ISD-100HFT-BTS2048-VL

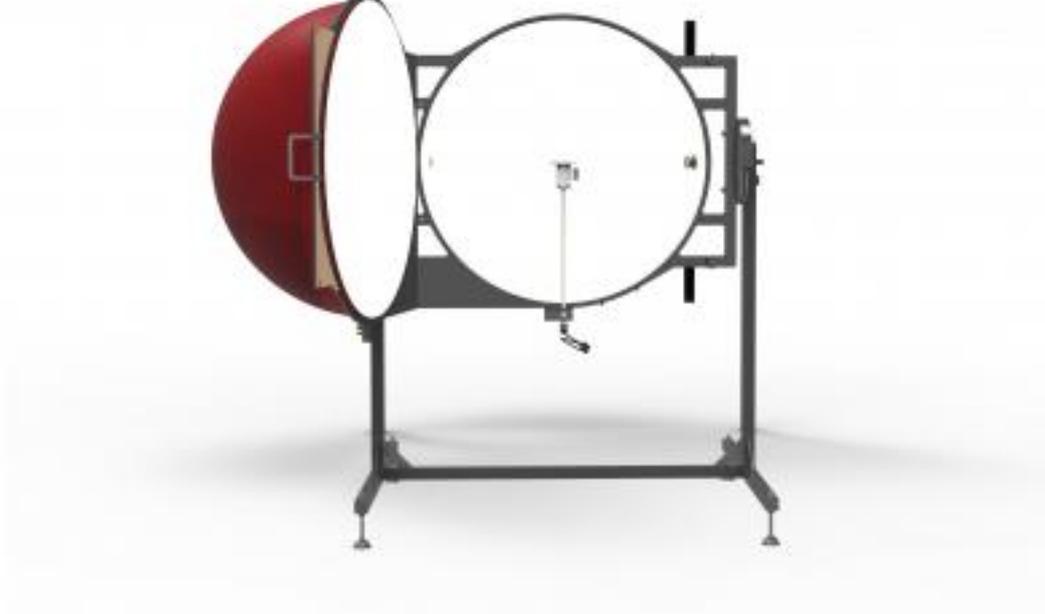https://www.gigahertz-optik.de/en-us/product/BTS2048-VL-ISD-100HFT-V03

Product tags: VIS

Description

The lamp position influences the luminous flux

LED lamps are often manufactured with integral driver circuitry. This means that the lamp orientation (base up, base down, etc) can have a significant effect on the junction temperature of the LEDs due to the different heat flow scenarios. Luminous flux, spectrum and color are directly related to junction temperature. The lifetime of LEDs is also reduced as junction temperature is increased. The measurement of photometric properties of LED lamps operating in the different orientations is therefore highly recommended. The ISD-100HFT-BTS2048-VL light meter from Gigahertz-Optik is a high-quality, CCD-based spectroradiometer with a rotatable, 100cm diameter, integrating sphere. This combination can be used to measure the luminous flux, spectrum, color, and color rendering index of LED lamps operating in any orientation.

The BTS256-VL light meter

The high-quality [BTS2048-VL](#) CCD based spectroradiometer is internationally recognized as a high-end product. It is one of the most compact spectroradiometers on the market which enables direct system integration in many applications without the need for expensive, and potentially measurement degrading, light guides. Among its characteristic features is its diffusor window with cosine corrected field of view for the measurement of spectral irradiance and spectral illuminance. This also permits direct mounting onto integrating spheres (e.g. the ISD-100HFT) for measurement of luminous flux. More detailed information about the [BTS2048-VL](#) can be found in the respective data sheets. The unit is also available in the [BTS2048-VL-TEC](#) thermoelectric cooled version.

Enhancement of the BTS2048-VL with the ISD-100HFT-V03 and ISD-100-V04 integrating spheres
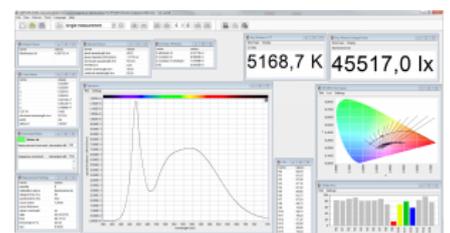
One unique feature of the ISD-100HFT-V03 is that it can be rotated around its frame. This allows for operation of LED lamps in upright (lamp base down), lying (lamp base horizontal) and hanging (lamp base up) positions. The sphere has a diameter of 100 cm and one of its hemispheres can be opened to allow easy access to the sample holder. The height of the sample holder can be adjusted for perfect positioning of the LED lamp at the center of the sphere. In order to operate 2Pi lamps outside the integrating sphere, the ISD-100HFT-V04 version has an extra measurement port with a 254 mm (10 inch) diameter. This remains closed when not in use. Both variants are equipped with an auxiliary lamp.
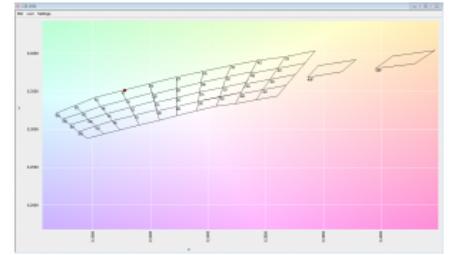
Calibration

