



Model Number

LGM8 Serie

Light grid

with fixed cable with 4-pin, M12 x 1 connector, and fixed cable with 8-pin, M12 x 1, connector

Features

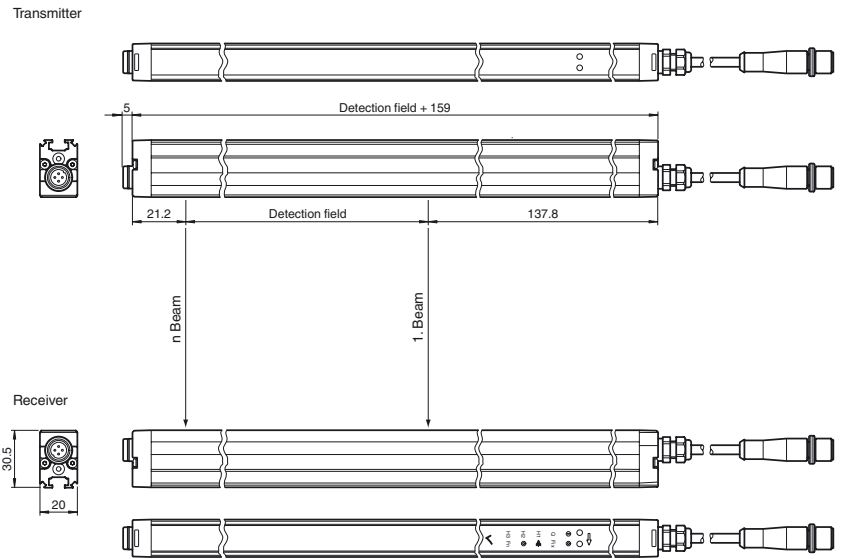
- Measuring automation light grid with switching output
- Optical resolution 8 mm
- Super-fast object detection, even with 3-way beam crossover
- Object identification using integrated object recognition
- IO-link interface for service and process data
- Temperature range to -30 °C
- Output of an analog measured value, can be selected from a number of measuring functions

Product information

Automation light grids in the LGM Series are designed to measure small to large objects. The slimline light grids are modular in design and are available with various beam gaps and field heights. The entire signal evaluation process is carried out within the device. The lightweight systems can be integrated elegantly into their surroundings, from both a technical and a visual perspective. As a result, machines and plants operating in temperature ranges between -30 °C ... +60 °C can be designed to more compact dimensions.

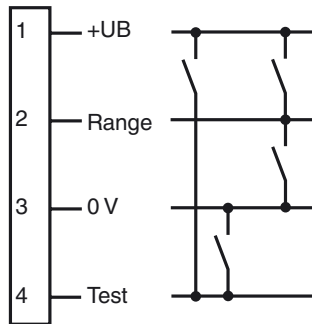
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Dimensions

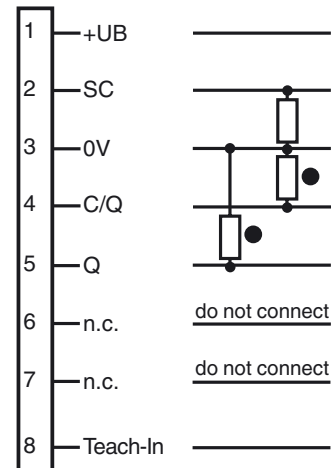


Electrical connection

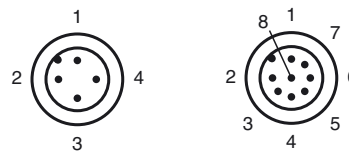
Transmitter



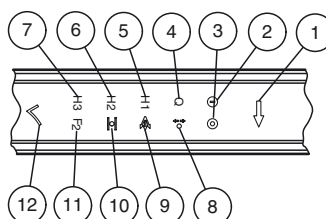
Receiver



Pinout



Indicators/operating means



| | | | | | |
|---|---------------------|--------|----|---------------------------|--------|
| 1 | Menu button | yellow | 7 | not used | yellow |
| 2 | Operating indicator | green | 8 | Object floating | yellow |
| 3 | Status display | yellow | 9 | Crossing | yellow |
| 4 | Q object | yellow | 10 | Peripheral beam tolerance | yellow |
| 5 | not used | yellow | 11 | 2nd level | yellow |
| 6 | not used | yellow | 12 | OK button | yellow |

