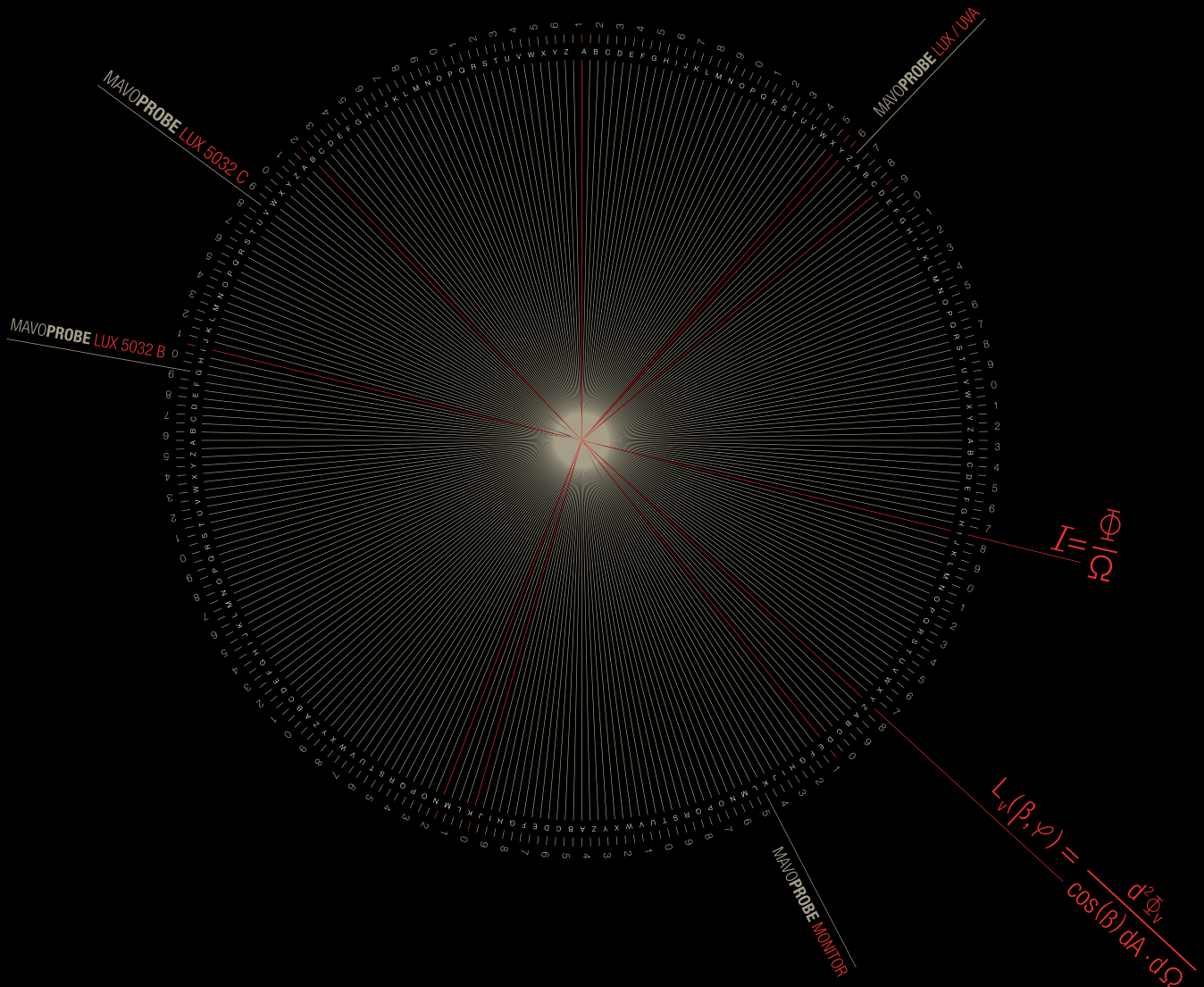
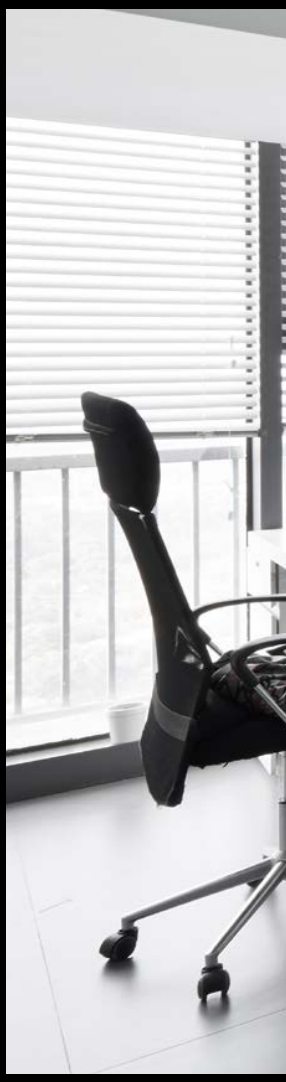
GOSSEN

# Light Metering System

## MAVOMASTER
## MAVOPROBE
## MAVOSOFT



# SYSTEMATIC LIGHT METERING



## The Innovative MAVOMASTER & MAVOPROBES Light Metering System Provides you with Absolute Flexibility and Reliability for all of Your Applications.

Newly developed from the ground up, MAVOMASTER and MAVOPROBES elevate light metering and certification to an entirely new level: a universal, basic MAVOMASTER meter can now be easily and flexibly combined with a diverse range of MAVOPROBES (measuring probes). For example with classified measuring probes for illuminance in accordance with DIN 5032-7 class B or C, luminance in accordance with DIN 5032-7 class B or with a UV-A/LUX combination probe for non-destructive testing – for efficient light testing and certification in a great variety of applications.

