

# MSC15

<https://www.gigahertz-optik.com/en-us/product/msc15/>

**Product tags: VIS**



## Description

LEDs enable much greater control of the lighting quality than the technologies they are rapidly replacing. Many international standards now specify requirements for internal and external lighting systems in terms of both 'quality' and 'quantity' of light as well as in terms of efficiency and life time. Photometry in the lighting industry generally focuses on the intensity (i.e., illuminance) and color (i.e., correlated color temperature, CCT and color rendering index, CRI) of light falling on a surface. LED lamps are extremely versatile in terms of emission spectra, which is why spectral measurement of the illuminance and color has now become essential for any high-end light meters.

### MSC15 Light Spectrum Meter

The compact, hand-held MSC15 light spectrum meter from Gigahertz-Optik GmbH focuses on the precise measurement of the illuminance spectrum, color, and color rendering. Its cutting-edge design concentrates on measurement accuracy rather than unnecessary esoteric electronic features. This makes the MSC15 a high quality LED light meter at an attractive price. The light sensor consists of a fast spectroradiometer that covers a spectral range between 360 nm and 830 nm (V-lambda range according to CIE S023) with a spectral bandwidth of 10 nm. The device also integrates an optical bandwidth correction feature (CIE 214) in order to further improve the quality of the values calculated based on the spectral measurement data.

### Excellent cosine response plus a wide measurement range

Another key feature that ensures accurate illuminance measurements of extended lighting conditions is its carefully designed field of view. Accurate illuminance measurements are only possible with a precise, cosine-corrected entrance optic. The MSC15 has an excellent cosine response ( $f_2 \leq 3\%$ ), at the same time as offering a wide measurement range for illuminance and color between 1 lx and 350,000 lx.

### Intuitive simple color touch-screen operation

The colored touch screen of the device makes it extremely easy to use. Activating and deactivating of individual measurement displays is possible as well via a configuration menu which is implemented into the MSC15. Uninterrupted operation of more than 8 hours is provided by its lithium ion battery which is recharged via the USB 2.0. Remote control of the device and data read out are made possible by the supplied software.

### Application Software

The included software allows control of the MSC15 device via its USB 2.0 interface. It provides numerical and graphical displays for all the measured parameters. Measurement data can be stored, loaded and exported. The software also enables the configuration of which display screens are active on the meter.

### Store up to 10 Measurements internally

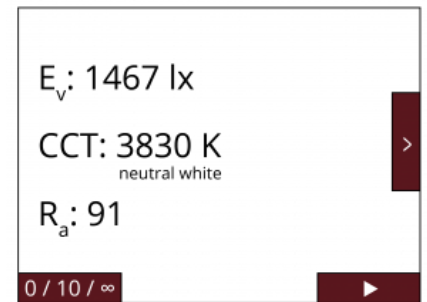
In addition, the MSC15 is equipped with an internal memory which can be used to store up to 10 measurements internally and read them out via software later. The device allows the comfortable management of the stored measurements on its screen.

### Calibration of the MSC15

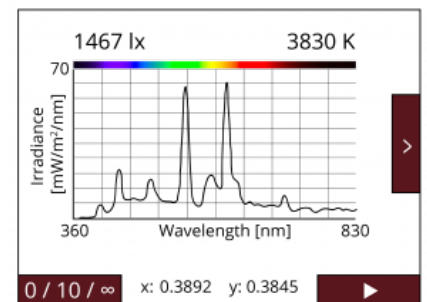
One essential quality feature of photometric devices is their precise and traceable calibration. The MSC15 is calibrated by Gigahertz-Optik's calibration laboratory that is accredited by



*MSC15 for measurement of the illuminance, spectrum, color, and color rendering in the lighting Industry. Touchscreen for intuitive handling of the meter.*



*Display of photopic lux, CCT and CRI Ra*



*Display of the spectral power distribution, photopic lux and CCT*

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## Over 30 different light, spectral, color quantity & actinic measurements

With over 30 different light, spectral, color quantity & actinic measurements, this versatile light meter for LED and other light sources can work precisely for you in a multitude of lighting conditions in the field, lab or in production.

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## PAR Meter measurements for horticultural applications

LED grow lights need to be measured in terms of the Photosynthetically Active Radiation (PAR) they produce. An additional function of the MSC15 is the display of Photosynthetic Photon Flux Density (PPFD) in  $\mu\text{mol}/\text{m}^2\text{s}$  (400 nm to 700 nm) which is a measure of the total number of photons within the PAR wavelength range that reach a surface each second per square meter area.

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## Photomedicine measurements

Neonatal phototherapy lamps used for the treatment of hyperbilirubinemia can be accurately measured in accordance with the latest standards and guidance, irrespective of the lamp type or manufacturer. The MSC15 directly displays total irradiance for bilirubin,  $E_{bi}$  ( $\text{mW}/\text{cm}^2$ ) in accordance with IEC 60601-2-50:2009+A1:2016 as well as average spectral irradiance ( $\mu\text{W}/\text{cm}^2/\text{nm}$ ) in accordance with the latest American Academy of Pediatrics recommendations.

