

Light Grid Sensors



Light grids

- Through-beam and reflection systems
- Two-dimensional detection range
- Recording and counting irregular objects
- Measuring and sorting different heights
- Presence and protrusion monitoring
- Sag monitoring for web-shaped materials
- Teach-in function
- Software-supported user-friendly parameterization and user guidance via application wizards

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Theory of Operation...Light Grid Sensors

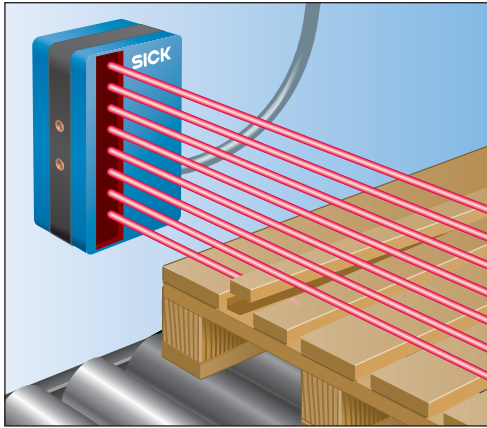


Fig. 1 Reflex light grid sensor

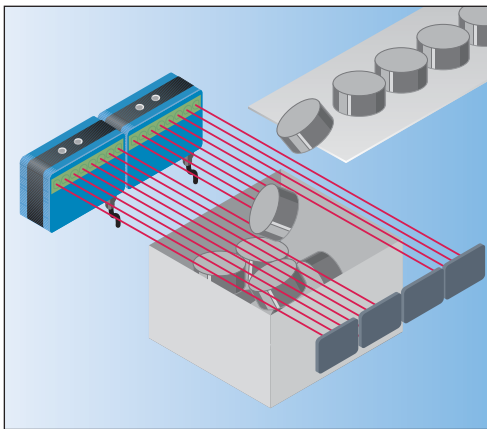


Fig. 2 Two WLG light grids, installed horizontally, count objects before packaging.

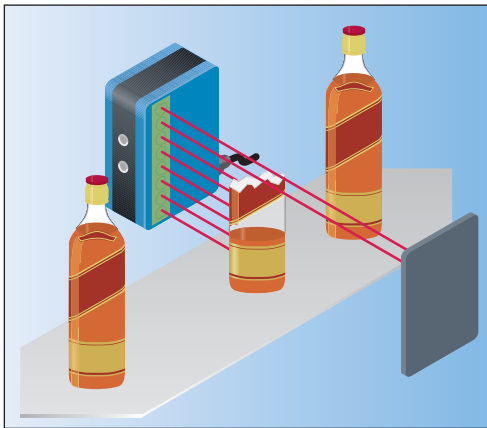


Fig. 3 WLG detects transparent objects and also reliably detects defective containers.



Fig. 4 Counts irregularly shaped objects during production



About Light Grid Sensors

Light grid photoelectric sensors are a small, non-safety version of our innovative light curtains.

The WLG and PLG light grids function according to the reflection principle. A suitable reflector, mounted directly across from the sensor's exit window, reflects the emitted light back to the receiver of the sensor. This produces a two-dimensional detection plane between the sensor and reflector. When the detection plane is broken, the sensor produces an output.

The HLG light grid sensor is specifically designed for use in parts ejection or part counting applications where product-positioning variations occur. They can also be used to determine the leading edge of packages, flats and letters.

The MLG and ELG light grids are designed to meet a variety of application requirements. They offer a host of possibilities with regard to size, resolution, configuration and interfaces. The electronics are completely integrated into the compact housing. Height measurement, zone division and monitoring, object recognition, hole and crack

detection, slack control and blanking control are all suitable tasks. In addition, the multiple scan function makes it possible to detect large and small objects.

Discrete inputs, outputs and serial data offer a wide range of interface combinations. Important parameters, such as the size of objects to be detected can be defined using the user-friendly MLG setup software. The MLG setup application assistant helps set up the most common applications.

Type Code and Selection Table...Light Grid Sensors

Type code MLG Light Grid

MLG with cable synchronization

Example to order a pair of MLG

MLG Type

MLG = Modular light Grid (pair)
MLG S = Emitter (only)
MLG E = Receiver (only)

Beam Spacing

1 = 10 mm
2 = 20 mm
3 = 30 mm
5 = 50 mm
7 = 70 mm PROFIBUS models only

Interface (& Synchronization Mode)

F(2xx) = 6 Outputs PNP, 2 Inputs 12-pin cable
F(5xx) = 1x Output PNP, 5-pin cable
F(8xx) = 3 Outputs PNP, 1 Input, 8-pin cable
I(2xx) = RS485, 4 Outputs PNP, 2 Inputs, 12-pin cable
I(8xx) = RS485, 1 Output PNP, 1 Input, 8-pin cable
E(2xx) = 6 Outputs NPN, 2 Inputs, 12-pin cable
E(5xx) = 1x Output NPN, 5-pin cable
E(8xx) = 3 Outputs NPN, 1 Input, 8-pin cable
T(2xx) = RS485, 4 Outputs NPN, 2 Inputs, 12-pin cable
T(8xx) = RS485, 1 Output NPN, 1 Input, 8-pin cable
P(8x1) = PROFIBUS

Connection

2 = Terminal chamber, 12 pins
5 = M12 plug, 5 pins
8 = M12 plug, 8 pins

Optical features

1 = 5 m; Infrared light
2 = 8.5 m; Infrared light

Parameter Mode

1 = Standard (only the Interface modes market with * are available)
2 = Programmable (with MLG setup)
3 = Multiple scan

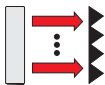
MLG 1 –	MLG 2–	MLG 3–	MLG 5 –
Beam spacing 10 mm	Beam spacing 20 mm	Beam spacing 30 mm	Beam spacing 50 mm
Detection height (mm)	Detection height (mm)	Detection height (mm)	Detection height (mm)
0140 (15 beams)	0140 (8 beams)	0120 (5 beams)	0100 (3 beams)
0290 (30 beams)	0280 (15 beams)	0270 (10 beams)	0250 (6 beams)
0440 (45 beams)	0440 (23 beams)	0420 (15 beams)	0400 (9 beams)
0590 (60 beams)	0580 (30 beams)	0570 (20 beams)	0550 (12 beams)
0740 (75 beams)	0740 (38 beams)	0720 (25 beams)	0700 (15 beams)
0890 (90 beams)	0880 (45 beams)	0870 (30 beams)	0850 (18 beams)
1040 (105 beams)	1040 (53 beams)	1020 (35 beams)	1000 (21 beams)
1190 (120 beams)	1180 (60 beams)	1170 (40 beams)	1150 (24 beams)
1340 (135 beams)	1340 (68 beams)	1320 (45 beams)	1300 (27 beams)
1490 (150 beams)	1580 (75 beams)	1470 (50 beams)	1450 (30 beams)
1640 (165 beams)	1640 (83 beams)	1620 (55 beams)	1600 (33 beams)
1790 (180 beams)	1780 (90 beams)	1770 (60 beams)	1750 (36 beams)
1940 (195 beams)	1940 (98 beams)	1920 (65 beams)	1900 (39 beams)
2090 (210 beams)	2080 (105 beams)	2070 (70 beams)	2050 (42 beams)
2240 (225 beams)	2240 (113 beams)	2220 (75 beams)	2200 (45 beams)
2390 (240 beams)	2380 (120 beams)	2370 (80 beams)	2350 (48 beams)
	2540 (128 beams)	2520 (85 beams)	2500 (51 beams)
	2680 (135 beams)	2670 (90 beams)	2650 (54 beams)
	2840 (143 beams)	2820 (95 beams)	2800 (57 beams)
	2980 (150 beams)	2970 (100 beams)	2950 (60 beams)
	3140 (158 beams)	3120 (105 beams)	3100 (63 beams)