2nd level: Beam collimation, inverse mode, light-on/dark-on switching, reset factory setting, signal tracking

Technical data**General specifications**

| | |
|---------------------------|--|
| Effective detection range | Standard : 0.3 ... 6 m |
| Threshold detection range | 7.5 m |
| Light source | IREL |
| Light type | modulated infrared light , 850 nm |
| Field height | see Table 1, max. 2100 mm |
| Beam crossover | Factory setting: three beam crossing, deactivateable |
| Beam blanking | adjustable max. 2 fixed suppressible beam areas (blanking) |
| Beam spacing | 8.33 mm |
| Number of beams | see Table 1, max. 253 |
| Operating mode | Emitter: Emitter power adjustable in two ranges |
| Optical resolution | without beam crossover: 8 mm with beam crossover: 4 mm with in 25% and 75% of the range |
| Angle of divergence | 10 ° |
| Ambient light limit | > 50000 Lux (if external light source is outside the opening angle) |

Functional safety related parameters

| | |
|--------------------------------|------|
| MTTF _d | 21 a |
| Mission Time (T _M) | 20 a |
| Diagnostic Coverage (DC) | 60 % |

Indicators/operating means

| | |
|---------------------|---|
| Operation indicator | LED green: constantly on - power-on double pulse flashing (0.8 Hz) - undervoltage flashing (4 Hz) - short circuit flashing with short interruptions (1 Hz) - IO-Link mode |
| Status indicator | Emitter: LED yellow constantly on - high emitter power constantly off - low emitter power flashing (8 Hz) - error message Receiver: LED yellow: constantly on - object detected constantly off - no object detected flashing (4 Hz) - below stability control limit flashing (8 Hz) - error message |
| Control elements | Receiver: 2 touch buttons for programming |

Electrical specifications

| | | |
|--------------------------------|----------------|---|
| Operating voltage | U _B | 18 ... 30 V DC |
| Ripple | | 10 % |
| No-load supply current | I ₀ | Emitter ≤ 50 mA Receiver: ≤ 150 mA (without outputs) |
| Time delay before availability | t _v | see Table 1, max. 3.8 s |

Interface

| | |
|--------------------|---|
| Interface type | IO-Link (pin 4) |
| IO-Link Revision | 1.0 |
| COM-Mode | COM 2 (38.4 kBaud) |
| Min. cycle time | 2.3 ms |
| Process data width | 16 bit |
| SIO mode support | yes |
| Device ID | 1050369 ... 1050389 (0x100701 ... 0x100715) |

Input

| | |
|----------------|---|
| Test input | Emitter switch-off with +UB or 0 V at pin 4 (emitter) |
| Function input | Range input activation from 1.6 m with +UB or 0 V on pin 2 (emitter) Teach-In input for parameterization on pin 8 (receiver) |

Output

| | |
|-----------------------------|---|
| Pre-fault indication output | Stability Control (SC) 1 PNP, short-circuit protected, reverse polarity protected on pin 2 (receiver) |
| Switching type | Factory setting: dark ON , Switchable to light ON mode |
| Signal output | Command interface: Pin 4 IO-Link interface C or used as switching output Q; 1 short-circuit proof reverse polarity protected push-pull output (receiver) Switch output: Pin 5 switching output Q; 1 short-circuit proof reverse polarity protected push-pull output (receiver) synchronized with pin 4 |
| Switching threshold | Factory setting: The signal tracking for the threshold value is deactivated, increasing the optical resolution by a maximum of 4 mm; switchable to active signal tracking |
| Switching voltage | max. 30 V DC |
| Switching current | max. 100 mA |
| Voltage drop | U _d ≤ 2 V DC |
| Switching frequency | f see Table 1, max. 118 Hz |
| Response time | see Table 1, max. 20 ms |
| Timer function | Off-delay programmable from 0 ... 1.25 s in 5 ms steps (adjustment via IO-Link only) |

Ambient conditions

| | |
|---------------------|--------------------------------|
| Ambient temperature | -30 ... 60 °C (-22 ... 140 °F) |
| Storage temperature | -30 ... 70 °C (-22 ... 158 °F) |