### A Single Device and Four Probes – the Light Metering System

Each MAVOPROBE is balanced prior to shipment and can be connected immediately to any MAVOMASTER. The classified MAVOPROBES transmit acquired measurement data to the MAVOMASTER in digital format. Furthermore, it's also possible to connect the measuring probes directly to a computer using an optional USB adapter cable. A single to multi-channel measuring system can thus be implemented with the measuring probes. The measuring probes can also be consolidated using a USB hub and supplied with voltage from a power pack. The open interface protocol makes it simple and easy to integrate the measuring probes into your own applications. The firmware for all of the probes and the basic meter is updated via the USB interface. The system concept also offers advantages for calibration because the measuring probes can be calibrated separately – for simplified shipping and reduced downtime.

### Evaluations Integrated On-Board

The integrated measuring functions of the MAVOMASTER evaluate measurement results as well, thus providing on-site evaluations in real time. They can be assigned to the F1 and F2 function keys for optimized operation. Evaluations include data logging, relative measurement, raster measurement for the assessment of workplace lighting with calculation of $E_{min}$ / $E_{max}$ / $E_{avg}$ / $U_0$ / $U_D$ values, B/A ratio measurement for contrast measurement, B-A deviation measurement, %A deviation measurement and integral measurement for determining the irradiation dose.

| LIGHT METERING SYSTEM | |
|---|---|
| A single basic meter | MAVOMASTER |
| Various probes: | MAVOPROBE LUX 5032 C<br>MAVOPROBE LUX 5032 B<br>MAVOPROBE LUX / UVA<br>MAVOPROBE MONITOR |

MADE IN GERMANY

# PERFECT LIGHT

## An Ideally Suited Measuring Probe for Every Task and Every Application: MAVOPROBE

**Numerous factors play a decisive role where light quality is concerned. Each range of applications has its own technical standards or directives in which the requirements for measuring instruments and measuring methods are described. The MAVOMASTER and MAVOPROBES provide you with an optimally engineered light meter for every application.**

### Illuminance *(formula symbol: E, unit of measure: lx)*

Illuminance indicates with how much intensity a surface is illuminated. The inverse-square law says that illuminance E decreases with the square of the distance between the light source and the illuminated surface ($E \sim 1 / r^2$). The spectral brightness sensitivity of the human eye V(λ) and the cos-like rating of incident light are taken into account when determining this photometric measured quantity.

A luxmeter measures horizontal and vertical illuminance or roughly calculates semi-cylindrical and cylindrical illuminance. As a rule, uniform light distribution is not achieved with normal lighting, for which reason specifications in the standards usually make reference to mean illuminance This value is calculated as the weighted arithmetic mean of all illuminance values in the room. The ratio of lowest to mean illuminance is designated uniformity. The ratio of the lowest to the greatest illuminance is called non-uniformity.

#### Applications

- Monitoring lighting in workplaces
- Measurement of emergency lighting
- Inspection of lighting for streets, crosswalks, tunnels, underpasses, railroad platforms and sluices
- Examination of lighting for sports facilities
- Adjustment of lighting in film and TV studios
- Planning, verification and maintenance of lighting systems
- Quality assurance for the production of luminaires and lamps
- Adherence to illuminance requirements in the fields of farming and forestry
- Examination of viewing conditions in fluorescent penetrant and magnetic particle testing

### Irradiance *(formula symbol: E, unit of measure: µW/cm2 or W/m2)*

Irradiance indicates the total power of the electromagnetic energy which strikes a surface relative to the area of the surface.

UV-A irradiance in the 365 nm range is evaluated with the spectral response curve in accordance with DIN EN ISO 3059 for viewing conditions in nondestructive testing.

#### Applications

- Checking UV-A radiation sources for fluorescent penetrant testing

## Luminance *(formula symbol: L, unit of measure: cd/m²)*

Luminance indicates the brightness impression perceived by the eye when positioned in front of a luminescent or illuminated surface. The diameter of the measuring circle of a luminance meter results from the aperture of the sensor in the case of contact measurement, and from the sensor's measuring angle and its distance to the object to be measured in the case of distance measurement. The luminescent or illuminated surface must entirely fill the measuring circle, because significant measuring error will otherwise occur. As long as these conditions are fulfilled, luminance is independent of the distance from which it's measured. It's a mean value based on the individual luminance values within the measuring circle. The spectral brightness sensitivity of the human eye V(λ) is taken into consideration when determining this photometric measured quantity.

## Applications

- Acceptance and constancy testing for image display devices in the field of medical engineering
- Brightness and contrast measurement of monitor screens and displays
- Contrast measurements at workplaces
- Determination of reflectivity
- Brightness measurement for signaling systems
- Testing for uniform illumination of projection surfaces
- Measurement of lighting installations, light tables and outdoor advertising

# SYSTEM OVERVIEW

## MAVOMASTER and MAVOPROBES – Light Metering Technology Systematically Reinvented

The intelligent components of our light metering system open up new possibilities – whether a stand-alone measuring instrument is required or when setting up single or multi-channel measuring systems. Various measuring requirements specified in the fields of photometry and radiometry are covered by the individual MAVOPROBE measuring probes. All of the intelligence required for the processing of measured values is now located in the probe, thus permitting universal use and separate calibration.

Many users prefer an autonomous, flexible measuring instrument, which is now available as a combination including MAVOPROBE and MAVOMASTER. The extensive functionality of the MAVOMASTER is matched to all routine daily measuring requirements. Appropriate kits including accessories are available for various applications, which can be expanded with additional measuring probes. The MAVOMASTER itself can only be operated with one measuring probe at a time.

