-00) for the *spectral responsivity* and *spectral irradiance* according to ISO/IEC 17025. The calibration and calibration values are confirmed by a calibration certificate for every detector.



*1) RCH-116-4 detector 2) Passive radiation absorber 3) fiber 4) Handle (with UV photodiode and filters) outside the UV radiation area 5) X1-1 Radiometer 6) UV irradiation*

## Specifications

General	
Short description	Handheld radiometer with a separate detector measurement of high-power LED lamps in UV-A and blue light radiation curing
Main features	Detector with passive radiation absorber that has a coupled UV sensor
Measurement range	1 mW/cm <sup>2</sup> to 40,000 mW/cm <sup>2</sup> . LED wavelengths: 365 nm, 375 nm, 385 nm, 395 nm, 405 nm, and 430 nm
typical applications	Monitoring and regulation of LED emitters in UV-A and blue light radiation curing
Calibration	Irradiance W/cm <sup>2</sup> . Factory calibration. Traceable to international calibration standards

## Downloads

Type	Description	File-Type	Download
X1-1-RCH-116 Technical Datasheet	X1-1-RCH-116 Brochure	pdf	<a href="https://www.gigahertz-optik.de/assets/Uploads/TD-X1-1RCH-116-EN-sheets.pdf">https://www.gigahertz-optik.de/assets/Uploads/TD-X1-1RCH-116-EN-sheets.pdf</a>

## Purchasing information

Article-Nr	Modell	Description
<b>Product</b>		
15298890	X1-1	Instrument, 2 x 1.5 V AA batteries, USB cable, manual
15297984	RCH-116-4	Detector with rigid light guide. Cable -4 type connector. Calibration with calibration certificate.
15295239	BHO-05	Hardcase for X1 type instrument and one RCH-1 type detector.
<b>Re-calibration</b>		
15300468	K-RCH116-S	Calibration of irradiance sensitivity in A/(W/cm <sup>2</sup> ) and A/(W/m <sup>2</sup> ) at 365nm, 375nm, 385nm, 395nm, 405nm and 430nm. Calibration certificate.  Option: Calibration of the relative spectral responsivity.
15300671	K-X11-C	Current calibration and adjustment of Gigahertz-Optik's optometer X1-1 by use of a calibrated current source. Calibration certificate.
<b>Software</b>		
15298167	S-X1	User software for X1 Optometer.
15298071	S-SDK-X20	Software development kit for software implementation of the X20 electronic into custom made software. Support X1-1, X1-2, X1-PCB.