sens:Control – SAFE CONTROL SOLUTIONS
PRODUCTS AT A GLANCE

Safe series connection, safety controllers, safety relays

SICK
Sensor Intelligence.
sens:Control – SAFE CONTROL SOLUTIONS

As well as focusing on increasing productivity, intelligent machine design also delivers optimum quality and safety. sens:Control – safe control solutions from SICK meet these requirements.

The product portfolio includes safe series connection, safety controllers and safety relays. The products feature easy commissioning, modularity and optimum integration into automation processes — for optimum interaction between human and machine.

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<td></td>
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</table>
Intelligent product combinations for more intelligence

sens:Control – safe control solutions from SICK are the bridge between safety sensors and complete system solutions. Intelligent product combinations increase the range of functions of the sensor systems. As a result, they optimize processes in many applications in a way that would not be possible with individual components.

System solutions from SICK feature easy commissioning and modularity as well as perfectly harmonized interaction between sensor systems and logic.

Enabling Industry 4.0 with sens:Control

Provide, visualize, evaluate and use reliable data in real time:
Safety controllers from SICK let you connect to all standard automation systems, no matter if you need simple access to error and status information for quick troubleshooting or targeted and remote diagnosis for reducing service work and supporting predictive maintenance. sens:Control from SICK makes you ready for your Industry 4.0 application.

Flexible safety concepts for the future

With Flexi Line and Flexi Loop, sens:Control offers forward-thinking safety solutions when it comes to both technology and economics.

With the Flexi Line safe communication concept, modular machines can be easily networked using safety technology. The focus is on flexible and easily adaptable configuration.

The Flexi Loop safe series connection enables series connection of safety switches and other safety sensors within a machine while maintaining the highest performance levels. Cuts costs, supports diagnostics and is flexible.

Safe Motion Control – safe movement monitoring

Safe Motion Control enables innovative concepts in safety technology. All movements are safely monitored at all times. The interaction of safety controllers and encoders with motor feedback systems makes it possible to draw an exact distinction between the machine movements that are dangerous and those that are safe.

If there is no risk, it is possible to access the machine even during ongoing processes. Unintended shutdowns are prevented, which shortens cycle times, increases availability and raises productivity.
Benefits sens:Control – SAFE CONTROL SOLUTIONS

ON THE SAFE SIDE IN EVERY SITUATION WITH SICK

For more than 65 years, safety solutions from SICK have offered people valuable protection. As one of the world’s technology and market leaders for intelligent sensors in industrial automation, we possess extensive knowledge for equipping machines and plants in a wide range of different industries. This expertise serves as our basis for creating innovative custom safety systems and concepts that meet tomorrow’s requirements today while providing our customers with sustainable competitive advantages.

The benefits of sens:Control – safe control solutions from SICK at a glance

- **Complete solutions from a single source**
  Products, services and expertise in the field of safety guarantee future-proof success.

- **Increased productivity**
  Prevention of unintended shutdowns, shorter cycle times and shorter periods of downtime due to intelligent safety concepts.

- **Cost benefit**
  Reduced implementation and installation work as a result of coordinated safety components from SICK.

- **Simplified certification process for plants**
  Safety components or complete safety solutions from SICK have already been certified by external bodies.
Application examples

**Flexi Soft: Protection of automated guided vehicles**
- Increased productivity through efficient protective field switching depending on the steering angle and the speed
- Increased safety through adjusting the speed depending on the load weight

[www.sick.com/Flexi_Soft](http://www.sick.com/Flexi_Soft)

**Flexi Classic: Protection of safety doors**
- Compact solution with optimal integration of various safety sensors
- Easily configurable access protection with rotary switch

[www.sick.com/Flexi_Classic](http://www.sick.com/Flexi_Classic)

**Flexi Loop: Safe series connection of sensors**
- Minimized downtime, thanks to detailed diagnostics of the connected sensors
- Quick and easy integration of safety sensors

[www.sick.com/Flexi_Loop](http://www.sick.com/Flexi_Loop)

