LICHTMETERS

PHOTONICS

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Partner GL Optic

GL Optic is a Polish-German manufacturer specializing in advanced light measurement systems for photonics and precision optics applications. Their comprehensive portfolio includes spectroradiometers, photometers, integrating spheres, goniometers, and luminance cameras, all designed to deliver accurate and reliable measurements across a broad spectrum of light sources.

Product offering

GL OPTICAM 4.0 M SC

GL OPTICAM 3.0 4K TEC

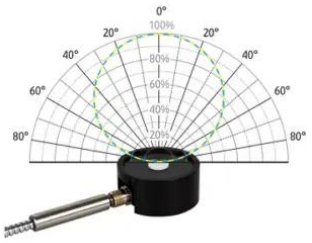
GL OPTICAM 2.0 4K TEC

GL OPTICAM 1.0

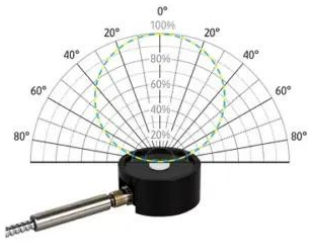
GL PHOTOMETERS

GL RETROREFLECTOMETER 4.0 SRS

LUMINANCE / RADIANCE



ILLUMINANCE / IRRADIANCE



GL Opticam 1.0

GL OPTI PROBES for radiometric measurements – GL Optic

GL OPTI PROBES for photometric measurements – GL Optic

GL OPTICAM 4.0 M SC

A revolution in luminance and color measurements

A novel luminance and color distribution measurement tool available on the market is the GL OPTICAM 4.0 M SC image luminance camera. The combination of image luminance and color measurement with measurements from an integrated spectroradiometer covering the ultraviolet to near-infrared regions is a new development in the industry. The GL OPTICAM 4.0 M SC is not your typical image luminance camera because it consists of two independent devices housed in one container. Spectral power distribution measurements provide a wealth of additional information about the thing being studied.

Matrix spectral sensitivity correction

Matrix spectral sensitivity adjustment is used by GL OPTICAM 4.0 M SC to enable accurate colorimetric data capture. Modular technology has made it possible to obtain spectral distribution and radiance data in the chosen regions of interest while accounting for the proper spectral efficiency. The device may be used with ease and dependability thanks to dedicated GL OPTICAM SOFT M image processing software, which also facilitates fast processing and evaluation of the data obtained by the imaging luminance and color meter. A report that can be customized can be created based on the analysis results. The new software makes it possible to create a smooth workflow, which significantly streamlines the otherwise difficult measuring and analysis procedure.

Automatic lens detection

For quick measurements of brightness and color distribution in both lab and production settings, this camera system is already set up. When installed lenses are detected by the device, it instantly chooses the correct calibration file. With our plug-and-measure imaging luminance camera for LEDs and other light sources, you can now quickly and accurately examine the luminance distribution of your light sources.

Sequential measurement

Higher signal levels are guaranteed by a special sequential measurement technique compared to methods that make use of simple optical filters or beam splitters.

Additional features of the GL OPTICAM 4.0 M SC, such an integrated depolarizer, encourage a greater dynamic range and guarantee that the system is prepared to handle the difficulties involved in measuring displays.

Simplify production testing

A stable luminance testing solution is necessary for the optical performance of instrument clusters, backlit buttons, and displays. It is necessary for developers, designers, and quality engineers to confirm light leakage, brightness distribution, contrasts, and homogeneity. This innovative optical tool makes it simple and accurate to verify all touch-screen control panels, backlit buttons, displays, keyboards, and telltale lights in R&D and production.

GL OPTICAM 4.0 M SC Usage

Imaging Luminance & Color Meter

High-resolution and high-sensitivity measurements of brightness and color distribution parameters are possible with the GL OPTICAM 4.0 M SC. GL Optic’s newest equipment allows for fast verification of an individual element’s uniformity of brightness, chromatic cooridinates, and CCT.

Evaluation and characterization of displays

Manufacturers of displays and individual components must test their goods at different phases of the manufacturing process. With its integrated spectroradiometer and image luminance camera, the new GL OPTICAM 4.0 M SC is a comprehensive solution that enables accurate luminance and color distribution measurement in a matter of seconds. It is an ideal tool for many industries, particularly the automotive, aviation, and display production sectors, but it can also be used for quality control in general illumination.

When color matters

Using a luminance camera and a separate colorimeter is no longer necessary. When various color LEDs are used in a lighting fixture or electrical board, the GL Optic breakthrough color camera can effortlessly deliver complete colorimetric and spectral data with great precision.

GL OPTICAM 4.0 M SC Features

Blue light hazard measurements

The spectral measurement of the backlighting, the blue light hazard weighted function, and the corrected luminance measurements enable BLH assessment for each point of the tested object based on the LB value.

Precise measuring of x,y coordinates next to L for each pixel

A sensitivity adjustment is applied to each pixel of the image based on spectral measurements of the backlighting sources. This yields an accurate reading of color coordinates at each location on the measured display.

GL OPTICAM 4.0 M SC Metrics

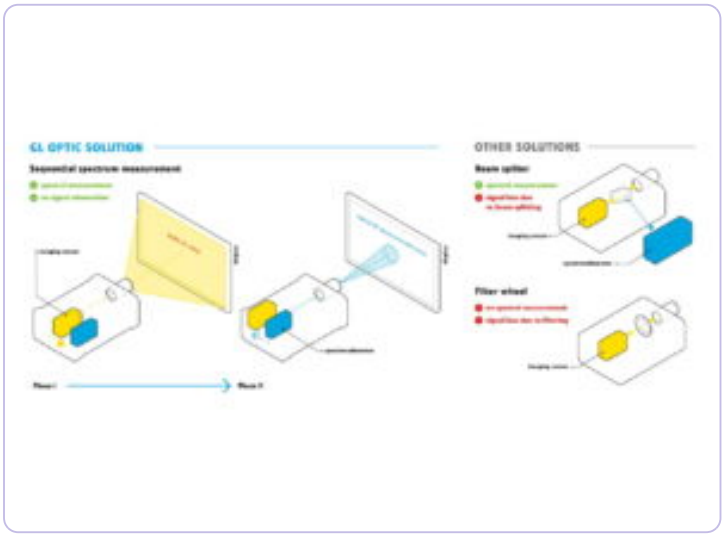
Using the GL OPITCAM 4.0 M SC, you can measure all of the following quantities:

Photometric quantities

- Point luminance [cd/m2]
- Luminance distribution, contrast
- Isocandela diagram
- Average, mean luminance
- Min Max diagram and tables

Colorimetric quantities

- Correlated Color Temperature – CCT and Duv
- Color Rendering Indices – CRI, R1 to R14
- TM-30 – Rf, Rg, CVG
- Color uniformity
- Binning and color consistency
- Spectral power distribution



GL OPTICAM 3.0 4K TEC

First fully adapted system for road lighting measurements according to the EN 13201: 2016 standard

Prior to the release of GL OPTICAM 3.0 4K TEC, measuring luminance distribution required a lot of individuals with specialized skills to participate in a laborious, expensive, and time-consuming process. The complete measurement data required to quickly determine the brightness distribution of the chosen road and area lighting standard compliance is provided by the new image luminance measuring technology. The GL OPTICAM 3.0 4K TEC is the world's first solution that is completely suited for field measurements, in contrast to previous laboratory meters.
It has a thermal stabilization unit (TEC) to correct for measurement inaccuracies caused by temperature variations in the image sensor. With its hermetic housing (IP 54), you can work in the field and be ready for any weather situation without worrying about damaging your camera. It also features a battery-operated power source, which eliminates the need for portable power supplies and power generators for outside operations. Determining the measuring field and finishing the measurement procedure are made simple by the set of accessories that are offered.

Street and area lighting verified

It is quick and easy to measure airport illumination, tunnel lighting, pedestrian crossing zones, and street luminance. This high sensitivity and high resolution camera system is ready to go for instantaneous measurements of the brightness distribution in any field setting. With our top-notch image luminance measuring gadget, you may plug it in and measure whenever you need a trustworthy portable brightness test.

