

# ISD-100HF-BTS256-LED

<https://www.gigahertz-optik.com/en-us/product/bts256-led-isd-100hf-v01/>

**Product tags:** VIS



## Description

### The BTS256-LED light meter

In its standalone mode, the compact [BTS256-LED](#) meter is designed for the convenient measurement of luminous flux, spectrum, color, and color rendering index of single LEDs. A key feature is the conical measurement port at the entry of the internal integrating sphere which enables the measurement of onboard LEDs. The bayonet connector used to attach the conical adapter makes it possible to combine the BTS256-LED with other accessory components. Gigahertz-Optik offers different accessories as part of the [BTS256-LED Plus Concept](#) which greatly extends the measurement capabilities of the BTS256-LED.

### Enhancement of the BTS256-LED using the ISD-100HF-V01 or ISD-100HF-V02 integrating sphere

The 100 cm diameter ISD-100HF-V01 integrating sphere makes it possible to measure the luminous flux, spectrum, color, and color rendering index of extra-large LED lamps with 2 pi and 4pi radiation characteristics inside the sphere. One half of the sphere can be opened in order to fix LED lamps onto the sample holder at the center of the sphere. The height of the sample holder can be adjusted. The ISD-100HF-V02 is offered as an alternative and has an additional measurement port with a 254 mm diameter for the measurement of 2pi lamps. This remains closed whenever it is not in use. Both variants are equipped with an auxiliary lamp. The BTS256-LED can still be used to measure single, onboard LEDs. A bayonet adapter enables connection of the device onto the ISD-100HF integrating sphere.

### Determination of flicker properties and TLA

In addition to the investigation of light-metric quantities such as luminous flux, spectrum, color, etc., other properties of light sources play a significant role. In order to be able to offer light sources on the European market, an investigation of temporal intensity modulations such as light flicker and stroboscopic effects is necessary according to the Ecodesign Directive. This application field is summarized under the term "Temporal Light Artefacts (TLA)".

Gigahertz-Optik offers the integrating sphere model ISD-100HF-V08 as a variant. In addition to the spectroradiometer BTS256-LED Tester, this model offers the option of connecting an additional photodiode-based detector. It enables the measurement of flicker and TLA in conjunction with the [PFL-200 measuring device](#).

In detail, the following measured quantities become available:

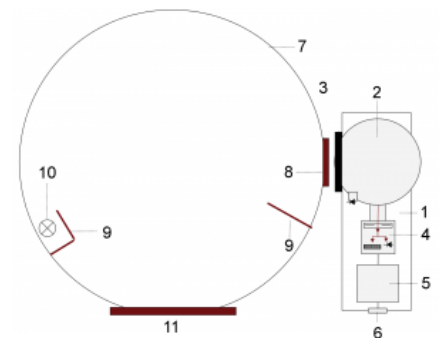
- Percent Flicker (IEEE Std 1789-2015, IES: RP-16-10, CIE:TN-006, CIE:TN-012)
- Flicker Index (IEEE Std 1789-2015, IES: RP-16-10, CIE:TN-006, CIE:TN-012)
- FFT Frequency component analysis
- P<sub>st</sub> Short term flicker severity (CIE:TN-006, CIE:TN-012, IEC TR 61547)
- Stroboscopic Visibility Measure, SVM (CIE:TN-006, CIE:TN-012, IEC TR 63158)
- M<sub>p</sub> ASSIST Flicker perception metric
- Joint Appendix JA10

### Calibration

One essential quality feature of photometric devices is their precise and traceable calibration. The ISD-100-HF with the BTS256-LED is calibrated by Gigahertz-Optik's calibration laboratory that is accredited by DAkkS (D-K-15047-01-00) for the *spectral responsivity* and *spectral*



*BTS256-LED spectroradiometer with integrating sphere ISD-100HF-V01 for 2pi and 4pi LED lamps inside the sphere. ISD-100HF-V02 with additional measurement port with plug.*

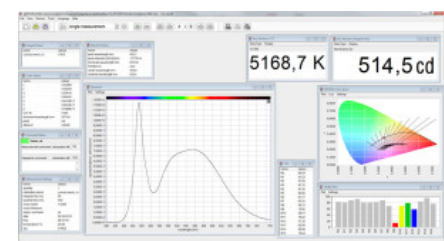


*1) BTS256-LED 2) 50mm integrating sphere 3) Precision bayonet mount 4) BiTec sensor with Si photodiode, CMOS diode array spectrometer and shutter 5) Microprocessor 6) USB interface 7) ISD-21 integrating sphere 8) Bayonet mount 9) Baffle 10) Auxiliary lamp 11) Measurement port*

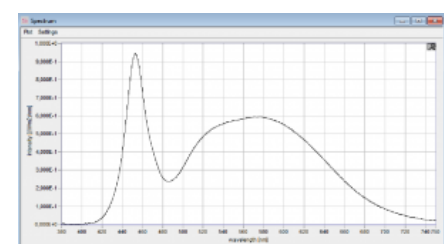


irradiance according to ISO/IEC 17025. Calibration for the luminous flux is performed using a BN-LHSF-104, which is placed at the sphere center. Spheres with an additional measurement port require additional calibration with a [BN-LHSF-2P-20](#) calibration lamp, which has 2pi radiation characteristics in the integrating sphere. Every device comes with its respective calibration certificate.

