

## UVC Radiometer for Germicidal UV Sources including 222nm Excimer Lamps

### UVC 紫外線殺菌光源及 222nm 氙燈的輻射照度計

The new X1-1-UV-3727 radiometer is designed to accurately measure the far-UVC irradiance or dose produced by 222nm excimer lamps. This is in addition to the measurement of other germicidal UV source types including low pressure Hg lamps and UV LEDs. Each meter has a wide dynamic range and is supplied with a traceable calibration certificate from the ISO-17025 accredited Gigahertz-Optik laboratory.

新型 X1-1-UV-3727 輻射照度計應用於精確測量 222nm 氙燈產生的深 UVC 輻照度或劑量。此外,還可應用於測量其他殺菌紫外線光源類型,包括低壓汞燈和 UV LED。每台儀器具有廣泛的動態範圍,並配有 ISO-17025 認證的 Gigahertz-Optik 實驗室的可追溯校準證書。

Far-UVC radiation, such as the 222nm produced by Kr-Cl excimer lamps, has been the subject of many studies and is known to be effective against a wide range of pathogens. Significantly, it is also thought to offer less photobiological hazard because far-UVC light cannot penetrate human skin as deeply as the longer wavelength UV radiation produced by low pressure Hg lamps and UVC LEDs.

深 UVC 輻射,如 222nm 的 Kr-Cl 氙燈,已成為許多研究的課題,已知對多種病原體有效。值得注意的是,它也被認為提供較少的光生物學危害,因為深 UVC 光不能像低壓 Hg 汞燈和 UVC LED 產生的長波長紫外線輻射那樣深入人體皮膚。

The X-1-1-UV-3727 radiometer measures UV-C irradiance over a very wide dynamic range from 0.002  $\mu\text{W} / \text{cm}^2$  to 1000  $\text{mW} / \text{cm}^2$  which permits the investigation of both germicidal efficacy as well as hazard. It is supplied with calibrations at 222 nm for excimer lamps, 254 nm for low pressure Hg lamps, and wavelength dependent calibration factors given in 5 nm increments 250 nm to 300 nm for UV LEDs. The detector's flat spectral responsivity ensures lowest measurement uncertainty irrespective of the precise wavelength of UV LEDs which inevitably varies according to operating conditions and manufacturing tolerances.

X-1-1-UV-3727 輻射照度計測量 UV-C 輻照度範圍非常寬,從 0.002  $\mu\text{W} / \text{cm}^2$  到 1000  $\text{mW} / \text{cm}^2$ ,這適用於研究殺菌功效和危害。它提供 222 nm 的氙燈校準,254 nm 的低壓 Hg 汞燈,針對 UV LED 提供波長相關校準係數以 5 nm 增量 250nm 至 300nm。探測器的平面光譜響應性可確保最低的測量不確定性,而不管 UV LED 的精確波長如何,這些波長不可避免地會根據工作條件和製造公差而變化。

The handheld meter provides a real time display of irradiance ( $\text{mW} / \text{cm}^2$ ) or dose ( $\text{mJ} / \text{cm}^2$ ) and includes a peak-hold function. The device may also be operated via its USB interface with optional S-X1 software. To correctly measure irradiance the detector's entrance optic is a diffuser with a cosine field of view. The detector is pre-aged to significantly reduce solarisation effects that results from long term exposure to UV radiation.

手持式儀器提供輻照度( $\text{mW}/\text{cm}^2$ )或劑量( $\text{mJ}/\text{cm}^2$ )的即時顯示,並包括峰值保持功能。設備也可以通過其 USB 介面與可選配的 S-X1 軟體進行操作。為了正確測量輻照度,探測器的入口光學元件是具有



X1-1-UV-3727 Radiometer - precise measurement of UVC irradiance and dose of germicidal lamps.

餘弦視場的擴散器。該探測器已作老化,可顯著降低長期暴露於紫外線輻射導致的太陽化效應。

Gigahertz-Optik operates an extensive calibration facility that is DIN EN ISO / IEC 17025 accredited. In addition to the absolute radiometric calibration, every UV radiometer produced by Gigahertz-Optik is individually calibrated with regard to its relative spectral responsivity. In accordance with CIE 220:2016 this enables spectral mismatch error to be corrected for, thereby reducing the overall measurement uncertainty.

Gigahertz-Optik 建置一個廣範圍的校準設施,該設施獲得 DIN EN ISO / IEC 17025 認證。除了絕對輻射校準外,Gigahertz-Optik 生產的每個 UV 輻射照度計都根據其相對光譜響應率進行單獨校準。根據 CIE 220:2016,這樣可以校正頻譜不匹配誤差,從而減少整體測量的不確定性。

<https://www.gigahertz-optik.de/en-us/product/X1-1-UV-3727>



X1-1-UV-3727 輻射照度計 - 精確測量 UVC 輻照度和殺菌燈劑量