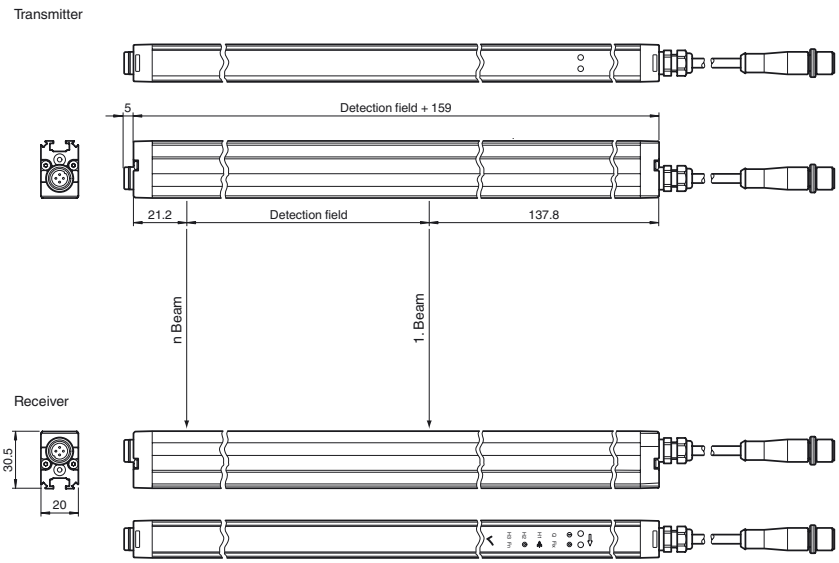
## Dimensions




## Model Number

**LGS25**

Light grid

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

## Features

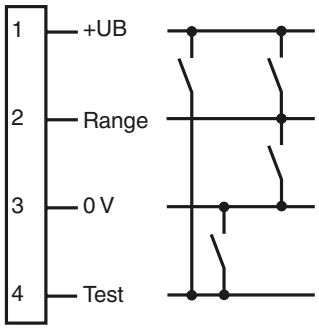
- Automation light grid
- Optical resolution 25 mm
- Super-fast object detection, even with 3-way beam crossover
- Software-free adjustment of height monitoring
- Object identification using integrated object recognition
- IO-link interface for service and process data
- Optional temperature range to -30 °C

## Product information

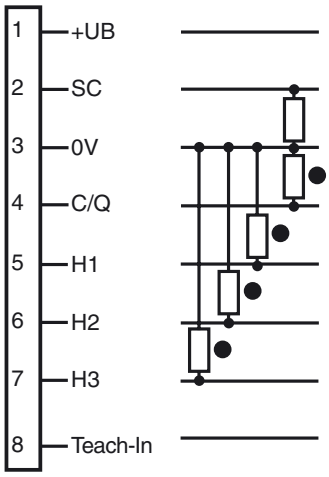
The LGS automation light grid series detects objects ranging in size from small to large. The very slender light grids have a modular design and come in different beam spacings and field heights. All signal evaluation takes place inside the unit. The lightweight systems can be integrated in their surroundings in a well-designed configuration, which means that machines and plants in temperature ranges between -30 °C ... +60 °C can be designed more compactly.

## Electrical connection

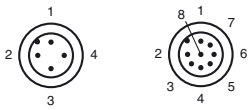
Transmitter



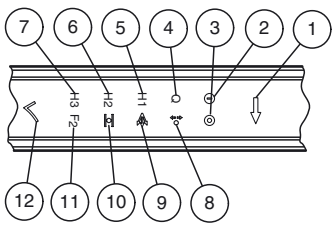

Receiver




## Pinout




## Indicators/operating means




| | | | | | |
|---|---|---|---|---|---|
| 1 | Menu button | yellow | 7 | Height checking 3 | 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 | Height checking 1 | yellow | 11 | 2nd level | yellow |
| 6 | Height checking 2 | yellow | 12 | OK button | yellow |