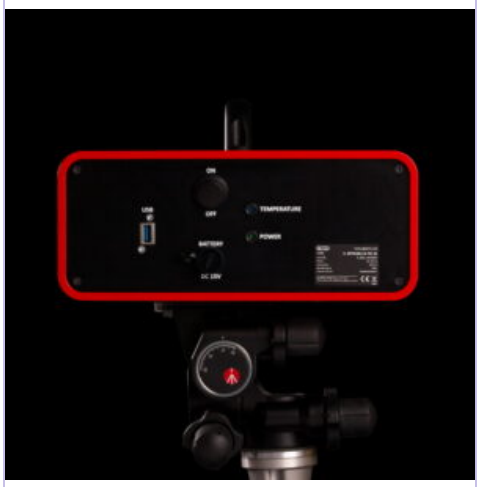
Road lighting compliance to EN 13201

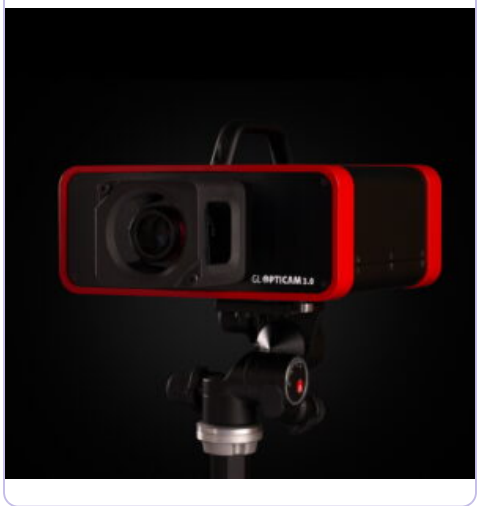
The analysis program is user-friendly and displays the results instantly, along with whether the installation complies or does not comply with the presumptions and specifications for the road lighting class as specified by EN 13201. Additionally, the software offers a feature that no other system on the market has up to this point: the ability to generate a report at the push of a button.

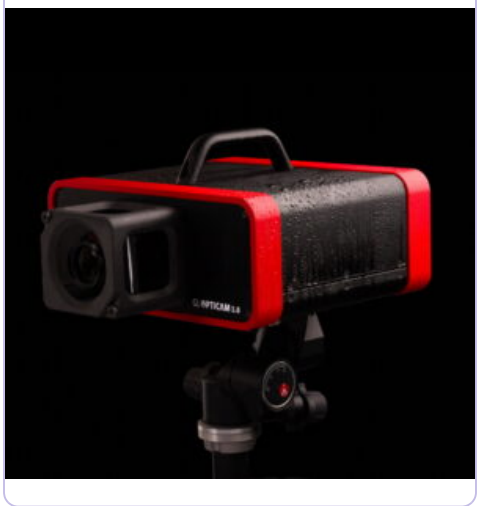
Adapted for field work

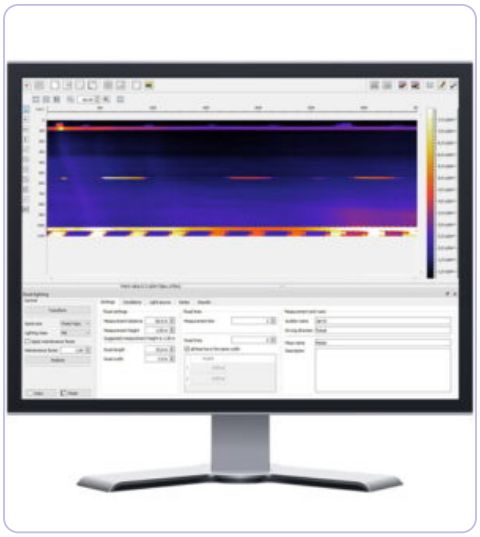
With the protection of hermetic housing (IP 54), thermal stabilization, a sturdy tripod, and accessories, you can operate in any weather without worrying about damaging your camera. To keep you covered when working outside, it has features including a measuring wheel, transportation cases, measurement field

markings, and a battery power supply.













GL OPTICAM 3.0 4K TEC Usage

Smart development programme

Working with Poznan University of Technology, the GL OPTICAM imaging luminance equipment was developed and implemented under the National Center for Research and Development Program. The project's objective was to commercialize a measurement device that facilitates on-site assessments of luminance distribution. Though there are a lot of luminance meters on the market, all of them are made for laboratory use and aren't really intended for measuring road luminance.

Using both spot luminance meters and an imaging luminance measuring device, the staff of the Poznań

University of Technology’s Department of Light Technology and Electrothermal Energy has many years of expertise measuring brightness on highways. An objective evaluation of the road lighting installation performance is made possible by the use of an ILMD meter, which greatly simplifies measurement procedures and contributes to the acquisition of more trustworthy data.

Focusing on road lighting quality

Road brightness measurement is a difficult task. This system is ready to take measurements on the road at the location. The hermetic casing of the camera is designed to prevent mechanical damage to the lens and system. The supplied power pack and auxiliary devices enable professional field measurement, and the thermally stabilized sensor is prepared to operate in a variety of temperatures. It can be applied in many settings while preserving the precision and efficiency of the laboratory.

Measuring system that works outdoors

The system also comes with a reflective safety vest, a measuring wheel for distance measurement, a heavy-duty elevating tripod, an extra battery pack, and specially made measurement field markers. This is all assembled into travel-ready cases to form a transportable measuring stand.

Adding colorimetry

Our GL SPECTIS 1.0 Touch spectroradiometer and this luminance meter can be used together to perform colorimetric testing and evaluation. Combining the spectroradiometric measurement with the luminance camera measurements is possible with our GL SPECTROSOFT. This allows us to provide complete colorimetric and spectral data for the LED product that is being tested, as well as mismatch correction for brightness values to obtain the best accuracy.

GL OPTICAM 3.0 4K TEC Features

Plug and measure

Digital luminance camera system that is individually calibrated and preconfigured for instantaneous luminance distribution assessment. Measuring the absolute brightness level is as simple as placing this device on the tripod in front of the lighting system. The device is applicable in both laboratory and field settings.

Dedicated V- lambda filter

A carefully chosen class A optically adjusted filter is fitted to every camera to ensure the best possible brightness measurements that match the sensitivity of the human eye. Every filter has a unique optimization for every CMOS sensor.

Thermal stabilisation

Temperature variations in the image sensor are compensated for by the TEC-controlled image sensor temperature.

Adding spectrum and color

The quality control can be expanded with colorimetric values such as CCT, CRI, and many more by combining this new picture luminance camera with our spectrum instruments, such as GL SPECTIS 1.0 Touch. It will also enable the measurements of multiple-color LED devices and offer an automatic filter miss-match adjustment process.

GL OPTICAM 3.0 4K TEC Metrics

Photometric quantities

- Point Luminance [cd/m2]
- Luminance distribution
- Iso candela diagram
- Average luminance
- Min Max diagram and tables

Spectral color quantities*

- Correlated Color Temperature – CCT and Duv
- Color Rendering Indices – Ra, CRI, R1 to R14
- New rendering Rf and TM-30
- Color Uniformity
- Binning and color consistency
- Spectral Power Distribution

GL OPTICAM 2.0 4K TEC

Laboratory imaging luminance cameras for a variety of applications

Faster changes in the design and complexity of backlit components in the automotive, transportation, electronics, and other industries are posing challenges for optical engineers and system developers. The employment of contemporary LED and OLED components to improve user interfaces presents development teams and QA/QC staff with a problem when it comes to quality verification. For optical examinations and measurements, they are all in need of dependable and easily available devices.

The GL OPTICAM 2.0 4K TEC is an imaging luminance measuring tool that was created to help the quicker adoption of contemporary LED and OLED lighting systems by confirming compliance and evaluating the functionality of lighting components. A stable luminance testing solution is necessary for the optical performance of instrument clusters, backlit buttons, and displays. It is necessary for developers, designers, and quality engineers to confirm light leakage, brightness distribution, contrasts, and homogeneity. Throughout the R&D and manufacturing phases, all touch-screen control panels, backlit buttons, displays, keyboards, and indicator lights may be quickly and accurately tested with this innovative optical device.

