

# AUTONOMOUS UV-INDEX-TRANSMITTER



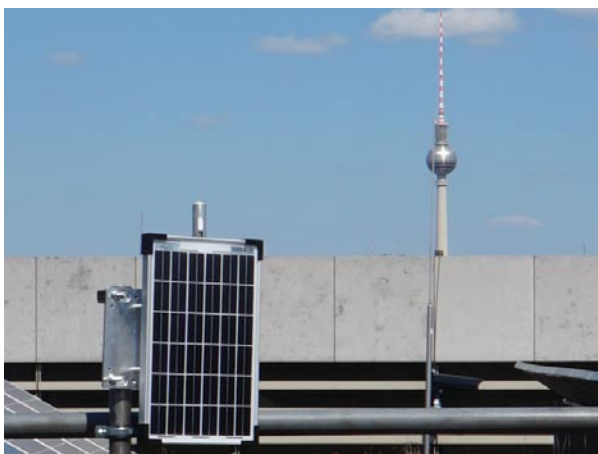
- Measurement and calculation of the UV index
- Data transfer via mobile data to a central server, no ongoing costs
- Data collection in a database
- Autonomous energy supply via solar power and storage battery
- Different options to display the measured data
- Installation and use do not require IT skills

## PRODUCT DESCRIPTION

The autonomous UV-Index-Transmitter registers the current erythemally effective UV radiation (UV index) according to ISO 17166:2019 as well as the technical WHO requirements and sends the measured data via mobile data to a central database operated by sglux. Alternatively, the measured values/the measurement signal can also be sent exclusively or additionally to a database of the user. Due to the autonomous energy provision, the UV-Index-Transmitter can also be installed on top of buildings where power or data cables may not be installed because of external lightning and surge protection. This product bases on the UV index probe “sglux ERYCA” and enhances this probe to a ready-to-go system. Our product “UVI Solo” offers an alternative by combining the “sglux ERYCA” with a USB output as well as a pole or railing bracket ready for installation.

## USERS OF THE AUTONOMOUS UV-INDEX TRANSMITTER

The UV-Index-Transmitter is mainly operated by public institutions such as municipalities, schools or recreational facilities. The two pictures below (courtesy of BfS) show the device in operation for the German Federal Office for Radiation Protection (BfS). Shown are the measuring stations in Berlin and in Grömnitz. They are part of the nationwide solar UV measurement network operated by BfS, which is mainly equipped with UV sensors from sglux.



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## ▶ SPECIFICATIONS

Sensor	SiC-based UVI sensor with interference filter (“sglux ERYCA”, see image 1 for spectral sensitivity) acc. to ISO 17166:2019 and WHO requirements.
Measurement uncertainty	+/-10%
Measuring range	0.00 to 0.75 W/m <sup>2</sup> erythemally effective UV radiation, equal to UVI 0 to 30
Field of view	Cosine-weighted dome made from PTFE
Calibration	towards the sun, PTB traceable
Resolution	2 mW/m <sup>2</sup> , equal to UVI 0.08
Temperature range	-30°C to 70°C
Energy supply	10 W solar module with storage battery, 7-day run time in constant shade (e.g. snow). Longer battery run time possible on request.
Transferred data points	erythemally effective UV radiation in W/m <sup>2</sup> via MQTT protocol, battery voltage, charge current, charge status, internal temperature. More data points (e.g. external temperature, humidity) possible on request.
Radio connection	via mobile data, SIM card and data pass permanently included in purchase price. No additional mobile data costs.
Weight	3.4 kg
Product measurements	deliverable for mounting on poles or railings, see drawing on page 3