**ReLy: Hazardous point protection on a press**
- Short response times and therefore increased productivity through short cycle times
- Low space requirements, thanks to narrow housing

[www.sick.com/ReLy](http://www.sick.com/ReLy)
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<td>Safe series connection</td>
<td>Flexi Loop</td>
<td>□</td>
</tr>
<tr>
<td>Safety controllers</td>
<td>Flexi Classic</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Flexi Soft</td>
<td>□</td>
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<tr>
<td>Safety relays</td>
<td>Speed Monitor</td>
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<td></td>
<td>Standstill Monitor</td>
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<tr>
<td></td>
<td>ReLy</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>UE23-3MF</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>UE43-3MF</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>UE43-3AR</td>
<td>□</td>
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<tr>
<td></td>
<td>UE43-4AR</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>UE44-3SL</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>UE45-3SL1</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>UE48-3OS</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>UE10-4XT</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>UE11-4DX</td>
<td>□</td>
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</tbody>
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## Selection Guide

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<th>Function</th>
<th>Drive safety functions</th>
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<tr>
<td>- Manual reset</td>
<td>-</td>
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<tr>
<td>- Automated reset</td>
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</tr>
<tr>
<td>- PSD mode</td>
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<tr>
<td>- Muting</td>
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</tr>
<tr>
<td>- Safe SICK device communication via EFI</td>
<td>-</td>
</tr>
<tr>
<td>- Safe networking of stations</td>
<td>-</td>
</tr>
<tr>
<td>- Flexi Loop-compatible</td>
<td>-</td>
</tr>
<tr>
<td>- Contact expansion</td>
<td>-</td>
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<tr>
<td>- Standstill monitoring</td>
<td>-</td>
</tr>
<tr>
<td>- Safe stop 1 (SS1)</td>
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</tr>
<tr>
<td>- Safe stop 2 (SS2)</td>
<td>-</td>
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<tr>
<td>- Safe operating stop (SOS)</td>
<td>-</td>
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<tr>
<td>- Safe speed monitor (SSM)</td>
<td>-</td>
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<tr>
<td>- Safety-limited speed (SLS)</td>
<td>-</td>
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<tr>
<td>- Safe direction (SD)</td>
<td>-</td>
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<tr>
<td>- Safe brake control (SC)</td>
<td>-</td>
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<tr>
<td>- Safely-limited position (SLP)</td>
<td>-</td>
</tr>
<tr>
<td>- Safe series connection</td>
<td>-</td>
</tr>
<tr>
<td>- Safe cam (SCA)</td>
<td>-</td>
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<tr>
<td>- Enabling current paths (with contact)</td>
<td>-</td>
</tr>
<tr>
<td>- Signaling current paths (with contact)</td>
<td>-</td>
</tr>
</tbody>
</table>

### Product Sensor Types

- **Opto-electronic protective devices**
- **Safety switches**
- **Safety command devices**
- **Encoders**
- **Pressure sensitive mats**
- **Two-hand control units**

### Features

- **Configuration via rotary switch**
- **Configuration via software**
- **Modular system**
- **Fieldbus integration**
- **External device monitoring (EDM)**
- **Path for external device monitoring (EDM)**
- **Muting**
- **Safe SICK device communication via EFI**
- **Safe networking of stations**
- **Flexi Loop-compatible**
- **Contact expansion**
- **Standstill monitoring**
- **Safe stop 1 (SS1)**
- **Safe stop 2 (SS2)**
- **Safe operating stop (SOS)**
- **Safe speed monitor (SSM)**
- **Safe direction (SD)**
- **Safe brake control (SC)**
- **Safely-limited speed (SLS)**
- **Safe speed monitor (SSM)**
- **Safe direction (SD)**
- **Safe brake control (SC)**
- **Safely-limited position (SLP)**
- **Safe cam (SCA)**
- **Safe series connection**
- **Safe cam (SCA)**
- **Flexi Loop**

