

# **L21E-21MA1A**L21

**SINGLE-BEAM PHOTOELECTRIC SAFETY SWITCHES** 





## Ordering information

Туре	Part no.
L21E-21MA1A	6034875

Other models and accessories → www.sick.com/L21



## Detailed technical data

#### **Features**

Scanning range	0 m 10 m
Number of beams	1
Optical axis	Axial

## Safety-related parameters

Туре	Type 2 (IEC 61496) <sup>1)</sup>
Safety integrity level	SIL1 (IEC 61508) 1) SILCL1 (EN 62061) 1)
Category	Category 2 (EN ISO 13849) 1)
Test rate (external test)	100 /s (EN ISO 13849) <sup>2)</sup>
Maximum demand rate	≤ 60 min <sup>-1</sup> (EN ISO 13849) <sup>3)</sup>
Performance level	PL c (EN ISO 13849) 1)
$\ensuremath{PFH_D}$ (mean probability of a dangerous failure per hour)	1.0 x 10 <sup>-6</sup> (EN ISO 13849) <sup>1)</sup>
T <sub>M</sub> (mission time)	20 years (EN ISO 13849)

<sup>&</sup>lt;sup>1)</sup> Only in combination with an appropriate test device, e.g., Flexi Classic or Flexi Soft.

#### Interfaces

Connection type	Male connector M12, 4-pin, straight	
Fieldbus, industrial network		
Integration via Flexi Soft safety controller	CANopen, DeviceNet™, EtherCAT®, EtherNet/IP™, Modbus TCP, PROFIBUS DP, PROFINET 1)	

<sup>1)</sup> For additional information on Flexi Soft -> www.sick.com/Flexi\_Soft.

## Electrical data

Protection class	III (EN 50178)

<sup>1)</sup> Short-circuit protected.

<sup>&</sup>lt;sup>2)</sup> The test rate shall not be exceeded.

<sup>3)</sup> Between two requirements on a safety-related response of the device, at least 100 internal or external tests must be carried out.

Supply voltage V <sub>S</sub>	24 V DC (19.2 V DC 28.8 V DC)
Power consumption	≤ 30 mA
Switching outputs	PNP, Q <sup>1)</sup>
Switching current	≤ 70 mA

 $<sup>^{1)}</sup>$  Short-circuit protected.

## Mechanical data

Design	Cylindrical
Dimensions (diameter x length)	M18 x 97.7 mm
Housing material	Nickel-plated brass
Lens material	Glass
Weight	67 g

## Ambient data

Enclosure rating	IP67 (EN 60529)
Ambient operating temperature	-40 °C +55 °C
Storage temperature	-40 °C +75 °C
Air humidity	15 % 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

## Other information

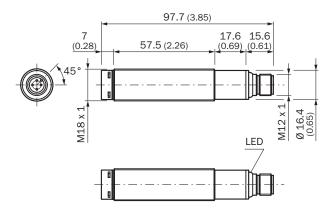
Aperture angle/receiving angle	±5°/±5°
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## Classifications

ECI@ss 5.0	27272701
ECI@ss 5.1.4	27272701
ECI@ss 6.0	27272701
ECI@ss 6.2	27272701
ECI@ss 7.0	27272701
ECI@ss 8.0	27272701
ECI@ss 8.1	27272701
ECI@ss 9.0	27272701
ETIM 5.0	EC001831
ETIM 6.0	EC001831
UNSPSC 16.0901	46171620

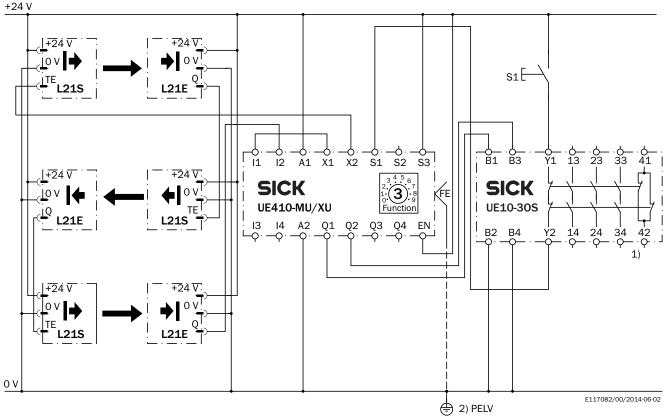
#### Dimensional drawing (Dimensions in mm (inch))

M18 axial



## Connection diagram

3 x L21 (cascaded) with Flexi Classic main unit and expansion module on UE10-30S



#### Task

Integration of three cascaded L2000 (L21) family single-beam photoelectric safety switches with a UE410-MU/XU safety controller and a UE10-30S safety relay.

Operating mode: with restart interlock and external device monitoring.

#### Function

The system is ready when the light path is clear and the UE10-30S is de-energized and functioning correctly. When the S1 button is pressed and released, the Q1 and Q2 outputs on the UE410-MU/XU are live and the UE10-30S is switched on. If one of the light beams is interrupted, the Q1 and Q2 outputs on the UE410-MU/XU shut down the UE10-30S.

#### **Possible faults**

Malfunctions in the UE10-30S will be detected. The shutdown function is retained.

#### **Comments**

Take note of the operating instructions for the integrated devices. The safety-related parameters (safety integrity level and response time) are dependent on the types used.

#### Recommended accessories

Other models and accessories → www.sick.com/L21

	Brief description	Туре	Part no.
Plug connectors and cables			
	Head A: female connector, M12, 4-pin, straight Head B: cable Cable: PVC, unshielded, 5 m	DOL-1204-G05M	6009866
	Head A: female connector, M12, 4-pin, angled Head B: cable Cable: PVC, unshielded, 5 m	DOL-1204-W05M	6009867
	Head A: female connector, M12, 4-pin, straight Head B: - Cable: unshielded	DOS-1204-G	6007302
	Head A: female connector, M12, 4-pin, angled Head B: - Cable: unshielded	DOS-1204-W	6007303
Alignment aids			
	Laser alignment aid for various sensors, laser class 2 (IEC 60825). Do not look into the beam!	AR60	1015741

<sup>&</sup>lt;sup>1)</sup> Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

 $<sup>^{\</sup>rm 2)}$  PELV as required in EN 60204-1 / 6.4

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We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

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