



Operating Manual



LUXMETER
Light meter



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This operation manual provides important advice for the safe and effective handling of the device. The manual must be kept at the place of work and be accessible to operators and maintenance personnel at all times.

1. DESCRIPTION

The portable Luxmeter is fitted with a large LCD display which optimally displays the measured values. The Luxmeter measures and records illuminance (PHOT) in units of Lux (lx).

The probes are equipped with an automatic SICRAM detection module, which stores the data of the factory calibration settings. The unit of measurement selection is also automatic.

Functions of the Luxmeter include:

MAX	Calculates the maximum reading
MIN	Calculates the minimum reading
AVG	Calculates the average reading
REL	Relative measurement
HOLD	Freezes the display
Automatic de-activation	Automatic turning off; can be disabled

NOTE: The Luxmeter does not measure white light in the UV measurement.

1.1 OPERATING ELEMENTS AND DISPLAY



1. Probe input, connection 8-pin DIN 45326
2. Battery symbol: displays the battery charge level
3. Function display
4. Secondary display line
5. DATA key: displays the maximum (MAX), the minimum (MIN) and the average (AVG) value of the current measurements
6. CLR key: resets the maximum, average, and minimum values.
7. HOLD key: freezes the display
8. UNIT key: allows you to specify the unit of measure
9. REL key: activates the relative measuring mode during standard operation; displays the difference between the current value and the value saved
10. ON-OFF/AUTO-OFF key: turns the unit on and off; when pressed together with the HOLD key, it disables the AutoPowerOff function
11. MAX (maximum value), MIN (minimum value) and AVG (average value) symbols
12. Main display line
13. Symbol and comment line

1.2 DESCRIPTION OF THE FUNCTIONS

The Luxmeter keypad consists of single-function keys, except the ON-OFF / Auto-OFF key that has two functions (see description opposite).

When you press a key, you will hear a short 'beep' as confirmation; a longer 'beep' will sound if the wrong key is pressed.

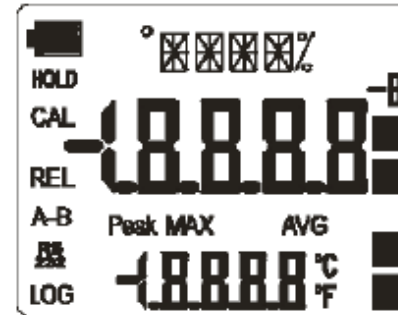
The functions of each key are described in detail below.



This key has two functions: **ON/OFF** and **AUTO-OFF**

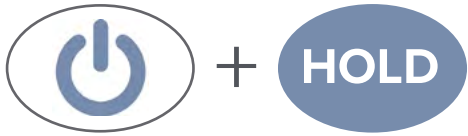
ON/OFF: press to switch the device on and off. Switching on the device activates all display segments for a few seconds and starts an auto-test (self-diagnosis), which will detect the probe connected to the input and set the device to standard measurement mode.

The following is displayed:



If no probe is connected when the device is switched on, the "PROB" message is displayed in the Symbol line for a few seconds, while the "ERR" message is shown in the central part of the display. If a probe is inserted while the device is turned on, it will not be detected; you will need to turn the device off and on again **with the probe connected** for it to be recognised.

Caution: only replace the probe when the instrument is off.



AUTO-OFF: the Luxmeter has a self-off function (AutoPowerOff) that automatically turns the device off after 8 minutes of inactivity (no key is pressed during that time). To disable this function, press the ON/OFF and HOLD buttons simultaneously.

If you use this function, remember to turn the device off using the ON/OFF key when you have finished using it. Deactivation of AutoPowerOff is indicated on the display by the flashing battery symbol.



The **CLR/ESC** key resets the maximum, average and minimum values of the captured measurements.



DATA:

1. Pressing this button once will display the maximum value (MAX) that the probe will measure. The measured values are updated each time new samples are detected.

2. Pressing the button a second time displays the minimum value (MIN).

3. Pressing the button a third time displays the average value (AVG).

The detection frequency is once a second.

The unit automatically starts storing the MAX, MIN and AVG values as soon as the unit is turned on. As long as the device is switched on, the MAX, MIN and AVG values remain in the memory, even after exiting the DATA calculation function. These values are deleted when the device is switched off.

To reset the previous values and start a new measurement session, hold down the CLR key until the FUNC_CLR indicator appears.



Pressing the HOLD button freezes the current measurement update and the "HOLD" message will appear in the upper left-hand corner of the display. To return to the current measurement, press the key again.

This button also deactivates the auto-off function.



The UNIT button sets the measurement unit of the primary input. The unit of measurement is displayed in the upper area of the display, while the measured value is shown on the middle line. Press the UNIT button repeatedly to set the desired unit of measure.

