

UV Sensor "UV-Cosine"

Waterproof cosine corrected UV sensor for outdoor use



GENERAL FEATURES



The "UV-Cosine" is a waterproof and dirt repellent UV sensor with a PTFE housing for outdoor use or measurements in wet and dirty environment. It is featured by a cosine shaped field of view. A M20x1.5 male thread allows an easy assembly. The sensor 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. It is often configured as "sglux ERYCA", an ISO 17166 compliant UVI-Index sensor with optimized cosine correction.

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 can be ordered. 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 or UVA only) is to be selected. For measurement of radiation above 390nm GaP based detectors are used.

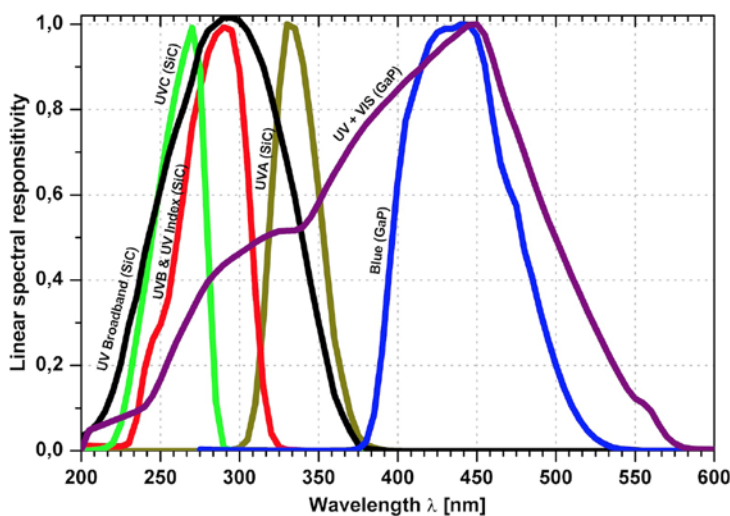


Table 1: position of peak responsivity and 10% of maximum margins, values in nm

SR	Peak	$\lambda_{S_{low}}$	$\lambda_{S_{high}}$
BroadB	280	221	358
UVA	331	309	367
UVB	280	231	309
UVC	275	225	287
UV+VIS	445	240	560
BLUE	445	390	515

Figure 1: available spectral responsivities

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GENERAL SPECIFICATIONS

FIXED SPECIFICATIONS Parameter Value

Dimensions	Please refer to drawing on page 4.
Field of view	Please refer to graph on page 4.
Weight	27 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

CONFIGURABLE SPECIFICATIONS Parameter Value

Spectral sensitivity	Broadband UV, UVA, UVB, 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 5 V or 0 to 10V 0 to 5V or 0 to 10V voltage output proportional to the irradiance

Supply voltage	7.5 to 24 VDC (0 to 5V output) and 12 to 24 VDC (0 to 10V)
Current consumption	< 30mA
Connections	2m cable version: V-=brown, V+=white, V _{OUT} =green, shield=black cable version is not available for 0 to 10V voltage output plug version 0-5V: GND=1(brown), V+=4(black), V _{OUT} =3(blue) plug version 0-10V: GND = 2(white), V+=4(black), V _{OUT} =1(brown)
Dark offset voltage	< 3 mV
Measurement range	3 orders of magnitude

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

Connections	shielded high temperature resistant wire 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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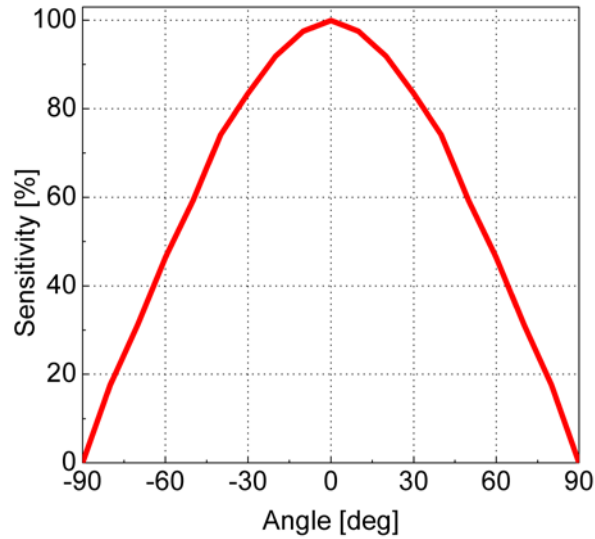
Signal Output 4 to 20 mA	4 to 20mA current loop for PLC controllers - The current is proportional to the irradiance.
Supply voltage	24 VDC +/-10% (down to 12V possible if compliance voltage and loop resistance is considered)
Current consumption	=signal out
Connections	cable version: IOUT=brown, V+=white, shield=black 2 m cable length, other lengths available (max.20 m) plug version: IOUT=1(brown), V+=4(black)
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%
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 MOD bus	MOD bus RTU over RS-485 (connection parameters programmable)
Supply voltage, current consumption	5 to 24V +/-10%, typ. 20mA, max. 25mA
Connections	5-pin M12 connector at sensor side and Binder cable M12-A Series 763 with open wires, Shield =1 (shield), V+ = 2 (red), GND = 3 (black), B = 4 (white), A = 5 (blue)