The high-resolution, laboratory-performance optical camera system GL OPTICAM 2.0 4K TEC has a dedicated V-Lambda correction filter that perfectly adjusts the system’s sensitivity (response) to a human’s eye sensitivity. It also features a high-resolution 9M pixel CMOS image sensor. Depending on the exact needs for brightness measurement, this optical system comes with a variety of top-notch lenses. The technology includes a patent-pending RFID lens recognition system and an image sensor with thermal stabilization to compensate for measurement mistakes caused by temperature changes.
This spectroradiometer can be used in conjunction with 00GL SPECTIS 1.0 Touch to test color.

RFID automatic lens recognition

With a large laboratory-grade back-thinned CCD sensor from Hamamatsu, the GL SPECTIS 4.0 optical light

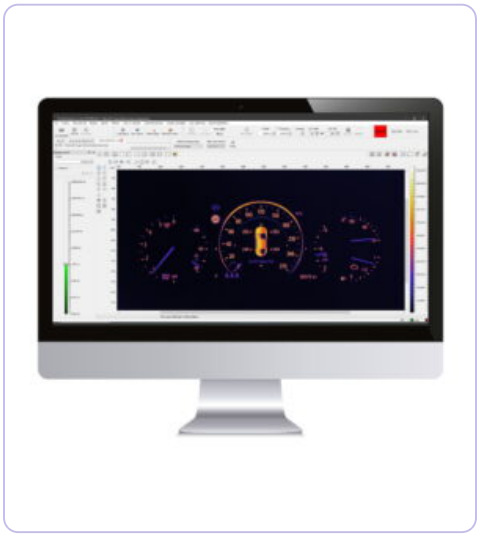
meter offers exceptional stability over extended exposure times. The gadget is calibrated using globally recognized factory calibration and reference standards traceable to National Laboratories. Automatic monitoring of electronic dark current levels is combined with intelligent drift adjustment for temperature variations.

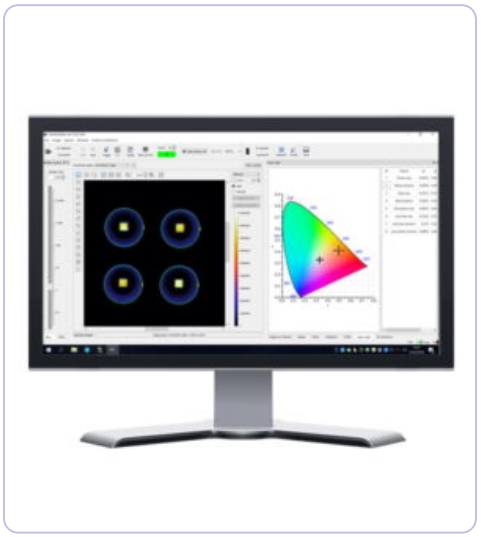
Improved optical resolution

Select the appropriate parts to improve the performance of your product. In the R&D department, utilizing a brightness measuring camera system directly will enhance quality control while saving costs and time. This accurate brightness measuring device with a 9-pixel resolution can enhance your research and development when creating a new, intricate optical system. You can now decide on modification and/or compliance more quickly.

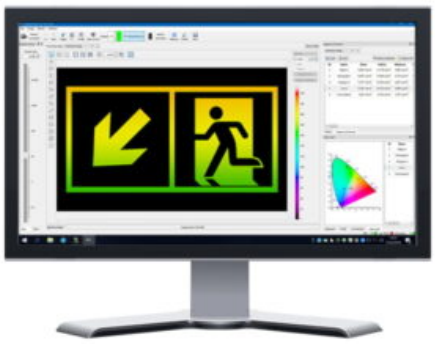
Thermally stabilized sensor

Our novel, fast, and accurate imaging technology for brightness measurements and tests is perfect for manufacturing quality control and backlit module development. This image luminance meter provides accurate and useful data for pass-fail production monitoring systems. It can be utilized in the lab or integrated into production online and offline testers for LED modules, displays, and instrument cluster testing.









GL OPTICAM 2.0 4K TEC Usage

Drive your critical requirements with specialized instrument

The new GL OPTICAM Imaging Luminance Measuring Device (ILMD) was developed primarily for the automobile and home appliance electronics industries. Precise testing of lighting components is even more important because of the growing number of touch panels and intricate instrument clusters. For example, assessing the brightness uniformity of finely illuminated icons requires high-resolution imaging equipment. Additionally, the brightness measurement camera needs to have a resolution that is suitable for working with high-resolution displays. For this reason, we made the decision to provide a new luminance camera system model with a 9 million pixel image sensor resolution. The new Sony CMOS monochromatic image sensor, together with a class A V-lambda correction filter and a precisely chosen lens, forms the foundation of the GL OPTICAM 2.0 4K TEC. Every optical system offered by GL Optic comes with factory calibration, which is a multi-step process that guarantees laboratory accuracy and traceability.

Best-in-class optical system

An optical correction filter that is specifically chosen and calibrated for the image sensor is included with every camera system. In contrast to digital cameras that are mass-produced, GL Optic instruments are made using premium glass filters and lenses from reputable vendors.

The TEC unit enhances stability and expands the dynamic range of the image sensor by thermally stabilizing it.

The system configuration can be automatically changed with the aid of a revolutionary RFID system for automatic lens recognition. With the aid of our GL OPTICAM SOFT analysis software, this light camera brightness meter enables quick setup and measurement of various objects. You may monitor the image, adjust the parameters, and measure the brightness by capturing an image of the device’s user test of the luminance scene by simply plugging this calibrated imaging luminance meter into your PC.
The analytical software will immediately display other important data, present brightness levels and histograms, and determine default regions of interest. The technology assists in analyzing particulars and areas and might even offer the required adjustments. Similar to a standard scientific equipment, this one offers absolute luminance accuracy.

When colour matters

The standard GL OPTICAM 2.0 4K TEC luminance meter can be used in conjunction with our GL SPECTIS 1.0 Touch spectral device to allow luminance and color testing and assessment when the lighting fixture or electrical board uses multiple color LEDs. Combining the spectroradiometric measurement with the luminance camera measurements is possible with our GL SPECTROSOFT. Thus, we are able to offer complete colorimetric and spectral data for the LED product that is being tested, as well as the mismatch correction

for brightness values to obtain the maximum accuracy.

GL OPTICAM 2.0 4K TEC Features

Plug and measure with RFID automatic lens recognition*

Digital luminance camera system that is uniquely calibrated and preconfigured for quick testing of light components and quality control of light devices. This instrument is easy to use; just place it in front of the lighting system to measure the absolute brightness level right away. The calibration file is uploaded by the system when it detects the lens automatically. For product testing and field measurements related to lighting system quality control, use this tool in the lab.

Improved optical resolution

This accurate brightness measuring device with 9 pixel resolution can enhance your research and development when creating a new, intricate optical system. You can now decide on modification and/or compliance more quickly.

Thermal stabilisation

To counteract measurement inaccuracies caused by temperature variations, this instrument has a TEC unit for thermal stabilization of the image sensor.

Dedicated V- lambda filter

A carefully chosen class A optically adjusted filter is fitted to every camera to ensure the best possible brightness measurements that match the sensitivity of the human eye. Every filter has a unique optimization for every CMOS sensor.

Adding spectrum and colour

The quality control can be expanded with colorimetric values such as CCT, CRI, and many more by combining this new picture luminance camera with our spectrum instruments, such as GL SPECTIS 1.0 Touch. It will also enable the measurements of multiple-color LED devices and offer an automatic filter miss-match adjustment process.

