GOSSEN

MAVOBASE LUX

USER MANUAL

Table of Contents

1. Safety Instructions

	Read and follow these instructions carefully and completely in order to ensure safe and proper use. The instructions must be made available to all persons who use the instrument. Keep for future reference.

General

- The instrument may only be used by adequately trained and qualified personnel in the commercial trades. It is not a consumer product.
- Observe and comply with all safety regulations which are applicable for your work environment.

Handling

- Use the instrument in undamaged condition only.
  Inspect the instrument before use. Pay particular attention to damage, interrupted insulation or kinked cables.
- If the instrument or its accessories don't function flawlessly, permanently remove the instrument/accessories from operation and secure them against inadvertent use.
- The instrument and the accessories may only be used for the tests/measurements described in the documentation for the instrument.

Operating Conditions

- Do not use the instrument and its accessories after long periods of storage under unfavorable conditions (e.g. humidity, dust or extreme temperature).
- Do not expose the instrument to direct sunlight for a long period of time. Overheating can damage the instrument.
- Only use the instrument and its accessories within the limits of the specified technical data and conditions (ambient conditions, IP protection code, measuring category etc.).
- Do not use the instrument in potentially explosive atmospheres. Danger of explosion!

Rechargeable or Regular Batteries

- Use (rechargeable) batteries in undamaged condition only. Risk of explosion and fire in the case of damaged (rechargeable) batteries!
  Inspect the (rechargeable) batteries before use. Pay particular attention to leaky and damaged (rechargeable) batteries.

Calibration

- Comply with national calibration regulations and laws.

2. Application

	Please read this important information!

2.1 Intended Use / Use for Intended Purpose

The MAVOBASE LUX (M532G) is an illuminance meter that measures and displays illuminance in LUX or foot candle (fc).

Safety of the user, as well as that of the instrument, is only assured when it is used for the intended purpose.

2.2 Intended Users

The following groups of people are intended to use the device:
Persons who monitor and evaluate the quality of lighting and irradiation systems, lamps, luminaires, and lighting products.

2.3 Use for Other than Intended Purpose

Using the instrument for any purposes other than those described in this manual is contrary to use for intended purpose. Use for purposes other than those intended may result in unforeseeable damage!

2.4 Liability and Guarantee

The warranty provided by GOSSEN Foto- und Lichtmesstechnik GmbH, and ist liability, are governed by the applicable contractual and mandatory statutory provisions.

3. Documentation

3.1 Information Concerning these Instructions

Read these instructions carefully and attentively. They contain all necessary information for safe use of the instrument. Comply with these instructions in order to protect yourself and others from injury, and to avoid damaging the instrument.

The latest version of these instructions is available on our website:

https://www.gossen-photo.de/

Firmware Version

This documentation describes the instruments with version 1.0.0. You can look up the firmware version of your instrument (chapter Maintenande, see page 13).

Documentation for other firmware versions is available upon request, see page 15.

Errors and Suggestions for Imporvement

These instructions have been prepared with utmost care in order to ensure correctness and completeness. Unfortunately, errors can never be entirely avoided. Continuous improvement is part of our quality goal, so we always appreciate your comments and suggestions.

Gender Equality

For better readability, only the masculine form is used in these instructions in a grammatically impartial sense. The feminine and diverse forms are of course always implied as well.

Trademark Law

Product designations used in this document may be subject to brand law and patent law. They are the property of their respective owner.

Copyright

3.3 Identification of Warnings

Instructions for your safety and for the protection of the instrument and its environment are provided as warnings and notes at certain points within these instructions.

They're laid out as shown below and are graded in terms of severity of the respective hazard. They also describe the nature and cause of the hazard, the consequences of non-observance and what must be done to avoid it.

DANGER

Death or serious injury is almost certain.

WARNING

Death or serious injury is possible.

CAUTION

Minor or moderate injury possible.

ATTENTION

Damage to the product or the environment.

NOTE

Important information.

Tip

Useful additional information or application tip.