### Safety Controllers

- **Flexi Classic**
- **Flexi Soft**

### Safety Relays

- **Speed Monitor**
- **Standstill Monitor**
- **ReLy**
- **UE23-3MF**
- **UE43-3MF**
- **UE43-3AR**
- **UE43-4AR**
- **UE44-3SL**
- **UE45-3S1**
- **UE48-3OS**
- **UE10-4XT**
- **UE11-4DX**

### Notes

- Subject to change without notice
## Safe series connection

**PRODUCT FAMILY OVERVIEW**

**Flexi Loop**

Cost-saving and safe series connection with diagnostic function

### Technical data overview

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| **Safety integrity level** | SIL3 (IEC 61508)  
SILCL3 (EN 62061) |
| **Category**           | Category 4 (EN ISO 13849)                                                        |
| **Performance level**  | PL e (EN ISO 13849)                                                              |
| **Suitable for**       | Flexi Classic  
Flexi Soft |
| **Safety device connection** | For safety sensor with dual-channel OSSD outputs  
For dual-channel equivalent electro-mechanical safety switch (EMSS) |
| **Structure of a Flexi Loop cascade** | Modular  
1 ... 32 Flexi Loop nodes  
0 ... = Flexi Loop accessory nodes  
1 Flexi Loop terminator |
| **Enclosure rating**   | IP65 (EN 60529)  
IP67 (EN 60529) |
| **Ambient operating temperature** | -25 °C ... +55 °C |

### At a glance

- Series connection of 32 sensors with up to 100 m per segment in compliance with performance level PL e
- Compatible with sensors from all manufacturers
- Detailed diagnostic information
- Integrated standard inputs and outputs
- Voltage supply for sensors is included
- Unshielded standard cable featuring M12 connectivity
- IP65 and IP67 enclosure rating
- Intelligent accessories for field diagnostics and commissioning

**Detailed information**

[www.sick.com/Flexi_Loop](http://www.sick.com/Flexi_Loop)
### PRODUCT FAMILY OVERVIEW

#### Safety controllers

<table>
<thead>
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<th>Flexi Soft</th>
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<tr>
<td>Efficient and easy-to-use safety controller</td>
<td>The software-programmable safety controller</td>
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### Technical data overview

<table>
<thead>
<tr>
<th></th>
<th>Flexi Classic</th>
<th>Flexi Soft</th>
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<tbody>
<tr>
<td><strong>Safety integrity level</strong></td>
<td>SIL3 (IEC 61508) SILCL3 (EN 62061)</td>
<td>SIL3 (IEC 61508) SILCL3 (EN 62061)</td>
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<tr>
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<td>Category 4 (EN ISO 13849)</td>
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<tr>
<td><strong>Performance level</strong></td>
<td>PL e (EN ISO 13849)</td>
<td>PL e (EN ISO 13849)</td>
</tr>
<tr>
<td><strong>Configuration method</strong></td>
<td>Via rotary switch / hard wired</td>
<td>Via software</td>
</tr>
<tr>
<td><strong>System construction</strong></td>
<td>Modular 1 main module 0 ... 11 expansion modules 0 ... 8 relay modules 0 ... 1 gateways</td>
<td>Modular 1 system plug 1 main module 0 ... 2 gateways 0 ... 12 expansion modules 0 ... 8 relay modules</td>
</tr>
<tr>
<td><strong>Fieldbus, industrial network</strong></td>
<td>EtherNet/IP™, Modbus, PROFINET, PROFIBUS DP, CANopen, DeviceNet™</td>
<td>EtherNet/IP™, Modbus, PROFINET, EtherCAT®, PROFIBUS DP, CANopen, DeviceNet™, CC-Link</td>
</tr>
<tr>
<td><strong>Safe SICK device communication</strong></td>
<td>–</td>
<td>EFI</td>
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<td><strong>Safe networking</strong></td>
<td>Global emergency stop</td>
<td>Flexi Link</td>
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<td><strong>Safe drive monitoring</strong></td>
<td>–</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Flexi Loop-compatible</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### At a glance