GL OPTICAM 2.0 4K TEC Metrics

Photometric quantities

- Point Luminance [cd/m2]
- Luminance distribution
- Iso candela diagram
- Average luminance
- Min Max diagram and tables

Spectral color quantities

- Correlated Colour Temperature – CCT and Duv
- Colour Rendering Indices – Ra, CRI, R1 to R14
- New rendering Rf and TM-30
- Colour Uniformity
- Binning and colour consistency
- Spectral Power Distribution

GL OPTICAM 2.0 4K TEC Luminance measuring device for laboratory applications https://youtu.be/O7DM6kQEDAA

SCAN TO VIEW VIDEO


Imaging Luminance System
READY-TO-MEASURE
IMAGING LUMINANCE
MEASUREMENT DEVICE
GL OPTICAM 2.0 4K TEC
for laboratory
applications

GL OPTICAM 1.0

Imaging luminance meter for precise testing

Engineers and designers can better regulate lighting performance with the use of secondary optics and diffusing materials in LED lighting product development. As a result, in order to prevent glare issues, makers of LED-based lamps and luminaires require dependable luminance testing solutions that enable them to confirm brightness uniformity when diffusing materials are utilized and determine the maximum luminance levels.
To maintain uniformity and control over product performance, all touch-screen control panels, displays, backlit keyboards, and signage must be tested during the research and development phase. As the uses for LED lighting products grow, so does the need for on-site luminance measurements. These measurements are needed for maintenance control of both indoor and outdoor lighting installations as well as lighting audits for both new and retrofit LED installations.

The entry-level GL OPTI CAM 1.0 optical camera system offers outstanding performance at a reasonable cost. It has a lens designed for accurate luminance measurements and a high-resolution CMOS image sensor with a V-Lambda correction filter to mimic human reactions to brightness. If you require testing for brightness and color, the extra features can be used in conjunction with our GL SPECTIS 1.0 Touch spectral instrument.

Instant luminance measurement

This high-sensitivity and high-resolution camera system is ready to use in the field, in production, or in the laboratory for instantaneous brightness measurements. With our imaging luminance camera for LEDs and other light sources, you can plug and measure whenever you require quick and accurate luminance testing. Every luminance camera has a V(λ) optimized filter installed and is calibrated separately.

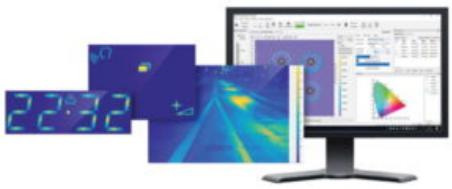
Develop better products

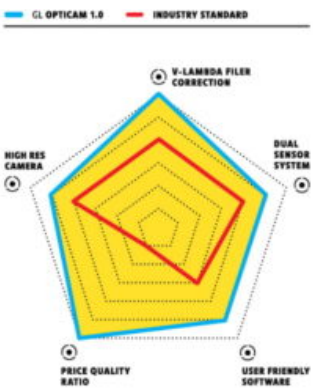
You can quickly verify the quality of components while picking out parts for your new product or selecting a new supplier. This will assist you in selecting the appropriate parts and improving the functionality of your product. In the R&D department, utilizing a brightness measuring camera system directly will enhance quality control while saving costs and time. You can make decisions about modification and/or compliance on-site and have more control over your R&D process.

Simplify production testing

For luminance quality monitoring throughout the production process of LED modules, a fast and reliable

optical system is needed. In order to provide dependable and useful data for pass-fail production monitoring systems, this image luminance meter can be integrated into production inline and off-line testers for LED modules, displays, and instrument cluster testing.





GL OPTICAM 1.0 Usage

Luminance under control

Existing clients in the automotive and home appliance electronics sectors spurred the development of the GL OPTICAM image luminance device. For efficient and trustworthy component testing during inbound QC,

development, and production testing, they needed a camera system that was both easily accessible and dependable. It soon became clear that many additional clients dealing with LED-based lighting goods also needed the same system, which calls for useful and user-friendly equipment for brightness measurements both in-house and on-site. The new Sony CMOS monochromatic image sensor, along with our V-lambda class A correction filter and a carefully chosen lens for multipurpose luminance tests and measurements, served as the foundation for the construction of GL OPTICAM 1.0. This instrument is a useful tool that can be used anywhere while retaining laboratory precision and performance thanks to its small housing design.

Demanding measurements made easy

With the aid of our GL OPTICAM SOFT analysis software, this light camera brightness meter enables quick setup and measurement of various objects. Just connect this calibrated imaging luminance meter to your PC, and you may use it to measure brightness, configure parameters, and monitor image quality by taking a picture of the device. The analytical software will immediately display other important data, present brightness levels and histograms, and determine default regions of interest. The technology assists in analyzing particulars and areas and might even offer the required adjustments. Similar to standard scientific equipment, this one offers absolute luminance accuracy.

When luminance and color matters

The basic GL OPTICAM 1.0 luminance meter can be used in conjunction with our GL SPECTIS 1.0 Touch spectral device to provide luminance and color testing and assessment when the lighting fixture or electrical board uses different color LEDs. Combining the spectroradiometric measurement with the luminance camera measurements is possible with our GL SPECTROSOFT. This allows us to provide complete colorimetric and spectral data for the LED product that is being tested, as well as mismatch correction for brightness values to obtain the best accuracy.

GL OPTICAM 1.0 Features

Plug and measure

Digital luminance camera system that is uniquely calibrated and preconfigured for quick testing of light components and quality control of light devices. Measure the absolute brightness level by positioning this device on the tripod in front of the lighting system. For product testing and field measurements related to lighting system quality control, use this tool in the lab.

Dedicated V- lambda filter

A carefully chosen class A optically adjusted filter is fitted to every camera to ensure the best possible brightness measurements that match the sensitivity of the human eye. Every filter has a unique optimization for every CMOS sensor.

Adding spectrum and color

The quality control can be expanded with colorimetric values such as CCT, CRI, and many more by combining this new picture luminance camera with our spectrum instruments, such as GL SPECTIS 1.0 Touch. It will also enable the measurements of multiple-color LED devices and offer an automatic filter miss-match adjustment process.

GL OPTICAM 1.0 Metrics

Photometric quantities

- Point Luminance [cd/m2]
- Luminance distribution
- Iso candela diagram
- Average luminance
- Min Max diagram and tables

Spectral color quantities*

- Correlated Color Temperature – CCT and Duv
- Color Rendering Indices – Ra, CRI, R1 to R14
- New rendering Rf and TM-30
- Color Uniformity
- Binning and color consistency
- Spectral Power Distribution

GL PHOTOMETERS

Photometers optimized for different applications

Explore a new selection of high-quality, precise photometric instruments with fast sample rates, high sensitivity, and laboratory-level V-lambda correction for various light measuring applications. A variety of photometer types designed for light measurement have been introduced thanks to the development team at GL Optic's vast experience. Beginning with measurements of illuminance (lx) in a lab setting, moving on to quicker measurements of Luminous Intensity Distribution (LID) during gonio-photometeric testing, characterizing light modulation (including flicker), and concluding with dynamic on-site measurements on the roads. Choose the model that works best for your needs.

Faster photometry

Use our newest rapid photometer model, the GL PHOTOMETER 3.0 LS + Flicker, to experience a new level of quality in quick on-the-spot gonio-photometric measurements. When used with the GL Goniometer, this gadget can produce results up to ten times quicker than those obtained using the conventional point-to-point gonio measuring method. When in on-fly mode, this gadget accurately reproduces a luminous intensity curve for each plane by taking many thousands of measurements per second.

Light flicker measurements

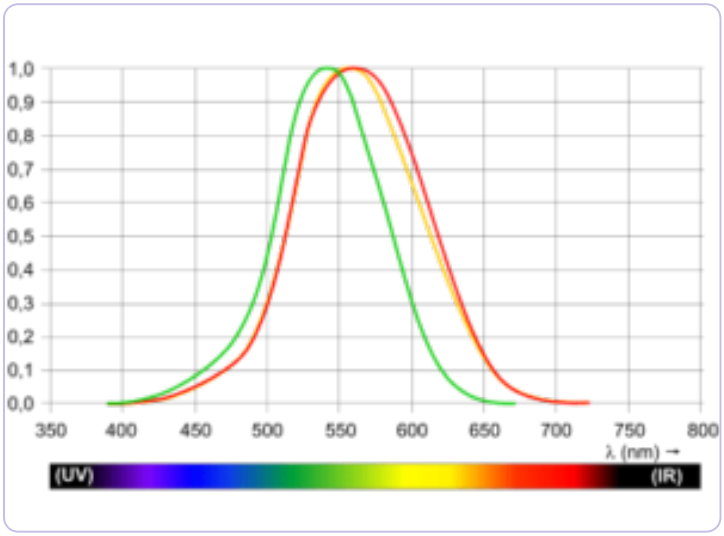
Large levels of light flicker can be measured with the high-speed (125 kHz) photometer GL PHOTOMETER 3.0 + Flicker when used in conjunction with the GL OPTI SPHERE System. The most recent essential flicker metrics, such as VESA (Video Electronics Standards Association), JEITA (Japan Electronics and Information Technology Industries Association), SVM (Stroboscopic Visibility Measure), PstML, flicker frequency, flicker index, flicker ratio, SAM, and Mp (flicker perception), are easily obtainable through the PC program GL Spectrosoft.