NOTE: The available units of measurement are determined by the probe connected to the input, as shown in the table below:

Type of measurement	Unit of Measurement
Illuminance (PHOT)	lx – Lux



Displays the difference between the current value and the value measured when the button was pressed. The indication "REL" appears on the left side of the display. To return to the standard measurement, press the key again.

1.3 PROBES

The Luxmeter works with photometric and radiometric probes that measure illuminance (PHOT). All probes are provided with a diffuser for cosine correction.

Important: connect the probe before turning on the power. The Luxmeter automatically detects the probe when it is turned on.

The unit of measurement is determined by the probe connected to the input. If more than one unit of measurement is provided for single probe, press the UNIT key to select the unit you want.

All probes are factory calibrated and require no further calibration by the user.

2. USER INSTRUCTIONS AND MAINTENANCE

This section includes all technical and administrative measures required to maintain the meter in proper working condition.

2.1 CARE OF THE LUXMETER

- Do not bend the probe connectors or force them upwards or downwards.
- Do not bend or force the contacts when inserting the probe connector into the meter.
- The sensors and filters must not exceed the specified temperature limits; the device may be irreparably damaged.
- Do not drop the probe.
- Avoid taking measurements in direct sunlight, or near high frequency sources, microwave ovens or strong magnetic fields, as these may influence the results.
- Although the device is water-resistant (IP67 rating), it should not be submerged in water. The probe connectors must be fitted with sealing gaskets. If the unit does fall into water, check whether water has penetrated into the device. Handle the device in such a way as to prevent water infiltration through the connections.
- The housing of the Luxmeter is made of ABS plastic, Do not clean with incompatible solvents.
- Do not use or store the Luxmeter in places where it could be exposed to:
 - Rapid changes in ambient temperature which may cause condensation.
 - Corrosive or combustible gases.
 - Direct vibration or shock to the instrument.
- We recommend an annual calibration of the meter unit and the probe.

2.2 INDICATIONS AND ERROR MESSAGES

The following table lists all the indications displayed by the Luxmeter during the different operating phases and in the case of a fault:

Display indication	Explanation
BATT TOO LOW CHNG NOW	Indicates insufficient battery charge; appears when you turn the meter on. The meter will issue a long beep and turn off. Replace the batteries.
CAL LOST	Program error; appears for a few seconds when the device is switched on. Contact Magnaflux.
ERR	Displays when an already detected probe is disconnected from the device. An intermittent 'beep' will sound at the same time.
FUNC CLRD	Indicates that the maximum (MAX), minimum (MIN) and average (AVG) values have been reset.
NEW_PROB_DET	Indicates new probe detected
NO_PRBE_SER_NUM	Indicates the serial number of the connected probe is not available.
OVER	Overflow measurement: indicates the probe is measuring a value that exceeds the measurement range.
PLS_EXIT >>> FUNC RES_FOR_ FACT ONLY	Meaning: please exit by pressing ESC >>> Function is reserved for factory calibration
PRBE_SER #####	Displays the serial number of the connected probe.
PROB ERR	Indicates that a probe with SICRAM module has been inserted, which is not supported by the meter.
PROB COMM LOST	Displays when an already detected probe is disconnected from the device. An intermittent 'beep' will sound at the same time.
SYS ERR #	Indicates a Device Management Error. Contact Magnaflux and tell us the numerical code indicated on the display.

2.3 LOW BATTERY WARNING AND BATTERY REPLACEMENT

The display always shows the battery charge status. As the batteries are depleted, the symbol "empties". If the charge continues to decrease, the symbol starts flashing. When this happens, replace the batteries, otherwise correct measurement cannot be guaranteed.



If the battery charge level is insufficient, the message below will appear when you turn the instrument on. The meter will also issue a long beep and turn off; replace the batteries in order to turn the instrument back on.

BATT TOO LOW

Replacing the batteries:

1. turn off the device
2. unscrew the battery cover counterclockwise
3. replace the batteries (3x 1.5V alkaline batteries - type AA)
4. screw the cover on clockwise



Occasionally the meter may not work properly after replacing the batteries. If this happens, remove the new batteries and wait a few minutes to allow the circuit capacitors to discharge completely, then put the batteries back in.

Battery recommendations:

- Remove the batteries when the device is not being used for a long time.
- Replace flat batteries as soon as possible.
- Discard leaking batteries
- Always use good quality leakproof alkaline batteries. Inferior batteries are likely to have an insufficient charge capacity.

2.4 STORING THE LUXMETER

Storage conditions:

- Temperature: -25...+65°C.
- Humidity: less than 90%RH without condensation.

Do not store the Luxmeter in a places where it may be exposed to:

- high humidity
- direct sunlight
- high temperatures
- strong vibrations;
- steam, salt or any corrosive gas.