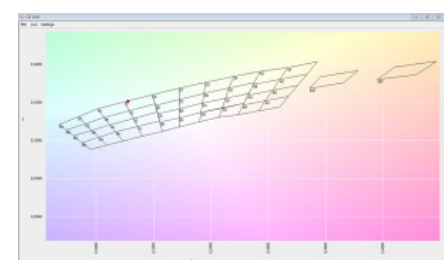
*BTS256-LED for measurement of the luminous flux, spectrum, color, and color rendering index of single LEDs*



*The S-BTS256 user software for the luminous flux with integrated and external sphere.*



*Full screen display of the luminous spectrum*



*CIE 1931 chromaticity diagram with binning fields*



*Substitution correction menu*

# Specifications

## General

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Short description    | <ul style="list-style-type: none"><li>• ISD-100HF-V01-BTS256-LED: Spectroradiometer for measurement of the luminous flux, spectrum, color, and color rendering index. Operation with the LED lamps at the center of the sphere</li><li>• ISD-100HF-V02-BTS256-LED: Spectroradiometer for measurement of the luminous flux, spectrum, color, and color rendering index. Operation with the LED lamps at the center of the sphere or outside the sphere</li></ul>                                                              |
| Main features        | <ul style="list-style-type: none"><li>• ISD-100HF-V01-BTS256-LED: Integrating sphere with a 100 cm diameter. Height-adjustable sample holder. Spectroradiometer can be used without the integrating sphere to measure single LEDs</li><li>• ISD-100HF-V02-BTS256-LED: Integrating sphere with a 100 cm diameter. One openable hemisphere. Additional measurement port with a 254 mm diameter. Height-adjustable sample holder. Spectroradiometer can be used without the integrating sphere to measure single LEDs</li></ul> |
| Measurement range    | 4 lm to 400,000 lm, 360 nm to 830 nm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Typical applications | Inspection of incoming products (LED lamps), quality assurance in production processes, design                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Calibration          | Factory calibration. Traceable to international standards                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## Product

|                             |                                                                                                                                                                                                                                                                                           |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Calibration uncertainty     | Luminous flux calibration $\pm 5\%$                                                                                                                                                                                                                                                       |
| Input optic - ISD-100HF-V01 | Integrating sphere with barium sulfate coating. 1000mm internal diameter. An openable hemisphere. UMSH-AP-1000 height-adjustable sample holder.. Baffle between the detector and the sphere center for lamps with an extent of up to 300mm. 12V/100W Halogen auxiliary lamp. Table stand. |
| General                     | This device is based on the <a href="#">BTS256-LED</a> , please find detailed specification there.                                                                                                                                                                                        |

## Spectral Detector

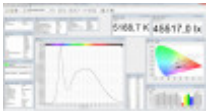
|                          |                                                                                                                                                                                                                                                                      |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Typical measurement time | BTS256-LED: max. 1000 lm $\leq$ 5 ms (white light)<br><br>BTS256-LED: min. 10 mIm $\leq$ 30 s (white light)<br><br><br>BTS256-LED with ISD-100HF-V01: max. 400000 lm $\leq$ 5 ms (white light)<br>BTS256-LED with ISD-100HF-V01: min. 4 lm $\leq$ 30 s (white light) |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Integral Detector

|                                |                                                                               |
|--------------------------------|-------------------------------------------------------------------------------|
| max. luminous flux             | BTS256-LED typ. 70000 lm<br><br>BTS256-LED with ISD-100 typ. 32000 lm         |
| Noise equivalent luminous flux | BTS256-LED Tester typ. 0.05 mIm<br>BTS256-LED Tester with ISD-100 typ. 40 mIm |

# Configurable with

| Product Name | Product Image                                                                       | Description                                   | Go to product                                                                                                                         |
|--------------|-------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| S-SDK-BTS256 |  | Software Development Kit for BTS256 variants. | <a href="https://www.gigahertz-optik.com/en-us/product/s-sdk-bts256/">https://www.gigahertz-optik.com/en-us/product/s-sdk-bts256/</a> |