Dynamic tests of road lighting

This class A luminosity photometer, the GL PHOTOMETER HSLx 2.0 WP, was created specifically for outdoor measurements. Its IP64 casing provides weather and dirt resistance. A "mobile laboratory," comprising three or more pieces of equipment, can be established to facilitate the dynamic measurement of road illuminance in accordance with EN 13201:2015 regulations. This kind of equipment can be mounted on an automobile bumper or paired with a laptop, special software, and a trailer. Coordinate data is added by the GPS system for use with the Google Maps Geocoding API or a comparable service.

Class A photometers

The photometer’s spectrum response is exactly the same as the spectral sensitivity of the human eye. This reduces the typical miss-match errors in measurements of various light source types for this sort of equipment. On request, the Class-L version is provided.



Integrating sphere flicker measurements

The GL spectroradiometer in the integrating sphere measuring system can be supplemented by this rapid photometer. LED light flux and efficacy measurements are made possible by a GL spectroradiometer mounted on an integrating sphere of any diameter. The most recent industry-mandated flicker metrics, including flicker frequency, flicker index, flicker ratio, SVM (Stroboscopic Visibility Measure), PstLM, SAM (Stroboscopic Acceptability Metric), Mp (also known as LRC Flicker Perception), VESA (Video Electronics Standards Association), and JEITA (Japan Electronics and Information Technology Industries Association), are all measured by a GL PHOTOMETER 3.0 + Flicker plugged into the second port of a GL OPTI SPHERE.

Ecodesign directive EU 2019/2020 compliant

Beginning in September 2021, new minimum standards for flicker and the so-called stroboscopic effect will be implemented throughout Europe. Light modulation can be measured with GL PHOTOMETER 3.0 LS + Flicker, and the PC software GL SPECTROSOFT provides the most recent measures, including SVM (Stroboscopic Visibility Measure) and PstLM, as mandated by the current standards. You can comply with the most recent OLED and LED testing regulations in Europe by using this new GL Optic photometer.

GL PHOTOMETER 3.0 + Flicker Usage

2 in 1 high precision illuminance photometer with wide dynamic range & accurate flicker meter

In addition to standard photometry, the high-sensitivity, high-sampling-rate GL PHOTOMETER 3.0 + Flicker photometer can measure light flicker in great detail. Even the most difficult measurement jobs can be completed thanks to features such a large dynamic range (0,001–10 000 000 lx), spectral response uncertainty (f1′) of less than 3% (Class A), and cosine correction (f2′) of less than 1.5% (Class A).

Standalone fast photometer

One can utilize the new GL Photometer 3.0 + Flicker as a stand-alone photometer. It is ready for usage in several applications where an accurate measurement of surface illuminance is necessary. GL Spectrosoft offers intuitive control over it, or external software can utilize a specific API. The device is powered by the USB connection; thus, no other power sources or batteries are needed.

GL PHOTOMETER 3.0 LS + Flicker Usage

Enabling gonio On-fly measurements

A goniometer arm travels from point to point in a measurement grid and stops at each location to take a measurement in a typical goniophotometric measurement. It may take many hours, depending on the measuring grid’s selected density. Goniometer arms rotate at a steady speed from one extreme position to

the next as measuring devices scan the light distribution coming in from a rotating DUT during on-fly measurement.

The GL PHOTOMETER 3.0 LS + Flicker accurately reproduces a photometric luminous intensity curve for every plane by taking thousands of measurements every second. You can complete a thorough scan of asymmetric street lighting with varied light distribution in less than half an hour, or you can complete a quick scan of an LED lamp in a matter of minutes. The results are obtained considerably faster.

Class A photometer

The photometer's spectrum response is exactly the same as the spectral sensitivity of the human eye. This removes measuring inaccuracies from various light sources, which are common with this type of meter.

GL PHOTOMETER HSLx 2.0 WP Usage

Waterproof photometer for demanding applications

The Illuminance Photometer Class A, from GL Optic, is specifically made for outdoor measurements. Its IP64 casing provides weather and dirt resistance. In order to establish a mobile laboratory that complies with EN 13201:2015 standards for measuring the illuminance intensity of a moving roadway, three or more GL PHOTOMETERS HSLx 2.0 WP can be utilized. This kind of equipment can be mounted on an automobile bumper or paired with a laptop, special software, and a trailer. In order to enhance the photometric data, a GPS system like this one can be used to retrieve coordinates from the Google Maps Geocoding API or any comparable service.

The spectrum sensitivity of the GL Photometer HSLx 2.0 WP (V-lambda class A, cosine correction class A) is exactly equal to that of the human eye. GL SPECTROSOFT provides straightforward control over it, or external software can utilize a specific API. The device is powered via a USB cable connection, so neither extra power sources nor batteries are needed. It has a universal photographic mount installed.

GL PHOTOMETER 3.0 TEC Usage

Class L photometer with thermally stabilized photodiode

A thermally stabilized photodiode powers the class L (DIN 5032-7:2017) photometer GL PHOTOMETER 3.0 TEC. In addition to routine photometry, extensive studies of light flicker are made possible by high sensitivity and a high sampling rate (125 kHz). It is ready to function with a stray light-eliminating tube in goniometric measurements. Optical components that are in charge of cosine correction are not used in this configuration. This device has a direct USB connection to the PC and can be controlled by external software via a specific API, or GL SPECTROSOFT.

GL RETROREFLECTOMETER 4.0 SRS

RETROREFLECTOMETER: to measure the reflective properties and color parameters of the illuminated surface

Manufacturers of reflectors and other reflecting surfaces are required by the CIE 54.2 and EN 12899 standards to test the reflection values and ascertain the color coordinates of the lighted surface.
In order to simulate scenarios when vehicle lights shine, such as road signs, and the reflected light returns to the driver's view, GL RETROREFLECTOMETER 4.0 SRS emits light onto the reflecting surface and gathers information about the reflected light.
A high-sensitivity monochromator is used, which makes the entire measurement incredibly exact and quick—just a few seconds!

Measurements in accordance with requirements of international standards

The design of GL RETROREFLECTOMETER 4.0 SRS complies with CIE 54.2, which specifies acceptable reflectance measurement techniques. With the GL Optic reflectometer, you may conduct tests in compliance with EN 12899 for road sign measuring as well as the ECE R3, ECE R27, ECE R48, and FMVSS 10 standards.

Highest precision and wide measurement range

The reflectometer's A-type halogen illuminator (2856 K) makes it possible to precisely determine color parameters. Another option is to imitate different illuminants.
On the other hand, great sensitivity and consistent, lightning-quick measurement times are ensured by the fast monochromator.

Full information about properties optical reflected radiation

Spectral matching filters have the potential to introduce mistakes and have a detrimental impact on measurement precision. Higher measurement precision is achieved, particularly in the red and blue range, by the GL Optic retroreflectometer's lack of a spectrum matching filter to the sensitivity of the human eye V(λ).






GL RETROREFLECTOMETER 4.0 SRS Usage

The GLG A 50–1800 goniometer is the exclusive focus of GL RETROREFLECTOMETER 4.0 SRS. A comprehensive measuring system for vehicle reflectors, warning triangles, road signs, and all varieties of reflective tape is produced by combining these two devices.
Finding the ratio of reflected light to surface illumination intensity (CIL) and the x and y color chromaticity coordinates are the fundamental uses of a retroreflectometer.

Fast monochromator expand possibilities

The rapid monochromator used by the GL Optic device sets it apart from other options. This technique removed the requirement for V (lambda) spectral correction filters, which prevent mistakes due to mismatches between the characteristics of the filters and allow photometric parameters to be determined based on measurement for different kinds of illumination.

Using a monochromator enables the examination of variations in the spectral properties of reflecting coatings as well as the extension of the measurement results' range by several parameters derived from the reflected light's spectral distribution.