Accessories**OMH-LGS-01**

Attachment aid for light grid series LGS/LGM

OMH-SLCT-06

Swivel Bracket

V19-G-EMV-BK0,3M-PVC-V19-G

Double-ended cordset, M12 to M12, with EMC filter, 8-pin, PVC cable

OMH-SLCT-01

Quick clamp and adjustment system

OMH-SLCT-03

Mounting bracket including adjustment

OMH-SLCT-04

Mounting bracket including adjustment (with loose bearing)

OMH-SLCT-05

Mounting bracket including adjustment

AA SLCT-01

Profile alignment aid; simplified alignment of the SLCS and SLCT safety light curtains

V1-G-BK2M-PUR-U

Female cordset, M12, 4-pin, PUR cable

V1-G-BK5M-PUR-U

Female cordset, M12, 4-pin, PUR cable

V1-G-BK10M-PUR-U

Female cordset, M12, 4-pin, PUR cable

V1-G-BK15M-PUR-U

Female cordset, M12, 4-pin, PUR cable

V19-G-BK10M-PUR-IEC

Female cordset, M12, 8-pin, PUR-cable

V19-G-BK2M-PUR-IEC

Female cordset, M12, 8-pin, PUR-cable

V19-G-BK5M-PUR-IEC

Female cordset, M12, 8-pin, PUR-cable

V19-G-BK2M-PUR-U-V1-G

Connection cable, M12 to M12, 8/4-pin, PUR cable

IO-Link-Master01-USB

IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection

IO-Link-Master-USB DTM

Communication DTM for use of IO-Link-Master

PACTware 4.X

FDT Framework

IODD Interpreter DTM

Software for the integration of IODDs in a frame application (e. g. PACTware)

LGM-Serie IODD

IODD for communication with LGM-IO-Link sensors

LGM-Serie DTM

DTM for communication with LGM sensors

Mechanical specifications

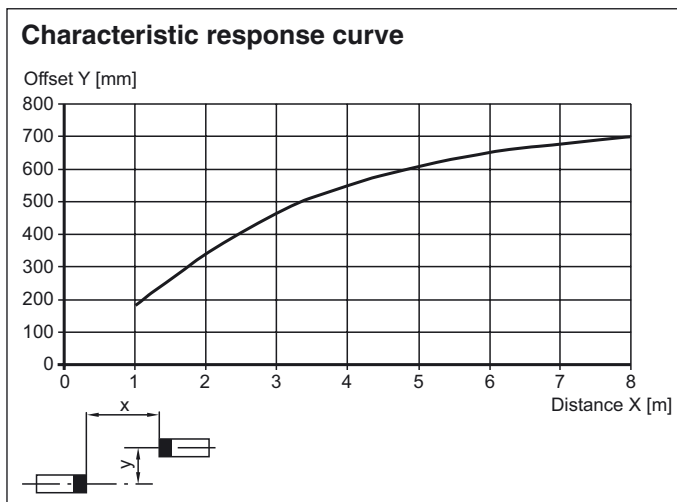
| | |
|----------------------|--|
| Housing length L | see Table 1, max. 2260 mm |
| Degree of protection | IP67 |
| Connection | Emitter: 200 mm connecting cable with 4-pin, M12x1 connector Receiver: 200 mm connecting cable with 8-pin, M12 x 1 connector Cable cross section min. 0.25 mm ² Max. cable length 30 m |
| Material | |
| Housing | extruded aluminum section , Silver anodized |
| Optical face | Plastic pane , Polycarbonate |
| Mass | see Table 1, max. 1200 g (per profile) |

Compliance with standards and directives

| | |
|---------------------------|---|
| Directive conformity | |
| EMC Directive 2004/108/EC | EN 60947-5-2:2007 |
| Standard conformity | |
| Product standard | EN 60947-5-2:2007 IEC 60947-5-2:2007 |

Approvals and certificates

| | |
|------------------|--|
| Protection class | III (IEC 61140:2009) |
| UL approval | cULus Listed |
| CCC approval | CCC approval / marking not required for products rated ≤36 V |