Single or multi-channel measuring systems based on computers or controllers can be set up for industrial applications. The MAVOPROBE can be connected directly to a USB interface or hub via an optional USB adapter. MAVOSOFT is provided free of charge as standard software for Windows computers, and integration into customer-specific software solutions is made possible by the open interface protocol.

## MAVOMASTER – MAVOPROBE Specifications

UNIVERSAL USE – each probe can be used with a MAVOMASTER as a stand-alone measuring instrument. The probes can also be used cost-effectively in single or multi-channel measuring systems with an optional USB adapter.

INDIVIDUALIZED SYSTEM INTEGRATION – for device control and data communication by means of open interface protocols.

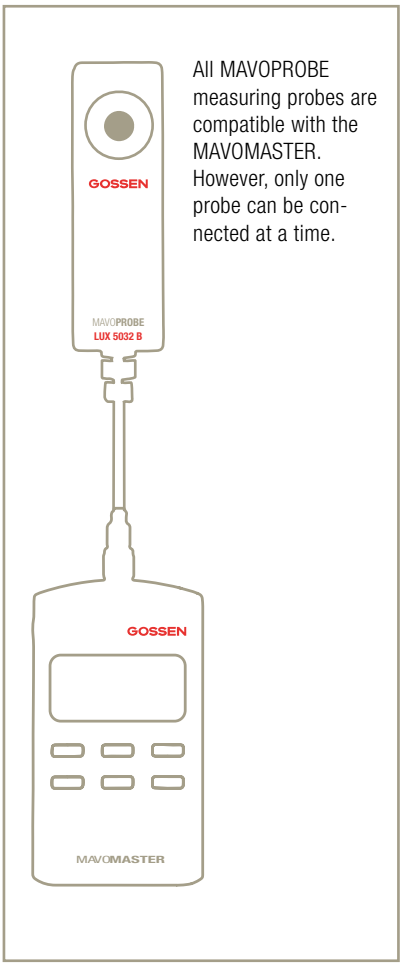
COST-EFFECTIVE SYSTEM SETUP – through the use of commercially available USB accessories and open terminal assignments.

CONVENIENT CONTINUOUS OPERATION – thanks to power supply for the individual components via USB interface.

CUSTOMIZED CABLE LENGTH – with optional 3, 5 and 10 m measuring probes extension cords.

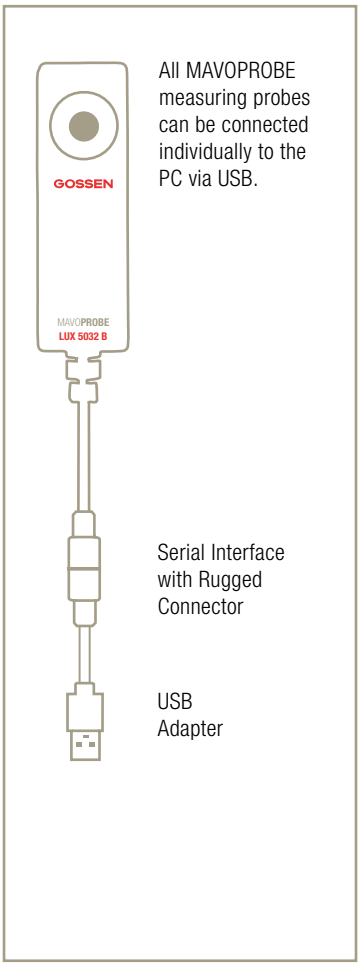
SUSTAINABLE SYSTEM CONCEPT – thanks to firmware updating via the USB interface.

## Measuring Instrument




All MAVOPROBE measuring probes are compatible with the MAVOMASTER. However, only one probe can be connected at a time.

## Single Channel Measuring System

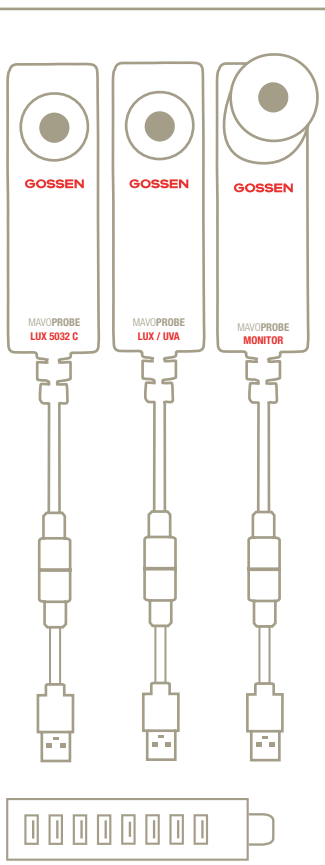



All MAVOPROBE measuring probes can be connected individually to the PC via USB.