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## Human Centric Lighting measurements

Circadian or Human Centric Lighting requires new metrics beyond traditional photometric and colorimetric values (ref. CIE TN 003:2015). The MSC15 directly displays melanopic irradiance, melanopic illuminance (equivalent melanopic lux) and melanopic daylight equivalent illuminance according to CIE S 026:2018.

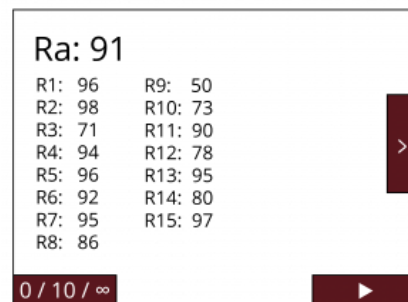
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## DALI Alliance tests IEC 62386-209

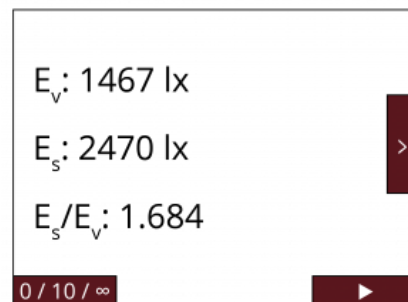
Enables CCT measurements to be fully automated in the official DALI Alliance tests in accordance with IEC 62386-209 (colour control gear).

### Options for the MSC15:

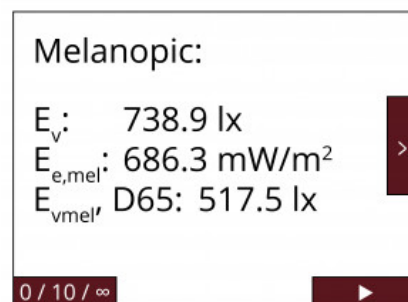
- Software development kit for integration of the device in the user's own software



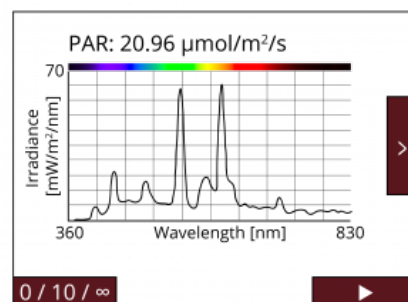
Display of the CRI's



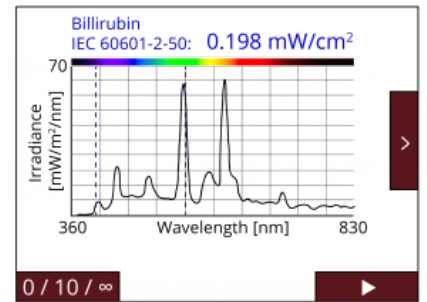
Display of photopic and scotopic lux and their ratio.



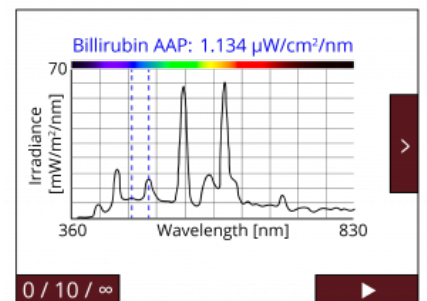
Display of melanopic lux, etc. according to CIE S 026:2018 and Well building Standard



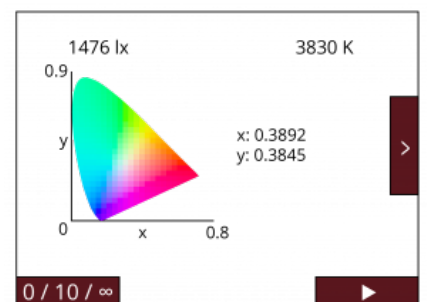
Display of PAR and the spectral power distribution



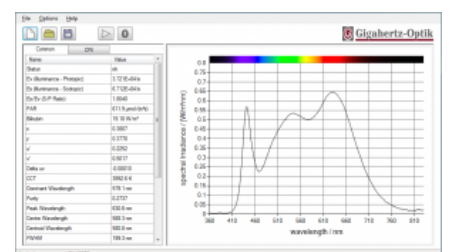
Display of Bilirubin according IEC 60601-2-50 and the spectral power distribution



Display of Bilirubin according AAP and the spectral power distribution



CIE 1931 view



Example measurement in the

## Specifications

### General

Short description	Spectroradiometer for measurement of the illuminance, spectrum, light color, and color rendering
Main features	Mobile meter, spectroradiometer with a 10 nm optical bandwidth and additional optical bandwidth correction (CIE214), precise cosine field of view function, Lithium ion battery with over 8 operation hours
Measurement range	1 lx to 350,000 lx, 360 nm to 830 nm
typical applications	Precise spectral light meter for the lighting industry
Calibration	Factory calibration. Traceable to international calibration standards.