Light Grid Sensors

Sensor Type	Sensing Range	Sensing Type	Resolution								Output				Page
			2	6	10	20	30	50	60	70	PNP	NPN	RS 485	Profi	
WL12	0...1.5 m	Reflex													1022
MLG Standard	0...8.5 m	Through-beam													1026
MLG Programmable	0...8.5 m	Through-beam													1028
MLG Profibus	0.5...5 m	Through-beam													1030
ELG	0...12 m	Through-beam													1032
HLG	0...2 m	Through-beam													1024
PLG	0...2 m	Reflex													1020

Pick2Light

Light Grid



6.6 ft (2 m)
sensing range



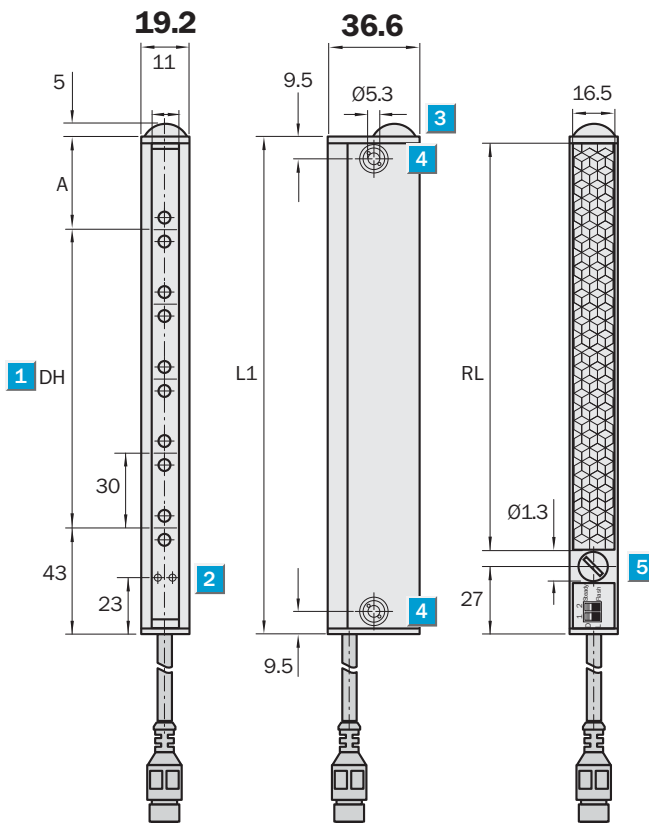
PLG



Highlights

- Single-sided picking light grid
- Only one sensor per bin
- Reliable hand detection
- Simple 2-screw mounting
- Mounts external to bin
- Steady/flashing job-LED
- Light/dark switching

Dimensional drawing



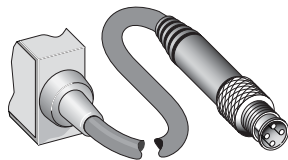
dimensions in mm

DH	A	L1	RL
120	36	199	162
210	26	279	242
270	36	349	312
360	26	429	392
420	36	499	462

- 1** Detection height (DH) 120 to 420 mm
- 2** Indicator Power On: green; beam status: yellow
- 3** Green Job-LED
- 4** Configuration switches
- 5** Mounting holes Ø5.3 mm

Connection diagram

PLG-xxxF431



M12, 4-pin, with 280 mm cable



Accessories	page
Cables and connectors	1180
Mounting systems	1234
Reflectors	1256

Technical data		PLG 3 -								
		120 F431	210 F431	270 F431	360 F431	420 F431				
Sensing range, typ. max.	0.3...4.9 ft (0.1...1.5 m)/REF-PLG									
	0.3...6.6 ft (0.1...2.0 m)/PL150									
Detection height	4.7 in (120 mm)									
	8.3 in (210 mm)									
	10.6 in (270 mm)									
	14.2 in (360 mm)									
	16.5 in (420 mm)									
Supply voltage V_S	15...30 V DC ¹⁾									
Residual ripple	< 10% within V_S tolerances									
Current consumption ²⁾	Sender: Typ. 45 mA									
	Job LED: Typ. 10 mA									
Light source	LED, visible red light									
Connection	M12, 4-pin with 11 inch (280 mm) cable									
Switching output³⁾	PNP output: Q									
Operating mode	Dark & light switching (switch selectable)									
Output current I_A max.	100 mA									
Output load	Capacitive load: 100 nF/									
	Inductive load: 1 mH									
Response time⁴⁾	< 180 ms									
Initialization period	Max. 600 ms									
Input Job LED activate	Input to V_S (15...30 V DC)									
Input current I_A max.	12 mA									
Protection class	⚡									
Circuit protection⁵⁾	A, B, C									
Enclosure rating	IP 54									
Ambient temperature T_A	Operation: 14...131° F (-10...55° C)									
	Storage: -13...158° F (-25...70° C)									
Mechanical resistance	Vibration: 5 g/10-55/s – IEC 68-2-6									
	Shock: 10 g/16 ms – IEC 68-2-29									
Weight	Approx. 7.1 oz (200 g) ⁶⁾									
Material	Housing: Aluminum, anodized									
	Front lens: PMMA									

1) Limit values

2) Without load at $V_S = 24$ V,
without Job LED

3) NPN on request

4) With resistive load

5) A = V_S connection, reverse-polarity
protected

B = Outputs short-circuit protected

C = Interference suppression

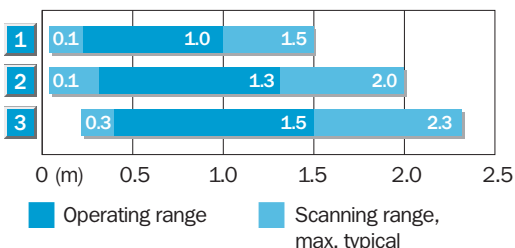
6) Increment: 50 g/50 mm
detection height

Optical performance					
Beam spacing	Detection height	MDO: minimum detectable object size			
		in front of PLG	at 1.0 ft (0.3 m)	at 2.0 ft (0.6 m)	at 3.3 ft (1.0 m)
1.2 in (30 mm)	4.7...16.5 in (120...420 mm)	1.2 in (30 mm)	1.8 in (45 mm)	2.4 in (60 mm)	3.2 in (80 mm)

MDO: Minimum Detectable Object size for non-moving objects measured in a direction parallel to Pick2Light

Order information	
Type	Part no.
PLG3-120F431	1 028 953
PLG3-210F431	1 028 548
PLG3-270F431	1 029 130
PLG3-360F431	1 029 131
PLG3-420F431	1 029 132

Min./operating/max.range vs reflector



1	REF-PLG
2	PL150
3	PL180

Configuration over switches:



Switch 1: D: Dark switching

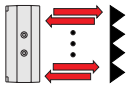
L: Light switching

Switch 2: Steady: Job-LED steady

Flash: Job-LED flashes, 3 Hz

WLG 12

Light Grid Sensors



0...5 ft (0...1.5 m)
sensing range



WLG 12



Teaching

The WLG 12-G137, -V537 and -P537 are equipped with a non-volatile memory. A teach-in should be done when the unit is first set up. This setting will be remembered even if power is removed.