One essential quality feature of photometric devices is their precise and traceable calibration. The ISD-100-HFT-BTS2048-VL is calibrated at Gigahertz-Optik's DAkkS-accredited (D-K-15047-01-00) calibration laboratory for the *spectral responsivity* and *spectral irradiance* according to ISO/IEC 17025. Calibration for the luminous flux is performed using a BN-LHSF-104 calibration lamp placed at the center of the sphere. Spheres with an additional measurement port require additional calibration using a [BN-LHSF-2P-20](#) calibration lamp that has 2pi radiation characteristics. Every device version comes with its respective calibration certificate.

The BTS2048-VL high-quality CCD sensor spectroradiometer with the rotatable ISD-100HFT integrating sphere

The position of the lamp can be changed simply by rotating the sphere.

BTS2048-VL high end CCD spectroradiometer for cw and flash measurements.

CIE 1931 with binning fields

Specifications

General	
Short description	ISD-100HFT-V03-BTS2048-VL: Spectroradiometer for measurement of the luminous flux, spectrum, color, and color rendering index. Operation with the LED lamps at the center of the sphere ISD-100HFT-V04-BTS2048-VL: Spectroradiometer for measurement of the luminous flux, spectrum, color, and color rendering index. Operation with the LED lamps at the center of the sphere
Main features	ISD-100HFT-V03-BTS2048-VL: Integrating sphere with a 100 cm diameter. 180° rotation possible. One half of the sphere can be opened. Height-adjustable sample holder. High-quality CCD sensor spectroradiometer ISD-100HFT-BTS2048-VL: Integrating sphere with a 100 cm diameter. 180° rotation possible. One half of the sphere can be opened. Additional measurement port with a 254 mm diameter. Height-adjustable sample holder. High-quality CCD sensor spectroradiometer
Measurement range	Luminous flux: Integral 1 mlm to 4 klm, Spectral for typical white LEDs: 0.1 lm to 700000 klm Spectral radiant flux: 1E-5 W/nm to 3.3E4 W/nm Spectral range: 350 nm to 1050 nm
typical applications	Inspection of incoming products (LED lamps), in-line quality assurance, design
Calibration	Factory calibration. Traceable to international calibration standards
Product	
General	This device is based on the BTS2048-VL, please find detailed specification there.
Spectral Detector	
typical measurement time	10 lm 450 ms 100 lm 45 ms 1000 lm 4,5 ms

spectral responsivity	
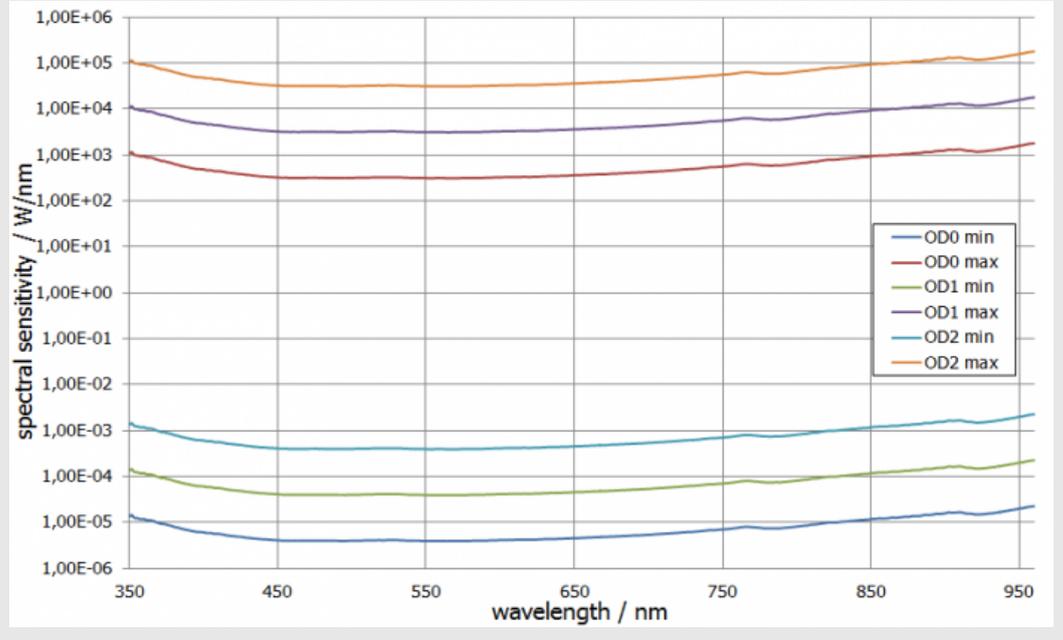
Integral Detector

