



L21S-33MA2A, L21E-33MA2A

L21

SINGLE-BEAM PHOTOELECTRIC SAFETY SWITCHES

SICK
Sensor Intelligence.



Ordering information

| System part | Type | Part no. |
|-------------|-------------|----------|
| Sender | L21S-33MA2A | 6034870 |
| Receiver | L21E-33MA2A | 6034871 |

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



Detailed technical data

Features

| | |
|------------------------|--------------|
| Scanning range | 0 m ... 60 m |
| Number of beams | 1 |
| Optical axis | Axial |

Safety-related parameters

| | |
|---|---|
| Type | Type 2 (IEC 61496) ¹⁾ |
| 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) ²⁾ |
| Maximum demand rate | ≤ 60 min ⁻¹ (EN ISO 13849) ³⁾ |
| Performance level | PL c (EN ISO 13849) ¹⁾ |
| PFH_D (mean probability of a dangerous failure per hour) | 1.0 x 10 ⁻⁶ (EN ISO 13849) ¹⁾ |
| T_M (mission time) | 20 years (EN ISO 13849) |

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

²⁾ The test rate shall not be exceeded.

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

Interfaces

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

¹⁾ For additional information on Flexi Soft -> www.sick.com/Flexi_Soft.

Electrical data

| | Sender | Receiver |
|-------------------------------------|-----------------------------------|----------|
| Protection class | III (EN 50178) | |
| Supply voltage V_S | 24 V DC (19.2 V DC ... 28.8 V DC) | |
| Power consumption | ≤ 20 mA | ≤ 30 mA |

¹⁾ Short-circuit protected.

| | Sender | Receiver |
|--------------------------|--------|----------------------|
| Switching outputs | | PNP, Q ¹⁾ |
| Switching current | | ≤ 70 mA |

¹⁾ Short-circuit protected.

Mechanical data

| | |
|---------------------------------------|---------------------|
| Design | Cylindrical |
| Dimensions (diameter x length) | M30 x 100 mm |
| Housing material | Nickel-plated brass |
| Lens material | Glass |
| Weight | 212 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

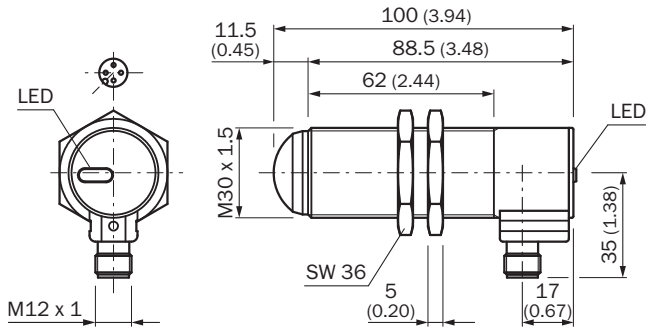
| | Sender | Receiver |
|---------------------------------------|-------------------|----------|
| Light source | LED | |
| Type of light | Visible red light | |
| Wave length | 660 nm | |
| Aperture angle/receiving angle | ± 5° / ± 5° | |

Classifications

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

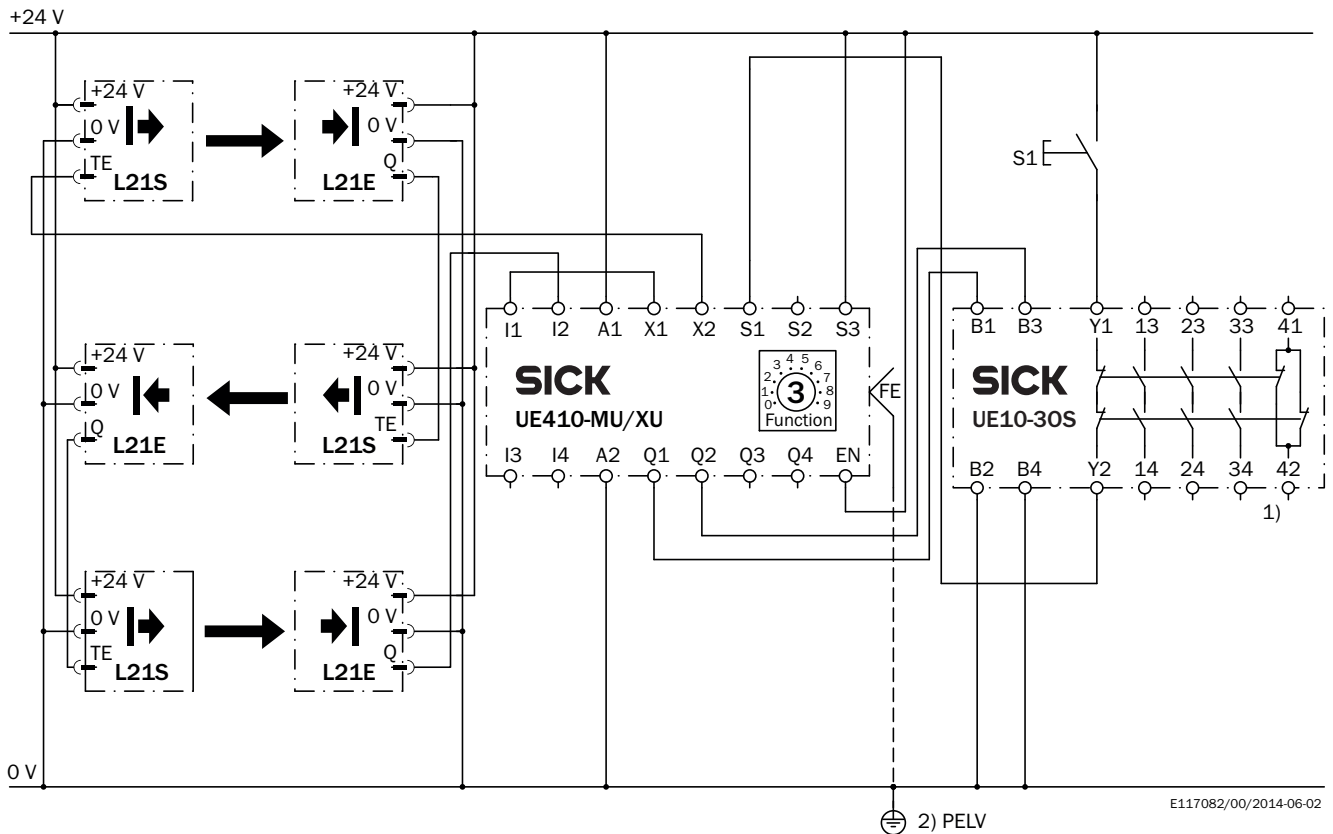
Dimensional drawing (Dimensions in mm (inch))

M30 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

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

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

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 | Type | 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 |

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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.”

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