GL RETROREFLECTOMETER 4.0 SRS Features

Measurements in line with requirements and more

For road sign measurements, items are tested on the H, V, or epsilon axes in compliance with the standards' requirements.
Apart from the standard-required measurement of color chromaticity coordinates (x and y), the GL Optic retroreflectometer may concurrently measure numerous other color characteristics.

Fast and reliable

In the visible range, a single measurement takes only two seconds!
The gadget is shielded from a reduction in measurement accuracy caused by the aging of the light source that illuminates the surface being examined by the implemented age compensation technology.

More possibilities

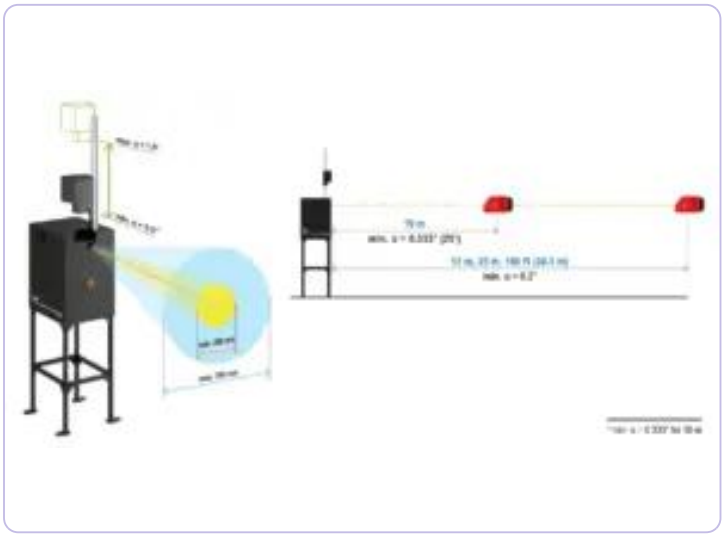
It is feasible to test parameters for illuminants other than the default illuminant A because of the utilization of the spectral measuring approach.

GL RETROREFLECTOMETER 4.0 SRS Metrics

Our individually calibrated, preconfigured equipment provide quick and accurate results for almost any realistic light measuring application. With the software that comes with it, you can measure in a matter of seconds and examine the data.

Using the GL RETROREFLECTOMETER 4.0 SRS, you can measure any or all of the following optical quantities:

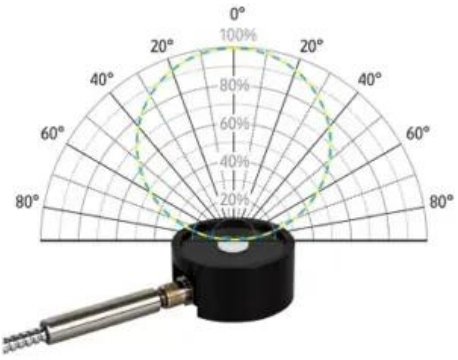
- CIL
- Chromaticity cooridnates x, y
- CCT c– the color temperature according to standard CIE
- Duv
- Full spectral distribution in the visible range
  +many more!



LUMINANCE / RADIANCE

Optic probes for measuring radiance or irradiance

It is crucial to understand what the client needs to measure, the quantities he must supply, the width of the spectral range he must measure in, and the measuring point diameter he will be comfortable with in order to match the best optical probe to the customer's needs.
For radiometric measurements, GL Optic provides a range of optical probes. Their spectral range, level of cosine correction, and kind of optic fiber are different.



Ready-set-go

Measurement probes, fiber optic cables, and adapters for specialized spectrometers are all included in each full package. includes calibration that can be linked to national labs.

Smart detection

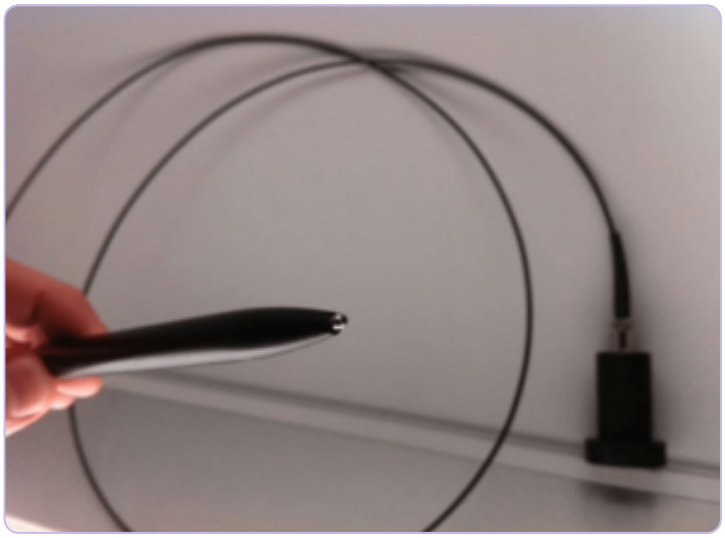
A sophisticated detection system included in every GL Optic Spectrometer recognizes a new probe and installs the relevant calibration file automatically.

Extended spectral range

These optical probes, which are made of high-transmission quartz fiber optics, have a wide spectral range of 200–1050 nm, from UV to NIR.

GL OPTI PROBE 1.0.10 Luminance Usage

The purpose of this accessory is to measure the luminance [cd/m2] of plasma FPDs, flat LCDs, and OLED panels. Television screens, computer monitors, avionics displays, and other electronic displays are frequently examined items. Projection screens, signage, and reflecting surfaces (such as walls and work surfaces) are also frequently measured.
This optical probe detects the light that a specific point on the surface of a comparatively large or extended source emits in a given direction. For measuring distance, the measuring probe can be mounted on a tripod; for measuring contact, it can be mounted directly on a screen using a specific stripe.GL SPECTIS 1.0 or GL SPECTIS 1.0 Touch can be connected via the optic probe. A polymer fiber optic cable is included with the probe. Spectrum that can be used: 400–730 nm.

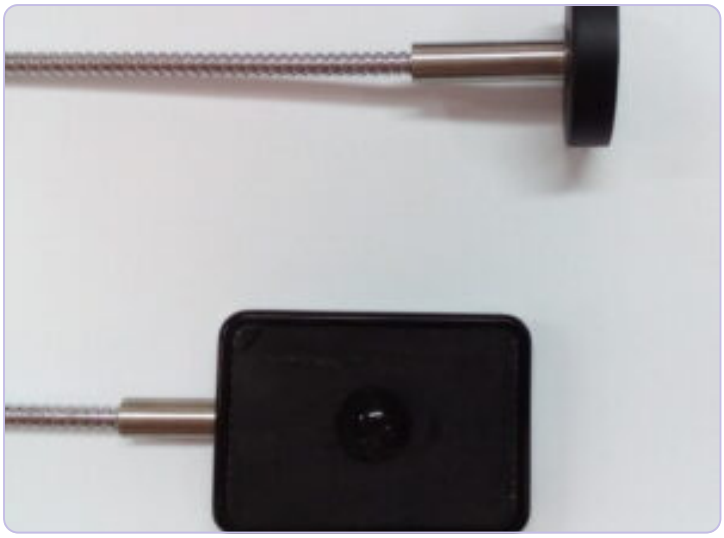


GL OPTI PROBE 1.0.11 Luminance Usage

This optic probe comes with a flexible fiber optic cable and is shaped like a pen with a measuring point diameter of just 1 mm. When small regions need to be measured, it is extremely helpful. GL SPECTIS 1.0 or GL SPECTIS 1.0 Touch can be connected to via the optic probe.
The purpose of this accessory is to measure the luminance [cd/m2] of plasma FPDs, flat LCD and OLED panels. Avionics, other electronic displays, and signal indicators are common devices to be tested. This optical probe detects the light that a specific location on the surface emits in a certain direction. A polymer fiber optic cable is included with the probe. Spectrum that can be used: 400–730 nm.

