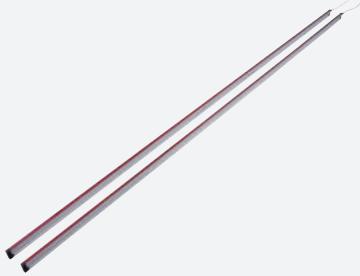
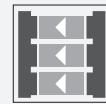


Elevator light grid

AL2109-P-1820/40b/49/143



- Low-profile, high resolution light grid for monitoring locking edges on elevators and accesses
- Thru-beam light grid with integrated controller
- In accord with EN81-70 and EN12015/16
- Dense monitoring field with up to 135 beams ensures that small objects are detected
- Object detection up to distance of zero
- Automatic beam crossing and beam suppression
- Insensitive to reflection and ambient light

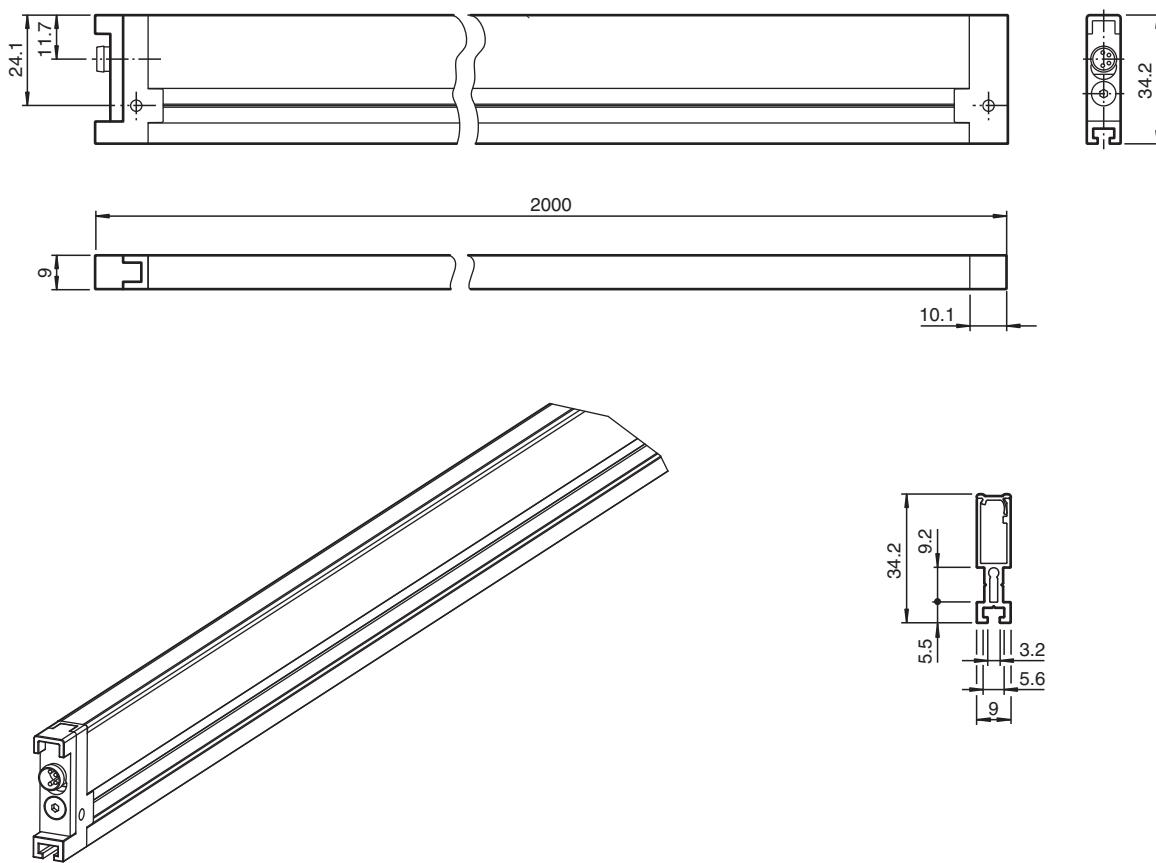
High-resolution light grid for detecting people and objects, set comprising emitter and receiver, field height: 1800 mm, light/dark on, 1 NPN output and 1 PNP output, M8 plug



Function

The AL2109 elevator light grid is used to protect elevator doors or for passenger monitoring and access control. Its special features include its dynamic beam crossover with up to 135 active sensors, object detection down to nearly zero millimeters and an ambient light limit greater than 100,000 Lux. The evaluation electronics and the power supply are completely integrated into the emitter and receiver element, so that no external equipment is necessary for operation. The system offers flexible mounting options and meets the newest standards in accordance with EN 81-70 and EN 12016.