- Rotary switch for easy function adjustment
- Modular extension possible
- Direct wiring for all types of sensors
- Logic functions: AND, OR, muting, bypass, reset, EDM
- Integration into all common fieldbuses
- Integration of the Flexi Loop safe sensor cascade
- Special muting modules are able to meet all the requirements of a demanding muting application

- Safety controller with modular hardware platform
- Configuration saved in the system plug
- Safe controller networking with Flexi Line
- Safe series connection with Flexi Loop
- Safe drive monitoring
- Safe analog value monitoring
- Flexi Soft Designer license-free configuration software

### Detailed information

- [www.sick.com/Flexi_Classic](http://www.sick.com/Flexi_Classic)
- [www.sick.com/Flexi_Soft](http://www.sick.com/Flexi_Soft)
## Safety relays
### PRODUCT FAMILY OVERVIEW

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<th>ReLy</th>
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<td>Standstill monitoring without additional sensors</td>
<td>Rely on safety relays from SICK</td>
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### Technical data overview

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<th>Motion Control</th>
<th>Output expansion module for OSSDs / evaluation unit</th>
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<td>Safety integrity level</td>
<td>SIL3 (IEC 61508) SILCL3 (EN 62061)</td>
<td>SIL3 (IEC 61508) SILCL3 (EN 62061)</td>
<td>SIL3 (IEC 61508) SILCL3 (IEC 62061)</td>
</tr>
<tr>
<td>Category</td>
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<td>Performance level</td>
<td>PL e (EN ISO 13849)</td>
<td>PL e (EN ISO 13849)</td>
<td>PL e (EN ISO 13849)</td>
</tr>
<tr>
<td>Sensor monitoring</td>
<td>–</td>
<td>–</td>
<td>Sequence monitoring Discrepancy monitoring Cross-circuit detection</td>
</tr>
<tr>
<td>Configuration method</td>
<td>Via rotary switch</td>
<td>Via rotary switch</td>
<td>–</td>
</tr>
<tr>
<td>Typical response time</td>
<td>–</td>
<td>–</td>
<td>10 ms</td>
</tr>
<tr>
<td>Drive safety functions</td>
<td>Standstill SLS, SSM</td>
<td>Standstill</td>
<td>–</td>
</tr>
<tr>
<td>Number of enable current contacts</td>
<td>–</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td>Encoder interface</td>
<td>Proxy A/B incremental encoder, HTL 12 V or 24 V</td>
<td>Motor voltage measuring</td>
<td>–</td>
</tr>
<tr>
<td>Housing width</td>
<td>22.5 mm</td>
<td>45 mm</td>
<td>18 mm</td>
</tr>
</tbody>
</table>

### At a glance

- Zero-speed and drive monitoring
- 4 safe semiconductor outputs
- Maximum input frequency of 2 kHz
- Adjustable monitoring limit/monitoring frequency from 0.1 to 9.9 Hz or 0.5 to 99 Hz
- 2 application diagnostic outputs for failure and status display
- Diagnostic LEDs

- Standstill monitoring by means of residual voltage measurement
- 3 normally open and 1 normally closed positively guided safety contacts
- 2 application diagnostic outputs for semiconductors
- 1 application diagnostic output normally open
- Maximum motor supply voltage 690 V
- Adjustable voltage threshold and standstill period

- Safety relays for monitoring ESPE and safety switches
- 2 safety outputs, fast response time of 10 ms
- Slim housing
- Plug-in terminals
- Diagnostics via status LEDs and application diagnostic outputs

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**Detailed information**

- [www.sick.com/Speed_Monitor](http://www.sick.com/Speed_Monitor)
- [www.sick.com/Standstill_Monitor](http://www.sick.com/Standstill_Monitor)
- [www.sick.com/ReLy](http://www.sick.com/ReLy)
### PRODUCT FAMILY OVERVIEW