Serial Interface with Rugged Connector

USB Adapter

## Multi-Channel Measuring System

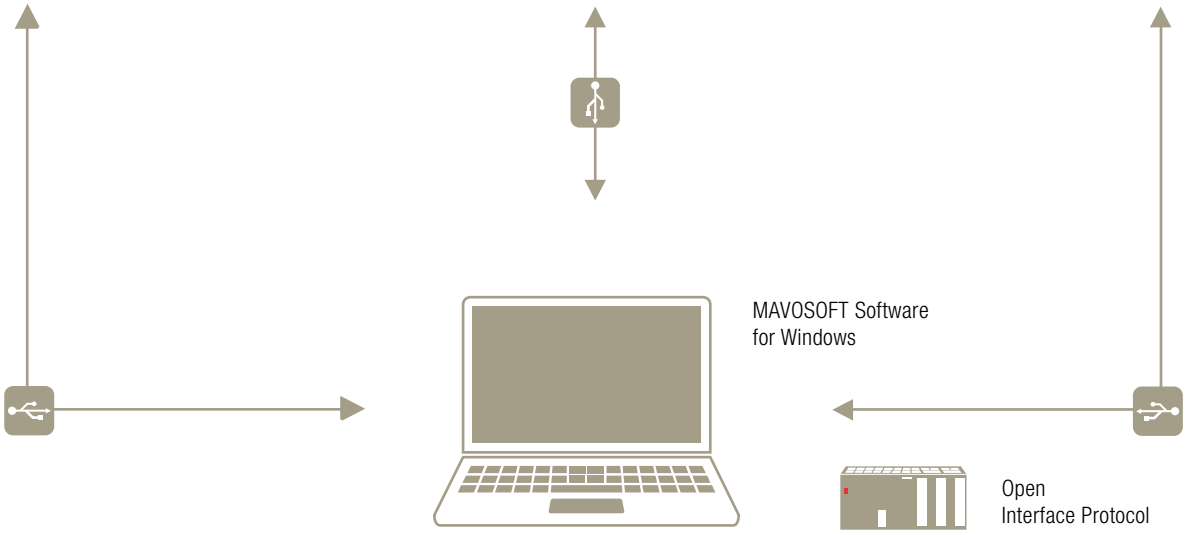



Several MAVOPROBE measuring probes can be connected to a PC at the same time via a USB hub.

Serial Interface with Rugged Connector

USB Adapter

USB Hub



MAVOSOFT Software for Windows

Open Interface Protocol

# UNIVERSAL BASIC METER

## Compact Measuring and Display Device with a Diverse Range of Functions

The compact MAVOMASTER measuring and display device includes a high-contrast graphic display with adjustable background illumination for displaying the various measured values obtained by the connected measuring probe along with their units of measure, or quantities calculated from these values. The basic meter also serves as power supply, display, control unit and data storage module – all in one. Its data can be read out via the USB interface, via which the meter can also be controlled. When plugged into a computer, the MAVOMASTER functions like an external drive.

### MAVOMASTER Specifications

NORMAL MEASUREMENT – continuous measurement and display of absolute measured quantities.

INDIVIDUALIZED CONFIGURATION – available measuring functions can be freely assigned to the F1 and F2 function keys.

RELATIVE MEASUREMENT – continuous measurement and display of absolute measured quantity(ies) / reference value(s) when the measuring mode is started.

INTEGRAL MEASUREMENT – integration of the measured quantity over time, display of the integral value as well as time elapsed since activation – determination of the irradiation dose.

RASTER MEASUREMENT – storage of individual measurement points and continuous calculation of mean, minimum and maximum values, as well as uniformity and non-uniformity – workplace illumination.

B/A RATIO MEASUREMENT – continuous calculation of the ratio of the measured value to the reference value when the measuring function is started – contrast measurement, luminance distribution.

B-A DEVIATION MEASUREMENT – continuous calculation of the relative deviation of the measured value from the reference value when the measuring function is started – matching of luminance values and lighting.

%A DEVIATION MEASUREMENT – continuous calculation of percentage deviation of the measured value from the reference value when the measuring function is started – uniformity of luminance and illumination.

DATA LOGGER – continuous recording of measured quantity time curves. Measurement data are written to a data file at adjustable time intervals.

PEAK – acquisition of minimum, maximum and mean values.

HOLD – freezes the measured value display.

MEM – storage and deletion of individual measured values.

LARGE MEASURED VALUE MEMORY – 8 GB, readable via USB, functions like an external drive.

UNIVERSAL POWER SUPPLY – battery operation, continuous operation via USB interface with power bank, plug-in power pack or PC interface.

CONVENIENT PROTECTION – protection against impacts provided by optional rubber holster with tilt stand for convenient tabletop operation.

OPTIMUM OPERATION – fluorescent key labeling for UV-A applications.

## MAVOMASTER

MAVOMASTER functionality is matched to the user's routine daily measuring requirements. In particular it supports the generation of measurement reports for room lighting for which individual measured values, mean, minimum and maximum values as well as uniformity (minimum/mean) and non-uniformity (minimum/maximum) are continuously determined and stored. The data logger with adjustable sampling interval records measured quantity curves over time. Deviations from a reference value are possible in the relative measuring mode and integration of a measured quantity over time is possible in the integral measuring mode.

Data exchange with the PC and display of the measured variables at the PC are supported by MAVOSOFT software for Windows. Open interface commands make it possible for the user to individually integrate the measuring probes and the basic meter into his own applications.

# IDEALLY LAID OUT MEASURING PROBES

## The Right Probe for Every Application

Various measuring requirements specified in the fields of photometry and radiometry are covered by the individual MAVOPROBE measuring probes. Integration of all of the intelligence required for measured value processing into the measuring probe facilitates universal use and separate calibration. The common characteristics of all of the measuring probes are listed below. These apply equally to all measuring probes described in the following pages.

### Common MAVOPROBE Specifications

STAND-ALONE MEASURING INSTRUMENT – each probe is equipped with its own intelligence, is calibrated and transmits the associated measured quantity via the serial interface.

CLASSIFIED MEASUREMENT – each probe is classified according to DIN 5032-7 and meets all of the requirements specified in this standard.

UNIVERSAL USE – each probe can be used with a MAVOMASTER as a stand-alone measuring instrument. The probes can also be used cost-effectively in single or multi-channel measuring systems with an optional USB adapter.

INDIVIDUAL SYSTEM INTEGRATION – the open protocol for device control and data communication permits incorporation into the user's own applications.

EASY ADAPTATION – each probe has a ¼" tripod socket on the back and can be combined with tripods and photo accessories.

FINAL TESTING VERIFICATION INCLUDED – each probe is shipped with verification that it has passed final testing with a measured value.