3.4 Identifiers

The following identifiers are used in this documentation:

Kennzeichen	Bedeutung
Control element	Keys, buttons, menus and other controls
✓ Prerequisite	A condition etc. which must be fulfilled before a given action can be taken
1. Procedural step	Steps of a procedure which must be completed in the specified order
↳ Result	Result of a procedural step
■ Enumeration □ Enumeration	Bullet lists
Footnote	Comment

3.5 Symbols in the Documentation

The following icons are used in this documentation:

Symbol	Bedeutung
	Read and adhere to the product documentation.
	General warning symbol.

4. The Instrument

4.1 Scope of Delivery

Please check the contents oft he package to ensure they are complete and undamaged. For information on replacement party, please refer to the instruments‘ data sheet.

1 MAVO**BASE** LUX instrument

1 AA Batterie

1 Manual

1 Final Test Certificate

4.2 Instrument Overview

4.3 Symbols on the Instrument and the Included Accessories

Symbol	Bedeutung
	The instrument may not be disposed of with household trash
CE	European conformity marking

4.4 Features

Classified measurement of illuminance in lx or fc according to Class C as specified in DIN 5032-7, IEC 13032-1 Annex B and CIE 69.

The accuracy is ±3 % + 1 digit of the reading.

High initial sensitivity and resolution from 0.1 lx or 0.01 fc up to high illuminance levels of 199.900 lx or 19.990 fc.

V(λ) Calibration – The spectral sensitivity of the silicon photodiode is color-corrected and matched the spectral luminous sensitivity of the human eye, V(λ).

Cosine correction – The brightness of a flat measurement surface is proportional to the cosine of the angle of incidence, which is taken into account by the receiver during elevation.

PEAK Function (display of MIN, MAX, and AVG illuminance values during the measurement process).

REL Function – Comparative measurement (e.g. measurement with and without daylight).

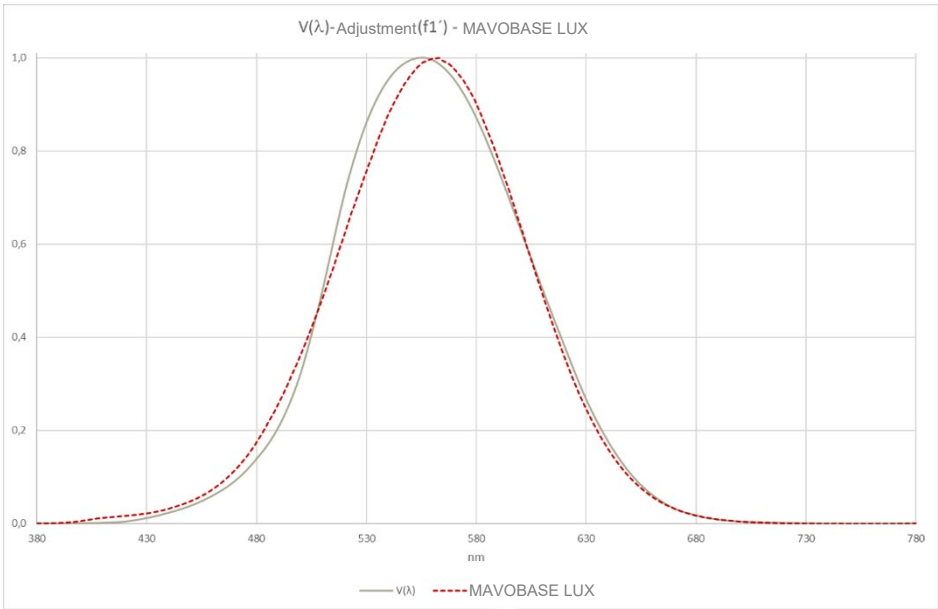
4.5 Relevant Standards

ISO CIE 19476	Characterization of the performance of illuminance meters and luminance meters
DIN 5032-7	Photometry – Part 7: Classification of illuminance meters and luminance meters
DIN EN 13032-1 Anhang B	Light and lighting – Measurement and presentation of photometric data of lamps and luminaires – Part 1: Measurement and file format; German version EN 13032-1:2004+A1:2012
EN 61326-1	Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements

4.6 Technical Specification

Measurment Functions

Classification	Klasse C – DIN 5032-7
Illuminance	0,1 lx … 199,900 lx / 0,01 fc … 19,990 fc
Sampling rate	2 measurements per second
Sensor	Silicon photodiode with V(λ) filter, Diffusor diameter: approx. 10 mm
Reference plane	Diffusor surface
Product standard	DIN 5032-7 class C DIN EN 13032-1 appendix B ISO CIE 19476
V(λ) matching f1', typically	< 6 %
Cos-like rating f2, typically	< 2 %
Temperature dependence	< 0,1 %, temperature-compensated
Accuracy	± 3 % rdg. ± 1 digit
Operating Temperature	-10 – +50 °C
Storage Temperature	+20 – +70 °C
Relative Humidity	45 – 75 %, condensation must be prevented
Power supply	Continuous via USB or AA battery
Dimensions	Display unit: 62 × 120 × 19 mm Measuring head: 31 × 105 × 30 mm
Weight	approx. 0,11 kg



5. Power Supply

Open the battery compartment of the MAVO**BASE** LUX by pressing down the snap closure of the battery compartment cover in the direction of the embossed arrow and flipping the cover open. Insert the included 1.5 V AA battery (IEC LR6) into the battery compartment, observing the polarity markings inside the compartment. Next, insert the two tabs on the battery compartment cover into the corresponding recesses in the housing and press the cover down until the snap-lock clicks into place. The instrument is now ready for use.

The battery status indicator shows the remaining battery capacity.

If the meter is to be used continuously for an extended period of time, we recommend using an optional USB power adapter or an optional power bank, as the built-in AA battery has a limited lifespan.

6. Display and Control Elements

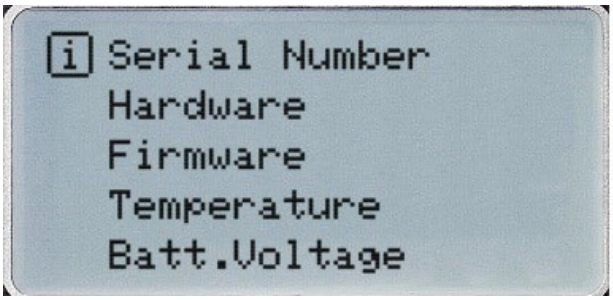
Display on the screen

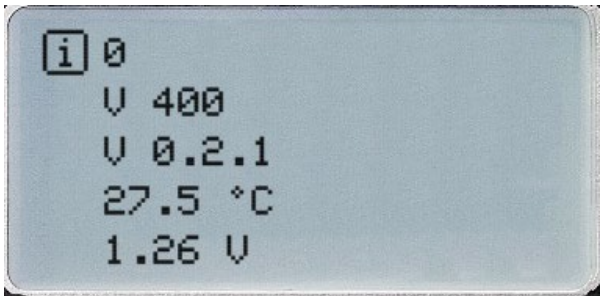
<table>
<tr><td></td><td>Battery status indicator
<table><tr><th>Display</th><th>Cont. Operation</th><th>Power supply</th></tr><tr><td></td><td>off</td><td>Battery</td></tr><tr><td>ON</td><td>on</td><td>Battery</td></tr><tr><td>ON</td><td>on</td><td>Power Adapter/Power Bank</td></tr></table></td></tr>
<tr><td>MIN/MAX/AVG</td><td>Activation via the “PEAK” button
Displays the maximum (MAX) or minimum (MIN) value measured during the current measurement period, or the average value (AVG) for the entire current measurement perios.</td></tr>
<tr><td>HOLD</td><td>The displayed measuremtn is the value that was frozen by pressing the “HOLD” button.</td></tr>
<tr><td>lx/fc</td><td>Display of the measured value in LUX or kilo-LUX (lx or klx) or foot-candles (fc)</td></tr>
<tr><td>Rel: X.XX (k)lx</td><td>Activated using the “REL” button
Display of the frozen reference value during relative measurement</td></tr>
</table>

7. Configuration of the Instrument

In configuration mode, you can view various pieces of information about the MAVO**BASE** LUX. To enter this mode, press and hold the ≡ button.