**Safety relays**

- **UE23-3MF**
  - Connection solution for safety switches and emergency stop pushbuttons
- **UE43-3MF**
  - Complete monitoring of safety switches and emergency stop pushbuttons
- **UE43-3AR**
  - Fast monitoring of safety switches

<table>
<thead>
<tr>
<th>Evaluation unit</th>
<th>Evaluation unit</th>
<th>Evaluation unit</th>
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</thead>
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<tr>
<td>SILCL2 (EN 62061)</td>
<td>SIL3 (IEC 61508)</td>
<td>SIL3 (IEC 61508)</td>
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<td>Category 3 (EN ISO 13849)</td>
<td>Category 4 (EN ISO 13849)</td>
<td>Category 4 (EN ISO 13849)</td>
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<td>PL e (EN ISO 13849)</td>
<td>PL e (EN ISO 13849)</td>
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<td>Sequence monitoring</td>
<td>Discrepancy monitoring</td>
<td>Sequence monitoring</td>
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<tr>
<td>Cross-circuit detection</td>
<td></td>
<td>Cross-circuit detection</td>
</tr>
<tr>
<td>50 ms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>22.5 mm</td>
<td>45 mm</td>
<td>22.5 mm</td>
</tr>
</tbody>
</table>

- **Connection solution for safety switches and emergency stop pushbuttons**
  - Ideal for the connection of emergency stop pushbuttons and safety switches
  - 3 safety outputs, 1 application diagnostic output
  - Manual or automated reset
  - External device monitoring (EDM)
  - Coded version for all slots

- **Complete monitoring of safety switches and emergency stop pushbuttons**
  - Evaluation unit for safety switches
  - Cross-circuit detection and sequence monitoring at the dual-channel input signal
  - Discrepancy time monitoring is possible
  - 3 safety outputs, 1 application diagnostic output
  - Manual or automated reset
  - External device monitoring (EDM)

- **Fast monitoring of safety switches**
  - Evaluation unit for emergency stop pushbuttons and safety switches
  - Cross-circuit detection and sequence monitoring at the dual-channel input signal
  - 3 safety outputs, 1 application diagnostic output
  - Automated reset
  - External device monitoring (EDM)
  - Coded version for all slots

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**At a glance**

- Zero-speed and drive monitoring
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- Diagnostic LEDs
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- 3 normally open and 1 normally closed positively guided safety contacts
- 2 application diagnostic outputs for semiconductors
- 1 application diagnostic output normally open
- Maximum motor supply voltage 690 V
- Adjustable voltage threshold and standstill period
- Safety relays for monitoring ESPE and safety switches
- 2 safety outputs, fast response time of 10 ms
- Slim housing
- Plug-in terminals
- Diagnostics via status LEDs and application diagnostic outputs

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**www.sick.com/UE23-3MF**

**www.sick.com/UE43-3MF**

**www.sick.com/UE43-3AR**
**Safety relays**  
**PRODUCT FAMILY OVERVIEW**

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UE43-4AR</td>
<td>Safety relay with four safety outputs for monitoring safety switches</td>
</tr>
<tr>
<td>UE44-3SL</td>
<td>Compact safety relays for applications with mechanical locking switches</td>
</tr>
<tr>
<td>UE45-3S1</td>
<td>Safety stop via time delay</td>
</tr>
</tbody>
</table>

**Technical data overview**

<table>
<thead>
<tr>
<th>Applications</th>
<th>Evaluation unit</th>
<th>Evaluation unit</th>
<th>Evaluation unit</th>
</tr>
</thead>
</table>
| Safety integrity level | SIL3 (IEC 61508)  
SILCL3 (EN 62061) | SIL3 (IEC 61508)  
SILCL3 (EN 62061) | SIL3 (IEC 61508)  
SILCL3 (EN 62061) |
| Category | Category 4 (EN ISO 13849) | Category 4 (EN ISO 13849)  
Category 3 (EN ISO 13849) | Category 4 (EN ISO 13849)  
Category 3 (EN ISO 13849) |
| Performance level | PL e (EN ISO 13849) | PL e (EN ISO 13849)  
PL d (EN ISO 13849) | PL e (EN ISO 13849)  
PL d (EN ISO 13849) |
| Sensor monitoring | Sequence monitoring  
Cross-circuit detection | Sequence monitoring  
Cross-circuit detection | Sequence monitoring  
Cross-circuit detection |
| Delay time | – | ✓ | ✓ |
| Typical response time | – | – | 25 ms |
| Number of enable current contacts | 4 | 3 | 3 |
| Housing width | 22.5 mm | 22.5 mm | 22.5 mm |

