

■ UV spectroradiometer BTS256-UV

Mobile UV spectroradiometer for irradiance and dose for intensive radiation sources in the wavelength range from 200 nm to 525 nm.

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Typical applications for high-intensity radiation sources in the ultraviolet and blue spectral range are UV radiation curing, solar simulation, UV sterilization, UV test systems, and UV sewer rehabilitation. For process-based applications with repetitive measurement tasks, broadband radiometers such as the X1-1 with RCH-116-4 are generally the most effective solution because of their ease of use, value for money, and low re-calibration cost.

Spectroradiometers such as the BTS256-UV are an alternative to broadband radiometers that provide additional information about the spectral distribution of radiation sources. The spectral information is particularly important if the wavelength-dependent aging behavior of broadband UV lamps must be investigated or if the irradiance must be measured in different wavelength ranges. This is also important if sources of differing spectral distribution must be measured. For this purpose, broadband radiometers ideally require separate calibration factors that take these spectral differences into account. This is not necessary with spectroradiometers. In addition, spectroradiometers offer more precise measured values than broadband radiometers. This is due to their spectral sensitivity function which corresponds to a rectangular function in the selected spectral measuring range.

For precise measurements in the UV spectral range, very good stray-light rejection is necessary, which is not provided by the array spectrometers typically available on the market.

BTS256-UV spectroradiometers comply with the latest design criteria for radiometric measuring instruments in the field of optical radiation:

Wide spectral sensitivity range

The spectral sensitivity range from 200 nm to 525 nm enables the precise irradiance measurement in the ultraviolet to blue wavelength range. Even the long-wave spectral component of UVA LEDs, which typically range up to approximately 490 nm, is completely captured. In particular, applications in radiation curing and trends in the use of shortwave LEDs down to the UVC range are supported with this wide spectral range.



BTS256-UV-1



Measurands:

- Spectral Irradiance up to 40,000 mW/cm²
- Spectral measuring range 200 nm up to 525 nm
- Dose (J / m² and J / cm² switchable)
- Data logger spectral irradiance: 100 samples (spectral data), 10000 samples (diode)

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Cosine field of view and flat design

When samples are diffusely irradiated, correct measurement of the angle-dependent irradiance requires a cosine field of view function of the instrument. In addition, the distance of the sensor to the irradiance reference plane must be as small as possible. With a height of only 12 mm and precise cosine field of view, the BTS256-UV measuring instruments are among the thinnest spectroradiometers on the market that are suitable for the precise measurement of absolute irradiance.

Stray light and dark signal

Stray light and dark signal both have a significant influence on measurement results of UV spectroradiometers with CCD or CMOS array sensors. Stray light is always critical if the emission spectrum of UV lamps has a long-wave component (VIS to IR), which leads to stray light in the actual measuring range of the device. The intensity of stray light in the UV range can easily exceed the intensity of the actual measurement signal and thus lead to considerable measurement errors. In contrast, dark signals are caused by operating temperature fluctuations during mobile use and by the variation of integration times required for the measurement of differing irradiance levels.

Despite their very flat design, BTS256-UV spectroradiometers incorporate innovative stray light correction with an integrated optical filter as well as a dark level shutter as standard. Both functions are automated. This guarantees precise irradiance measurements of different emitter types and over varying operating temperatures.

Intense UV and temperature radiation

In practice, spectroradiometers are often exposed to the same intense UV and temperature radiation that is supposed to trigger aging effects or crosslinking processes in an application. The BTS256-UV spectroradiometers are built into a stainless steel or aluminium housing that has excellent UV stability and low thermal conductivity to protect the electronics. At the same time, the stability of the wavelength and irradiance readings of the meter is ensured.



BTS256-UV-1 handheld with safety distance to UV radiation

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Hand-held measuring device and process flow meter

With the **BTS256-UV-1 handheld meter**, the sensor is placed 250mm away from the meter. As such, it can be positioned in front of the radiation source without exposing the operator to hazardous levels of UV radiation. The sensor itself is extremely flat with an overall height of 8 mm.

With the **BTS256-UV-2 and BTS-UV-3 flow meter**, the sensor is attached directly to the meter. As such, it is ideal for UV systems where samples pass below the UV light sources on a conveyor belt.

Data logger

In addition to their array sensor, BTS256-UV spectroradiometers include a broadband photodiode as a second sensor. This enables a much higher data logging rate than can be reached using only the array sensor.

Factory calibration and ISO 17025 test certificate

The measurement laboratory of Gigahertz-Optik offers high quality, traceable factory calibrations of their BTS256-UV. Factory calibrations are handled in Gigahertz-Optik's calibration laboratory using the same quality management procedure as per NMI accredited test measurements. NMI accredited testing measurements with an ISO/IEC/EN 17025 testing certificate are optionally available.



BTS256-UV-3 flow meter for use on conveyors - diffuser on the front



BTS256-UV-2 flow meter for use on conveyors - diffuser on the back

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Specifications	BTS256-UV		Comment
Spectral sensitivity range	200 nm to 525 nm		
Optical bandwidth	2,8 nm		
Measuring range of spectral irradiance	up to 40.000 mW/cm ²		(Variants on request)
Data logger spectral measurement data	500 records 20 ms sampling rate + integration time		
Logger memory	100 samples (spectral data), 10000 samples (diode)		
Manual operation: 3 function keys (push-button) Display: Monochrome, 56 mm x 49.5 mm, resolution 117 DPI, backlight			
Dimensions	basic body BTS256-UV-1 und BTS256-UV-3: 148 mm x 92 mm x 13 mm (length x width X height) basic body BTS256-UV-2: 148 mm x 92 mm x 12 mm (length x width X height)		
Power supply	Charging via USB interface	battery pack	
Interfaces	USB 2.0 (type mini USB)		
Operating temperatur	Housing: max. t.b.c.		
Software	S-BTS256 S-SDK-BTS256		(Supplement)
Weight	275g		



With its innovative and high-quality products as well as application solutions, Gigahertz-Optik enjoys a high regard from its international customers within the field of optical radiation measurement technology. As a manufacturer, Gigahertz-Optik offers standard and custom-made solutions. Regular investments in new technologies ensure that Gigahertz-Optik is able to offer modern measuring solutions to its customers in industry and science.

Broadband light measurement devices

- UV Radiometer
- Photometer
- Hazard

Spectral light meter

- Handheld devices
- High-end devices
- UV Spectroradiometer
- Weather-proof devices
- Light transmission

Complementary products

- Integrating spheres
- Integrating sphere light sources
- Calibration standards
- Electronics, optomechanics
- Optically diffuse materials

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