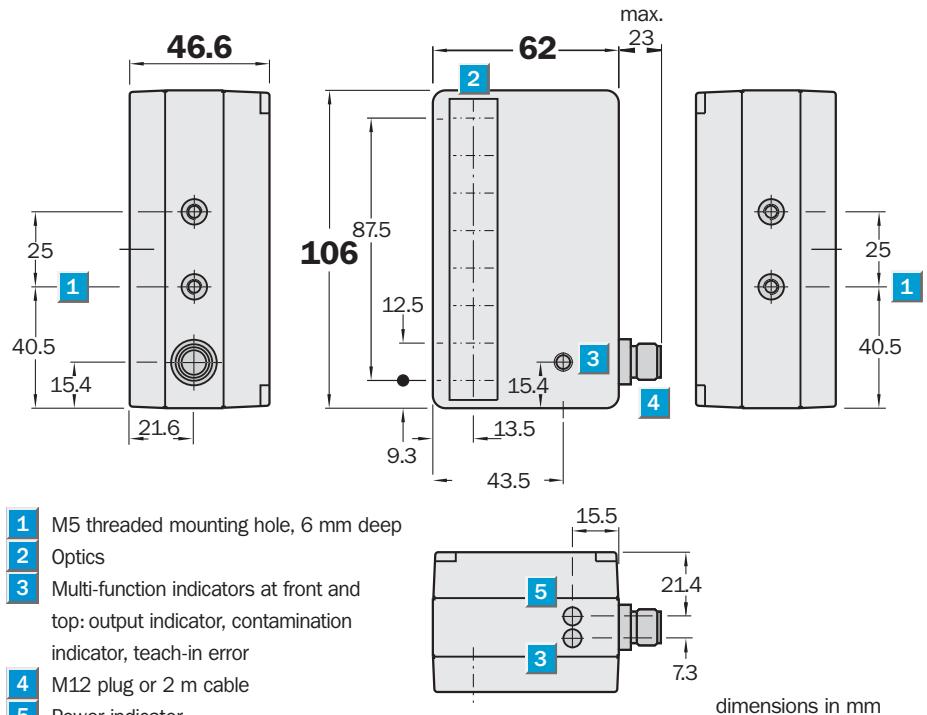
Notes

The sensitivity range should be selected in a voltage-free condition. In the event of temperature fluctuations $> 15^{\circ}\text{C}$, adjustment or contamination, a new teach-in process must be done. The switching threshold that has been taught is maintained on loss of voltage.

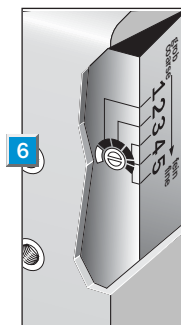
Highlights

- Rugged plastic housing
- Teach-in for easy sensitivity setting and blanking
- Can detect objects as small as 6 mm in diameter
- Alarm output
- Eight light senders to cover a wide range
- Polarizing filters prevent false readings on shiny objects

Dimensional drawing



- 1 M5 threaded mounting hole, 6 mm deep
- 2 Optics
- 3 Multi-function indicators at front and top: output indicator, contamination indicator, teach-in error
- 4 M12 plug or 2 m cable
- 5 Power indicator
- 6 Potentiometer for sensitivity adjustment



Sensitivity setting

Potentiometer setting	Resolution	Sensing range	Reflector
1	$> 12.5\text{ mm}$	1.5 m	2 x PL 80 A/PL 40 A
2	$> 10\text{ mm}$	1.2 m	2 x PL 80 A/PL 40 A
3	$> 9\text{ mm}$	1.0 m	PL 180 E01
4	$> 7\text{ mm}$	0.8 m	PL 180 E01
5	$> 6\text{ mm}$	0.4 m	PL 180 E01

Order information

Type	Part no.
WLG 12-G 137	1 016 046
WLG 12-V 537	1 016 045
WLG 12-P 537	1 015 798

Accessories

Accessories	page
Cables and connectors	1180
Mounting systems	1234
Reflectors	1256

Technical data		WLG 12-	G137	V537	P537						
Sensing range , on reflector	5 ft (1.5 m)/to 2 x PL 40 A or 2 x PL 80 A										
Light source ¹⁾ , light type	Red light, pulsed										
Resolution, adjustable	0.2...0.5 in (6...12.5 mm) (see table of settings)										
Light spot diameter	0.4 in (10 mm)										
Distance to optic axis	0.5 in (12.5 mm)										
Divergence of adjacent channels	Approx. 0.2°										
Angle of divergence	Approx. 0.4°										
Supply voltage V_S	18...30 V DC ²⁾										
Ripple ³⁾	< 5 V _{SS}										
Current consumption ⁴⁾	Approx. 80 mA										
Switching outputs	PNP, 8 x $\bar{Q}$ and alarm										
	PNP, $\bar{Q}$ and alarm										
	PNP, $\bar{Q}$ and Q										
Output current I _A max.	Total 100 mA + 100 mA for alarm 100 mA per output										
Output voltage HIGH	V _S – (≤ 2 V, at I max.)										
Output voltage LOW	0 V										
Response time ⁵⁾	0.6 ms										
Max. switching frequency ⁶⁾	850 Hz										
Alarm output	Alarm is activated acc. to teach-in procedure if at least one of the light beams is damped such that the required level of functional safety is not achieved.										
Teach-in (TI)											
Teach-in minimum time	Approx. 10 ms										
Teach-in activation time	Approx. 200 ms										
Connection type	2 m, 12-wire cable ⁷⁾ Plug, M12 5-pin										
VDE protection class ⁸⁾	☐										
Circuit protection ⁹⁾	A, B, C										
Enclosure rating	IP 67/NEMA 6										
Ambient temperature T_A	Operation -13...131° F (-25...55° C) Storage -13...167° F (-25...75° C)										
Approximate weight	8.1 oz (230 g)										
Polarization filter											
Housing material	Fiberglass reinforced plastic										

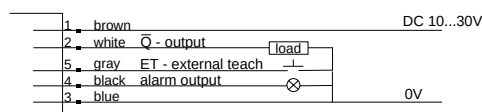
- 1) Average service life 100,000 h at T_A = 25° C
- 2) Limit values
- 3) May not exceed or fall short of V_S tolerances

- 4) Without load
- 5) Signal transit time with resistive load
- 6) With light/dark ratio 1:1
- 7) Do not bend below 0° C
- 8) Reference voltage DC 50 V

- 9) A = V_S connections reverse-polarity protected
B = Outputs Q and $\bar{Q}$ short-circuit protected
C = Interference pulse suppression

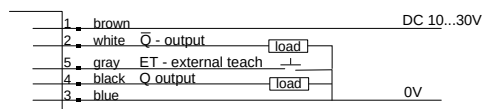
Connection diagram

WLG 12-V537



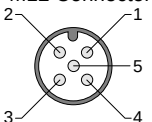
wire colors refer to standard cable, not included with WLG 12-V537
*This is Q-output on P537

WLG 12-P537

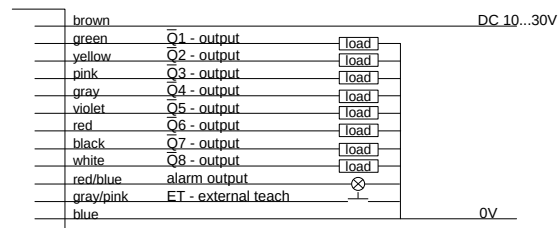


wire colors refer to standard cable, not included with WLG 12-V537
*This is Q-output on P537

M12 Connector



WLG 12-G137



HLG

Through-beam Light Grid



0...2 m
sensing range

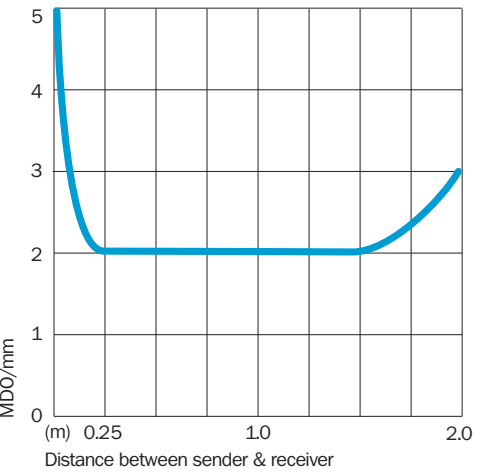
Highlights

- 2 mm resolution
- Short response time
- Industrial standard outputs
- Teach-in for optimal sensitivity adjustment

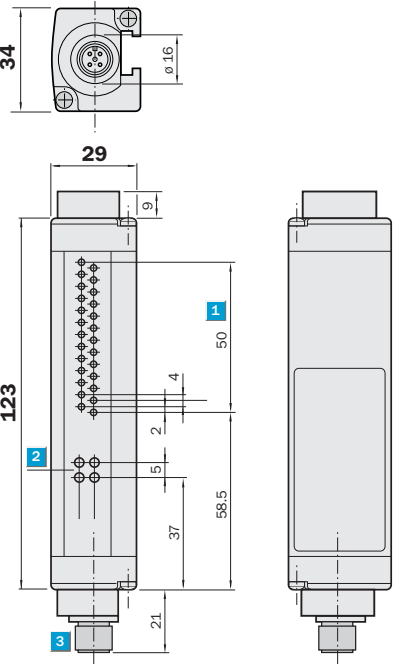
HLG



MDO: Minimum Detectable Object size
measured in a direction parallel to
the HLG.