OPTIONAL CALIBRATION – depending on the measured quantity, a factory or DAkkS calibration certificate can be issued by the GOSSEN Calibration Laboratory.

SEPARATE CALIBRATION – each probe can be calibrated separately, resulting in simplified shipping and reduced costs.

SUSTAINABLE DEVICE CONCEPT – the probe's firmware can be updated via the USB interface, allowing for future expansion and modification.

EXTENDABLE CONNECTION – the probe's 1.5 m connection cable can be subsequently extended with an optional 3, 5 or 10 m cable.

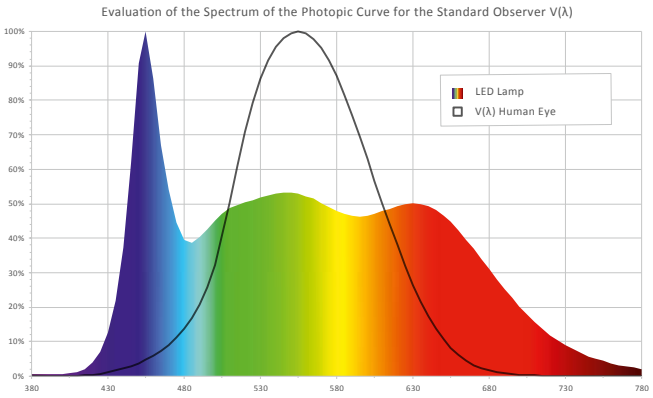
EXTERNAL POWER SUPPLY – each probe can be supplied with power from the basic MAVOMASTER meter or via the USB interface.

## V(λ) Matching and LED Compatibility

When ascertaining measured quantities, photometric measuring instruments take the spectral sensitivity of the human eye in daylight V(λ). into account. Matching to this curve is achieved by means of optical filtering in high-end measuring instruments, and it's one of their most important quality features.

GOSSEN has developed its own optical filters to this end, which feature less deviation than specified by class requirements in accordance with DIN 5032-7. In the case of class B devices deviation at f1' is 3%, and for class C it's less than 7.5%, which is significantly better than the 6% required for class B and the 9% required for class C.

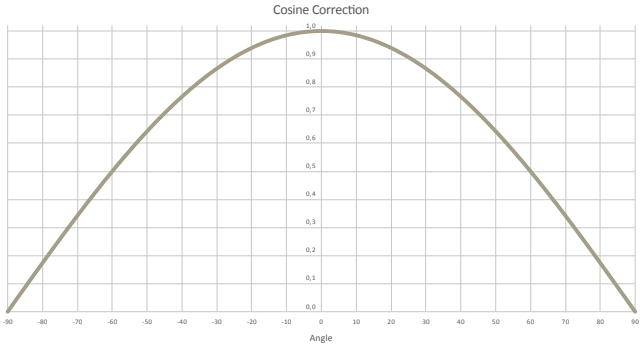
Thanks to excellent emulation of the V(λ) curve with optical filters, the instruments are unaffected by the spectral composition of the light and are therefore suitable for reliable measurement of daylight and all artificial light sources, including LEDs.




## Cosine Correction

The fact that the brightness of a flat measuring surface is proportional to the cosine of the incident angle of light is taken into consideration by luxmeters. Brightness is greatest in the case of vertical incident light, and brightness is 0 with an incident light angle of 90°.

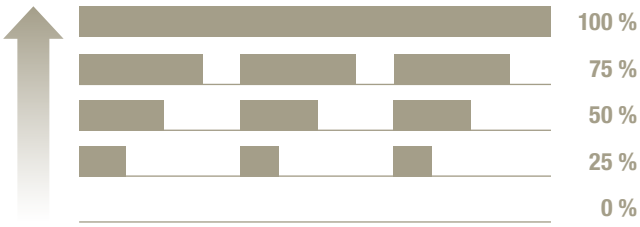
GOSSEN's meters have a typical error of 2% for classes B and C, which is well below the allowable error limit of 3% for class B and 6% for class C.




## Compatible with PWM-Controlled Light Sources

PWM stands for pulse width modulation and makes reference to the process of controlling the brightness of a light source via the ratio of the on and off-times of a periodic signal. The ratio of on-time to pulse duration as a percentage is proportional to the brightness of the lamp. This method is often used for LED light sources.

All MAVOPROBE probes deliver correct measured values for PWM-controlled light sources.



# ILLUMINANCE MEASURING TECHNOLOGY

## High-Precision Illuminance Probes

The MAVOPROBE LUX 5032 is available as a class B or C product in accordance with DIN 5032-7, DIN EN 13032-1 appendix B and ISO/CIE 19476. Both variants are equipped with V(λ) matching as well as cosine correction, and reliably measure the illuminance of daylight and all artificial sources of light. Even in the case of very bright sunlight or illumination from headlights, no accessories are required.

### MAVOPROBE LUX 5032 B/C Specifications

MAXIMUM PRECISION – classified measurement of illuminance in lx or fc in accordance with class B or C per DIN 5032-7, DIN EN 13032-1 appendix B and ISO/CIE 19476.

BROAD MEASURING RANGE – high initial sensitivity and resolution from 0.001 lx or 0.001 fc for the MAVOPROBE LUX 5032 B, right on up to high illuminance of 199,990 lx or 19,999 fc.

V(λ) MATCHING – the spectral sensitivity of the silicon photodiode is color corrected and corresponds very closely to the spectral brightness sensitivity of the human eye V(λ). The quality of this matching represents a significant difference between class B and class C.

COSINE CORRECTION – the luminosity of a flat measuring surface is proportional to the cosine of the incident angle of light. This relationship is taken into consideration by the receiver during evaluation.