GL OPTI PROBE 1.0.12 Luminance Usage

An optical fiber-equipped luminance-measuring telescope guarantees an exactly parallel observation beam. Adaptable to a tripod. Spot diameter at 0.5 m distance is 8 mm. Range of spectra: 400–1050 nm. Telescopes that measure luminosity make sure that the observation beam is precisely parallel. For measuring other projection displays, LCD, LED, and OLED panels, as well as flat screens. The kit comes with fiber optics, a measuring probe, and an adapter for GL SPECTIS 1.0 spectrometers that has a coder. Tripods can be equipped with probes.



GL OPTI PROBE 5.0.10 Luminance Usage

Luminance probe for point measurement of projection displays, indication lights, LCD, LED, and OLED panels. The kit comes with a counterweight with a strap to hang above the measured screen, quartz fiber optics, an adapter with a coder for the GL SPECTIS 1.0 series spectrometer, and a measuring probe.
The probe’s frame is prepared to hold a typical photo tripod. Within the range of the utilized spectrometer, this probe covers the entire spectral range, from UV to IR. N.A. is 0.20.

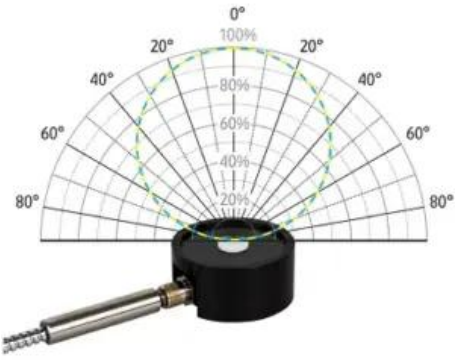
GL OPTI PROBE 5.0.51 Luminance Usage

For point measurement of flat screens, LCDs, LED OLED panels, projection displays, and signaling lights, use a pen-style brightness probe. The kit comes with a quartz fiber optic adapter, a measuring probe, and a coder for spectrometers that are GL SPECTIS 5.0, 6.0, and 8.0 compatible. Within the range of the utilized spectrometer, this probe covers the entire spectral range, from UV to IR. N.A. is 0.20.

ILLUMINANCE / IRRADIANCE

Probes to measure illuminance or irradiance

The use of specialized probes is necessary for a variety of distinct optical qualities and measuring geometries. As a full-line manufacturer, we provide a range of optical probes with varying spectral ranges, degrees of cosine correction, and types of optic fibers for photometric and radiometric studies. All of our spectrometers come with irradiance and illuminance probes, which are made specifically for each system based on the optical performance and spectral range of the device.



Ready-set-go

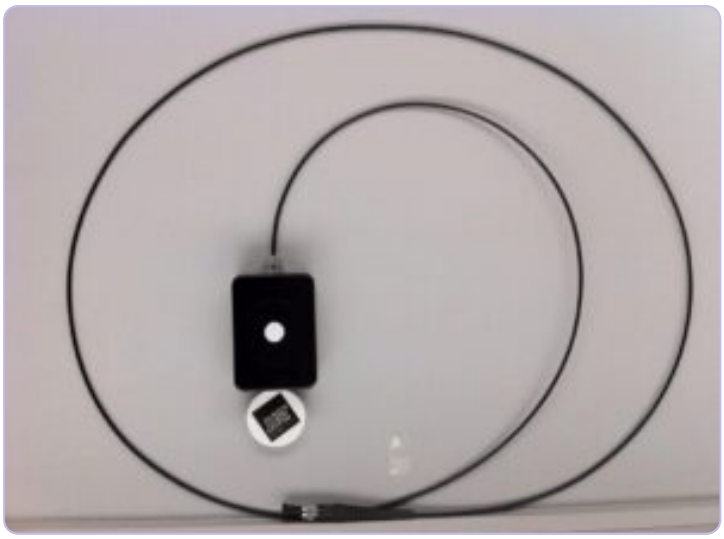
Measurement probes, fiber optic cables, and adapters for specialized spectrometers are all included in each full package. includes calibration that can be linked to national labs.

Smart detection

A sophisticated detection system included in every GL Optic Spectrometer recognizes a new probe and installs the relevant calibration file automatically.

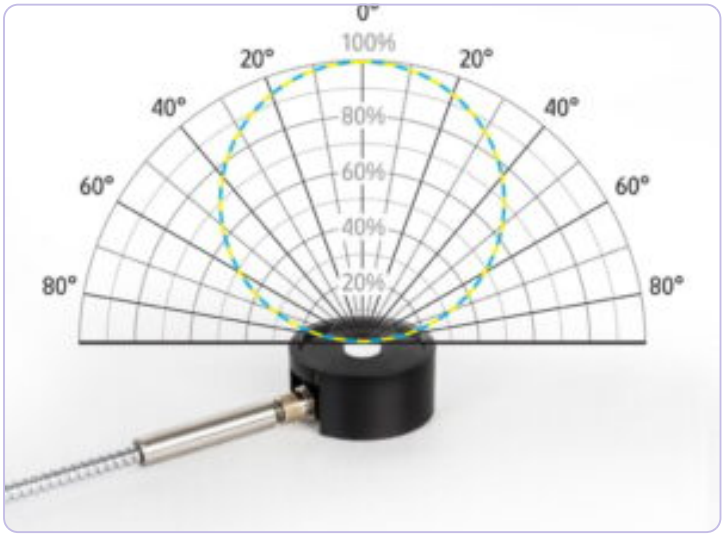
Made for everyday use

Excessive performance and precision no longer equate to excessive complexity. Without requiring highly skilled personnel, our solutions produce dependable, repeatable results.



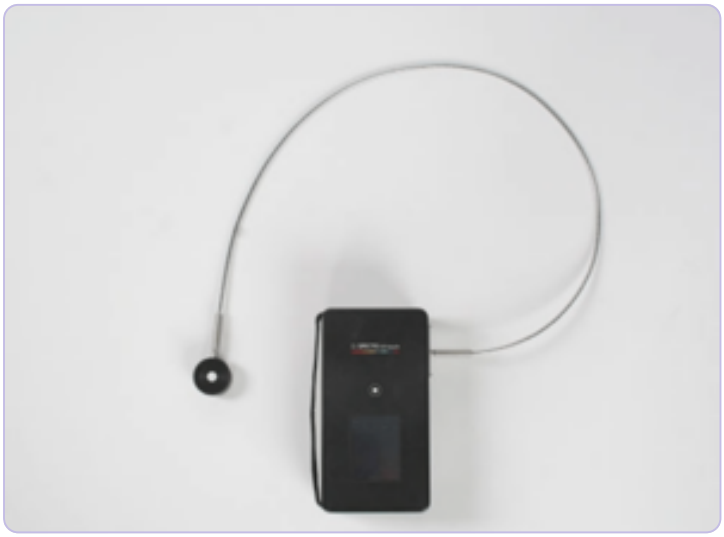
GL OPTI PROBE 1.1.10 Illuminance Usage

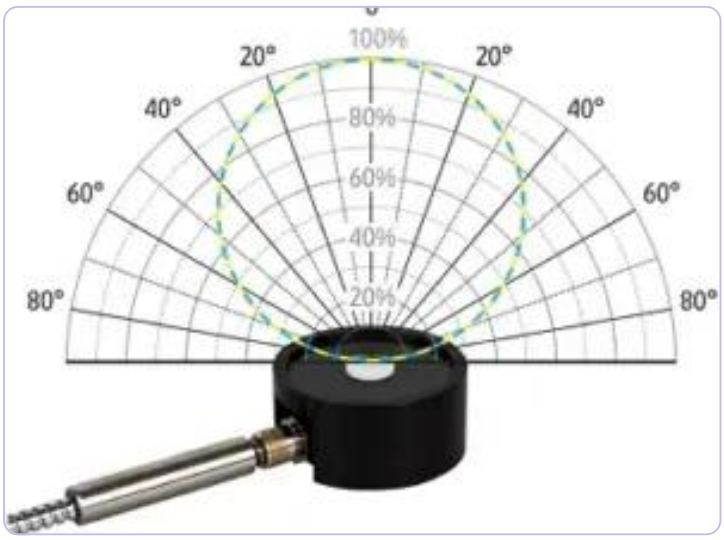
Submersible probe for measuring irradiance and brightness underwater. The kit comes with a GL SPECTIS 1.0 series spectrometer adaptor with a coder, polymer fiber optics, and a measuring probe. The only range in which the set can be spectrally calibrated is over 400 nm. N.A. equals 0.22.
The GL OPTI PROBE calculates optical quantities of illuminance [lx] or PAR energy [W/m2], which represent the amount of light flux incident upon a surface per unit area.



