BTS256-HI

Product tags: VIS

Description

The BTS256-HI is a high-quality light meter for measurement of dental polymerization lamps and cold light sources

BiTec light sensor for complex light measurement

One of the characteristic properties of the mobile light meter is its BiTec light sensor. This combines the characteristic properties of a silicon photodiode with those of a low-noise CMOS diode array. The BiTec sensor guarantees precise photometric, spectral-radiometric and colorimetric measurement values over a large dynamic range through mutual correction of the measurement signals of both sensors.

Silicon photodiode detector, fast and linear

When taking into account the dynamic range, linearity and speed, silicon photodiodes have always been and are still the ultimate radiation detectors. A silicon photodiode is therefore incorporated in the BiTec light sensor of the BTS256-HI. Its precise matching to the photometric V(λ) CIE responsivity is also ideal for LEDs due to the integration of the diode array's spectral measurement data.

Diode array detector for spectral measurement data

The low-noise CMOS diode array of the BiTec Light sensor provides precise measurement data required for the luminous spectrum. This data is then used for calculation of the color values as well as for optimization of the photometric responsivity.

Optimized Signal to Noise Ratio

The noise signal of a diode array detector has significant influence on the Signal to Noise Ratio and thereby affects the quality of the measurement signal. A remote controlled shutter in the BiTec light sensor enables online compensation of the dark signals that are dependent on the temperature and integration time.
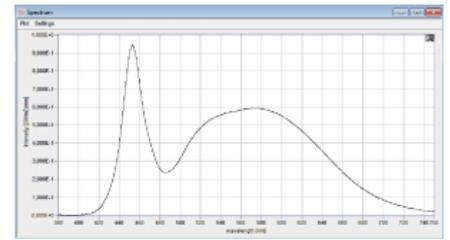
Integrated integrating sphere

The integrating sphere of the BTS256-HI enables measurement of the radiant flux of 2Pi sources. Their light guides are directly placed on the 15cm diameter protective window for measurement.
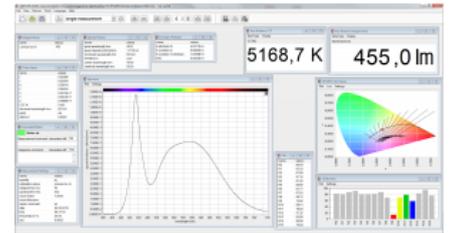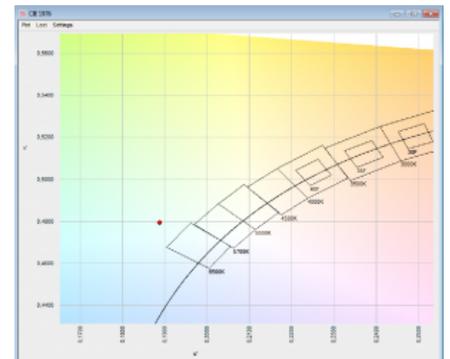
Integrating sphere with protective window

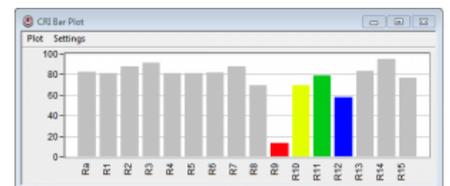For continuous, long-term use, a protective window protect the integrating

Full screen display of the luminous spectrum

S-BTS256 user software with modular desktop setup

CIE 1976 chromaticity table with binning fields

CRI Bar Plot

sphere against contamination. The cone adapter with bayonet connector can easily be replaced if necessary.

Use with PC

The BTS256-HI has a USB 2.0 interface for use of the device with a PC. This enables both data exchange and battery charging.

User software

The S-BTS256 software included in the device's price provides all the necessary functions for the measurements, measurement data display and data transfer. The cutting-edge, flexible desktop concept of the software offers the user an individual constellation of the required measurement values. This can be a full screen filled with lux measurement values or a matrix with both numerical and graphical fields. Each desktop constellation can easily be saved for future use.

