



# L41E-21MA1A

L41

SINGLE-BEAM PHOTOELECTRIC SAFETY SWITCHES

**SICK**  
Sensor Intelligence.



### Ordering information

Type	Part no.
L41E-21MA1A	6034867

Other models and accessories → [www.sick.com/L41](http://www.sick.com/L41)



### Detailed technical data

#### Features

<b>Scanning range</b>	0 m ... 10 m
<b>Number of beams</b>	1
<b>Optical axis</b>	Axial

#### Safety-related parameters

<b>Type</b>	Type 4 (IEC 61496) <sup>1)</sup>
<b>Safety integrity level</b>	SIL3 (IEC 61508) <sup>1)</sup> SILCL3 (EN 62061) <sup>1)</sup>
<b>Category</b>	Category 4 (EN ISO 13849) <sup>1)</sup>
<b>Performance level</b>	PL e (EN ISO 13849) <sup>1)</sup>
<b>PFH<sub>D</sub> (mean probability of a dangerous failure per hour)</b>	$8.1 \times 10^{-10}$ (EN ISO 13849) <sup>1)</sup>
<b>T<sub>M</sub> (mission time)</b>	20 years (EN ISO 13849)

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

#### Interfaces

<b>Connection type</b>	Male connector M12, 4-pin, straight
<b>Diagnostic display</b>	LED

#### Electrical data

##### Operating data

<b>Protection class</b>	III
<b>Power consumption</b>	≤ 30 mA

##### Switching output

<b>Switching current</b>	≤ 70 mA
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#### Mechanical data

<b>Design</b>	Cylindrical
<b>Dimensions (diameter x length)</b>	M18 x 97.7 mm

<b>Housing material</b>	Nickel-plated brass
<b>Lens material</b>	Glass
<b>Weight</b>	67 g

## Ambient data

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

## Other information

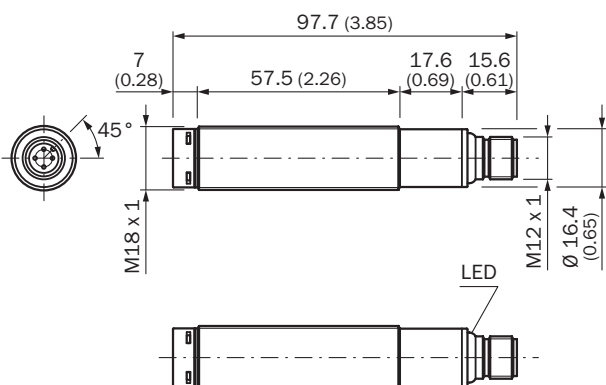
<b>Aperture angle/receiving angle</b>	$\pm 2.5^\circ / \pm 2.5^\circ$
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## Classifications

<b>ECl@ss 5.0</b>	27272701
<b>ECl@ss 5.1.4</b>	27272701
<b>ECl@ss 6.0</b>	27272701
<b>ECl@ss 6.2</b>	27272701
<b>ECl@ss 7.0</b>	27272701
<b>ECl@ss 8.0</b>	27272701
<b>ECl@ss 8.1</b>	27272701
<b>ECl@ss 9.0</b>	27272701
<b>ETIM 5.0</b>	EC001831
<b>ETIM 6.0</b>	EC001831
<b>UNSPSC 16.0901</b>	46171620

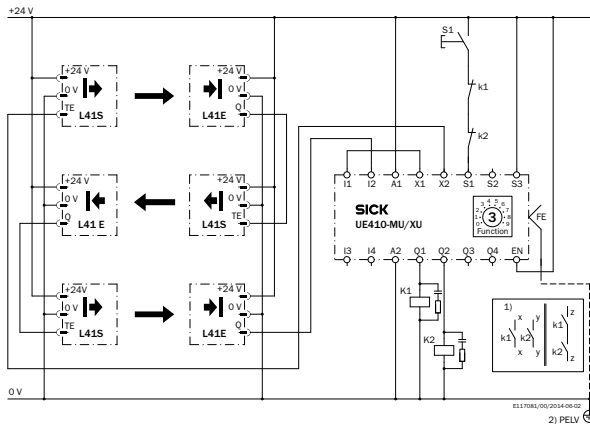
## Dimensional drawing (Dimensions in mm (inch))

M18 axial



### Connection diagram

3 x L41 (cascaded) on Flexi Classic main unit and extension unit



#### Task

Integration of three cascaded L4000 (L41) family single-beam photoelectric safety switches with a UE410-MU/XU safety controller into a relay controller/contactor controller.

Operating mode: with restart interlock and with external device monitoring.

#### Function

When the input conditions are valid, the system is ready for switch-on and waits for an input signal/switch-on signal. The system is enabled by pressing and releasing the S1 button. The related output on the UE410-MU/XU carries power. If the input conditions are no longer met, the related outputs on the UE410-MU/XU shut down.

#### Possible faults

The incorrect function of the K1 and K2 contactors will be detected. The shutdown function is retained.

On manipulation (e.g., jamming) of the S1 button, the system does not enable the output current circuits.

#### Comments




1) 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.








2) PELV as required in EN 60204-1 / 6.4

Optical short-circuits must be avoided. 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/L41](http://www.sick.com/L41)

Brief description		Type	Part no.
Mounting brackets and plates			
	Mounting bracket for M18 sensors, steel, zinc coated, without mounting hardware	BEF-WN-M18	5308446
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

	Brief description	Type	Part no.
	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
<b>Alignment aids</b>			
	Laser alignment aid for various sensors, laser class 2 (IEC 60825). Do not look into the beam!	AR60	1015741
	Adapter AR60 for M18 sensors (L41 and L21)	AR60 adapter, M18 sensors	5313533
<b>Deflector mirrors</b>			
	Horizontal deflection, 75 mm x 80 mm reflector surface, Glass, Incl. mounting kit (2 x swivel mount)	PNS75-008	1026647
	Horizontal deflection, 96 mm x 124 mm reflector surface, Glass	PSK1	1005229
	Deflector mirror for 90° deflection, mirror surface 97 mm x 80 mm, not suitable for column mounting, Glass, mounting hardware included	PSK45	5306053

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

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.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)