| Product Name            | Product Image                                                                       | Description                                                                                                                                                                       | Go to product                                                                                                                                               |
|-------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| S-BTS256                |    | Application software for BTS256 variants.                                                                                                                                         | <a href="https://www.gigahertz-optik.com/en-us/product/s-bts256/">https://www.gigahertz-optik.com/en-us/product/s-bts256/</a>                               |
| UMLA-SHAP-E27           |    | Bulbs measuring socket for the use with integrating spheres. Features: E27 socket. Quadropole connecting the lamp to a galvanically isolated power supply and voltage measurement | <a href="https://www.gigahertz-optik.com/en-us/product/umla-shap-e27/">https://www.gigahertz-optik.com/en-us/product/umla-shap-e27/</a>                     |
| UMLA-SHAP-E14           |    | Bulbs measuring socket for the use with integrating spheres. Features: E14 socket. Quadropole connecting the lamp to a galvanically isolated power supply and voltage measurement | <a href="https://www.gigahertz-optik.com/en-us/product/umla-shap-e14/">https://www.gigahertz-optik.com/en-us/product/umla-shap-e14/</a>                     |
| 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.    | <a href="https://www.gigahertz-optik.com/en-us/product/umla-shap-g9/">https://www.gigahertz-optik.com/en-us/product/umla-shap-g9/</a>                       |
| 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.  | <a href="https://www.gigahertz-optik.com/en-us/product/umla-shap-gu10/">https://www.gigahertz-optik.com/en-us/product/umla-shap-gu10/</a>                   |
| 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. | <a href="https://www.gigahertz-optik.com/en-us/product/umla-shap-gu5.3/">https://www.gigahertz-optik.com/en-us/product/umla-shap-gu5.3/</a>                 |
| BTS256-LED Tester       |  | Compact BiTec Spectroradiometer LED Tester for the Measurement of Total Luminous Flux of Single VIS and NIR LEDs                                                                  | <a href="https://www.gigahertz-optik.com/en-us/product/bts256-led/">https://www.gigahertz-optik.com/en-us/product/bts256-led/</a>                           |
| BTS256-LED Plus Concept |  | The Plus concept describes the many applications that are possible with the BTS256-LED                                                                                            | <a href="https://www.gigahertz-optik.com/en-us/product/bts256-led-plus-concept/">https://www.gigahertz-optik.com/en-us/product/bts256-led-plus-concept/</a> |
| BN-LHSF-AP-100          |  | Calibration standard lamp for 4π spectral flux, total flux and CCT                                                                                                                | <a href="https://www.gigahertz-optik.com/en-us/product/bn-lhsf-ap-100/">https://www.gigahertz-optik.com/en-us/product/bn-lhsf-ap-100/</a>                   |

## Purchasing information

| Article-Nr         | Modell            | Description                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product</b>     |                   |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 15298049           | ISD-100HF-V01     | Integrating sphere with 1000mm diameter. One hemisphere can be opened. Height-adjustable sample holder UMSH-AP-1000. Detector port for the BTS256-LED. Baffle for shadowing the sphere Center for lamp sup to 300 mm. 12V/100W auxiliary lamp.                                                                                                                                                                          |
| 15298050           | ISD-100HF-V02     | Integrating sphere with 1000mm diameter. One hemisphere can be opened. Height-adjustable sample holder UMSH-AP-1000. Measurement port with 254mm diameter. Removable port plug. Detector port for the BTS256-LED. Two-direction baffle for shadowing the sphere center for lamps up to 300mm and measurement port. Auxiliary lamp 12V/100E.                                                                             |
| 15316092           | ISD-100HF-V08     | Integrating sphere with 1000 mm diameter. One hemisphere can be opened. Height-adjustable sample holder UMSH-AP-1000. Measurement port with 254 mm diameter. Removable port plug. Detector port for the BTS256-LED. Detector port for a VL-3702-1 in combination with flicker meter PFL-200. Two-direction baffle for shadowing the sphere center for lamps up to 300 mm and measurement port. Auxiliary lamp 12V/100E. |
| 15308420           | BTS256-LED        | Measurement device, BTS256-LED-CA10 cone adapter, USB cable, hard-top casing, operation manual, S-BTS256 software, calibration certificate.                                                                                                                                                                                                                                                                             |
| 15314215           | PFL-200           | Flicker and TLA meter for use in combination with VL-3702-1. Compatible to model ISD-100HF-V08.                                                                                                                                                                                                                                                                                                                         |
| 15295293           | VL-3702-1         | Detector for measurement of flicker and TLA. Only compatible to model ISD-100HF-V08. Requires PFL-200 flicker meter.                                                                                                                                                                                                                                                                                                    |
| <b>Calibration</b> |                   |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 15300260           | K-BTS256LED-Phi-2 | Calibration of the BTS256-LED with external integrating sphere in $2\pi$ measuring geometry.                                                                                                                                                                                                                                                                                                                            |
| 15306983           | K-BTS256LED-Phi-4 | Calibration of the BTS256-LED with external integrating sphere in $4\pi$ measuring geometry.                                                                                                                                                                                                                                                                                                                            |
| <b>Software</b>    |                   |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 15298218           | S-SDK-BTS256      | Software Development Kit for the implementation of the BTS256 or variants into custom made software                                                                                                                                                                                                                                                                                                                     |

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- Calibrations & Re-Calibrations ([ISO/IEC 17025 Calibration Services](#), [factory calibration](#), [Calibration of Third-Party Products](#))
- Repairs & Updates
- OEM & Feasibility Consulting of Customized Solutions

[Send us your inquiry](#) or contact us by phone or e-mail. We would welcome your feedback too or review us on [Google](#).

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