3. TECHNICAL DATA

3.1 LUXMETER

Dimensions (length x width x height)	140 x 88 x 38 mm
Weight	160 g (including batteries)
Material	ABS
Display	2 x 4½ digits plus symbols
Visible display area	52 x 42 mm
Operating temperature	-5 to +50°C
Storage temperature	-25 to +65°C
Relative operating humidity	0 - 90 % RH without condensation
Degree of protection housing	IP67
Batteries	3 x 1.5V type AA
Autonomy	200 hours with 1800mAh Alkaline
Power consumption when switched off	< 20 µA
Probe input connection	8-pole male connector DIN 45326
Unit of measurement	lx – Lux
Part number	134056*

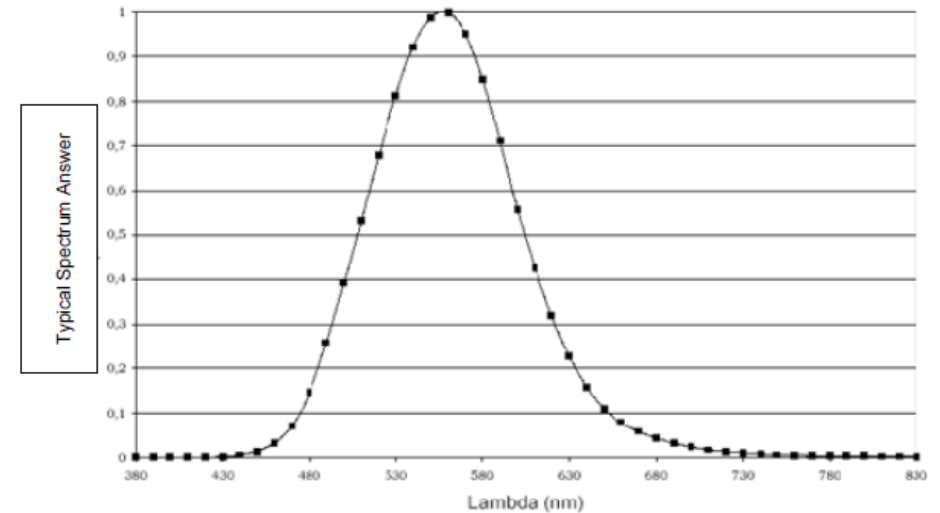
* Kit includes 1 x Luxmeter, 1 x Probe LM-PHOT and 3 x 1.5V alkaline batteries, all in a case.

3.2 PHOTOMETRIC PROBE

Illuminance measurement probe (PHOT) complete with SICRAM module

Measurement range (Lux)	Resolution (Lux)
0.01...199.99	0.01
...1999.9	0.1
...19999	1
...199.99 x 10 ³	0.01 x 10 ³

Spectral range	in agreement with standard photopic curve V(λ)
α (temperature coefficient) f6(T)	<0.05% K
Calibration uncertainty	< 4%
f'1 (in agreement with photopic response V(λ))	< 8%
f2 (response according to the cosine rules)	< 3%
f3 (linearity)	< 1%
f4 (meter reading error)	< 0.5%
f5 (fatigue)	< 0.5%
Annual drifting	< 1%
Operating temperature	0 to 50°C
Reference Standard	CIE No 69 – UNI 11142



Typical response curve

Note: The probe is not able to detect the white light constituent of UV-A lamps.

3.3 KEY DATA FOR USE IN NDT (NON-DESTRUCTIVE TESTING)

Standard references:

- Magnetic particle inspection: DIN EN ISO 9934
- General: DIN EN ISO 3059

Illuminance (PHOT):

- Daylight examination: > 500 lx
- Fluorescent examination: < 20 lx

Note: Do not measure illuminance in direct sunlight; it will produce an incorrect measurement.

3.4 DISPOSAL

Before disposal, ensure that the power supply to the meter is disconnected.

Conform with the local regulations and disposal guidelines.

Rechargeable batteries, dry batteries and button cells are hazardous waste; they pose risks to health and the environment.

Procedure:

1. Decommission the meter
2. Separate the components according to type:
 - Metals
 - Plastic materials
 - Composite materials
 - Electric and electronic components
3. Dispose all parts according to the local regulations and directions

If you have any questions about disposing of this device, contact Magnaflux.



EC/EU DECLARATION OF CONFORMITY FOR MAGNAFLUX STANDARD SMALL DEVICES



We hereby declare that this equipment complies with the following EU Directives. The device has been tested and approved. Any modification made to the device without our written consent will invalidate this declaration.

Equipment name: MX Luxmeter (part number 134056)

Applicable standards:

DIN EN ISO 9934-1:2017-03, DIN EN ISO 9934-3:2015-12,
DIN EN ISO 3059:2013-03, DIN EN 61010-1:2011-07

Authorised person for documentation:

Mr. Georg Koch, Quality Management Officer

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Person responsible:

Sales Manager Equipment EMEAR
Mr. Silvio Georgi

Signature:

Date: 01/01/2019



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