Dimensions



Technical Data

Release date: 2020-10-08 Date of issue: 2020-10-08 Filename: 184861_eng.pdf

General specifications

Effective detection range	0 ... 3500 mm
Threshold detection range	3500 mm
Light source	IRED
Light type	modulated infrared light , 950 nm
Field height	1800 mm
Beam crossover	automatic, 3x/5x/7x (depending on distance between transmitter/receiver)
Beam blanking	Defective beams are faded out after 60 s. Deactivation of the light grid upon failure of 2 adjacent beams or more than 50 % of all beams
Beam spacing	90 mm
Number of beams	61 ... 135 (dynamic)
Angle of divergence	Emitter: < 20 ° , Receiver: < 6 °
Ambient light limit	> 100000 Lux
Accessories provided	2 connecting cable , length 5 m (15 ft)

Functional safety related parameters

MTTF _d	180 a
Mission Time (T _M)	20 a
Diagnostic Coverage (DC)	0 %

Indicators/operating means

Function indicator	LED red (in receiver): Illuminates after connecting operating power, out when object is detected, flashes in case of permanent interruption of 2 neighbouring beams
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Electrical specifications

Operating voltage	U _B	11 ... 30 V DC
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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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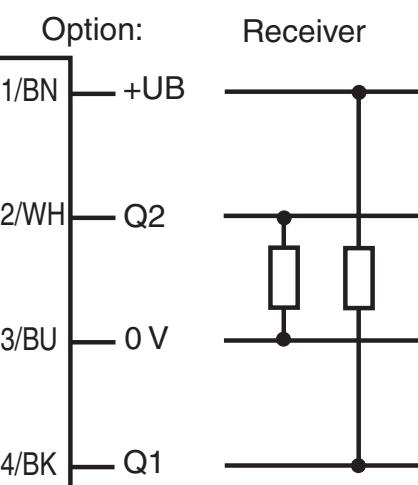
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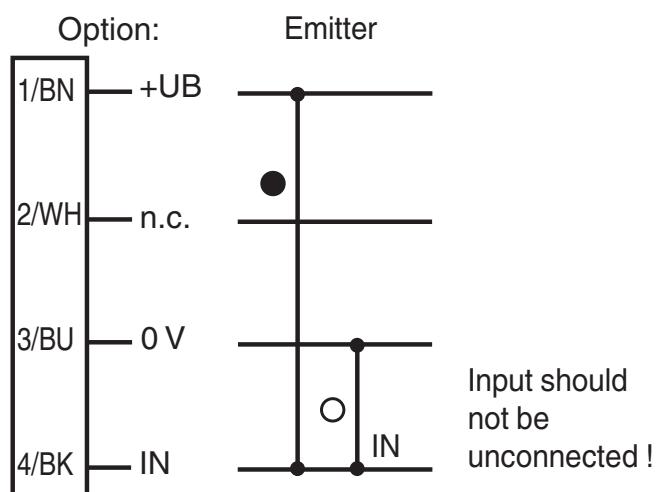
Technical Data

Ripple	10 %	
No-load supply current	I_0	< 180 mA
Output		
Switching type	light/dark on selectable programmable	
Signal output	1 PNP and 1 NPN, short-circuit protected	
Switching voltage	max. 30 V DC	
Switching current	100 mA	
Switching frequency	f	< 3 Hz
Response time	< 100 ms	
Compliance with standards and directives		
Directive conformity		
EMC Directive 2004/108/EC	EN 12015:2014 EN 12016:2013	
Standard conformity		
Product standard	EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2 Edition 3.1:2012-09	
Standards	EN 81-70:2003-05 EN 81-70/A1:2004-12 EN 81-1+A3:2009-12; Chapter 7.5.2.1.1.3 Taking into account object detection in accordance with the data sheet specification for the monitoring field.	
Approvals and certificates		
CE conformity	yes	
UL approval	cULus Listed	
CCC approval	CCC approval / marking not required for products rated ≤ 36 V	
Ambient conditions		
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)	
Storage temperature	-20 ... 65 °C (-4 ... 149 °F)	
Mechanical specifications		
Degree of protection	IP54	
Connection	M8 x 1 connector, 4-pin	
Material		
Housing	aluminum	
Optical face	plastic	
Mass	2000 g (device)	