Curves/Diagrams**Additional Information****Table 1:****Switch-on delay, maximum switching frequency, and maximum time delay before availability:**

| Field height [mm] | Switch-on delay Q [ms] Without object parameterization | | Switch-on delay Q [ms] - With object parameterization - Updated measured value | | Maximum switching frequency [Hz] | Maximum time delay before availability t_v [s] |
|-------------------|---|------|--|------|----------------------------------|--|
| | typ. | max. | typ. | max. | | |
| 100 | 3 | 5 | 5 | 7 | 118 | 0.9 |
| 200 | 3 | 5 | 6 | 9 | 101 | 1.0 |
| 300 | 3 | 6 | 7 | 10 | 88 | 1.2 |
| 400 | 4 | 7 | 7 | 12 | 78 | 1.3 |
| 500 | 4 | 8 | 8 | 13 | 70 | 1.5 |
| 600 | 5 | 8 | 9 | 15 | 63 | 1.6 |
| 700 | 5 | 9 | 10 | 16 | 58 | 1.8 |
| 800 | 5 | 10 | 10 | 18 | 53 | 1.9 |
| 900 | 6 | 11 | 11 | 19 | 49 | 2.0 |
| 1000 | 6 | 11 | 12 | 21 | 46 | 2.2 |
| 1100 | 6 | 12 | 13 | 22 | 43 | 2.3 |
| 1200 | 7 | 13 | 13 | 24 | 41 | 2.5 |
| 1300 | 7 | 14 | 14 | 25 | 38 | 2.6 |
| 1400 | 8 | 14 | 15 | 27 | 36 | 2.8 |
| 1500 | 8 | 15 | 16 | 28 | 35 | 2.9 |
| 1600 | 8 | 16 | 16 | 30 | 33 | 3.0 |
| 1700 | 9 | 17 | 17 | 31 | 31 | 3.2 |

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.comUSA: +1 330 486 0001
fa-info@us.pepperl-fuchs.comGermany: +49 621 776 4411
fa-info@de.pepperl-fuchs.comSingapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

| Field height [mm] | Switch-on delay Q [ms] Without object parameterization | | Switch-on delay Q [ms] - With object parameterization - Updated measured value | | Maximum switching frequency [Hz] | Maximum time delay before availability t_v [s] |
|----------------------|---|----|--|----|-------------------------------------|---|
| | | | | | | |
| 1800 | 9 | 17 | 18 | 33 | 30 | 3.3 |
| 1900 | 9 | 18 | 19 | 34 | 29 | 3.5 |
| 2000 | 10 | 19 | 19 | 36 | 28 | 3.6 |
| 2100 | 10 | 20 | 20 | 37 | 27 | 3.8 |

Number of beams, housing length, and weight:

| Field height [mm] | Number of beams | Overall length of the transmitter/receiver unit [mm] | Weight of transmitter/receiver unit [g] |
|----------------------|-----------------|---|--|
| 100 | 13 | 260 | 200 |
| 200 | 25 | 360 | 250 |
| 300 | 37 | 460 | 300 |
| 400 | 49 | 560 | 350 |
| 500 | 61 | 660 | 400 |
| 600 | 73 | 760 | 450 |
| 700 | 85 | 860 | 500 |
| 800 | 97 | 960 | 550 |
| 900 | 109 | 1060 | 600 |
| 1000 | 121 | 1160 | 650 |
| 1100 | 133 | 1260 | 700 |
| 1200 | 145 | 1360 | 750 |
| 1300 | 157 | 1460 | 800 |
| 1400 | 169 | 1560 | 850 |
| 1500 | 181 | 1660 | 900 |
| 1600 | 193 | 1760 | 950 |
| 1700 | 205 | 1860 | 1000 |
| 1800 | 217 | 1960 | 1050 |
| 1900 | 229 | 2060 | 1100 |
| 2000 | 241 | 2160 | 1150 |
| 2100 | 253 | 2260 | 1200 |

Design and Function**Safety information**

The device must be operated only at low protective voltage where there is safe electrical isolation. Modifications and repairs must be carried out only by your supplier!

The system must be maintained and inspected on a regular basis.

A soft, clean cloth may be used to clean the system. Do not use any aggressive or abrasive cleaning agents that will corrode the surfaces. The device must not be subjected to severe impacts or vibrations.

Commissioning

Prerequisites

- The transmitter unit and receiver unit have been mounted and aligned correctly.
- The electrical connection has been established as per the information in the connection diagram.
- The signal output responds to object measurement.
- If at least one beam of light is interrupted, the output remains active for as long as the object is detected.

Troubleshooting

- Measure operating voltage
- Check cabling.
- Check transmitter and receiver unit for dirt. Clean if necessary.

