



# M4C-EB03400A10

deTem

**MULTIPLE LIGHT BEAM SAFETY DEVICES**

**SICK**  
Sensor Intelligence.



## Ordering information

Low scanning range

| Number of beams | Beam separation | Scanning range | System part | Type           | Part no. |
|-----------------|-----------------|----------------|-------------|----------------|----------|
| 3               | 400 mm          | 15.5 m         | Receiver    | M4C-EB03400A10 | 1089980  |

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



## Detailed technical data

### Features

|                                    |                                                                                                                                                        |                  |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Application</b>                 | Areas with high pressure cleaning (hygiene, food)                                                                                                      |                  |
| <b>Functional principle</b>        | Sender/receiver system                                                                                                                                 |                  |
| <b>System part</b>                 | Receiver                                                                                                                                               |                  |
| <b>Scanning range category</b>     | Low scanning range                                                                                                                                     |                  |
| <b>Scanning range</b>              | 15.5 m                                                                                                                                                 |                  |
| <b>Dimension of the light path</b> | Minimum                                                                                                                                                | 0.5 m ... 12.5 m |
|                                    | Typical                                                                                                                                                | 0.5 m ... 15.5 m |
| <b>Number of beams</b>             | 3                                                                                                                                                      |                  |
| <b>Beam separation</b>             | 400 mm                                                                                                                                                 |                  |
| <b>Response time</b>               | 20 ms                                                                                                                                                  |                  |
| <b>Synchronization</b>             | Optical synchronisation                                                                                                                                |                  |
| <b>Items supplied</b>              | Receiver in IP69K protective housing with connecting cable, 15 m<br>Safety instruction<br>Mounting instructions<br>Operating instructions for download |                  |

### Safety-related parameters

|                                                                           |                                        |
|---------------------------------------------------------------------------|----------------------------------------|
| <b>Type</b>                                                               | Type 4 (IEC 61496-1)                   |
| <b>Safety integrity level</b>                                             | SIL3 (IEC 61508)<br>SILCL3 (IEC 62061) |
| <b>Category</b>                                                           | Category 4 (ISO 13849-1)               |
| <b>Performance level</b>                                                  | PL e (ISO 13849-1)                     |
| <b>PFH<sub>D</sub> (mean probability of a dangerous failure per hour)</b> | $3 \times 10^{-9}$                     |
| <b>T<sub>M</sub> (mission time)</b>                                       | 20 years (ISO 13849-1)                 |

|                                           |                                        |
|-------------------------------------------|----------------------------------------|
| <b>Safe state in the event of a fault</b> | At least one OSSD is in the OFF state. |
|-------------------------------------------|----------------------------------------|

## Interfaces

|                                              |                                                                                                           |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>System connection</b>                     | Connecting cable, 15 m, flying lead, 5-wire                                                               |
| Flexi Loop compatible M12 male connector     | ✓                                                                                                         |
| Length of cable                              | 15 m                                                                                                      |
| <b>Display elements</b>                      | LEDs                                                                                                      |
| <b>Fieldbus, industrial network</b>          |                                                                                                           |
| Integration via Flexi Soft safety controller | CANopen <sup>1)</sup><br>DeviceNet™<br>EtherCAT®<br>EtherNet/IP™<br>Modbus TCP<br>PROFIBUS DP<br>PROFINET |

<sup>1)</sup> For additional information on Flexi Soft -> [www.sick.com/Flexi\\_Soft](http://www.sick.com/Flexi_Soft).

## Electrical data

|                                                |                                                                                      |
|------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>Protection class</b>                        | III (IEC 61140) <sup>1)</sup>                                                        |
| <b>Supply voltage V<sub>S</sub></b>            | 24 V DC (19.2 V DC ... 28.8 V DC) <sup>2)</sup>                                      |
| <b>Residual ripple</b>                         | ≤ 10 % <sup>3)</sup>                                                                 |
| <b>Power consumption</b>                       | ≤ 150 mA                                                                             |
| <b>Power consumption</b>                       | ≤ 4.32 W (DC)                                                                        |
| <b>Output signal switching devices (OSSDs)</b> | 2 PNP semiconductors, short-circuit protected, cross-circuit monitored <sup>4)</sup> |
| ON state, switching voltage HIGH               | 24 V DC (V <sub>S</sub> - 2.25 V DC ... V <sub>S</sub> )                             |
| OFF state, switching voltage LOW               | ≤ 2 V DC                                                                             |
| Current-carrying capacity per OSSD             | ≤ 300 mA                                                                             |

<sup>1)</sup> SELV/PELV safety/protective extra-low voltage.