SIMPLE FUNCTIONS EXPANSION – unclassified measurement of luminance in cd/m² or fL is made possible by the optional luminance attachment. Reduced measuring error can be achieved by matching the attachment to the respective probe. Furthermore, the optional adapter disc prevents erroneous measurements due to lateral incidence of light, and the velvety coating prevents scratching of the surface.

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## MAVOPROBE LUX 5032 B

Due to its outstanding accuracy in accordance with class B, the MAVOPROBE LUX 5032 B is used primarily for certification and inspection applications. An additional measuring range with high initial sensitivity of 0.001 lx makes it possible to measure extremely small illumination intensities. This even permits reliable measurement of emergency lighting. Matching to the spectral brightness sensitivity of the human eye V(λ) is highly precise with minimal deviation of just $f1' < 3\%$.

## MAVOPROBE LUX 5032 C

With accuracy in accordance with class C, the MAVOPROBE LUX 5032 C is used primarily for general applications as an industrial measuring instrument. The smallest measuring range begins with an initial sensitivity of 0.1 lx. V(λ) matching, which amounts to $f1' < 7.5\%$, is considerably better than the permissible error limit for class C.

Both variants can be used as unclassified luminance meters with the help of an optional luminance attachment with an acceptance angle of 15°. Reduced measuring error can be achieved by matching the luminance attachment to the measuring probe by ordering or calibrating them together.

# LUMINANCE MEASURING TECHNOLOGY

## The High-Precision Luminance Probe

This MAVOPROBE MONITOR for contact measurements is assigned to class B in accordance with DIN 5032-7, DIN EN 13032-1 appendix B and ISO/CIE 19476. It measures the perceived brightness of luminous surfaces in candelas per square meter (cd/m²) or foot-lamberts (fL). Excellent matching to the spectral brightness sensitivity of the human eye V(λ) is highly precise with minimal deviation of just f1‘ < 3%, which is significantly better than specified in the standard.

### MAVOPROBE MONITOR Specifications

MAXIMUM PRECISION – classified measurement of illuminance in cd/m² or fL in accordance with class B or C per DIN 5032-7, DIN EN 13032-1 appendix B and ISO/CIE 19476.

BROAD MEASURING RANGE – high initial sensitivity and a resolution of 0.001 cd/m² or 0.001 fL, right on up to 19,999 cd/m² or 1999 fL.

V(λ) MATCHING – the spectral sensitivity of the silicon photodiode is color corrected and corresponds very closely to the spectral brightness sensitivity of the human eye V(λ).

Light entry surface: diameter 19 mm diameter.

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## MAVOPROBE MONITOR

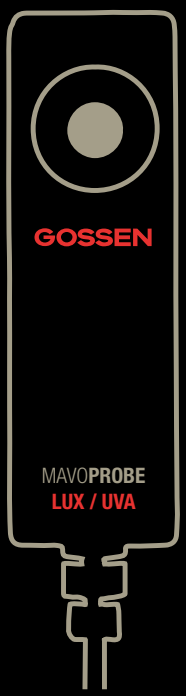
The included adapter disc prevents erroneous measurements due to lateral incidence of light, and the velvety coating prevents scratching of the surface. In industrial, commercial and service applications, luminance can be measured at monitors of any type, TV screens, light tables, trough luminaires, illuminated advertising surfaces, traffic signs and viewing screens.

Calibration conducted at regular intervals is substantiated by means of a factory calibration certificate for special tests for adherence to quality, safety and work safety regulations, for monitor workstations in the field of medical diagnostics and for office technology. Depending on how the meter is used, we recommend a calibration interval of 12 to 24 months.

# UV-A IRRADIANCE MEASURING TECHNOLOGY

## High-Precision Combination Probe for Nondestructive Testing

The MAVOPROBE LUX / UVA is classified for class B illuminance in accordance with DIN 5032-7, DIN EN 13032-1 appendix B and ISO/CIE 19476, and measurement of UV-A irradiance complies with the requirements specified in DIN EN ISO 3059 and ASTM E2297 for measuring instruments for fluorescent penetrant and magnetic particle testing.




### MAVOPROBE LUX / UVA Specifications

MAXIMUM PRECISION – classified measurement of illuminance in lx or fc in accordance with class B per DIN 5032-7, DIN EN 13032-1 appendix B and ISO/CIE 19476, measurement of UV-A irradiance in accordance with DIN EN ISO 3059 and ASTM E2297.

BROAD MEASURING RANGE – high initial sensitivity and resolution from 0.001 lx or 0.001 fc and 0.01µW/cm², right on up to high illuminance of 199,990 lx or 19,999 fc and high irradiance of 100,000 µW/cm².

V(λ) MATCHING – the spectral sensitivity of the silicon photodiode is color corrected and corresponds very closely to the spectral brightness sensitivity of the human eye V(λ).

COSINE CORRECTION – the luminosity of a flat measuring surface is proportional to the cosine of the incident angle of light. This relationship is taken into consideration by the receiver during evaluation.

SIMPLE FUNCTIONS EXPANSION – unclassified measurement of luminance in cd/m² or fL is made possible by the optional luminance attachment. Reduced measuring error can be achieved by matching the attachment to the respective probe. Furthermore, the optional adapter disc prevents erroneous measurements due to lateral incidence of light, and the velvety coating prevents scratching of the surface.

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## MAVOPROBE LUX / UVA

Performance of non-destructive materials testing systems must be checked regularly to ensure inspection quality and reliability. This inspection includes UV-A radiation intensity as well as illuminance. The viewing conditions for this test method are described in DIN EN ISO 3059, which contains the minimum requirements for illuminance and UV-A irradiance and their measurement. A calibration interval according to the manufacturer's specifications, but no less frequently than once every 12 months, is also stipulated, and documentation must be provided in the form of a calibration certificate.