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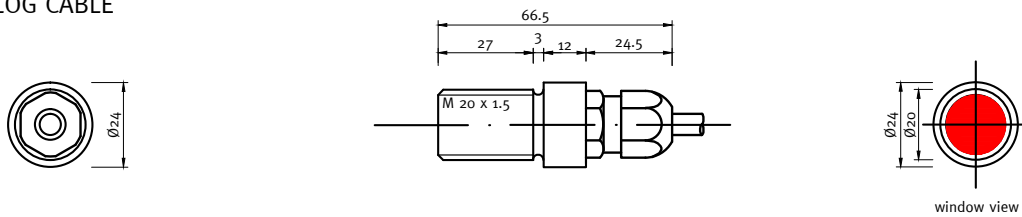


FIELD OF VIEW

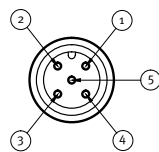
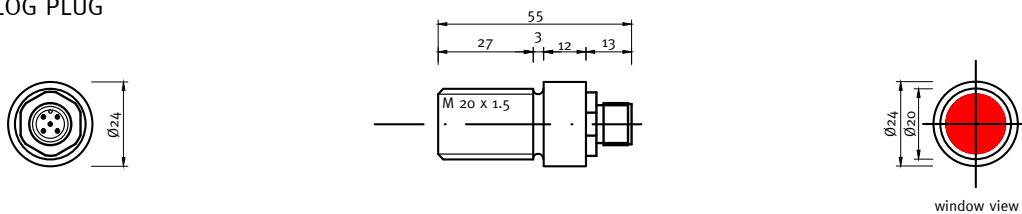


DRAWING (values in mm)

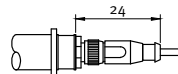
ANALOG CABLE



ANALOG PLUG

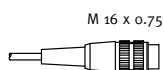
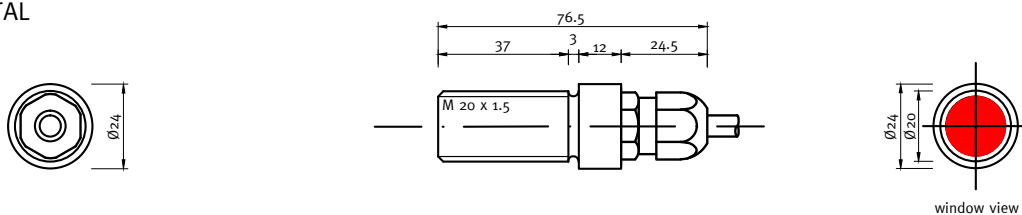


connector view
5 pin M 12 x 1
RSFM5



plug connection
5 pin M 12 x 1
e.g. Lumberg PRSFM 5

DIGITAL



KfV 80 plug



pin layout

Sensor Probes Overview



LABORATORY & EXPERIMENTS



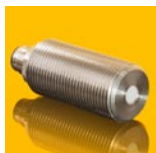
UV-Surface

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).



UV-Wireless

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

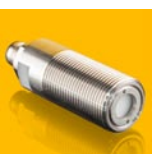
UV sensor for DVGW(160°) and ÖNORM certified water purifiers, also available as UV-DVGW (40°). The sensors comply with ÖNORM M5873, DVGW W294(06), DIN19294



UV-Radial

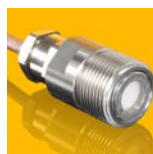
Waterproof side looking UV sensor for monitoring of lamp bundles, for operation in a cladding tube or directly in water, M20x1.5 thread.

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.