Measurement range	Luminous flux: (1E-3 - 4E6) lm

Specification

Measured Quantity	Spectral radiant power (W/nm), total flux (lm), dominant wavelength, peak wavelength, center wavelength, centroid wavelength, x, y, u´, v´, X,Y,Z, delta uv, color temperature, color rendering index (CRI) Ra, R1-R15. Option without integrating sphere: in addition spectral irradiance (W/(m² nm)) and illuminance(lx). Option goniometer: in addition radiant intensity and luminous intensity distribution
Input optic - ISD-100HFT-V03	Turnable integrating sphere with 1 m diameter. One of the hemispheres for opening. Auxiliary lamp with 100 W diffuse bulb quartz-halogen lamp. Height adjustable sample holder with connection for lamp power supply and voltage measurement.
Calibration	Spectral radiant power

(350 - 399) nm:	OD0: ± 8 %	OD1: ± 10 %	OD2: ± 10 %
(400 - 800) nm:	OD0: ± 4,5 %	OD1: ± 4,5 %	OD2: ± 4,5 %
(801 - 1000) nm:	OD0: ± 6,5 %	OD1: ± 6,5 %	OD2: ± 6,5 %
(1001 - 1050) nm:	OD0: ± 8 %	OD1: ± 10 %	OD2: ± 10 %

Calibration uncertainty luminous flux ± 4 %

Downloads

Type	Description	File-Type	Download
BTS2048-Series Brochure	Not Just Another Spectrometer	pdf	https://www.gigahertz-optik.de/assets/Uploads/BTS2048-broschuere-DINA4-hoch-V2-WEB.pdf

Configurable with

Produktname	Product Image	Description	Show product
S-SDK-BTS2048		Software Development Kit for BTS2048 variants.	https://www.gigahertz-optik.de/en-us/product/S-SDK-BTS2048
UMLA-SHAP-E27		Bulbs measuring socket for the use with integrating spheres. Features: E27 socket. Quadrupole connecting the lamp to a galvanically isolated power supply and voltage measurement	https://www.gigahertz-optik.de/en-us/product/UMLA-SHAP-E27
UMLA-SHAP-E14		Bulbs measuring socket for the use with integrating spheres. Features: E14 socket. Quadrupole connecting the lamp to a galvanically isolated power supply and voltage measurement	https://www.gigahertz-optik.de/en-us/product/UMLA-SHAP-E14
UMLA-SHAP-G9		Bulbs measuring socket for the use with integrating spheres. Features: G9 socket. Four-line connection of the lamp socket for a separate power supply and voltage measurement.	https://www.gigahertz-optik.de/en-us/product/UMLA-SHAP-G9
UMLA-SHAP-GU10		Bulbs measuring socket for the use with integrating spheres. Features: GU10 socket. Four-line connection of the lamp socket for a separate power supply and voltage measurement.	https://www.gigahertz-optik.de/en-us/product/UMLA-SHAP-GU10
UMLA-SHAP-GU5.3		Bulbs measuring socket for the use with integrating spheres. Features: GU5.3 socket. Four-line connection of the lamp socket for a separate power supply and voltage measurement.	https://www.gigahertz-optik.de/en-us/product/UMLA-SHAP-GU5.3
UMLA-SHAP-GX53		Bulbs measuring socket for the use with integrating spheres. Features: GX53 socket. Four-line connection of the lamp socket for a separate power supply and voltage measurement.	https://www.gigahertz-optik.de/en-us/product/UMLA-SHAP-GX53

Purchasing information

Article-Nr	Modell	Description
Product		
15298762	ISD-100HFT-V03	Turnable integrating sphere with 100W auxiliary lamp, height adjustable sample holder.

Article-Nr	Modell	Description
15298281	BTS2048-VL	BTS2048-VL, users guide, software CD, calibration certificate.
15298687	BTS2048-VL-TEC	Measuring device, hard cover box, users guide, software S-BTS2048, calibration certificate.
Calibration		
15300771	K-BTS2048VL-Phi-2-V1	Calibration of the total flux respectively radiant power responsivity of the BTS2048-VL with optional integrating sphere. 4Pi light distribution. Spectral range (350 - 1050) nm. With calibration certificate.
15300510	K-BTS2048VL-Phi-4-V1	Calibration of the total flux respectively radiant power responsivity of the BTS2048-VL with optional integrating sphere. 4Pi light distribution. Spectral range (350 - 1050) nm. With calibration certificate.

15298281	BTS2048-VL	BTS2048-VL, users guide, software CD, calibration certificate.
15298687	BTS2048-VL-TEC	Measuring device, hard cover box, users guide, software S-BTS2048, calibration certificate.