# MAVOSOFT SOFTWARE

## Software for Data Storage and Interface Communication with the MAVOPROBES

### Fully Automatic or Manual Storage

The MAVOMASTER either saves the momentary measured value when the user presses a key, or it automatically saves measured values to a CSV file at the selected sampling interval if the data logger function is activated. When exiting special measuring functions such as integral, raster, ratio, percentage deviation or relative deviation, the user is prompted to specify whether or not the function values will be saved. Data is stored to the internal 8 GB memory, which is displayed as a portable storage device when the meter is connected to a computer. The measurement files stored in CSV format can then be easily opened, copied, moved or deleted.

### Interface Functions

MAVOMASTER and MAVOPROBES are equipped with a USB 2.0 interface. The open protocol for device control and data communication permits easy incorporation into the user's own applications. As long as the devices are connected to the PC, they're supplied with power via the interface and aren't switched off. Alternatively, a USB mains power pack or a power bank can be used for long-term measurements.

### Software for Control and Display

Intuitive MAVOSOFT software supports one or more MAVOMASTERs, as well as MAVOPROBES LUX 5032 B, LUX 5032 C, LUX / UVA and MONITOR. It handles device control and data communication, as well as visualization and logging of the measured values. Data export as a CSV file permits further universal processing of the measured values in Microsoft Office products.

## MAVOSOFT Specifications

SIMPLE DEVICE CONTROL – operation of all connected devices

CLEAR DISPLAY – single or multi-channel display of measured values as individual values, lists or graphics

EXPRESSIVE PROFILES – measured value recording at adjustable intervals for the creation of illumination profiles and long-term monitoring

EXPLICIT REPORTS – measurement report for workplace assessment

EASY DATA EXPORT – storage as universal CSV file

INTERNATIONAL USE – German, English, French, Italian or Spanish can be selected

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USB 2.0

# GOSSEN – GUARANTEED PRECISION AND QUALITY

## GOSSEN – Classified Measuring Instruments and Calibration

GOSSEN Foto- und Lichtmesstechnik is specialized in the measurement of light and has more than 90 years of experience in its chosen field. Continuous innovation is the appropriate answer to new technologies, regulations and markets. The flexibility enjoyed by a mid-sized company makes it possible for us to respond to the changing needs of our customers on short notice. Longstanding customers from industry, public authorities and medical technology have come to value this and place their faith in our products and services. They know their applications and welcome our advice. Together, we identify the most suitable solution for their measuring tasks.

### Focus on Quality

We focus on the outstanding quality of our products and services. Reliable measurement results with defined error limits are guaranteed by luminance meters and luxmeters classified in accordance with DIN 5032-7 and DIN EN 13032-1. Quality inspections, appraisals and reference measurements performed with these meters permit the issuance of concrete statements. Quality is assured by our certified quality management system in accordance with ISO 9001 and our accredited light lab for illuminance in accordance with DIN EN ISO/IEC 17025. Competent employees, continuous external monitoring and international recognition of our calibration services ensure that you can always rely on the quality of our products.

### Meters and Calibration from a Single Source

As a rule, calibration certificates and recalibration at regular intervals are required for the use of measuring instruments in quality-relevant applications and for assessments. Our calibration laboratory provides the required services for our own products, as well as for products from other manufacturers. We issue factory calibration certificates for illuminance, luminance and UV-A irradiance at 365 nm, as well as DAkkS calibration certificates for illuminance and UV-A irradiance at 365 nm. The laboratory used for this purpose is subject to strict test equipment monitoring, and is traced back to the PTB in Brunswick, Germany (German Federal Institute of Physics and Metrology).

For our own products, we can perform inexpensive minor repairs or adjustments free of charge before calibration. This saves additional logistics costs and time. In urgent cases, we offer express service upon request.

Detailed information on calibration can be found in our Calibration Laboratory brochure or on our website under Light Lab, where our accreditation, calibration ranges and sample calibration certificates can also be viewed.

# KITS WITH ACCESSORIES

## KITS

| | | |
|---|---|---|
| MAVOLUX 5032 B – Kit | MAVOMASTER, MAVOPROBE LUX 5032 B | M535G |
| MAVOLUX 5032 C – Kit | MAVOMASTER, MAVOPROBE LUX 5032 C | M536G |
| MAVOMONITOR – Kit | MAVOMASTER, MAVOPROBE MONITOR | M537G |
| MAVOLUX LUX / UVA – Kit | MAVOMASTER, MAVOPROBE LUX / UVA | M538G |

Each kit includes a Mavomaster and a corresponding Mavoprobe, as well as a rubber holster, a USB cable, a final test certificate and an aluminum carrying case.

## ACCESSORIES

Adapter Disc
Article Number: M499G

Rubber Holster
Article Number: V076A

Luminance Attachment
Article Number: M516G

MAVOPROBE Extension
Binder Socket - Series 711:
3 m – Article Number: V071A
5 m – Article Number: V072A
10 m – Article Number: V073A

Plastic Carrying Case
Article Number: M520G

USB Adapter Cable
USB 2.0 Type A Plug - Binder Series 711 Socket
Article Number: V074A