<sup>2)</sup> The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

<sup>3)</sup> Within the limits of V<sub>S</sub>.

<sup>4)</sup> Applies to the voltage range between -30 V and +30 V.

## Mechanical data

|                                 |                                                |
|---------------------------------|------------------------------------------------|
| <b>Dimensions</b>               | See dimensional drawing                        |
| <b>Housing diameter</b>         | 50 mm                                          |
| <b>Material</b>                 |                                                |
| Housing                         | Acrylic glass (PMMA)                           |
| End caps                        | Stainless steel 1.4404                         |
| Compensating element (membrane) | PA 6                                           |
| Cable glands                    | Stainless steel 1.4404 including silicone seal |
| <b>Weight</b>                   | 2,200 g (± 50 g)                               |

## Ambient data

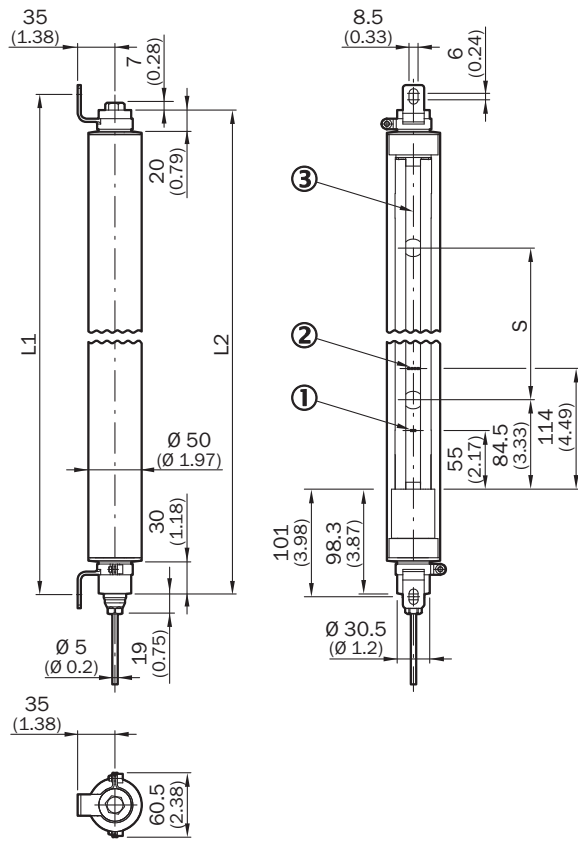
|                                      |                                                                               |
|--------------------------------------|-------------------------------------------------------------------------------|
| <b>Enclosure rating</b>              | IP65 (IEC 60529)<br>IP66 (IEC 60529)<br>IP67 (IEC 60529)<br>IP69K (ISO 20653) |
| <b>Ambient operating temperature</b> | -30 °C ... +55 °C                                                             |

|                             |                                      |
|-----------------------------|--------------------------------------|
| <b>Storage temperature</b>  | -30 °C ... +70 °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 60068-2-27)         |

## Classifications

|                       |          |
|-----------------------|----------|
| <b>ECI@ss 5.0</b>     | 27272703 |
| <b>ECI@ss 5.1.4</b>   | 27272703 |
| <b>ECI@ss 6.0</b>     | 27272703 |
| <b>ECI@ss 6.2</b>     | 27272703 |
| <b>ECI@ss 7.0</b>     | 27272703 |
| <b>ECI@ss 8.0</b>     | 27272703 |
| <b>ECI@ss 8.1</b>     | 27272703 |
| <b>ECI@ss 9.0</b>     | 27272703 |
| <b>ECI@ss 10.0</b>    | 27272703 |
| <b>ECI@ss 11.0</b>    | 27272703 |
| <b>ETIM 5.0</b>       | EC001832 |
| <b>ETIM 6.0</b>       | EC001832 |
| <b>ETIM 7.0</b>       | EC001832 |
| <b>UNSPSC 16.0901</b> | 46171620 |

