

UV Sensor "UV-Surface"

Radiometric UV sensor for calibration and reference measurement

GENERAL FEATURES



The "UV-Surface" is a universal radiometric UV sensor for calibration and reference measurements. It is featured by a cosine shaped field of view and is often used with the sglux Radiometer SXL 55 (see page 5). It will be configured upon individual customer's requirements which are clarified within the order process. Configurable parameters are the signal output type, the measurement range and the spectral responsivity. A magnetic sensor holder is available as accessory (see page 5).

The signal output is configurable as a 0...5V voltage or a 4...20mA current loop or photocurrent (diode) output. Digital output sensors are available with a MOD bus, a CAN bus or a USB interface. The determination of the individual dynamic range needs customer's assistance, e.g. information about the source to be measured and a typical distance between the sensor and the source. A PTB traceable calibration is available. Figure 1 shows the different options regarding the spectral responsivity of the sensor. Our sales team is happy to assist our customers selecting the best suitable responsivity for the specific application. Alternatively, technical reports and selection guides are available on our website providing further assistance.

SPECTRAL RESPONSIVITY SELECTION OPTIONS

Figure 1 shows the available spectral responsivities. Table 1 shows the position of the peak and the 10% of maximum margins. For UV measurement, by default, unfiltered broadband SiC is applied. If a UV source also emits radiation that must not contribute to the sensor's signal (e.g. UV medium pressure lamps used for water or air purification that also emit non germicidal UV radiation) a filtered SiC sensor (UVC, UVB+C or UVA only) is to be selected. For measurement of radiation above 390nm GaP based detectors are used.

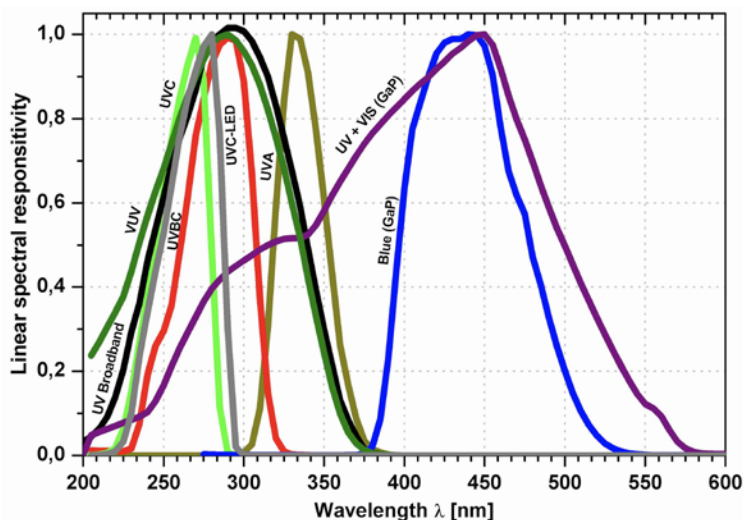


Table 1: position of peak responsivity and 10% of maximum margins, values in nm

SR	Peak	$\lambda_{S_{low}}$	$\lambda_{S_{high}}$
BroadB	280	221	358
UVA	331	309	367
UVBC	280	231	309
UVC	275	225	287
UVC-LED	285	225	298
VUV	280	170	355
UV+VIS	445	240	560
BLUE	445	390	515

Figure 1: available spectral responsivities

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GENERAL SPECIFICATIONS

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FIXED SPECIFICATIONS Parameter Value

Dimensions	Please refer to drawing on page 4.
Field of view	Please refer to graph on page 4.
Weight	56 g
Temperature coefficient (30 to 65°C)	0.05 to 0.075%/K
Operating temperature	-20 to +80°C
Storage temperature	-40 to +80°C
Humidity	< 80%, non condensing
Time constant	0.1s +/-20% - other time constants on request, device has 1st order low pass characteristics
IP protection class	60

CONFIGURABLE SPECIFICATIONS Parameter Value

Spectral sensitivity	Broadband UV, UVA, UVB+C, UVC, UV-Index, Bluelight or UV+VIS (see Fig. 1 at page 1)
Measurement range	Any range between the lowest range of 1nW/cm ² to 1μW/cm ² and the highest range 20mW/cm ² to 20W/cm ² is configurable for analog sensors. Any range between the lowest range of 1nW/cm ² to 10μW/cm ² and the highest range 2mW/cm ² to 20W/cm ² is configurable for digital sensors.

SIGNAL OUTPUT SPECIFICATIONS

Signal Output 0 to 5V	0 to 5V voltage output proportional to the irradiance
Supply voltage	7.5 to 24 VDC
Current consumption	< 30mA
Connections	2m cable version: V-=brown, V+=white, V _{OUT} =green, shield=black plug version: not available
Dark offset voltage	< 3 mV
Measurement range	3 orders of magnitude

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Signal Output 4 to 20mA 4 to 20mA current loop for PLC controllers - The current is proportional to the irradiance.