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

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## Technical data

| | | |
|---|---|---|
| **General specifications** | | |
| Effective detection range | | Standard : 0.3 ... 6 m<br>Option /35: 0.5 ... 8 m |
| Threshold detection range | | Standard : 7.5 m<br>Option /35: 10 m |
| Light source | | IRED |
| Light type | | modulated infrared light , 850 nm |
| Field height | | see Table 1, max. 3200 mm |
| Beam crossover | | Factory setting: three beam crossing, deactivateable |
| Beam blanking | | adjustable max. 2 fixed suppressible beam areas (blanking) |
| Beam spacing | | 25 mm |
| Number of beams | | see Table 1, max. 129 |
| Operating mode | | Emitter: Emitter power adjustable in two ranges |
| Optical resolution | | without beam crossover: 25 mm<br>with beam crossover: 12.5 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** | | |
| $MTTF_d$ | | 34 a |
| Mission Time ($T_M$) | | 20 a |
| Diagnostic Coverage (DC) | | 60 % |
| **Indicators/operating means** | | |
| Operation indicator | | Power on: LED green, statically lit , Undervoltage indicator: Green LED, pulsing (approx. 0.8 Hz) , short-circuit : LED green flashing (approx. 4 Hz) |
| Function indicator | | Emitter: Yellow LED, illuminates at high emitting power, off at low emitting power<br>Receiver: Yellow LED: illuminates when an object is detected flashes when falling short of the stability control (4 Hz)<br>Error message: Yellow LED flashes (8 Hz) in emitter and receiver |
| Control elements | | Receiver: 2 touch buttons for programming |
| Parameterization indicator | | IO link communication: green LED goes out briefly (1 Hz) |
| **Electrical specifications** | | |
| Operating voltage | $U_B$ | 18 ... 30 V DC |
| Ripple | | 10 % |
| No-load supply current | $I_0$ | Emitter ≤: 50 mA<br>Receiver: ≤ 150 mA (without outputs) |
| Time delay before availability | $t_v$ | see Table 1, max. 2.3 s |
| **Interface** | | |
| Interface type | | IO-Link |
| Protocol | | IO-Link V1.0 |
| Mode | | COM 2 (38.4 kBaud) |
| **Input** | | |
| Test input | | Emitter switch-off with +UB or 0 V at pin 4 (emitter) |
| Function input | | Range input activation from 1.6 m (or 2 m in case of option /35) with +UB or 0 V on pin 2 (emitter)<br>Teach-In input for programming 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 | | Switch output (detection field C/Q) 1 push-pull (4 in 1) output, short-circuit protected, reverse polarity protected on pin 4 (receiver),<br>Height monitoring (H1, H2. H3) 3 push-pull (4 in 1) outputs, short-circuit proof, reverse polarity protected on pin 5, pin 6, pin 7 (receiver) |
| 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. 135 Hz |
| Response time | | see Table 1, max. 12 ms |
| Timer function | | Off-delay programmable from 0 ... 1.25 s in 5 ms steps (adjustment via IO-Link only) |
| **Conformity** | | |
| Communication interface | | IEC 61131-9 |
| Product standard | | EN 60947-5-2 |
| **Ambient conditions** | | |
| Ambient temperature | | Standard : -10 ... 60 °C (14 ... 140 °F)<br>Option /146: -30 ... 60 °C (-22 ... 140 °F) |
| Storage temperature | | -30 ... 70 °C (-22 ... 158 °F) |
| **Mechanical specifications** | | |

## Accessories

**OMH-LGS-01**
Attachment aid for light grid series LGS/ LGM

**OMH-SLCT-06**
Swivel Bracket

**OMH-SLCT-01**
Quick clamp and adjustment system

**V19-G-EMV-BK0,3M-PVC-V19-G**
Double-ended cordset, M12 to M12, with EMC filter, 8-pin, PVC cable

**OMH-SLCT-04**
Mounting bracket including adjustment (with loose bearing)

**OMH-SLCT-03**
Mounting bracket including adjustment

**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-Master02-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 4.1**
FDT Framework

