X1-UV-3726

https://www.gigahertz-optik.com/en-us/product/x1-1-uv-3726/

Product tags: UV , Handheld device

Description

Ultraviolet germicidal irradiation (UVGI) is a sterilization method that uses short wavelength light in the UV-C region (100 nm to 400 nm) to break down microorganisms such as viruses, bacteria, yeasts and fungi. The maximum effectiveness for germicidal activity is around 265 nm. The DNA and RNA of microorganisms absorbs the UV-C radiation, which causes changes in their structure rendering them unable to replicate. Microorganisms can be destroyed in a very short time if exposed to sufficiently high intensity UV-C radiation.

To ensure the germicidal effect, the UV dose must be checked. This is achieved by measuring the UV irradiance at the location of exposure using a UV radiometer.

In addition to checking the desired germicidal effect of high intensity UV radiation, the potential risk to skin and eyes from relatively low UV intensity must also be determined if there is the possibility of human exposure to the UV radiation. Carrying out both measurements with one device requires UV radiometers with a very large dynamic range.

Figure 0: UV-3726 detector head

Figure 1: Mobile UV radiometer with separate measuring device and detector for measuring irradiance and dose of germicidal Hg lamps and UV-C LEDs.

Product description

UV-3726 Irradiance Detector for UV-C LEDs and low-pressure Hg lamps

The UV-3726 model offers all the properties and features of the UV-37 series detectors. They are specially designed for radiometric measurement tasks in the UV spectral region and have been proven in industrial and scientific use over many years.

The UV-3726 detector incorporates a photodiode that is only sensitive in the short-wave spectral range. In conjunction with additional optical filtering, only radiation in the specified spectral sensitivity range is measured. This combination enables the radiometric measurement of UV-C LEDs (Figure 2) and low-pressure mercury lamps (Figure 3). Selectable calibration factors for common UV LED wavelengths and low-pressure Hg lamps increase the measuring accuracy.

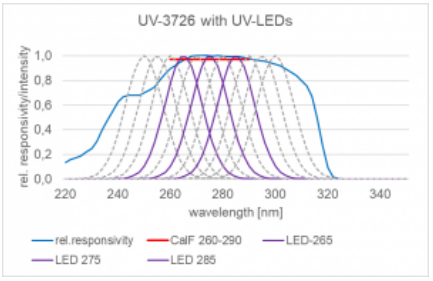
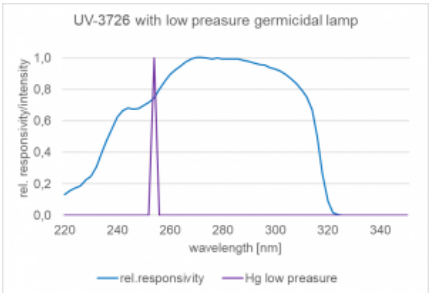


Figure 2: Typical spectral sensitivity of the UV-3726 detector shown together with typical germicidal UV LEDs at 265, 275 und 285 nm.

To measure the irradiance, the detector's entrance optic is a diffuser with a cosine field of view, which must be positioned in the desired plane of measurement. The diffuser, optical correction filter and photodiode are pre-aged with UV radiation to significantly reduce the inevitable aging process that results from exposure to UV radiation. The UV-3726 detector shows very little aging effects even in intensive use. Any changes are recorded and corrected as part of the recommended annual recalibration.



The photodiode of the UV-3726 detector offers a strictly linear relationship between the measurement signal and the irradiance in the range from a few pico amps (10^{-12} A) to several micro amps (10^{-6} A). When connected to

the Gigahertz-Optik X1 meter (Figure 1) it provides a linear measurement range up to at least 1000 mW / cm² with a resolution of 0.002 µW / cm².

Figure 3: Typical spectral sensitivity of the UV-3726 detector shown together with low-pressure Hg germicidal lamp at 254 nm.

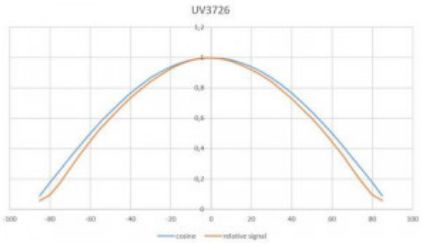


Figure 4: Typical field of view with good cosine correction

Calibration

Reliable measurements in absolute units require the calibration of the measuring device with traceability to national metrological institute (NMI) standards. Since 1993, the Gigahertz-Optik measuring laboratory has been accredited as a calibration laboratory by the PTB (Physikalisch-Technische Bundesanstalt) and the DAkkS (German Accreditation Body) for the measurement of spectral responsivity and spectral irradiance. Since then, all factory calibrations have been closely based on the calibration standards and quality management of the accredited calibration laboratory. Therefore, the factory calibrations of Gigahertz-Optik offer the highest possible level of traceability and have been accepted worldwide for many years.