Supply voltage 24 VDC +/-10% (down to 12V possible if compliance voltage and loop resistance is considered)

Current consumption =signal out

Connections cable version: IOUT=brown, V+=white, shield=black
2 m cable length, other lengths available (max.20 m)
plug version: not available

Measurement range 3 orders of magnitude

Sensor compliance voltage 8.5 V

Max. loop resistance 645 Ohm @ 24V and 145 Ohm @12V

offset 4 mA +/- 0.01 mA

Signal Output USB USB output with USB-A (to computer) or μ USB connector (to smartphone)

Supply voltage 5V (USB powered)

Current consumption < 17 mA

Connections USB2.0-A connector (to computer, free software "UVPLOT" is available)
or USB2.0-micro-B connector (to a smartphone device like the Radiometer SXL55) 2m cable length.

Measurement range 4 orders of magnitude

Signal Output CAN bus CAN Bus with VSCP protocol for integration into a bus system or to be used with the sglux UVTOUCH or the sglux Digibox

Supply voltage, current consumption 5 to 24 V +/- 10%, typ. 16mA, max. 20mA

Connections 8-pin M16 x 0.75 connector: Pins 1&7 = CAN low, Pins 3&8 = CAN high,
Pin 6=V+, Pins 2&4&5 = GND, 2m cable length, other lengths available

Measurement range 4 orders of magnitude

Available displays and converters UVTOUCH and Digibox

Signal Output Photo current photodiode current approx. 1 nA ... 1 μ A, needs external transducer such as the sglux Radikon Simple. This signal output allows operating temperatures between -40°C and 170°C.

Connections shielded cable with open wires (BNC plug on request), 2m cable length

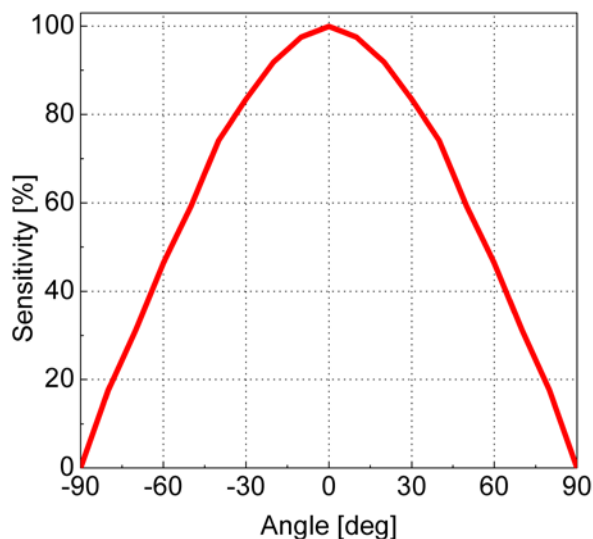
Measurement range The measurement range depends on the applied transducer.

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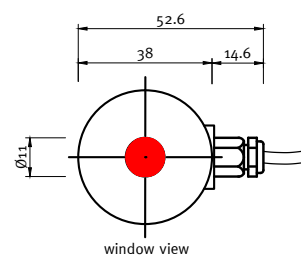
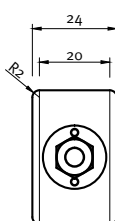
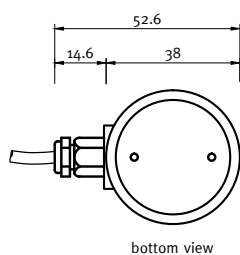
FIELD OF VIEW

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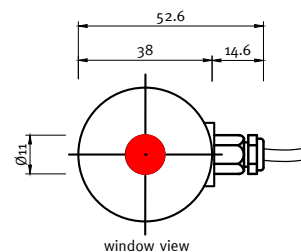
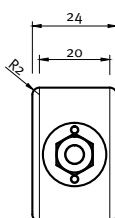
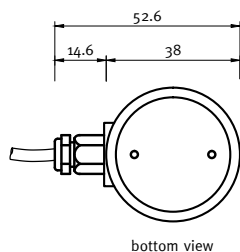


DRAWING (values in mm)