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

**LGS IODD**
IODD for communication with LGS-IO-Link sensors

**V1-G-BK0,6M-PUR-U-V1-G-LGS25T**
Cordset, LGS25 light grids to ICE modules/WIS 2, M12 to M12, PUR cable, 4-pin

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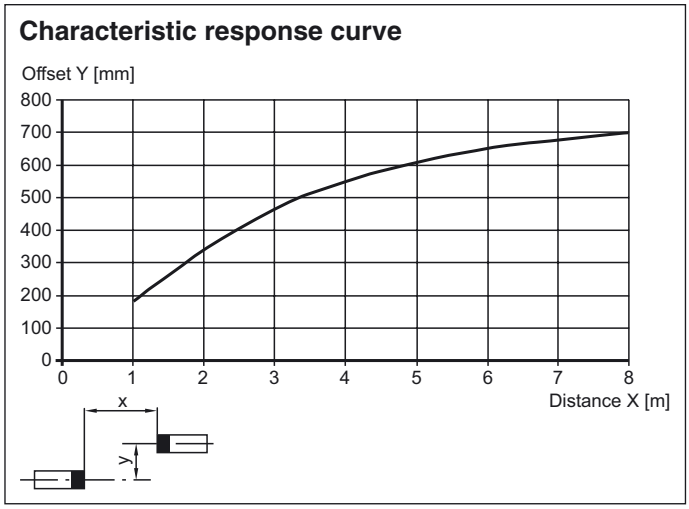
| | |
|---|---|
| Housing width | 20 mm |
| Housing depth | 30.5 mm |
| Housing length L | see Table 1, max. 3360 mm |
| Degree of protection | IP67 |
| Connection | Emitter: 200 mm connecting cable with 4-pin, M12x1 connector<br>Receiver: 200 mm connecting cable with 8-pin, M12 x 1 connector Cable cross section min. 0.25 mm$^2$<br>Max. cable length 30 m |
| Material | |
| Housing | extruded aluminum section , Silver anodized |
| Optical face | Plastic pane , Polycarbonate |
| Mass | see Table 1, max. 1750 g (per profile) |

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

## Operating principle

The light grid consists of a transmitter and a receiver, between which is the area to be monitored. The switch command is initiated by the entry or existence of a body/object in the monitoring field.
The modular system design supports a wide range of distances for the lines of light. Optimum implementation of the LGS series light grids for specific application requirements is thus possible.
The system also has 3 switch outputs for height checking. The system is programmed using the integrated touch field or the IO-Link interface.

## 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, HQn outputs | | Max. switching frequency [Hz] | Max. time delay before availability $t_v$ [s] |
|---|---|---|---|---|---|---|
| | typ. | max. | typ. | max. | | |
| 100 | 2 | 4 | 5 | 6 | 134 | 0.8 |
| 200 | 3 | 5 | 5 | 7 | 125 | 0.9 |
| 300 | 3 | 5 | 5 | 7 | 118 | 0.9 |
| 400 | 3 | 5 | 5 | 8 | 112 | 0.9 |
| 500 | 3 | 5 | 6 | 8 | 106 | 1.0 |
| 600 | 3 | 5 | 6 | 9 | 101 | 1.0 |
| 700 | 3 | 6 | 6 | 9 | 96 | 1. |
| 800 | 3 | 6 | 6 | 10 | 92 | 1.1 |
| 900 | 3 | 6 | 7 | 10 | 88 | 1.2 |
| 1000 | 4 | 6 | 7 | 11 | 84 | 1.2 |
| 1100 | 4 | 7 | 7 | 11 | 81 | 1.3 |
| 1200 | 4 | 7 | 7 | 12 | 78 | 1.3 |
| 1300 | 4 | 7 | 8 | 12 | 75 | 1.4 |
| 1400 | 4 | 7 | 8 | 13 | 72 | 1.4 |