Diverse photometric and colorimetric measurement quantities

A large span of measurement quantities is necessary for the verification and testing of LEDs. The BTS256-HI offers twelve measurement quantities and thereby meets all the requirements for a modern light meter:

- Φp luminous flux in lm
- Φe radiant power in W
- $\Phi \lambda$ spectral radiant power
- x, y CIE 1931 color coordinates
- u', v' CIE 1976 color coordinates
- CT color temperature
- Δuv deviation from the blackbody locus
- λdom dominant wavelength
- λp peak intensity wavelength
- $\lambda 0,5$ spectral half-width
- Purity color purity
- CRI Ra and R1 to R15 Color Rendering Index

Software Development Kit

Gigahertz-Optik offers programmers the S-SDK-BTS256 Software Development Tool. This can be used with LabView from National Instruments, .NET from Microsoft and C/C++. The SDKs simplify integration of the BTS256-LED Tester in an internally developed software.
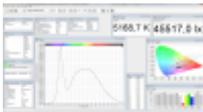
Traceable calibration

The calibration is performed by Gigahertz-Optik's calibration laboratory for photometric measurands. The calibration is done using calibration standards traceable to national and international standards. Recalibration is recommended after every 12 months.

Specifications

General	
typical applications	Light meter for the luminous flux, spectral radiant power and luminous color
Calibration uncertainty	± 4 % for luminous flux ± 5 % for radiant power
Sensor	Bi-Technology sensor with a photometric broadband detector and a array spectrometer. Integrated aperture for automatic dark signal adjustment.
Input optics	Integrating sphere with synthetic ODM98 coating behind entrance window. 15 mm diameter measurement port.
Spectral Detector	
Chip	CMOS diode array
spectral range	(360 - 830) nm
Optical Bandwidth	5 nm
Data Resolution	1 nm
Integration Time	(5.2 - 30000) ms
Shutter	Automatic aperture for dark signal measurements with the same integration time as that of light measurements. Aperture delay = 100ms .
Peak wavelength	± 0.5 nm
Dominant wavelength	± 1 nm
Repeatability Δx and Δy	± 0.0001 (Standard illuminant type A) ± 0.0002 (LED)
Δy Δx uncertainty	± 0.002 (Standard illuminant type A) ± 0.005 (typ. LED)
CCT Measurement range	(1700 - 17000) K
ΔCCT	± 50 K (standard illuminant type A) ± 6 % (depending on the LED spectrum)
CRI (color rendering index)	Ra and R1 to R15
Stray Light	6E-4 (Blue LED) 6E-4 (Green LED) 6E-4 (Red LED) 1E-3 (White LED)
min. radiant power	0.2 mW (typical white LED) 0.05 mW (typical blue LED)
max. radiant power	50 W (typical white LED) 16 W (typical blue LED)
Integral Detector	

Filter	Spectral responsivity with fine CIE photometric matching. Online correction of the photometric matching through spectral measurement data (spectral missmatch factor correction).
f1'	≤ 6 % (uncorrected)
	≤ 3 % (f1' a*$(s_z(\lambda))$ respectively F*$(s_z(\lambda))$ corrected by spectral data, done automatically by BTS technology)
ADC	12 Bit
Measurement time	(0.1 - 6000) ms
Miscellaneous	
Microprocessor	16 bit, 25 ns instruction cycle time
Power Supply	5 VDC to 7 VDC, 250 mA peak during capacitor charging of the auxiliary lamp
Interface	USB 2.0 (Type B USB port)
temperature range	Operation: 10 °C to 30 °C
	Storage: -10 °C to 50 °C
Dimensions	160 mm x 85 mm x 60 mm (Length x Width x Height)
Weight	500 g
Transport case	Plastic hard-top casing: 333 mm x 280 mm x 70 mm, 650 g

Configurable with

Produktname	Product Image	Description	Show product
S-SDK-BTS256		Software Development Kit for BTS256 variants.	http://www.gigahertz-optik.de/en-us/product/S-SDK-BTS256
S-BTS256		Application software for BTS256 variants.	http://www.gigahertz-optik.de/en-us/product/S-BTS256

Purchasing information

Article-Nr	Modell	Description
Product		
15308421	BTS256-HI	Light meter with integrating sphere to measure total flux and power of light sources with light guide. Measurement port 15mm diameter with diffuse window. USB interface. Delivery content: meter, hard case BHO-014, S-BTS256 software with manual on CD, Operation handbook, calibration certificate.

Article-Nr	Modell	Description
Calibration		
15300529	K-BTS256-HI-I	Re-calibration of BTS256-HI for luminous flux and spectral radiant power. calibration certificate. *6/6*
Software		
15298218	S-SDK-BTS256	Software Development Kit; Software and users guide on CD
15298108	S-BTS256	User software for BTS256 and variants.
Accessories		
15298622	BTS256-HI-Z01	Socket plate for BTS256-HI