GL OPTI PROBE 5.1.10 Illuminance Usage

For measurements of extended spectral irradiance, an irradiance/illuminance diffuser with quartz glass fiber optics is utilized. The kit comes with a quartz fiber optic adapter, a measuring probe, and a coder for spectrometers in the GL SPECTIS 1.0 series. Within the spectrometer’s working range, this probe spans the entire spectral range, from UV to IR. N.A. is 0.20.





GL OPTI PROBE 5.1.50 Illuminance Usage

For measurements of extended spectral irradiance, an irradiance/illuminance diffuser with quartz glass fiber optics is utilized. The kit comes with a quartz fiber optic adapter, a measuring probe, and a coder for spectrometers that are GL SPECTIS 5.0, 6.0, and 8.0 compatible. Within the limitations of the spectrometer being utilized, this probe spans the entire spectral range, from UV to IR. N.A. is 0.20.

GL Opticam 1.0

Imaging Luminance Meter for precise testing

This high resolution and high sensitivity camera system is preconfigured for immediate luminance measurements in the laboratory, production or field application. When fast and precise luminance testing is needed, you can simply plug and measure with our imaging luminance camera for LED and other light sources. Each luminance camera is equipped with V(λ) optimized filter and individually calibrated.

Simplify production testing

LED module manufacturing requires quick and dependable optical system for luminance quality control. This Imaging Luminance Meter can be integrated into production inline and off line testers for LED modules, displays and instrument cluster testing providing reliable and practical data for pass fail production monitoring systems.

Demanding measurements made easy

The GL opticam, supported by the GL OPTICAM SOFT analytical software, allows the user to set and measure different objects in no time. Simply plug this calibrated imaging luminance meter to your PC, where you can monitor the image and set parameters and measure the luminance simply by recording the image of the device user test of luminance scene. The analytical software will detect default areas of interest, show luminance level, histograms and will immediately display other useful data. The system helps to analyze specific details and regions and even provide necessary corrections. This instrument provides absolute luminance accuracy just like a typical laboratory device.

When luminance and color matters

When the lighting fixture or electronic board is using different color LEDs, the GL Opticam can be combined with the GL Spectis to support luminance, color test and evaluation. The GL Spectrosoft features an option to combine the measurements from the luminance camera with the spectroradiometric measurement. As result you will be able to provide mismatch correction for luminance values to get the highest accuracy and provide all colorimetric and spectral data.

GL OPTI PROBES for radiometric measurements – GL Optic

GL Optic offers a variety of optical probes for radiometric measurements. They differ in spectral range, degree of cosine correction and type of optical fiber.
In order to tailor the best optical probe to the customer's needs, it is important to know what the customer needs to measure, what quantities he needs to deliver, how wide a spectral range he needs to measure and what measuring point diameter he will have. satisfied with.

Features of GL Opti Probes

- supplied in a complete set
- The probe is supplied with a quartz fiber optic cable.
- an extended spectral range
- certificate of absolute spectral calibration
- it communicates with laboratory level GL Spectis 5.0 Touch or GL Spectis 6.0
- made in the European Union Line of optical probes from GL Optic

GL OPTI PROBE 5.0.50 RADIATION

This accessory has a larger spectral range and is intended for measuring luminance or radiation outside the visual range. Typical devices to be tested include: television screens, computer monitors, electronic displays and other electronic displays and where it is necessary to measure reflective surfaces – also paintings, works of art, projection screens and signboards. The optical probe measures the radiation emitted in a given direction from a given spot on the surface of a relatively large or extended source.

For distance measurements, the measuring probe can be mounted on a tripod. Alternatively, it can be placed directly on a surface using a special stripe for contact measurements. The optical probe is connected to GL Spectis 5.0 Touch or GL Spectis 6.0.

The probe is supplied with quartz fiber optic cable. Usable spectral range: 200-1050 nm.

GL OPTI PROBE 5.0.51 RADIATION

This optical probe has a pen shape with a measuring point diameter of only 1 mm and is supplied with a flexible fiber optic cable. It is especially useful when it is necessary to measure small areas. The optical probe is connected to GL Spectis 5.0 Touch or GL Spectis 6.0.

This accessory has an extended spectral range and is intended for measuring the radiance/luminance of flat LCD and OLED panels and plasma FPDs. Typical devices to be tested include: television screens, computer monitors, electronic displays, and other electronic displays. The optical probe

measures the radiation emitted in a given direction from a given spot on the surface of a relatively large or extended source.

The probe is supplied with quartz fiber optic cable. Usable spectral range: 200-1050 nm.

GL OPTI PROBE 5.1.50 INSTALLATION/ILLUMINATION

The probe is intended for measuring irradiation/illuminance. The accessory has an extended spectral range and can be used for photobiological safety assessment in accordance with EN 62471 and EN 14255. This sensor measures the flux received by a surface per unit area.

It is often used in the medical sector (occupational safety and health). The optical probe is connected to GL Spectis 5.0 Touch or GL Spectis 6.0.

The probe is supplied with quartz fiber optic cable. Usable spectral range: 200-1050 nm.

Special optical probes

If you haven’t found an optical probe that meets your needs, please contact us (office@gloptic.com). Our R&D center is ready to meet your special requirements!

Each set contains a measuring probe, a fiber optic cable and an adapter for a special spectrometer and a decoder for automatic detection of the corresponding calibration file. It comes with a certificate of absolute factory spectral calibration.

Optic Probes supplied by GL Optic are intended to work with GL Optic spectrometers belonging to the higher range of DIN quality class B. To deliver the highest quality product, GL Optic calibrates each set of spectrometers and optical probes purchased in their European laboratory.

GL OPTI PROBES for photometric measurements – GL Optic

GL Optic offers variety of optical probes for photometric measurements. They differ in spectral range, degree of cosine correction and a type of optic fiber.
To be able to match the best optical probe to customer's needs, it is important to know what the client has to measure, which quantities he needs to deliver, how wide a spectral range he has to measure in and which measuring point diameter he will be satisfied with.

GL Opti Probes features

- delivered in a complete set
- certificate of absolute spectral calibration
- it communicates with GL Spectis 1.0 or GL Spectis 1.0 Touch
- made in the European Union

The line of GL Optic' optical probes:

GL OPTI PROBE 1.0.10 LUMINANCE

This accessory is intended for measuring luminance of flat LCD and OLED panels and plasma FPDs. Typical devices to be tested are: television screens, computer monitors, avionics displays and other electronic displays and where there is a need to measure reflective surfaces – also walls and workplaces, projection screens and signs. This optic probe measures the light emitted in a particular direction by a given spot on the surface of a relatively large or extended source.

The measuring probe can be installed on a tripod for distance measurements. Alternatively, it can be placed directly on a screen with the use of a special stripe for contact measurements. The optic probe connects to GL Spectis 1.0 or GL Spectis 1.0 Touch.

The probe comes with polymer fiber optic cable. Usable spectral range: 400-730 nm.

GL OPTI PROBE 1.0.11 LUMINANCE

This optic probe has a pen shape with just 1 mm measuring point diameter and comes with a flexible fiber optic cable. It is especially useful when it is necessary to measure small areas. The optic probe connects to GL Spectis 1.0 or GL Spectis 1.0 Touch.

This accessory is intended for measuring luminance of flat LCD and OLED panels and plasma FPDs. Typical devices to be tested are: signal indicators, avionics and other electronic displays. This optic probe measures the light emitted in a particular direction by a given spot on the surface.

The probe comes with polymer fiber optic cable. Usable spectral range: 400-730 nm.

GL OPTI PROBE 1.1.10 ILLUMINANCE

The quantities it operates with are illumination or PAR energy . This optic probe measures the amount of luminous flux incident upon a surface per unit area. This optic probe is waterproof and it is designed for special measurements.

This accessory is especially desirable in the horticulture and aquaculture industries. The optic probe connects to GL Spectis 1.0 or GL Spectis 1.0 Touch.

The probe comes with polymer fiber optic cable. Usable spectral range: 400-800 nm.