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| Field height [mm] | Switch-on delay Q [ms] without object parameterization | | Switch-on delay Q [ms] with object parameterization, HQn outputs | | Max. switching frequency [Hz] | Max. time delay before availability $t_v$ [s] |
|---|---|---|---|---|---|---|
| 1500 | 4 | 8 | 8 | 13 | 70 | 1.5 |
| 1600 | 4 | 8 | 8 | 14 | 67 | 1.5 |
| 1700 | 4 | 8 | 9 | 14 | 65 | 1.6 |
| 1800 | 5 | 8 | 9 | 15 | 63 | 1.6 |
| 1900 | 5 | 9 | 9 | 15 | 61 | 1.7 |
| 2000 | 5 | 9 | 9 | 16 | 60 | 1.7 |
| 2100 | 5 | 9 | 10 | 16 | 58 | 1.8 |
| 2200 | 5 | 9 | 10 | 17 | 56 | 1.8 |
| 2300 | 5 | 10 | 10 | 17 | 55 | 1.9 |
| 2400 | 5 | 10 | 10 | 18 | 53 | 1.9 |
| 2500 | 5 | 10 | 11 | 18 | 52 | 1.9 |
| 2600 | 6 | 10 | 11 | 19 | 51 | 2.0 |
| 2700 | 6 | 11 | 11 | 19 | 49 | 2.0 |
| 2800 | 6 | 11 | 11 | 20 | 48 | 2.1 |
| 2900 | 6 | 11 | 12 | 20 | 47 | 2.1 |
| 3000 | 6 | 11 | 12 | 21 | 46 | 2.2 |
| 3100 | 6 | 12 | 12 | 21 | 45 | 2.2 |
| 3200 | 6 | 12 | 12 | 22 | 44 | 2.3 |

**Number of beams, housing length and weight:**

| Field height [mm] | Number of beams | Overall length of the transmitter/receiver unit [mm] | Weight of the transmitter/receiver unit [g] |
|---|---|---|---|
| 100 | 5 | 260 | 200 |
| 200 | 9 | 360 | 250 |
| 300 | 13 | 460 | 300 |
| 400 | 17 | 560 | 350 |
| 500 | 21 | 660 | 400 |
| 600 | 25 | 760 | 450 |
| 700 | 29 | 860 | 500 |
| 800 | 33 | 960 | 550 |
| 900 | 37 | 1060 | 600 |
| 1000 | 41 | 1160 | 650 |
| 1100 | 45 | 1260 | 700 |
| 1200 | 49 | 1360 | 750 |
| 1300 | 53 | 1460 | 800 |
| 1400 | 57 | 1560 | 850 |
| 1500 | 61 | 1660 | 900 |
| 1600 | 65 | 1760 | 950 |
| 1700 | 69 | 1860 | 1000 |
| 1800 | 73 | 1960 | 1050 |
| 1900 | 77 | 2060 | 1100 |
| 2000 | 81 | 2160 | 1150 |
| 2100 | 85 | 2260 | 1200 |
| 2200 | 89 | 2360 | 1250 |
| 2300 | 93 | 2460 | 1300 |
| 2400 | 97 | 2560 | 1350 |
| 2500 | 101 | 2660 | 1400 |
| 2600 | 105 | 2760 | 1450 |
| 2700 | 109 | 2860 | 1500 |
| 2800 | 113 | 2960 | 1550 |
| 2900 | 117 | 3060 | 1600 |
| 3000 | 121 | 3160 | 1650 |
| 3100 | 125 | 3260 | 1700 |
| 3200 | 129 | 3360 | 1750 |

## Design and function

### Safety information

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The device must only be operated with Safety Extra Low Voltage (SELV) with safe electrical disconnection. Intervention and repairs must only be carried out by your suppliers.
The system must be serviced and checked regularly.
A clean, soft cloth can be used for cleaning. Aggressive, abrasive cleaning agents that damage the surface must be avoided.
The device must not be subjected to hard knocks or vibration.

## Commissioning

Prerequisites

- The transmitter and receiver must be installed and aligned correctly.
- The electrical connection must be established according to the connection diagram.
- The signal output must respond to object detection.
- If at least one light beam is interrupted, the output remains active as long as the object is detected.

## Fault location

- Measure operating voltage
- Check the cabling.
- Check the transmitter and receiver for dirt and clean if necessary.

## Function displays

Behind the optics cover on the connection side of the profiles there is a green Power ON operating indicator LED and a yellow status display LED.