Dimensional drawing



dimensions in mm

- 1** Detection height: 50 mm
- 2** Status indicator/Power ON
- 3** M12 plug, 8-pin

Connection diagram	
Type	Part no.
HLG2-050F811	1029853
HLG2-050E811	1041849

Accessories	page
Cables and connectors	1180
Mounting systems	1234

Technical data		HLG2-							
		050 F811	050 E811						
Beam spacing	0.1 in (2 mm)								
MD0/Resolution*See chart									
Detection height	2.0 in (50 mm)								
Number of beams	26								
Scanning range ¹⁾	0...78 in (0...2 m)								
Synchronization	Synchronization by wire Sync A/Sync B								
Light source	LED, infrared								
Supply voltage VS ²⁾	15...30 V DC								
Residual ripple	< 10 % within Vs tolerances								
Current consumption sender	< 100 mA								
Current consumption receiver ³⁾	< 100 mA								
Connection	M12 Plug, 8 pins								
Switching output ⁴⁾	PNP output: Q & $\bar{Q}$								
	NPN output: Q & $\bar{Q}$								
Operating mode	Q dark-switching, $\bar{Q}$ light-switching								
Output current IA max.	100 mA								
Output load	Capacitive load: 100 nF								
	Inductive load: 1 H								
Test input "TE"	Sender OFF: Test input to Vs								
Response time ⁵⁾	3 ms								
Initialisation duration after Power ON	Max. 800 ms								
High immunity to ambient light	50.000 lx								
VDE protection class	III								
Circuit protection ⁶⁾	A, B, C								
Enclosure rating	IP 54								
Ambient temperature T _A	Operation -13...131° F (-25...+55° C)								
	Storage -40...158° F (-40...+70 ° C)								
Mechanical resistance	Vibration: 5 g/10-55 Hz - IEC 68-2-6								
	Shock: 10 g/ 16ms - IEC 68-2-29								
Weight	Approx. 4.8 oz (135 g)								
Front lens material	PMMA								
Housing	Aluminium, anodized								

1) Max. range: 78 in (2 m) Operating range: 59 in (1.5 m)

2) Limit values

3) Without load at V_x = 14 V

4) NPN on demand

5) With resistive load

6) A = V_x connection, reverse polarity protected

B = Outputs Q and $\bar{Q}$ short-circuits protected

C = interference suppression

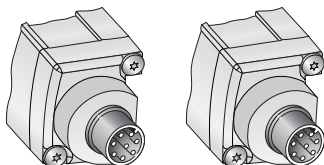
Connection diagram

HLGS2-50E811

HLGS2-50E811

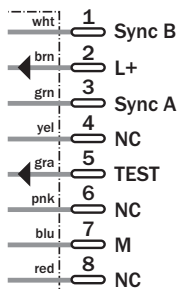
HLGS2-50F811

HLGS2-50F811



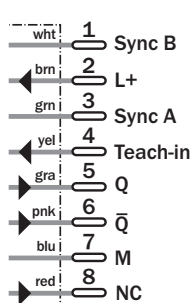
8-pin, M12

Sender



8-pin, M12

Sender



MLG Standard

Light Grid Sensors



0...16.4 ft (0...5 m)
0...27.9 ft (0...8.5 m)

sensing range

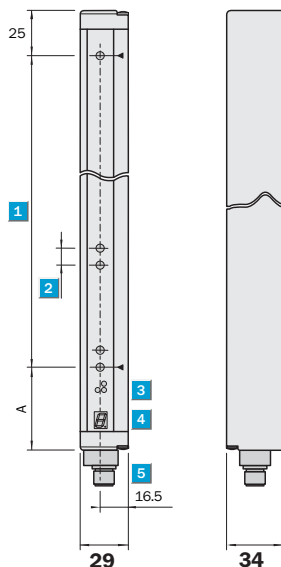
Highlights

- High modularity: beam spacing, detection height, sensing range, interface
- Compact housing
- Short response time
- Teach-in for optimal sensitivity adjustment

MLG



Dimensional drawing



dimensions in mm

Distance: MLG edge – first beam

Dimensions (mm)	A
Beam spacing 10 mm	49
Beam spacing 20 mm	59
Beam spacing 30 mm	69
Beam spacing 50 mm	89

- 1** Detection height (see optical performance)
- 2** Beam spacing (10, 20, 30, 50 mm)
- 3** Status indicator: LED green/LED yellow/LED red
- 4** Indicator panel, 7-segment display
- 5** M12 plug, 8-pin/M12 plug, 5-pin

Optical performance

	Detection height			Minimum Detectable Object (MDO)	
	Minimum	Increment	Maximum	Beam spacing	MDO ⁹⁾
MLG 1:	140 mm	150 mm	2390 mm	10 mm	15 ¹⁰⁾ /20 ¹¹⁾ mm
MLG 2:	140 mm	140 mm, 160 mm	3140 mm	20 mm	25 ¹⁰⁾ /30 ¹¹⁾ mm
MLG 3:	120 mm	150 mm	3120 mm	30 mm	35 ¹⁰⁾ /40 ¹¹⁾ mm
MLG 5:	100 mm	150 mm	3100 mm	50 mm	55 ¹⁰⁾ /60 ¹¹⁾ mm

9) MDO for non-moving objects measured in a direction parallel to the MLG

10) Sensing range: 5 m

11) Sensing range: 8.5 m

Order Information

See selection guide at the front of this section and check www.sickusa.com for product availability.

Accessories

	page
Cables and connectors	1180
Mounting systems	1234

Technical data

MLG-

x-xxxx x8x1	x-xxxx x5x1								
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Beam spacing¹⁾	0.4 in (10 mm)/0.8 in (20 mm)/1.2 in (30 mm)/2 in (50 mm)		
Maximum number of beams	240 beams		
Sensing range	0...16.4 ft (0...5 m) (max. 7 m) / 0...39.4 ft (0...8.5 m) (max. 12 m)		
Synchronization²⁾	By cable sync A/sync B		
Light source	LED, infrared light		
Supply voltage V_s³⁾	15...30 V DC		
Current consumption sender	< 140 mA + 2 mA/beam		
Current consumption receiver ⁴⁾	< 100 mA + 3 mA/beam		
Connections	M12 plug, 8-pin		
	M12 plug, 5-pin		
Teach-in (ET)	PNP: Teach > 10 V... < V _s		
Teach-in (ET)	External Teach-in input		
	Automatic by each Power on		
Output current I _A max.	100 mA per output		
Output load	Capacitive load: 100 nF/output		
	Inductive load: 1H/output		
Outputs/Operating mode	Q dark-switching		
	$\bar{Q}$ light-switching		
Alarm output (contamination)			
Response time⁵⁾	Max. 3x (150 μ s per beam + 1 ms) ⁶⁾		
Immunity to ambient light	50,000 lx (continuous light)		
VDE protection class	III		
Circuit protection⁷⁾	A, B, C		
Enclosure rating	IP 65		
Ambient temperature T_A	Operation -13...131° F (-25...55° C)		
	Storage -40...158° F (-40...70° C)		
Mechanical resistance	Vibration: 5 g; 10-55/s – IEC 68-2-6		
	Shock: 10 g; 10 ms – IEC 68-2-29		
Approximate weight	52.2 oz (1480 g) ⁸⁾		
Material	Housing: Al, anodized; optics: PMMA		