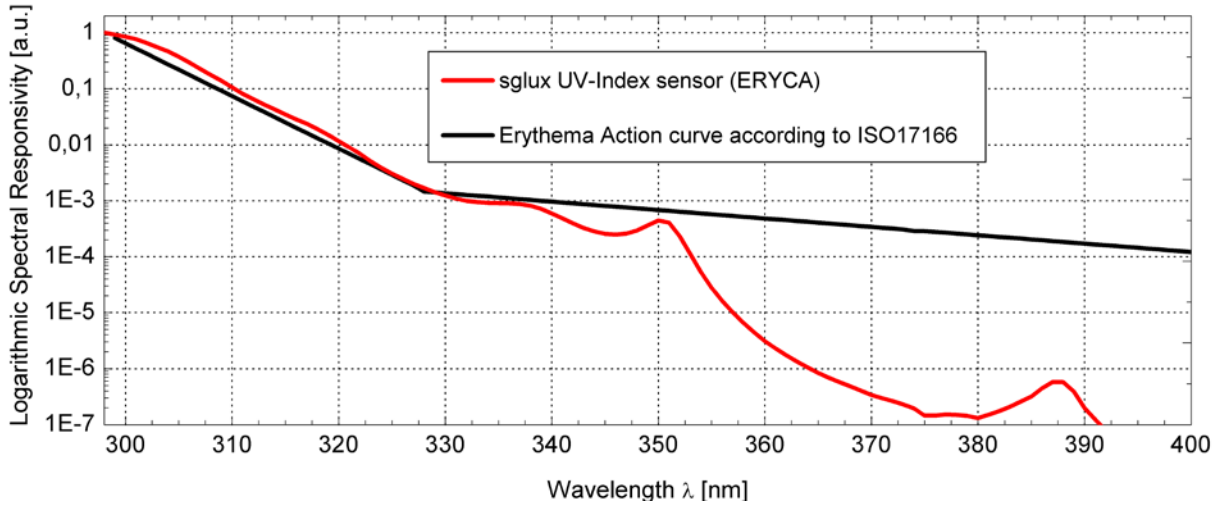


Image 1 Spectral sensitivity of a “sglux ERYCA” sensor compared to the erythemal effectiveness function acc. to ISO 17116:2019

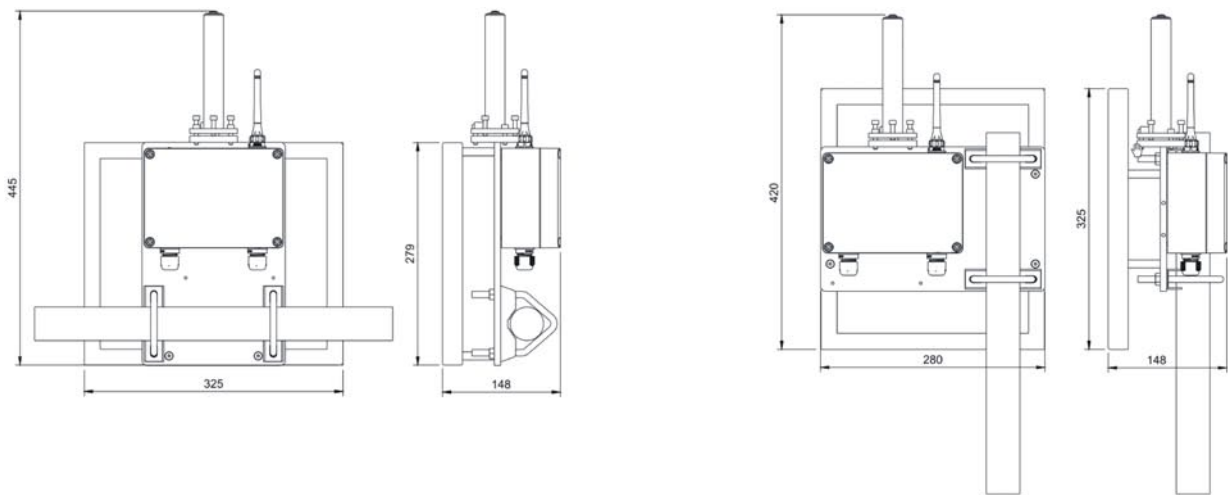


Image 2 Product measurements, arrangement for horizontal (railing) mount) on the left; arrangement for vertical (mast) mount on the right (as in product image on page 1)

## INSTALLATION

Ensure direct orientation of the solar cell towards south as much as possible when installing the device, so that the sensor is not blocked by the shade of trees or buildings throughout the day. Exceptions for measurements targeted specifically at discovering the UV radiation in the shade of trees or buildings (e.g. parks, schools or day care facilities). In this case, the device should be mounted at eye level with people who are moving in the designated area.

Check with a spirit level before installation whether the mast is properly vertical (or the railing properly horizontal).

Mount the device to the mast (or railing, depending on your arrangement) with the help of the supplied bracket set.

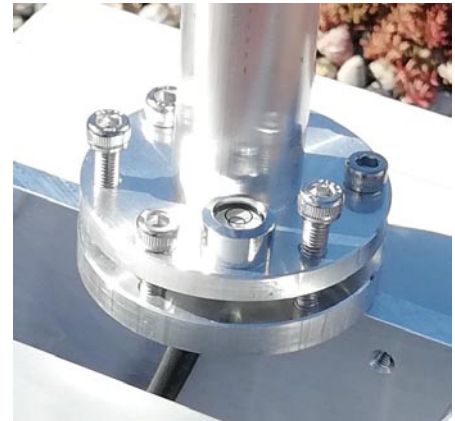


Image 3 Adjustment unit

To perform the measurements conforming to ISO 17166 standards, the UV sensor has to be oriented exactly vertically to the zenith. Image 3 shows the spirit level and the hex adjusting screws intended for the exact orientation.

Should the proper orientation not be possible with the adjustment unit, the mast or railing are not vertical or horizontal enough for installation. In such case, the mast or railing should first be oriented properly.