Connection Assignment



○ = Light on
● = Dark on

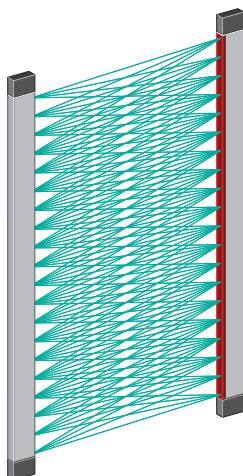


Input should
not be
unconnected !

Assembly



Application

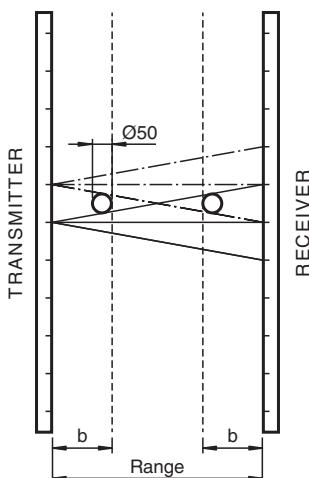


Accessories

	Mounting Set AL2109 back board	Mounting aid
	Mounting Set AL2109 extension	Mounting aid
	Mounting Set AL2109 lateral	Mounting aid
	PS1/31	Power supply/Power supply module

Monitoring field

Object detection



Range [mm]	b [mm]
100	38
200	64
300	88
400	64
500	76
600	88
700	72
800	80
900	88
1000	96
1500	134
2000	171
2500	209
3000	246
3500	283

Accessories

Other suitable accessories can be found at www.pepperl-fuchs.com

LED Indicators

The red LED in the upper end of the receiver lights up continuously when the operating voltage is applied. The light grid is then ready for operation.

When an object is detected, the red LED goes out until the light beams are unobstructed again.

The AL2109 elevator light grid features a beam suppression system. If one of the 21 emitters or receivers is covered on a sustained basis (e.g. by dirt or other contaminants), the beam in question is removed from the evaluation after 60 seconds, and the light grid remains ready for operation. The light grid is deactivated if 2 adjacent beams or more than half of all the beams fail; in this case, the red LED flashes.

Operating Modes

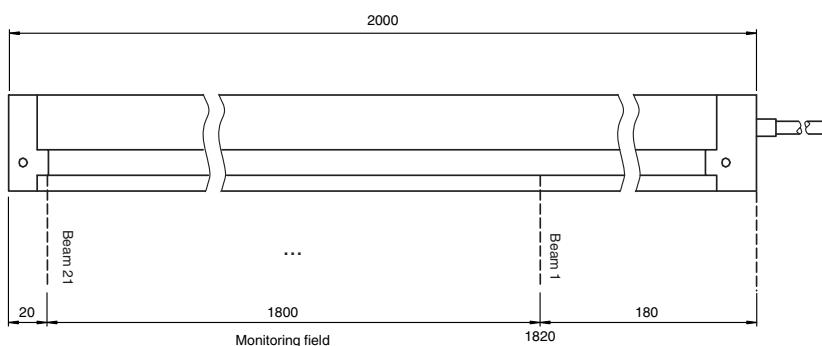
Light/dark ON:

Light ON means that the outputs are active if none of the light beams are broken. In dark ON mode, the outputs are active in every instance of an object being detected. This function can be selected via the light/dark ON input (IN) on the emitter. Do not leave the input in a non-wired state.

+UB on switching input IN: dark ON

0V on switching input IN: light ON

Monitoring field



Function Principle

The AL2109 light grid is used for access monitoring on elevators. The device consists of an emitter and receiver unit. The evaluation electronics and power supply are integrated into the devices. No additional external components are required for operation.

By default, the light grid automatically switches between 7-way, 5-way and 3-way crossovers. If the distance is more than 0.8 m between the emitter and receiver, the light grid selects the "7-way crossover" operating mode. Every receiver evaluates the beams of 7 emitters in this mode. 7-way crossover thus increases the resolution to 135 beams.

Application

- Secure and complete monitoring of elevator doors
- Monitoring of access systems and entrances
- Access control