Function indicators

A green LED for indicating the operating status "Power ON" and a yellow status indication LED are fitted on the connection side of the profiles, behind the lens cover.

Transmitter Unit

| Function | Description of Diagnosis |
|---|---|
| Green LED to display operating status permanently illuminated | Power On |
| Green LED to display operating status is not illuminated. Yellow LED to indicate status is flashing | Energy-saving mode |
| Yellow LED to indicate status is not illuminated | Transmission power of transmitter is low |
| Yellow LED to indicate status is permanently illuminated | Transmission power of transmitter is high |
| Yellow LED to indicate status is flashing rapidly (approx. 8 Hz) | Fault state |

| Function | Description of Diagnosis |
|---|--------------------------|
| Yellow LED to indicate status — brief change in light emitted | Test input is activated |

Receiver Unit

| Function | Description of Diagnosis |
|--|---|
| Green LED to display operating status permanently illuminated | Power On |
| Green LED to display operating status is not illuminated | Energy-saving mode |
| Green LED to display operating status is flashing at brief intervals | IO-Link mode active. Possible to parameterize the device only via IO-Link |
| Green LED to display operating status is flashing (4 Hz) | Fault status: short circuit at the outputs |
| Yellow LED to indicate status is permanently illuminated | Detection field interrupted |
| Yellow LED to indicate status is not illuminated | Detection field is clear. |
| Yellow LED to indicate status is flashing (approx. 4 Hz) | Insufficient stability control |
| Yellow LED to indicate status is flashing rapidly (approx. 8 Hz) | Fault state: fault during signal measurement |

Resolution and Beam Gap

The optical resolution of the light grid corresponds to the size of the object that can be detected.

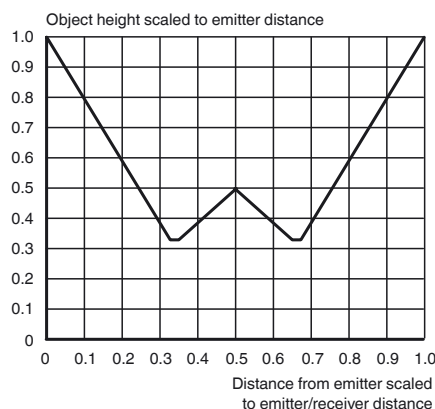
The values specified in the technical data under "Optical Resolution" apply if signal tracking for the threshold value is activated. Where the system is parameterized via the touch field menu (level 2, "Signal Tracking"), the value is automatically set to 60%. It is not possible to set other values. To parameterize the system via IO-Link, a threshold value of at least 60% must be entered. Signal tracking for the threshold value is deactivated by default, increasing the optical resolution by a maximum of 4 mm. By selecting 3-way crossover of the light beams, the resolution of the light grid is refined.

The switching outputs respond to any instance in which the beam is interrupted by an object. Selective object detection can also be parameterized using predefined or taught-in objects. Up to 2 beam areas can be suppressed (blinking).

The devices are supplied without object detection programmed, with signal tracking of the threshold value deactivated, and with a beam path with a 3-way crossover.

Resolution of the Crossed Beam Arrangement

If 3-way beam crossover is programmed, the resolution is refined. In the case of 3-way crossover, this means that the increased resolution is offered once 25% of the transmitter unit range or receiver unit range has been covered. It is therefore necessary to ensure that all objects pass the transmitter or receiver with such a gap.



IO-Link

The sensor parameters are device-specific and are described in the standardized IO Device Description file (IODD). The IODD can be read into different engineering tools using IODD support from different system providers. The sensor can then be configured or diagnosed using the relevant tool and a user interface generated from the IODD.

The IODD interpreter are available in the corresponding product description on our homepage, www.pepperl-fuchs.com. For the IODD description contact the P+F support.

Model number

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|
| L | G | M | x | x | - | y | y | y | y | - | IO | / | z | z | z |
|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|

Resolution [mm]
(8 mm; 17 mm; 25 mm; 50 mm)

Detection field [mm]
(min. 100 mm ... max. 3200 mm -> see technical data)

IO-Link-interface

Options

/110 Push-pull output, switch output 0.1 A, short-circuit protected, reverse polarity protection
/115b with 0.2 m fixed cable and M12 connector