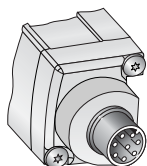
- 1) Further beam spacing possible
2) Sender (MLG S) and receiver (MLG E)
3) Limit values
4) Without load at V_s = 24 V
5) With resistive load
6) Depends on selected basic function

- 7) A = V_s connection, reverse polarity protected
B = Outputs short-circuit protected
C = Interference pulse suppression

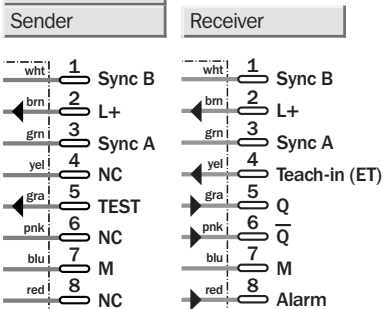
- 8) For 1200 mm detection height, increment 160 g per 150 mm detection height

Connection diagram

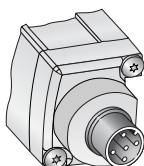
MLG x-xxxxx8x1



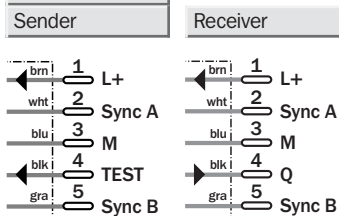
8-pin, M12



MLG x-xxxxx5x1



5-pin, M12



MLG Programmable

Light Grid Sensors



0...16.4 ft (0...5 m)
0...27.9 ft (0...8.5 m)
sensing range

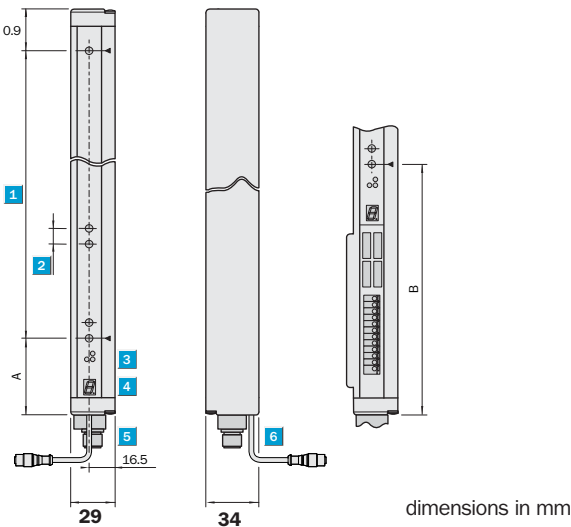
Highlights

- High modularity: beam spacing, detection height, sensing range and interface
- Compact housing
- Short response time
- Teach-in for optimal sensitivity adjustment
- MLG setup software for visualization and parameterization (included)

MLG



Dimensional drawing



Distance: MLG edge – first beam

Dimensions (mm)	A	B
MLG 1 10 mm	49	160
MLG 2 20 mm	59	170
MLG 3 30 mm	69	180
MLG 5 50 mm	89	200

- 1** Detection height (see optical performance)
- 2** Beam spacing 10, 20, 30, 50 mm
- 3** Status indicator: LED green/LED yellow/LED red
- 4** Indicator panel, 7-segment display
- 5** PG 9/M12 plug, 8-pin
- 6** Programming cable M8 plug, 4-pin

Optical performance

	Detection height			Minimum Detectable Object (MDO)		
	Minimum	Increment	Maximum	Beam spacing	MDO ¹⁴⁾	MDO ¹⁴⁾ with multiple scan ¹⁵⁾
MLG 1:	140 mm	150 mm	2390 mm	10 mm	15 ¹⁶⁾ /20 ¹⁷⁾ mm	< 10 ¹⁶⁾ / ¹⁷⁾ 15 mm
MLG 2:	140 mm	140 mm, 160 mm	3140 mm	20 mm	25 ¹⁶⁾ /30 ¹⁷⁾ mm	< 15 ¹⁶⁾ / ¹⁷⁾ 20 mm
MLG 3:	120 mm	150 mm	3120 mm	30 mm	35 ¹⁶⁾ /40 ¹⁷⁾ mm	< 20 ¹⁶⁾ / ¹⁷⁾ 25 mm
MLG 5:	100 mm	150 mm	3100 mm	50 mm	55 ¹⁶⁾ /60 ¹⁷⁾ mm	< 30 ¹⁶⁾ / ¹⁷⁾ 35 mm

14) MDO for non-moving objects measured in a direction parallel to the MLG

15) Multiple scan MDO sizes are determined at the mid point between the sender and receiver. Scanning range: Multiple scan usage will reduce scanning range and prolong response time.

16) Sensing range: 5 m
17) Sensing range: 8.5 m

Order information

See selection guide at the front of this section and check www.sickusa.com for product availability.

Accessories

	page
Cables and connectors	1180
Mounting systems	1234

MLG-

1)								
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Maximum number of beams	240 beams		
Scanning range	0...16.4 ft (0...5 m)/0...27.9 ft (0...8.5 m)		
Synchronization mode ²⁾	Synchronized by cable sync A/sync B		
Supply voltage V _s ³⁾	15...30 V DC		
Current consumption sender	< 140 mA + 2 mA/beam		
Current consumption receiver ⁴⁾	< 100 mA + 3 mA/beam		
Teach-in (ET)	PNP: Teach > 10...< V _s		
Teach-in (ET)	External teach-in input		
Output current I _A max.	100 mA per output ⁵⁾		
Output load	Capacitive load: 100 nF/output		
	Inductive load: 1H/output		
Operating mode outputs	Configurable with MLG setup		
Response time ⁶⁾	150 μs per beam + 1 s) ⁷⁾		
Alarm output (contamination)	Configurable with MLG setup ⁸⁾		
Data interface	RS 485 ⁹⁾		
Configuration plug ¹⁰⁾	4-pin, M8 plug, RS 232: 9.6 kBaud fix ¹¹⁾		
Immunity to ambient light	50,000 lx (continuous light)		
VDE protection class	III		
Circuit protection ¹²⁾	A, B, C		
Enclosure rating	IP 65		
Ambient temperature T _A	Operation -13...131° F (-25...55° C)		
	Storage -40...158° F (-40...70° C)		
Mechanical resistance	Vibration: 5 g/10-55/s – IEC 68-2-6		
	Shock: 10 g/10 ms – IMC 68-2-29		
Approximate weight (with PG 9)	52.2 oz (1480 g) ¹³⁾		
Material	Housing: Alu., anodized; optics: PMMA		

- 1) See selection table
- 2) Sender (MLG S) and receiver (MLG E)
- 3) Limit values
- 4) Without load at $V_s = 24 \text{ V}$
- 5) Max. $\Sigma = 550 \text{ mA}$
- 6) With resistive load

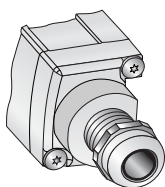
- 7) Depends on selected basic function
- 8) Default setting on Q3
- 9) Baud Rate, reporting mode configurable per MLG setup
- 10) Plug built on receiver (MLG E)
- 11) Configurable with MLG setup