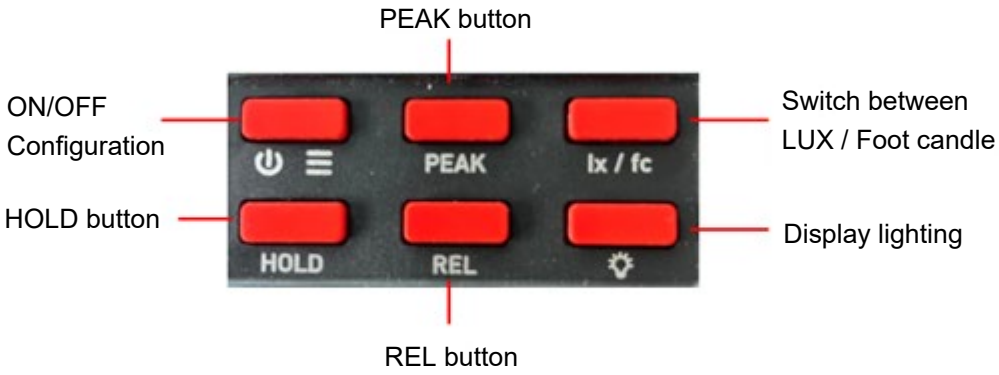
The parameters and their corresponding values are displayed alternately:





8. Measurements

The meter is operated using 6 buttons.



The button ☼ turn the display's backlight on or off

9.1 PEAK

During a measurement, the PEAK function records the maximum value (MAX), and the arithmetic mean (AVG) in the background. A brief press of the PEAK button displays MAX, MIN, and AVG in sequence. If no further operation is performed while the PEAK display is active, the PEAK display ends automatically. Pressing and holding the PEAK button resets MAX, MIN, and AVG. This is indicated by an audible tone and the display of "Reset" in the message field.

9.2 REL

The REL measurement function is activated by briefly pressing the corresponding function key. It uses the value measured at the time of activation or the value frozen using the HOLD key as the reference value and subtracts this from the current measured value. The display shows the reference value at the top and the measured value minus the reference value at the bottom. Pressing the function key briefly deactivates the measurement function.

9.3 HOLD

Fixed memory functions are assigned to the HOLD button. Depending on the meter's operating state, the button has a different function: however, pressing and holding the button consistently ends a measurement function and clears values.

9. Storage and Transport

ATTENTION

Improper storage

Damage to the product and measuring error due to environmental influences.

- Store the instrument in a protected location and only within the limits of permissible ambient conditions. The ambient conditions (temperature, humidity etc.) can be found on page 10.

ATTENTION

Improper Transport

Damage to the product and measuring error.

- Transport the instrument only within the limits of permissible ambient conditions (temperature, humidity etc.). The ambient conditions (temperature, humidity etc.) can be found on page 10.
- Only use the original carry case to transport the instrument.

10. Maintenance

10.1 Cleaning

DANGER

Life endangering due to electric shock!

The instrument and its accessories are operated with electrical power, therefore there is a general risk of electric shock. This can be fatal or cause serious injuries.

- The instrument, the accessories and all connected conductors must be voltage-free before and during cleaning. Switch the test instrument off and disconnect it from the mains power supply.
- Never immerse the instrument/accessories in water or other fluids.
- Never touch the instrument/accessories with wet or moist hands.

ATTENTION

Unsuitable cleaning agents

Unsuitable cleaning agents such as aggressive or abrasive cleansers result in damage to the instrument/accessories.

- Use a slightly damp cloth for cleaning.

Keep the outside surfaces of the instrument and any accessories clean.

10.2 Calibration

Use of your instrument and the resulting stress influence the instrument and lead to deviation from warranted accuracy values.

In the case of strict measuring accuracy requirements, as well as in the event of severe stressing (e.g. severe climate or mechanical stress), we recommend a relatively short calibration interval of once per year. If this is not the case, a calibration interval of 24 months is usually adequate.

Please contact our service department for calibration services, see page 15.

11. Repair

If your instrument requires repair, please contact our service department, see page 15.