### Product

MSC15	Handheld meter for illuminance and light color. Color-Touchscreen, simple intuitive Operation with clearly arranged display views. Storage of 10 measuring points and selection of different display views is possible.  (Class B according DIN 5032-7 or AA according to JIS C 1609-1:2006)
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Measured Quantity	<p>Illuminance photopic          Illuminance scotopic          Spectral Irradiance          Color coordinates (x,y)          CCT          CRI (color rendering index)          PAR- PPF          Melanopic irradiance          Melanopic illuminance (equivalent melanopic lux)          Melanopic daylight equivalent illuminance          Total irradiance for bilirubin (<math>E_{bi}</math>)          Average spectral irradiance for bilirubin (AAP)          Other color quantities as well by software (x, y, <math>u'</math>, <math>v'</math>, X,Y,Z, delta uv, color temperature, color rendering index (CRI) Ra, R1-R15, TM-30-20, CQS, CIE-170, etc.)</p>
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Input optics	Diffuser window with 10mm diameter, cosine corrected field of view, $f2 \leq 3 \%$
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### Spectral Detector

spectral range	(360 - 830) nm
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Optical Bandwidth	10 nm  optical bandwidth correction applied according to CIE 214
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Measurement range typ. white LED	(1 - 350000) lx
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$\Delta y \Delta x$ uncertainty	$\pm 0.002$ (Standard illuminant A, $k=2$ )
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CCT Measurement range	(1700 - 17000) K
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$\Delta CCT$	$\pm 50$ K (standard illuminant type A, $k=2$ ) $\pm 3$ MK <sup>-1</sup> (Standard illuminant type A, $k=1$ ) $\pm 4\%$ (depending on the LED spectrum, $k=2$ )
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Repeatability	$\pm 0.0002$
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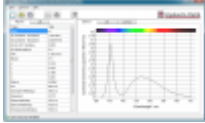
Peak wavelength	± 1 nm
<b>Calibration</b>	
Calibration uncertainty	<p>Illuminance (standard illuminant A, <math>k=2</math>) +/- 3%</p> <p>Illuminance (typ. LED, <math>k=2</math>) +/- 4%</p> <p><i>(Traceable to national standard. Uncertainty of the standard is included.)</i></p>
<b>Miscellaneous</b>	
Interface	USB 2.0
temperature range	<p>Operation: 10°C to +30°C</p> <p>Storage: -10°C to +50°C</p>
Power Supply	5VDC by USB
Power Supply	<p>rechargeable battery</p> <p>8h of operation (continuous measurement, 100% display backlight on)</p> <p>13.5h of operation (one measurement, standby modus, 100% display backlight on)</p> <p>30h of operation (one measurement, standby-modus, reduced display backlight to 10% (sufficient for indoor lighting conditions))</p>
Display	Color Touchscreen
Weight	160 g
Dimensions	136 mm x 74 mm x 32 mm

## Downloads

Type	Description	File-Type	Download
MSC15 Technical Datasheet	MSC15 brochure	pdf	<a href="https://www.gigahertz-optik.com/assets/Uploads/Technical-Datasheet-MSC15-210x297-FN-sheets.pdf">https://www.gigahertz-optik.com/assets/Uploads/Technical-Datasheet-MSC15-210x297-FN-sheets.pdf</a>
Brochure	Light measurement solutions for general and specialized lighting	pdf	<a href="https://www.gigahertz-optik.com/assets/Uploads/generalighting-broschuere-DINA4-hoch-v2.pdf">https://www.gigahertz-optik.com/assets/Uploads/generalighting-broschuere-DINA4-hoch-v2.pdf</a>

## Configurable with

Product Name	Product Image	Description	Go to product
S-SDK-MSC15		Software Development Kit for MSC15 and CSS-45 variants.	<a href="https://www.gigahertz-optik.com/en-us/product/s-sdk-msc15/">https://www.gigahertz-optik.com/en-us/product/s-sdk-msc15/</a>

Product Name	Product Image	Description	Go to product
S-MS15		Application software for MSC15 and CSS-45 variants.	<a href="https://www.gigahertz-optik.com/en-us/product/s-msc15/">https://www.gigahertz-optik.com/en-us/product/s-msc15/</a>

## Purchasing information

Article-Nr	Modell	Description
<b>Product</b>		
15298960	MSC15	MSC15 measurement device, USB cable, case for device and USB cable, S-MS15 software as a download, calibration, Factory calibration certificate
15310290	KP-MS15-E-S	Option: DIN EN ISO/IEC 17025:2018 Test Certificate (DAkKS)  Spectral irradiance measurement in wavelength range from 360nm to 830nm.
<b>Re-calibration</b>		
15300569	K-MS15-I	Calibration of the MSC15 including wavelength adjustment. Factory calibration certificate
15310249	KKP-MS15-E-S	Factory Calibration Certificate with DIN EN ISO/IEC 17025:2018 Test Certificate.
<b>Software</b>		
15306347	S-SDK-MS15	Software development kit