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

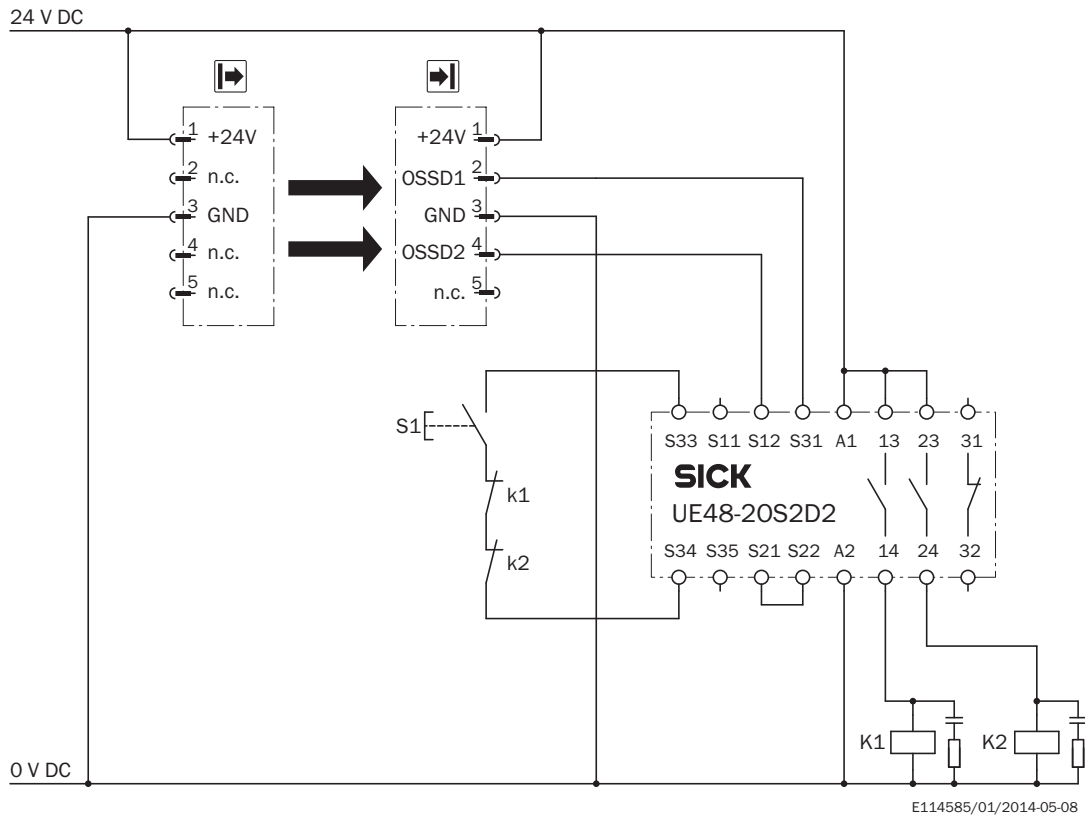


- ① Operating indicator
- ② Alignment indicator
- ③ Optical axis

| Number of beams | Beam separation S | L1            | L2            |
|-----------------|-------------------|---------------|---------------|
| 2               | 500               | 828 (32.60)   | 813 (32.01)   |
| 3               | 400               | 1,128 (44.10) | 1,113 (43.82) |
| 4               | 300               | 1,228 (48.35) | 1,213 (47.76) |

## Connection diagram

deTem4 Core IP69K multiple light beam safety device to UE48-20S safety relay



### Task

Connection of a deTem4 Core IP69K or deTem2 Core IP69K multiple light beam safety device to UE48-20S.  
Operating mode: with restart interlock and external device monitoring.

### Function

When the light path is clear, the OSSD1 and OSSD2 outputs are live. The system is ready to switch on if K1 and K2 are de-energized. By pressing S1 (button is pressed and released), the UE48-20S is energized and its 13 - 14 and 23 - 24 contacts activate K1 and K2. On interruption of one of the light beams, the UE48-20S is de-energized by the OSSD1 and OSSD2 outputs and K1 and K2 are deactivated.

### Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The incorrect functioning of one of the K1 or K2 contactors will be detected and does not result in the loss of the shutdown function. Jamming of the S1 button will prevent the UE48-20S from enabling.

### 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.

| Connection | Color-coded connecting cable | Sender   | Receiver |
|------------|------------------------------|----------|----------|
| 1          | Brown                        | +24 V DC | +24 V DC |
| 2          | White                        | Reserved | OSSD 1   |
| 3          | Blue                         | 0 V DC   | 0 V DC   |
| 4          | Black                        | Reserved | OSSD 2   |
| 5          | Gray                         | -        | -        |

## Recommended accessories

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

|                                                                                   | Brief description                                                                                       | Type          | Part no. |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------|----------|
| Terminal and alignment brackets                                                   |                                                                                                         |               |          |
|  | 2 pieces, Stainless steel support bracket, stainless steel 1.4350                                       | BEF-2AAAADES2 | 2026849  |
|  | 4 pieces, Stainless steel bracket, rotatable, stainless steel 1.4350, stainless steel 1.4301            | BEF-2SMMEAES4 | 2023708  |
|  | 4 pieces, Reinforced stainless steel bracket, rotatable, stainless steel 1.4350, stainless steel 1.4301 | BEF-2SMMVAES4 | 2026850  |

## 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)