If not possible due to the building construction, we are able to deliver needed offset pieces upon request.

## INITIAL SETUP

There are no switches, electrical connections or display units on the device by intention. Once the solar cell has charged the battery sufficiently, the UVI-Transmitter is going to measure and transfer the values autonomously. With a cloudless, sunny sky in summer, charging an at-first fully discharged battery takes approximately one hour after installation. Unfavorable weather conditions prolong the waiting time proportionately before measurements and transfers can start.

## RECALIBRATION AND CARE

The device is delivered with a PTB-traceable calibration and a calibration certificate. Due to the sensor components' exceptional resistance against radiation, a recalibration is only needed every 3 years.

The dismounting of the device is unnecessary, as we will send a reference radiometer for recalibration as a loan. Our technical support team walks the user through the small number of easy steps for recalibration. The device itself is maintenance-free, as the sensor is enclosed by dirt-repellent Teflon and mounted on a mast at a 24 cm height. This prevents damage to the sensor by birds (pecking, droppings).

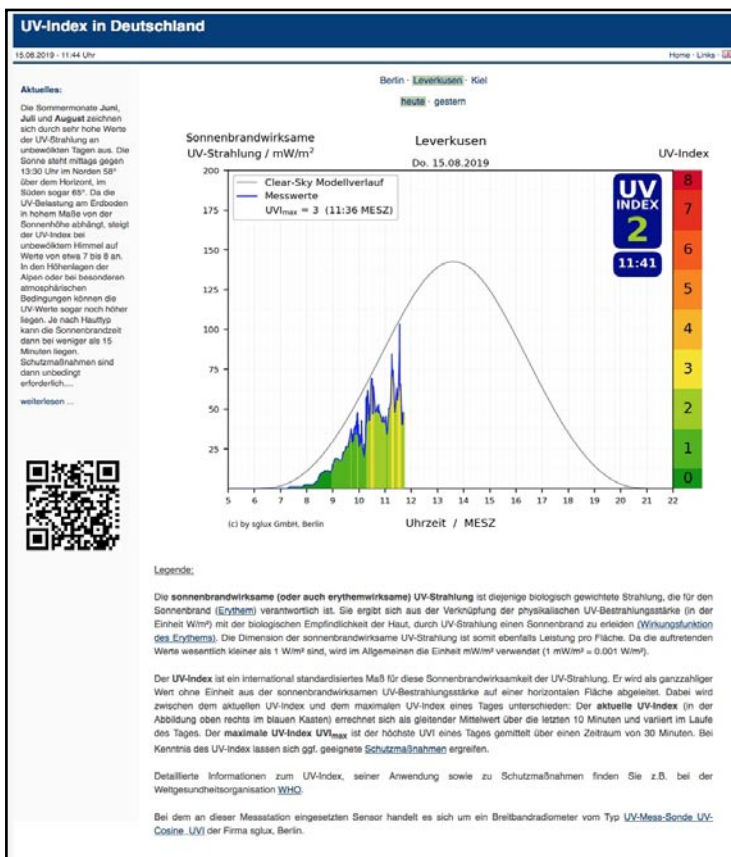
The sensor height also prevents distortion of the measurement caused by snow up to a height of 24 cm.

Nonetheless, the device should be checked every now and again in the first months to ensure proper operation. Check-ups are especially necessary when the measured data widely deviates from the predicted value on cloudless days. Checking the position of the bubble on the spirit level will determine whether the sensor is still oriented vertically in the correct way. The solar cells and the sensor should be kept free from dirt and shade at all times.

## ▶ DISPLAY OF MEASUREMENTS

Our thorough technical support is included in the price of the UV-Index-Transmitter, to ensure the implementation of the measurements into the individual customer’s display setup. We are available without a time limit for your questions or any problems that may arise later.

The reasons for operating a UVI measuring station varies, and the respective varying uses determine the different requirements for the measurement displays. Scientists may use the data base values to operate their own analysis and publication (for which meteorological and data base knowledge is required on the customer side). However, for users without specific prior knowledge, we also offer simple “plug & play” solutions, which are included in the product price, consisting of a web-based desktop view as shown in image 4. This displays the current UV index according to WHO requirements and shows the UVI history for the current and the previous day. Layout and text on this page serve as an example which may be configured to the individual user needs.



Other possible layouts may include a web display optimized for smartphones, a smartphone application, or a display optimized for wall-mounted monitors. For construction sites or outdoor pools, we suggest a display unit with mechanical indicators, as opposed to electronic displays, to ensure visibility of the measurements in bright sunlight. sglux is looking forward to implement solutions together with you that fit your specific needs. There is no need for prior meteorological or database knowledge.

Image 4 Example of the display of UV index variation. Color coding and UV index calculation acc. to WHO requirements