Note

Loss of warranty and guarantee claims
Unauthorized modification of the instrument is prohibited. This also includes opening the instrument.
If it can be ascertained that the instrument has been opened by unauthorized personnel, no guarantee claims can be honored by the manufacturer with regard to personal safety, measuring accuracy, compliance with applicable safety measures or any consequential damages.

- The device may only be repaired or opened by authorized, qualified personnel who are familiar with the associated dangers.
- Original replacement parts may only be installed by authorized, qualified personnel.
- The device may not be put back into service until the fault has been identified and repaired.

Note

Data protection
Data can be stored in the instrument. This may include personal and/or sensitive data.
Back up your data before sending the instrument for repair.
Also, be aware of the owner's or end user's own responsibility with regard to protecting personal and other potentially sensitive data in the instrument before sending it for repair.

12. Service and Contact

GOSSEN Foto- und Lichtmesstechnik GmbH
Lina-Ammon-Str. 22
90471 Nürnberg
Germany

+49 911 800621 0
info@gossen-photo.de

13. Certifications

13.1 CE Declaration

The instrument fulfills all requirements of applicable EU directives and national regulations. We confirm this with the CE mark.

A printed version of the CE declaration is available on our homepage.

13.2 Calibration Certificate

A calibration certificate can be issued for the device upon request.

We also recommend setting a schedule for recalibration.

Please contact us regarding calibration services.

14. Disposal and Environmental Protection

Proper disposal makes an important contribution to the protection of our environment and the conservation of natural resources.

ATTENTION

Environmental damage

Improper disposal results in environmental damage.

Follow the instructions concerning return and disposal included in this section.

14.1 Disposal of Old Devices, Batteries and Rechargeable Batteries

Old devices and (rechargeable) batteries contain valuable raw materials that can be recycled, as well as hazardous substances which can cause serious harm to human health and the environment, and they must be recycled and disposed of correctly.

The symbol depicting a crossed-out garbage can on wheels refers to the legal obligation of the owner or end-user not to dispose of old devices and batteries or rechargeable batteries with unsorted municipal waste ("household trash"). The (rechargeable) batteries must be removed from the old device (where possible) without destroying them and the old device and the (rechargeable) batteries must be disposed of separately. The type and chemical composition of the (rechargeable) battery are indicated on the battery's labelling. If the abbreviations "Pb" for lead, "Cd" for cadmium or "Hg" for mercury are included, the (rechargeable) battery exceeds the limit value for the respective metal.

You are obliged to comply with respective local requirements and implement them correctly on site. Further information can be obtained, for example, from the responsible authorities or the local distributor.

Please also observe the owner's or end user's responsibility with regard to deleting personal data, as well as any other sensitive data, from old devices before disposal.

14.2 Disposal of Packing Materials

Packaging and its parts must be correctly disposed of separately from unsorted municipal waste ("household trash").

You are obliged to comply with respective local requirements and implement them correctly on site. Further information can be obtained, for example, from the responsible authorities or the local distributor.

We recommend retaining the original packaging materials in case you might require servicing or calibration in the future.

WARNING

Danger of asphyxiation resulting from foils and other packing materials

Children and other vulnerable persons may suffocate if they wrap themselves in packaging materials, or their components or foils, or if they pull them over their heads or swallow them.

- Keep packaging materials, as well as their components and foils, out of the reach of babies, children and other vulnerable persons.

14.3 Regulations for the Federal Republic of Germany

The following comments refer specifically to the legal situation in the Federal Republic of Germany.

Old devices, electrical or electronic accessories and batteries or rechargeable batteries

Old devices, electrical or electronic accessories, batteries and rechargeable batteries used in Germany can be returned free of charge to Gossen Metrawatt GmbH or the service provider responsible for their disposal in compliance with applicable regulations, in particular laws concerning packaging and hazardous goods. Batteries and rechargeable batteries must be returned in the discharged state or with appropriate precautions against short circuiting. Further information regarding returns can be found on our website.

Packaging Materials

Packaging which is not subject to so-called system participation is returned to the appointed service provider. Further information regarding returns can be found on our website.

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Germany

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