**Transmitter**

| Function | Diagnostic description |
|---|---|
| Green operating indicator LED lights up statically | Power-On |
| Green operating indicator LED is dark and yellow status indicator flashes | Power save mode |
| Yellow status indicator LED is dark | Transmitter with low transmitting power |
| Yellow status indicator LED lights up statically | Transmitter with high transmitting power |
| Yellow status indicator LED flashes quickly (approx. 8 Hz) | Error condition |
| Yellow status indicator LED light changes for short time | Test input is activated |

**Receiver**

| Function | Diagnostic description |
|---|---|
| Green operating indicator LED lights up statically | Power-On |
| Green operating indicator LED is dark | Power save mode |
| Green operating indicator LED flashes with brief interruption | IO-Link mode active, parameterisation only possible via IO-Link |
| Green operating indicator LED flashes (4 Hz) | Error condition: Short circuit at the outputs |
| Yellow status indicator LED lights up statically | Detection field interrupted |
| Yellow status indicator LED is dark | Detection field is enabled. |
| Yellow status indicator LED flashes (approx. 4 Hz) | Insufficient function reserve |
| Yellow status indicator LED flashes quickly (approx. 8 Hz) | Error condition: Incorrect signal measurement |

## Resolution and beam clearance

The mechanical beam clearance determines the smallest detectable object size. Crossing the light beams increases the resolution of the light grid.

The devices are delivered without programmed height checking. The beam is crossed three times.

### Resolution of the crossed beam arrangement

If three-way crossing of the beams is programmed, the resolution increases. For a three-way crossing, this means that the increased resolution is offered after 25% of the transmitter range or receiver range. It must therefore be ensured that all objects pass transmitters or receivers with this clearance.

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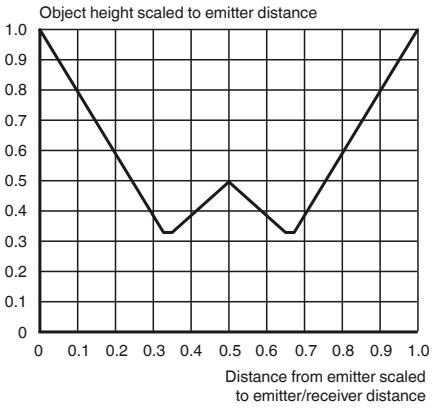


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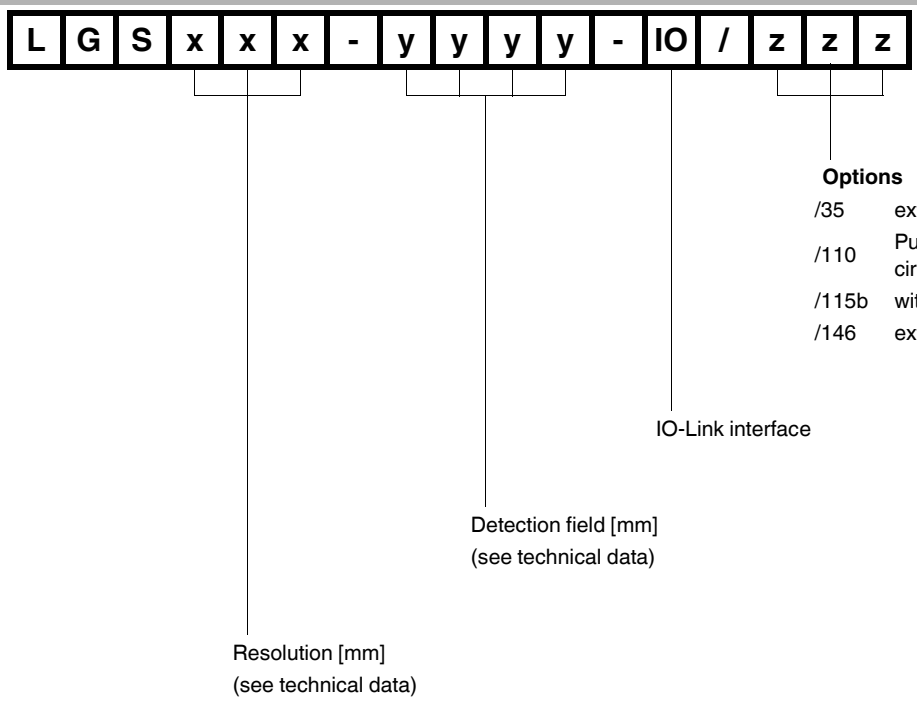
## Model number

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