Aluminum Carrying Case
Article Number: V077A

USB Cable
USB 2.0 Type A Plug - Type B Micro Plug (1 m)
Article Number: V075A

# TECHNICAL DATA

| | Model | MAVO**PROBE** LUX 5032 B | MAVO**PROBE** LUX 5032 C |
|---|---|---|---|
| | Type | Illuminance measuring probe | Illuminance measuring probe |
| | Classification | Class B – DIN 5032-7 | Class C – DIN 5032-7 |
| | Article number | M527G | M528G |
| Measuring Functions^ | Illuminance | 0.001 lx … 199 990 lx / 0.001 fc … 19 999 fc | 0.1 lx … 199 990 lx / 0.01 fc ... 19 999 fc |
| | Luminance | 0.01 cd/m² … 1 999 900 cd/m² / 0.001 fL … 199 990 fL with optional luminance attachment, not classified | 0.1 cd/m² … 1 999 900 cd/m² / 0.01 fL … 199 990 fL with optional luminance attachment, not classified |
| | Irradiance - UV-A 365 nm | | |
| | Sampling rate | 2/s | 2/s |
| | Measuring sensor | Silicon photodiode with V(λ) filter | Silicon photodiode with V(λ) filter |
| | Probe with ¼" tripod thread | • | • |
| | Probe connector cable | 1.5 m, plug-in, Binder series 711 plug, 5-pin | 1.5 m, plug-in, Binder series 711 plug, 5-pin |
| | Compliance with the Standards | DIN 5032-7 class B / DIN EN 13032-1 appendix B / ISO CIE 19476 | DIN 5032-7 class C / DIN EN 13032-1 appendix B / ISO CIE 19476 |
| | Characteristic value - V(λ) matching (f1'), typicaltypisch | < 3% | < 7.5% |
| | Characteristic value - cos-like rating f2, typical f2 typisch | < 2% | < 2% |
| | Temperature dependence | < 0.1%, temperature compensated | < 0.1%, temperature compensated |
| | Accuracy | ± 2.5 % rdg ± 1 digit | ± 2.5 % rdg ± 1 digit |
| Operation | Display | | |
| | Background illumination | | |
| | Controls | | |
| | Measured value memory | | |
| | Interface | USB 2.0 with adapter cable | USB 2.0 with adapter cable |
| | Software | MAVOSOFT | MAVOSOFT |
| Power Supply | Batteries | | |
| | Automatic battery monitoring | | |
| | Automatic shutdown | | |
| | Battery service life | | |
| | Power supply via USB | • | • |
| Miscellaneous | Operating temperature | -10 °C bis +50 °C | -10 °C bis +50 °C |
| | Dimensions | 33 mm x 115 mm x 27 mm | 33 mm x 115 mm x 27 mm |
| | Weight | 110 g | 110 g |
| | Scope of delivery | Operating instructions, final test certificate | Operating instructions, final test certificate |
| Optional Calibration Certificates | | Factory calibration certificate - H997B<br>DAkkS calibration certificate - H997D | Factory calibration certificate - H997B<br>DAkkS calibration certificate - H997D |

| MAVO**PROBE** LUX / UVA | MAVO**PROBE** MONITOR | MAVO**MASTER** |
|---|---|---|
| Measuring probe for illuminance and irradiance | Luminance measuring probe | Compact control and display unit |
| Class B - DIN 5032-7 | Class B - DIN 5032-7 | |
| M526G | M529G | M525G |
| 0.001 lx ... 199 990 lx / 0.001 fc ... 19 999 fc | | |
| 0.01 cd/m² … 1 999 900 cd/m² / 0.001 fL … 199 990 fL with optional luminance attachment, not classified | 0.001 cd/m² … 19 999 cd/m² / 0.001 fL … 1999 fL | |
| 0.01 µW/cm² … 199 990 µW/cm² | | |
| 2/s | 2/s | 2/s |
| Silicon photodiode with V(λ) filter<br>Silicon photodiode with UV-A filter per DIN EN ISO 3059 | Silicon photodiode with V(λ) filter | |
| • | • | |
| 1.5 m, plug-in, Binder series 711 plug, 5-pin | 1.5 m, plug-in, Binder series 711 plug, 5-pin | Probe connection, Binder series 711 plug, 5-pin |
| DIN 5032-7 class B / DIN EN 13032-1 appendix B / ISO CIE 19476 / DIN EN ISO 3059 / ASTM E2297-15 | DIN 5032-7 class B / DIN EN 13032-1 appendix B / ISO CIE 19476 | DIN 5032-7 / DIN EN 13032-1 appendix B / ISO CIE 19476 |
| < 3 % | < 3 % | |
| < 2 % | | |
| < 0.1%, temperature compensated | < 0.1%, temperature compensated | |
| ± 2.5 % rdg ± 1 digit,<br>± 10 % rdg ± 1 digit (UV-A 365 nm) | ± 2.5 % rdg ± 1 digit | |
| | | FSTN graphic display, 128 x 64, monochrome, 50 x 25 mm |
| | | Selectable mode and adjustable brightness |
| | | 6 keys, fluorescent lettering |
| | | 8 GB |
| USB 2.0 with adapter cable | USB 2.0 with adapter cable | USB 2.0, , micro B socket |
| MAVOSOFT | MAVOSOFT | MAVOSOFT |
| | | 1.5V mignon, type AA |
| | | • |
| | | Off, 10 s, 30 s, 1 min, 2 min, 5 min |
| | | Up to 16 hours continuous operation with alkaline manganese battery |
| • | • | • |
| -10 °C bis +50 °C | -10 °C bis +50 °C | -10 °C bis +50 °C |
| 33 mm x 115 mm x 27 mm | 33 mm x 115 mm x 97 mm | 65 mm x 120 mm x 19 mm |
| 115 g | 180 g | 100 g including battery |
| Operating instructions, final test certificate | Operating instructions, final test certificate | Operating instructions, battery, USB cable |
| Factory calibration certificate lx- H997B<br>Factory calibration certificate UV-A 365 nm - H997U<br>DAkkS calibration certificate lx - H997D<br>DAkkS calibration certificate UV-A 365 nm - H997E<br>DAkkS calibration certificate NDT/ZfP - H997N | Factory calibration certificate - H997B | |

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