- 12) A = V_s connection, reverse polarity protected
B = Outputs short-circuit protected
C = Interference pulse suppression

- 13) For 1200 mm detection height,
increment 160 g per 150 mm detection
height

Connection diagram

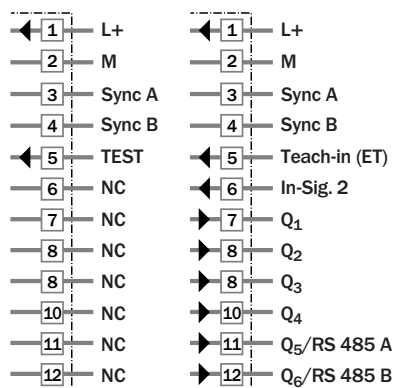
MLG x-xxxxx2x2



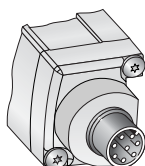
PG 9, terminals

Sender

Receiver



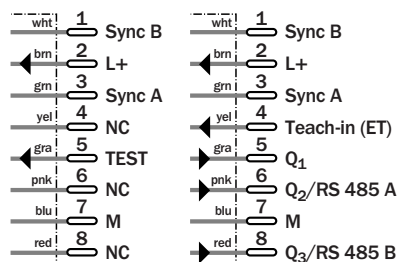
MLG x-xxxxx8x2



8-pin, M12

Sender

Receiver



MLG PROFIBUS

Light Grid Sensors



0...16.4 ft (0...5 m)
0...27.9 ft (0...8.5 m)

sensing range

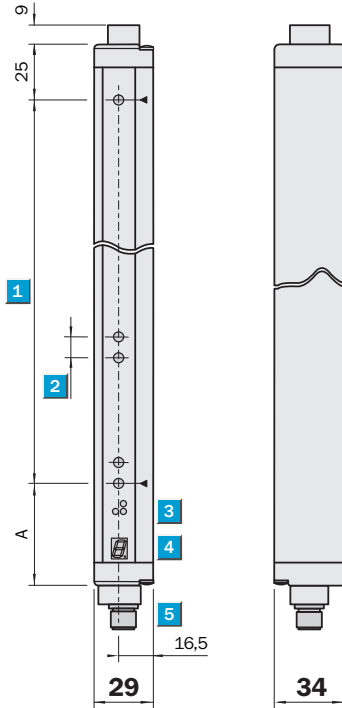
MLG Profibus



Highlights

- Integrated PROFIBUS interface
- High modularity: beam spacing, detection height and sensing range
- Compact housing
- Teach-in for optimal sensitivity adjustment
- GSD file included

Dimensional drawing



dimensions in mm

Distance: MLG edge – first beam

Dimensions (mm)	A
MLG 1 10 mm	49
MLG 2 20 mm	59
MLG 7 25 mm	52
MLG 3 30 mm	69
MLG 5 50 mm	89

- 1 Detection height (see optical performance)
- 2 Beam spacing 10, 20, 30, 50 mm
- 3 Status indicator: LED green/LED yellow/LED red
- 4 Indicator panel, 7-segment display
- 5 M12 plug, 8-pin (receiver), 5-pin (sender)
- 6 Address setting
- 7 Bus termination

Optical performance

	Detection height			Minimum Detectable Object (MDO)	
	Minimum	Increment	Maximum	Beam spacing	MDO ⁸⁾
MLG 1:	140 mm	150 mm	2390 mm	10 mm	15 ⁹⁾ /20 ¹⁰⁾ mm
MLG 2:	140 mm	140 mm, 160 mm	3140 mm	20 mm	25 ⁹⁾ /30 ¹⁰⁾ mm
MLG 3:	120 mm	150 mm	3120 mm	30 mm	35 ⁹⁾ /40 ¹⁰⁾ mm
MLG 5:	100 mm	150 mm	3100 mm	50 mm	55 ⁹⁾ /60 ¹⁰⁾ mm
MLG 7:	125 mm	150 mm	3125 mm	25 mm	30 ⁹⁾ mm

8) MDO for non-moving objects measured in a direction parallel to the MLG

9) Sensing range: 5 m

10) Sensing range: 8.5 m

Order information

See selection guide at the front of this section and check www.sickusa.com for product availability.

Accessories	page
Cables and connectors	1180
Mounting systems	1234

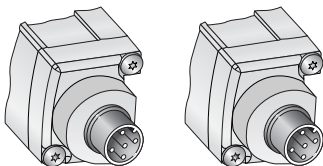
MLG-

X-XXX vPRv1								
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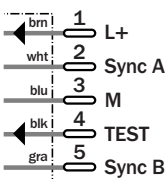
[illegible]

- 6) 1480 g for 1200 m detection height,
increment 160 g per 150 mm¹

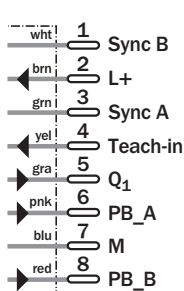
MLG x-xxxxx8x1



Sender



Sender



ELG 1 Short Range

Through-beam Light Grid Sensors



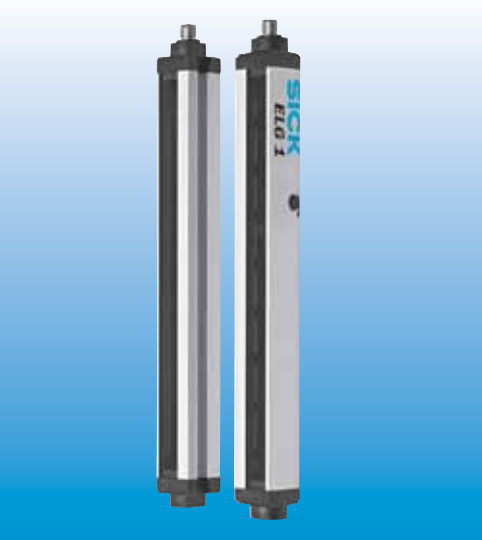
0...9.8 ft (0...3 m)

sensing range

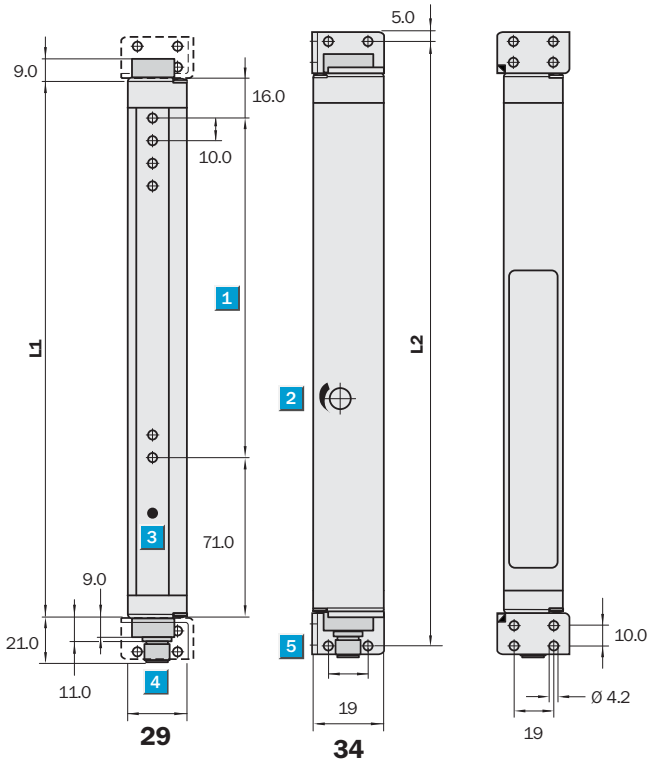
Highlights

- Beam spacing 10 mm
- Industrial standard outputs
- Optical synchronization
- Compact housing
- Mounting bracket included with delivery