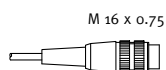
ANALOG CABLE



DIGITAL



CAN



M 16 x 0.75

KFV 80 plug



pin layout

USB



USB Type A



Micro USB

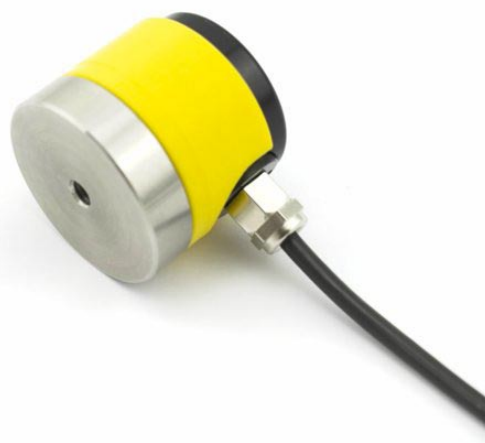
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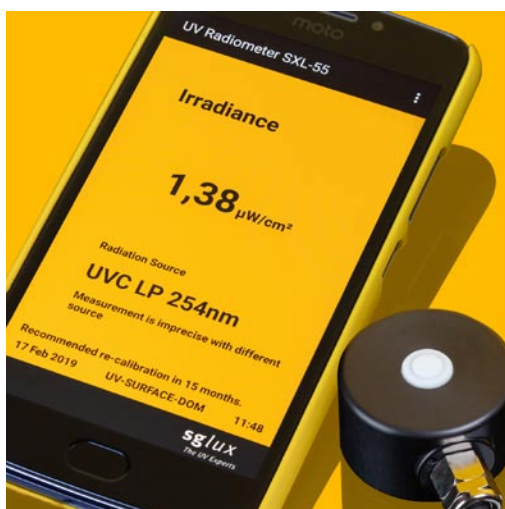
▶ SENSOR HOLDER AVAILABLE AS OPTIONAL ACCESSORY

The below pictures show a useful accessory for the UV-Surface sensor. This sensor holder is featured by a magnetic foot that allows to attach the sensor on every steel surface, also at a ceiling. The sensor and the holder are also connected by a magnet. The bottom of the holder has a 1/4" 20 UNC threaded hole to be connected to a standard camera tripod.

The holder allows various usages with one sensor. The sensor can be attached at a defined fixed position but also can be removed from this position to measure the UV radiation at another place. Additionally, the holder can be used as a protective cap when flipped.



▶ DISPLAY UNIT AVAILABLE AS OPTIONAL ACCESSORY



The UV Radiometer SXL 55 is a smartphone based useful accessory to display the UV-Surface sensor probe measurement values and to execute dose or dosimeter measurement.

For detailed information please refer to the SXL 55 datasheet available on our webpage.

Sensor Probes Overview

LABORATORY & EXPERIMENTS



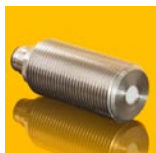
UV-Surface

Universal radiometric UV sensor for calibration and reference measurements, cosine correction. Often used with radiometer SXL55.



UV-Cosine

Waterproof dirt repellent UV sensor for outdoor measurement, cosine field of view. Also available as UVI sensor (ERYCA), M20x1.5 thread.



UV-Air

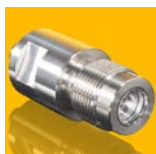
Axial measuring screw-in UV sensor very good EMC properties, M22x1.5 thread.



TOCON-Probe

Miniature UV sensor with 0 to 5 V voltage output, M12x1 thread.

SPECIAL APPLICATIONS



UV-Arc

Waterproof UV sensor for measurement of electric arcs between overhead contact wires and pantograph, complies with EN 50317, G3/4" thread.



sglux ERYCA

High accuracy UV-Index sensor, measurement uncertainty is <5%. The sensor complies with ISO 17166, M20x1.5 thread.



UVI-Solo

Like sglux ERYCA but configured as a ready-to-mount system (available for pole or railings assembly).



uvLink One

Wireless UV sensor with a display unit for intensity and dose measurement.

DUTY SENSORS MONITORING UV DISINFECTION OF AIR, SURFACES AND WATER



UV-Sanitize

UV sensor for monitoring of air and surface UV disinfection systems, configurable for monitoring of Hg low pressure lamps, excimer lamps or xenon flash lamps, M20x1.5 thread.



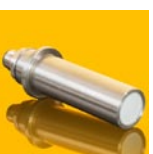
UV-Water-G3/4

UV sensor for operation in pressurized water (10 bar), for Hg medium and low pressure lamps.



UV-Water-PTFE

PTFE UV sensor for operation in pressurized water (10 bar), only for Hg low pressure lamps or LEDs, G1/4" thread.



UV-ÖNORM / UV-DVGW

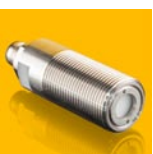
UV sensor for DVGW(160°) and ÖNORM certified water purifiers, also available as UV-DVGW (40°). The sensors comply with ÖNORM M5873, DVGW W294(06), DIN19294



UV-Radial

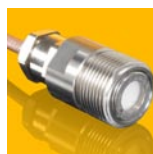
Waterproof side looking UV sensor for monitoring of lamp bundles, for operation in a cladding tube or directly in water, M20x1.5 thread.

HIGH UV RADIATION



UV-Cure

UV sensor for high irradiance (>100mW/cm²) for LED curing or cooled medium pressure lamps, M22x1.5 thread (temperature sensor available).



UV-Cure_HT

Like UV-Cure but for temperatures up to 170°C, e.g. for uncooled medium pressure systems, M22x1.5 thread.