CSS-45

http://www.gigahertz-optik.de/en-us/product/css-45

Product tags: VIS , Detector , Spectral Data , Color Temperature , CRI , Bilirubin , PAR , Scotopic , Photometry , General lighting

Description

The physical constraints and requirements of many optical radiation measurement tasks prevent the use of handheld instruments such as our MSC15 and BTS256-EF. Despite their extremely compact design, the powerful BTS2048-Series spectroradiometers may be over specified. For such applications, Gigahertz-Optik GmbH offers an interesting alternative with the new intelligent spectral detector CSS-45.

A compact metal housing with various mounting options enables universal integration of the CSS-45 in measurement setups. The robust housing and its connectors are splash proof, and therefore suitable for use in industrial applications. A variant with protective glass dome in front of the diffuser is available. A special feature of the detector is its remote-controlled shutter, which allows a dark level measurement to be made at any time.

CSS-45 detector head

The CSS-45 detector incorporates a powerful microprocessor which performs not only data acquisition but also all necessary lighting calculations. Both USB and RS485 interfaces are standard enabling the flexible configuration of single and multi-detector based systems. An optional software development kit supports integration into third party application software.

Topview

With its wide spectral range from 360 nm to 830 nm the CSS-45 is ideal, for example, as a high accuracy photometric and colorimetric detector (according to CIE S023). The precision diffuser provides excellent cosine correction ($f_2 \leq 1.5$ %). The optical bandwidth correction feature (CIE 214) further improves the quality of the spectral measurement data. Manual and auto gain settings enable a wide measurement from 1 lx to 350,000 lx for illuminance and color measurements.

Additional functions of the CSS-45

The embedded intelligence of the CSS-45 enables the direct output of a comprehensive range of radiometric, photometric and colorimetric parameters based on the measured spectral data. Additionally, specialist functions are incorporated for particular applications fields including:

- Horticultural lighting – PAR measurement Photosynthetic Photon Flux Density (PPFD) in µmol/m²s.
- Human Centric Lighting – melanopic irradiance and illuminance, melanopic daylight equivalent illuminance.
- Phototherapy – total irradiance for bilirubin, E_{bi}, in mW/cm^2 (IEC 60601-2-50) as well as average spectral irradiance in µW/cm^2/nm (American Academy of Pediatrics).

Calibration of the CSS-45

One essential quality feature of spectroradiometric devices is their precise and traceable calibration. The CSS-45 is calibrated by Gigahertz-Optik's calibration laboratory which is accredited by DAkkS (D-K-15047-01-00) for

the spectral responsivity and spectral irradiance according to ISO/IEC 17025. Every device is supplied with its unique calibration certificate.

Options for the CSS-45

- Software development kit for integration of the device in the user's own software

Specifications

General	
Short description	Remote spectroradiometric detector for universal use in radiometric and photometric measurement setups.
Main features	Remote operation via USB 2.0 or RS 485. Compact, robust, splashproof housing with universal mounting options. Direct output of radiometric, photometric, colorimetric and specialist functions. Precision cosine diffuser. Remote controlled dark level shutter. Application software.
Range of measurement	1 lx to 350,000 lx (for white LED), 360 nm to 830 nm.
Typical applications	Photometric and radiometric setups requiring remote positioning of single or multiple detectors. Use with positioning equipment e.g.for mapping. Industrial monitoring, grow lights, blue light phototherapy, human centric lighting.
Calibration	Factory calibration. Traceable to international calibration standards.
Product	
Entrance Optic	Diffuser window with 10 mm diameter, cosine corrected field of view, $f_2 \leq 1.5$ %
Measurement Quantities	Illuminance photopic Illuminance scotopic Spectral Irradiance Color coordinates (x,y) CCT CRI (color rendering index) PAR– PPFD Melanopic irradiance Melanopic illuminance (equivalent melanopic lux) Melanopic daylight equivalent illuminance Total irradiance for bilirubin (E_{bi}) Average spectral irradiance for bilirubin (AAP)
CSS-45	Detector head for illuminance and light color. (Class B according DIN 5032-7 or AA according to JIS C 1609-1:2006)
Spectral Detector	
Wavelength Range	(360 - 830) nm
Optical Bandwidth	10 nm optical bandwidth correction applied according to CIE 214
Measurement range typ. white LED	(1 - 350,000) lx
Δx, Δy reproducibility	± 0.0002
Δx, Δy uncertainty	± 0.002 (Standard illuminant A)

CCT Measurement range	(1700 - 17000) K
ΔCCT	± 50 K (standard illuminant type A) ± 4 % (depending on the LED spectrum)
Calibration	
Calibration uncertainty	Illuminance (standard illuminant A) ± 3 % Illuminance (typ. LED) ± 4 % *(Traceable to national standard. Uncertainty of the standard is included)*
Miscellaneous	
Interface	USB 2.0, RS 485
Temperature Range	Operation: 10°C to +30°C Storage: -10°C to +50°C
Power supply	5 VDC by USB (3.5 - 25) VDC by custom plug max. current 500 mA
Weight	130 g, only sensor without cables
Dimensions	45 mm diameter 53 mm height* * height without WT protection dome
Housing	Splashproof/Watertight class: CSS-45: IP62 CSS-45-WT: IP65

Downloads

Type	Description	File-Type	Download
technical drawing	CSS-45	pdf	http://www.gigahertz-optik.de/assets/Uploads/V127680.pdf

Purchasing information

Article-Nr	Modell	Description
Product		
15308867	CSS-45	Measurement device, USB cable, software, calibration, calibration certificate

Article-Nr	Modell	Description
15308950	CSS-45-WT	Splash-proof measurement device, USB cable, software, calibration certificate.
Calibration		
15309229	K-CSS45-L	Calibration of a CSS-45 detector's spectral radiance in combination with a luminance adapter. Calibration certificate.
Re-calibration		
15308903	K-CSS45-E	Re-calibration of a CSS-45's spectral irradiance including wavelength adjustment. Calibration certificate.
15309228	K-CSS45-WT-E	Re-calibration of a CSS-45-WT's spectral irradiance including wavelength adjustment. Calibration certificate.
Accessories		
15295664	SRT-M45/37B	Adapter/holder for the attachmant of SRT-M37 components to a CSS-45 (not compatible to CSS-45-WT).
15295665	SRT-M37L-1	Luminance lens with 1° field of view.
15295666	SRT-M37L-2	Luminance lens with 2° field of view.
15295668	SRT-M37L-5	Luminance lens with 5° field of view.
15295740	SRT-M37L-10	Luminance lens with 10° field of view.
15308887	BHO-24	Carry case for CSS-45 including accessories