ELG 1



Dimensional drawing



dimensions in mm

Dimensions		
1	L1	L2
100 mm	187 mm	217 mm
150 mm	237 mm	267 mm

- 1 Detection height: 100/150 mm
- 2 Sensitivity adjustment
- 3 Status indicator (ELG E)/Power on (ELG S)
- 4 M12 plug, 4-pin
- 5 Mounting bracket (included with delivery)

Optical performance

Beam spacing

Detection height

10 mm

100/150 mm

MDO: minimum detectable object¹⁾

in front of ELG S or ELG E

15 mm

at mid-point between ELG S and ELG E

15 mm

10 mm²⁾

1) MDO: minimum detectable object for non-moving objects, measured in a direction parallel to ELG

2) At mid-point between ELG S and ELG E with multiple scan

Accessories	page
Cables and connectors	1180
Mounting systems	1234

Order information

Type	Part no.
ELG 1-0100P531	1 026 807
ELG 1-0150P531	1 026 741
ELG 1-0100P533	1 026 808
ELG 1-0150P533	1 026 809

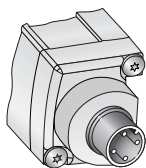
Technical data		ELG 1-	0100 P531	0150 P531	0100 P533	0150 P533						
Beam spacing	0.4 in (10 mm)											
Detection height	3.9 in (100 mm)											
	5.9 in (150 mm)											
Number of beams	11											
	16											
Sensing range	0...9.8 ft (0...3 m)											
Multiple scan	3 x (see optical performance)											
Synchronization	Optical synchronization											
Light source	LED, infrared light											
Voltage supply V_s ¹⁾	15...30 V DC											
Residual ripple	< 10 % within V_s tolerance											
Current consumption Sender	< 100 mA											
Current consumption Receiver ²⁾	< 100 mA											
Connection	M12 plug, 4-pin											
Switch output	2 x PNP output ³⁾ : $\bar{Q}$ and Q											
Operating mode	Q: dark-/ $\bar{Q}$: light-switching											
Output current I_A max.	100 mA											
Output load	Capacitive load: 100 nF											
	Inductive load: 1H											
Test input »TE«	Sender OFF: Test input to V_s											
Response time ⁴⁾	Max. 12 ms											
	Max. 36 ms											
Initialization duration after power ON	Max. 300 ms											
High immunity against ambient light	150,000 lx (sunlight)											
VDE protection class	III											
Circuit protection ⁵⁾	A, B, C											
Enclosure rating	IP 65											
Ambient temperature T_A	Operation -13...131° F (-25...+55° C)											
	Storage -40...158° F (-40...+70° C)											
Mechanical resistance	Vibration: 5 g; 10-55/s – IEC 68-2-6											
	Shock: 10 g; 16 ms – IEC 68-2-29											
Weight	Approx. 350 g											
Housing Material	Aluminum anodized											
Front Lens	PMMA											

- 1) Limit values
2) Without load at $V_s = 24$ V
3) NPN available upon request
4) With resistive load

- 5) A = V_s connections, reverse-polarity protected
B = Outputs Q and $\bar{Q}$ short-circuit protected
C = Interference pulse suppression

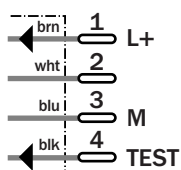
Connection diagram

ELG S1-xxxxD53x

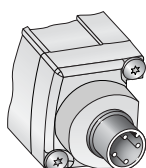


Sender

M12, 4-pin

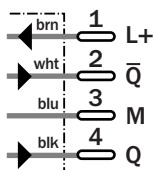


ELG E1-xxxxP53x



Receiver

M12, 4-pin



ELG Short Range

Light Grid Sensors



0...6.6 ft (0...2 m)

sensing range

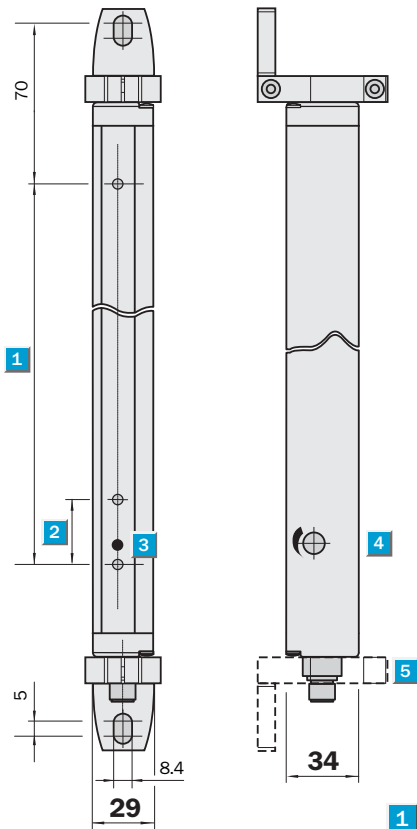
Highlights

- Industrial standard outputs
- Optical synchronization
- Compact housing
- Manual sensitivity adjustment
- High sunlight immunity

ELG



Dimensional drawing



dimensions in mm

- 1 Detection height
- 2 Beam spacing
- 3 Status indicator (ELG E)/Power on (ELG S)
- 4 Sensitivity adjustment
- 5 M12 plugs, 4-pin

Optical performance

Beam spacing	Detection height	MDO: minimum detectable object ⁷⁾	
		in front of ELG S or ELG E	at mid-point between ELG S and ELG
30 mm	90...930 mm	35 mm	35 mm 25 mm ⁸⁾

7) MDO: minimum detectable object for non-moving objects, measured in a direction parallel to ELG

8) Only ELG 3-XXXXP513 with multiple scan

Accessories	page
Cables and connectors	1180
Mounting systems	1234

Beam spacing	1.2 in (30 mm)										
Detection height	See selection table p1038										
Number of beams	See selection table p1038										
Sensing range	0...6.6 ft (0...2 m)										
Multiple scan	3 x (reduced MDO)										
Synchronization	Optical synchronization										
Light source	LED, infrared light										
Voltage supply V_s ¹⁾	15...30 V DC										
Residual ripple	< 10 % within V_s tolerance										
Current consumption Sender	< 100 mA										
Current consumption Receiver ²⁾	< 100 mA										
Connection	M12 plug, 4-pin										
Switch output	2 x PNP output ³⁾ ; $\bar{Q}$ and Q										
Operating mode	Q: dark-/ $\bar{Q}$: light-switching										
Output current I_A max.	100 mA										
Output load	Capacitive load: 100 nF/output Inductive load: 1H/output										
Response time ⁴⁾	Max. 50 ms										
Initialization duration	Max. 300 ms										
High immunity against ambient light	150,000 lx (sunlight)										
VDE protection class	III										
Circuit protection ⁵⁾	A, B, C										
Enclosure rating	IP 65										
Ambient temperature	Operation -13...131° F (-25...+55° C) Storage -40...158° F (-40...+70° C)										
Mechanical resistance	Vibration: 5 g; 10-55/s – IEC 68-2-6 Shock: 10 g; 16 ms – IEC 68-2-29										
Weight ⁶⁾	Approx. 350...1700 g										
Material	Aluminum anodized										

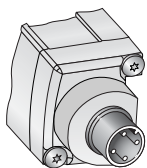
- 1) Limit values
2) Without load at $V_s = 24$ V
3) NPN also available
4) With resistive load

- 5) A = V_s connection, reverse polarity protected
B = Outputs short-circuit protected
C = Interference pulse suppression