In accordance with the requirements of individual industrial sectors, part of the measuring laboratory is accredited by the DAkkS as a DIN EN ISO / IEC 17025 test laboratory. As a result, Gigahertz-Optik can optionally offer a DIN EN ISO / IEC 17025 test certificate for the UV radiometer X1 with UV-3726 in addition to the factory certificate.

The UV-3726 detector is calibrated for its spectral responsivity. When performing a measurement, the nominal wavelength of the UV-LED or Hg lamp can be selected on the X1 meter for highest precision. The meter offers several calibration options:

- An average calibration factor for measuring any UV LEDs in the spectral range from 260 nm to 290 nm.
- A specific calibration factor for measuring low-pressure Hg lamps (at 254 nm).
- Eleven, wavelength dependent, calibration factors given in 5 nm increments from 250 nm to 300 nm for measuring UV LEDs with known nominal wavelength.

Measuring device X1

The X1 measuring device evaluates the signal from the UV-3726 detector and displays the measured irradiance in absolute units, mW/cm². The high-quality signal amplifier of the meter supports the very large dynamic range of the detector and thus offers a measuring range of up to 1000 mW/cm² with a resolution of 0.002 µW/cm². In addition to the irradiance, the dose can also be displayed in J/cm². The measuring device offers a ‘peak-hold’ display function. The ergonomic housing of the device with its two AA batteries supports mobile use. Alternatively, the measuring device can be operated via its USB interface with the available application software for PCs. A software development kit (SDK) enables the measurement device to be integrated into user-written software.

Specifications

General

Short description	UV radiometer for UV-C LEDs and low-pressure Hg germicidal lamps
Main features	Mobile measuring device with separate detector. Easy to use. Large measuring range for high radiation intensities for disinfection and low radiation levels for the evaluation of the UV radiation risk.
Measurement ranges	For UV LEDs from 250 nm to 300 nm and 254 nm low pressure Hg lamps. Linear measuring range up to 1000 mW/cm² with X1 meter. N.E.I. 0.002 µW/cm²
Typical applications	UVGI for disinfection of air and surfaces
Calibration	Calibration of the spectral responsivity in 5 nm steps from 250 nm to 300 nm. Additional calibration factors for 254 nm and for the spectral range average, 260 nm to 290 nm.
Measurement Head	
Broadband detector	UV-3726 detector for UV-C LEDs and low-pressure Hg germicidal lamps UV-3726 data sheet
Accessories	
Display	X1 Handheld meter for display of irradiance mW/cm^2 and dose J/cm^2 with peak-hold function. Data sheet

Downloads

Type	Description	File-Type	Download
Drawing	UV-3726	pdf	https://www.gigahertz-optik.com/assets/101896.pdf

Purchasing information

Article-Nr	Modell	Description
Product		
15312096	UV-3726-5	Detector with -5 type connector. Calibration with factory calibration certificate.
15312065	X1-5	Instrument for use with UV-3726-5, 2 x 1.5 V AA batteries, USB cable, manual.
15311665	UV-3726-4	Detector with -4 type connector. Calibration with factory calibration certificate.
15309641	X1-1-V02	Instrument, 2 x 1.5 V AA batteries, USB cable, manual
15297539	BHO-11	Hardcase for X1 instrument and UV-3726 detector
15311968	KP-UV3726X1-E-I	Option: DIN EN ISO/IEC 17025 Test Certificate (DAkkS) for 254 nm Hg lamps. Contact sales team for other wavelength options.
Re-calibration		
15311689	K-UV3726-E-V01	Re-calibration of UV-3726 with factory certificate
15300671	K-X11-C	Current calibration and adjustment of Gigahertz-Optik´s optometer X1-1 by use of a calibrated current source. Calibration certificate.

Article-Nr	Modell	Description
15311967	KKP-UV3726X1-E-I	DIN EN ISO/IEC 17025 Test Certificate (DAkkS) for 254 nm Hg lamps. Contact sales team for other wavelength options. Includes factory calibration.
Software		
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.

Contact, Calibration, Service & Support

We are known worldwide for excellent technical consulting and after sales support. Contact us to find together the best solution for you. Our services:

- Technical Consulting & Sales
- After-Sales Support
- Calibrations & Re-Calibrations (ISO/IEC 17025 Calibration Services, factory calibration, Calibration of Third-Party Products)
- Repairs & Updates
- OEM & Feasibility Consulting of Customized Solutions

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