LUMINANCE METERS

PHOTONICS

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Partner GL Optic

GL Optic est un fabricant germano-polonais spécialisé dans les systèmes avancés de mesure de la lumière pour les applications de photonique et d’optique de précision. Son portefeuille complet comprend des spectroradiomètres, des photomètres, des sphères d’intégration, des goniomètres et des caméras de luminance, tous conçus pour fournir des mesures précises et fiables sur un large spectre de sources lumineuses.

Product offering

GL Opticam 1.0

GL OPTICAM 2.0 4K TEC

GL OPTICAM 3.0 4K TEC

GL OPTICAM 4.0 M SC

GL Opticam 1.0

GL OPTICAM 1.0 is a high performance optical camera system at an entry level price. It is equipped with a high resolution CMOS image sensor with V-Lambda correction filter to replicate human response to brightness and lens optimized for precise luminance measurements. If you need luminance and color testing the additional functionality is available in combination with our GL SPECTIS 1.0 Touch spectral device.

The development of the GL OPTICAM imaging luminance instrument was triggered by existing customers from automotive and household appliances electronics industries. They needed an accessible and dependable camera system for quick and reliable component testing during the incoming QC, development up to the production testing. It quickly became apparent that the same system is also required by many other customers dealing with LED based lighting products and require practical and easy-to-use instrument for in house and onsite luminance measurements. GL OPTICAM 1.0 was designed based on the new CMOS monochromatic image sensor from Sony combined with our V-lambda class A correction filter and carefully selected lens for multi-purpose luminance test and measurements. Compact housing design makes this instrument a practical tool which can be used in different places while maintaining laboratory accuracy performance.

This high resolution and high sensitivity camera system is preconfigured for immediate luminance measurements in the laboratory, production or field application. Whenever you need fast and precise luminance testing you can 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.

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.

This light camera luminance meter supported by our 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.

Key Features:

- Spectral response of class A
- Wide dynamic range

- Powered and controlled via USB connection
- User-friendly analysis software

Applications include verifying luminance uniformity and maximum levels in LED lamps, luminaires, and diffusing materials to prevent glare issues during R&D and production; quality control of displays, backlit keyboards, illuminated symbols, and automotive components like instrument clusters; as well as onsite audits for indoor/outdoor lighting, street luminance, and emergency lighting compliance.

For more information, simply complete the contact form, and a member of our team will be in touch shortly.

Light Measurement Solutions › Luminance Meters

GL OPTICAM 2.0 4K TEC

GL OPTICAM 2.0 4K TEC is a high resolution, laboratory performance optical camera system featuring a high resolution 9M pixel CMOS image sensor with a dedicated V-Lambda correction filter precisely adjusting the system's sensitivity (response) to human's eye sensitivity. Selection of high class lenses is available for this optical system depending on a specific luminance measurement requirements. The system features a unique RFID lens recognition* system and a thermal stabilization of the image sensor, which compensates for measurement errors resulting from changing temperature conditions.

Automotive and household appliances electronics industries are the major drives of the development of the new GL OPTICAM Imaging Luminance Measuring Device – ILMD. The increased number of touch screens and complex instrument clusters puts additional demand on precise testing of lighting components. High resolution imaging system is required to evaluate luminance uniformity of fine backlit icons for instance. Also, when working with high resolution displays, an appropriate resolution of luminance measuring camera is required. This is why we decided to launch a new model of the luminance camera system with 9M pixel image sensor resolution. GL OPTICAM 2.0 4K TEC is based on the new type of CMOS monochromatic image sensor from Sony combined with a class A, V-lambda correction filter and carefully selected lens. Each optical system from GL Optic includes factory calibration consisting of multi-step procedure ensuring traceability and laboratory accuracy performance.

Each camera system is equipped with an individually selected and calibrated optical correction filter optimized for the image sensor. Unlike mass produced digital cameras, GL Optic instruments are designed with the use of high quality glass filters and lenses from the leading suppliers.

The image sensor is thermally stabilized by TEC unit to improve stability and increase the dynamic range of the sensor.

A novel RFID Automatic Lens Recognition helps to change the system configuration automatically. This light camera luminance meter, supported by our 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, set the parameters and measure the luminance simply by recording the image of the device user test of the 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 analyse specific details and regions and even provide necessary corrections. This instrument provides absolute luminance accuracy just like a typical laboratory device.

When the lighting fixture or electronic board is using different colour LEDs, the standard GL OPTICAM 2.0 4K TEC luminance meter can be combined with our GL SPECTIS 1.0 Touch spectral device to support luminance and colour test and evaluation. Our GL SPECTROSOFT features an option to combine the measurements from

the luminance camera with the spectroradiometric measurement. As a result, we are able to provide the mismatch correction for luminance values to get the highest accuracy and provide all colorimetric and spectral data for the LED product under test.

Key Features:

- Spectral response of class A
- Wide dynamic range
- Controlled via USB connection
- Temperature stabilized sensor
- Automatic detection of lens and filters
- User friendly analysis software

Applications include verifying luminance uniformity and maximum levels in LED lamps, luminaires, and diffusing materials to prevent glare issues during R&D and production; quality control of displays, backlit keyboards, illuminated symbols, and automotive components like instrument clusters; as well as onsite audits for indoor/outdoor lighting, street luminance, and emergency lighting compliance.

For more information, simply complete the contact form, and a member of our team will be in touch shortly.

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.

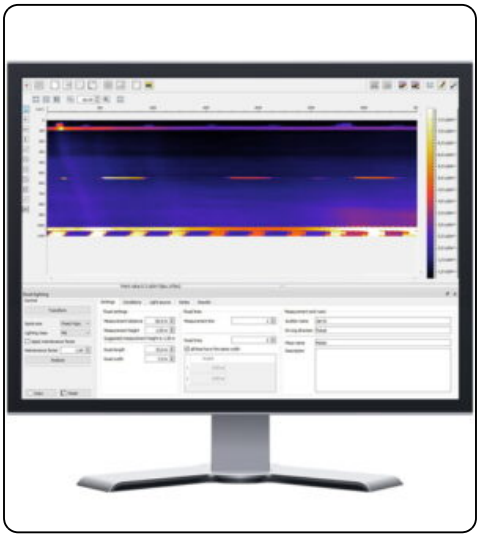
Road lighting compliance to EN 13201

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

Light Measurement Solutions › Luminance Meters

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