- 6) 350 g for 90 mm detection height, increase 160 g per 100 mm

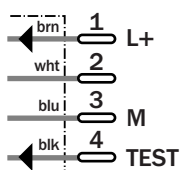
Connection diagram

ELG S3-xxxD511

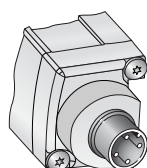


Sender

M12, 4-pin

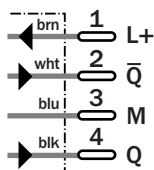


ELG E3-xxxP511



Receiver

M12, 4-pin



ELG Long Range

Light Grid Sensors



0...39 ft (0...12 m)

sensing range

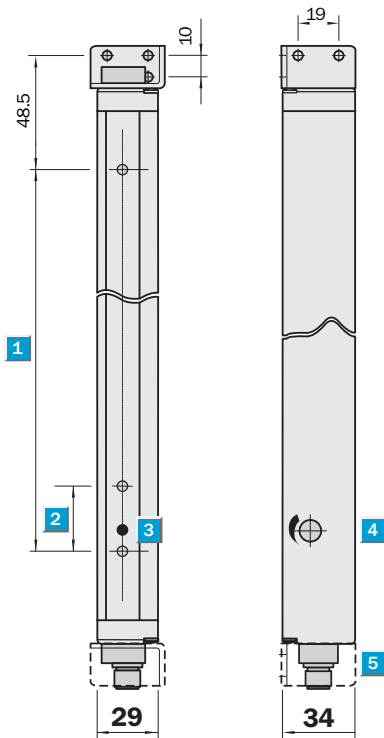
Highlights

- Wide range of options
- High sunlight immunity
- Optical synchronization
- Compact housing
- Beam spacing 30 mm/60 mm
- Manual sensitivity adjustment

ELG



Dimensional drawing



dimensions in mm

- 1 Detection height (see next page)
- 2 Beam spacing ELG 3: 30 mm/ELG 6: 60 mm
- 3 Status indicator (ELG E)/Power on (ELG S)
- 4 Sensitivity adjustment
- 5 M12 plugs, 4-pin

Optical performance

Beam spacing	Detection height	MDO: minimum detectable object ⁷⁾			
		in front of ELG S or ELG E		at mid-point between ELG S and ELG E	
30 mm	210...1890 mm	35 mm	35 mm	25 mm ⁸⁾	
60 mm	900...2460 mm	65 mm	65 mm	35 mm ⁸⁾	

7) MDO: minimum detectable object for non-moving objects, measured in a direction parallel to ELG

8) Only ELG 3-xxxxP523/ELG 6-xxxxP523 with multiple scan

Accessories	page
Cables and connectors	1180
Mounting systems	1234

Beam spacing	See selection table p1038										
Detection height	See selection table p1038										
Number of beams	See selection table p1038										
Sensing range	0...39 ft (0...12 m)										
Synchronization	Optical synchronization										
Light source	LED, infrared light										
Voltage supply V_s ¹⁾	15...30 V DC										
Residual ripple	< 10 % within V_s tolerance										
Current consumption Sender	< 100 mA										
Current consumption Receiver ²⁾	< 100 mA										
Connection	M12 plug, 4-pin (cable optional)										
Switch output ³⁾	2 x PNP output: $\bar{Q}$ and Q										
Operating mode	Q: dark-/ $\bar{Q}$: light-switching										
Output current I_A max.	100 mA										
Output load	Capacitive load: 100 nF/output Inductive load: 1H/output										
Response time ⁴⁾	Max. 100 ms										
Initialization duration	Max. 300 ms										
High immunity against ambient light	150,000 lx (sunlight)										
VDE protection class	III										
Circuit protection ⁵⁾	A, B, C										
Enclosure rating	IP 65										
Ambient temperature	Operation -13...131° F (-25...+55° C) Storage -40...158° F (-40...+70° C)										
Mechanical resistance	Vibration: 5 g; 10-55/s – IEC 68-2-6 Shock: 10 g; 16 ms – IEC 68-2-29										
Weight ⁶⁾	Approx. 950...3300 g										
Material	Aluminum anodized										

- 1) Limit values
2) Without load at $V_s = 24$ V
3) NPN also available
4) With resistive load

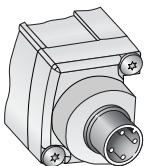
- 5) A = V_s connection, reverse polarity protected
B = Outputs short-circuit protected
C = Interference pulse suppression

- 6) 950 g for 450 mm detection height, increase 160 g per 100 mm

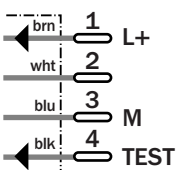
Connection diagram

ELG S3-xxxxD521

ELG S6-xxxxD521

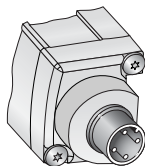


Sender
M12, 4-pin

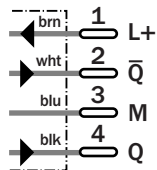


ELG E3-xxxxP521

ELG E6-xxxxP521



Receiver
M12, 4-pin



ELG short range, range = 0...2 m/beam spacing 30 mm

Type	Part no.	Height	No. of beams	Interface/Multiple scan
ELG 3-0090P513	1 025 443	90 mm	4	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input, 3 x multiple scan
ELG 3-0150P513	1 025 578	150 mm	6	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input, 3 x multiple scan
ELG 3-0210P513	1 025 438	210 mm	8	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input, 3 x multiple scan
ELG 3-0330P513	1 025 576	330 mm	12	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input, 3 x multiple scan
ELG 3-0210P511	1 025 510	210 mm	8	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0330P511	1 025 575	330 mm	12	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0450P511	1 025 490	450 mm	16	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0570P511	1 025 501	570 mm	20	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0690P511	1 025 499	690 mm	24	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0930P511	1 025 492	930 mm	32	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input

ELG long range, range = 0...12 m/beam spacing 30 mm

Type	Part no.	Height	No. of beams	Interface/Multiple scan
ELG 3-0210P521	1 025 574	210 mm	8	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0450P521	1 025 440	450 mm	16	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0690P521	1 025 568	690 mm	24	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0810P521	1 025 577	810 mm	28	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0930P521	1 025 511	930 mm	32	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-1050P521	1 025 570	1050 mm	36	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-1170P521	1 025 579	1170 mm	40	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-1410P521	1 025 502	1410 mm	48	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-1650P521	1 025 503	1650 mm	56	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-1890P521	1 025 504	1890 mm	64	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-2070P521	1 025 505	2070 mm	70	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-2070P523	1 025 572	2070 mm	70	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input, 3 x multiple scan
ELG 3-2370P521	1 025 573	2370 mm	80	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0210N521	1 025 613	210 mm	8	NPN, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0450N521	1 025 614	450 mm	16	NPN, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0690N521	1 025 615	690 mm	24	NPN, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-0930N521	1 025 616	930 mm	32	NPN, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-1170N521	1 025 617	1170 mm	40	NPN, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-1410N521	1 025 618	1410 mm	48	NPN, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-1650N521	1 025 620	1650 mm	56	NPN, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 3-1890N521	1 025 621	1890 mm	64	NPN, 1 x $\bar{Q}$, 1 x Q, 1 Test input

ELG long range, range = 0...12 m/beam spacing 60 mm

Type	Part no.	Height	No. of beams	Interface/Multiple scan
ELG 6-0900P521	1 025 447	900 mm	16	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 6-1080P521	1 025 586	1080 mm	19	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 6-1380P521	1 025 587	1380 mm	24	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 6-1380P523	1 025 588	1380 mm	24	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input, 3 x multiple scan
ELG 6-1860P521	1 025 589	1860 mm	32	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 6-1860P523	1 025 593	1860 mm	32	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input, 3 x multiple scan
ELG 6-2040P523	1 025 594	2040 mm	35	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input, 3 x multiple scan
ELG 6-2340P521	1 025 596	2340 mm	40	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input
ELG 6-2460P523	1 024 293	2460 mm	42	PNP, 1 x $\bar{Q}$, 1 x Q, 1 Test input, 3 x multiple scan

^{*)} Additional options on request, minimum order: 20 systems