**At a glance**

- Evaluation unit for safety switches
- Cross-circuit detection and sequence monitoring at the dual-channel input signal
- 4 safety outputs
- Automated reset
- External device monitoring (EDM)
- Coded version for all slots

- Ideal for the evaluation of safety switches with mechanical interlocking
- Cross-circuit detection and sequence monitoring at the dual-channel input signal
- 2 N/O contacts for a direct integration into a machine environment
- 1 N/O contact for magnetic release, time delayed up to 30 s
- Manual or automated reset
- External device monitoring (EDM)
- Coded version for all slots

- Ideal for evaluating emergency stop pushbuttons and safety switches
- Cross-circuit detection and sequence monitoring at the dual-channel input signal
- 2 N/O contacts for direct integration into a machine environment
- 1 N/O time for stop category 1 applications, time delayed up 30 s
- Manual or automated reset
- External device monitoring (EDM)
- Coded version for all slots

**Detailed information**

- [www.sick.com/UE43-4AR](http://www.sick.com/UE43-4AR)
- [www.sick.com/UE44-3SL](http://www.sick.com/UE44-3SL)
- [www.sick.com/UE45-3S1](http://www.sick.com/UE45-3S1)
## Safety relays

<table>
<thead>
<tr>
<th>UE48-3OS</th>
<th>UE10-4XT</th>
<th>UE11-4DX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety relay with 3 safety outputs for all common safety applications</td>
<td>Contact expansion for all safety relays</td>
<td>Time-delayed contact expansion for all safety relays</td>
</tr>
</tbody>
</table>

### Technical data overview

<table>
<thead>
<tr>
<th>Evaluation unit</th>
<th>Contact expansion</th>
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</tr>
</thead>
<tbody>
<tr>
<td>SIL3 (IEC 61508) SILCL3 (EN 62061)</td>
<td>SIL3 (IEC 61508) SILCL3 (EN 62061)</td>
<td>SIL2 (IEC 61508) SILCL2 (EN 62061)</td>
</tr>
<tr>
<td>Category 4 (EN ISO 13849)</td>
<td>Category 4 (EN ISO 13849)</td>
<td>Category 3 (EN ISO 13849)</td>
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<td>PL e (EN ISO 13849)</td>
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<td>PL d (EN ISO 13849)</td>
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<tr>
<td>Sequence monitoring</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Cross-circuit detection</td>
<td>–</td>
<td>✓</td>
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<td>22.5 mm</td>
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### At a glance

- Ideal for the evaluation of emergency stop pushbuttons, safety switches, safety light curtains, safety laser scanners, and safety pressure sensitive mats
- Cross-circuit detection and sequence monitoring at the dual-channel input signal
- 3 safety outputs
- Manual or automated reset
- External device monitoring (EDM)
- Coded version for all slots

- Contact expansions enable four additional safety outputs for evaluation units in the safety relays product family group
- 4 safety outputs, 2 application diagnostic outputs
- Feedback path for external device monitoring (EDM)
- Coded plugs for all slots

- Contact expansions enable four additional safety outputs for evaluation units in the safety relay product family group
- 4 safety outputs, 2 application diagnostic outputs
- Predefined time delays
- Feedback signal for external device monitoring (EDM)
- Coded type for all plug-in positions

### Detailed information

- [www.sick.com/UE48-3OS](http://www.sick.com/UE48-3OS)
- [www.sick.com/UE10-4XT](http://www.sick.com/UE10-4XT)
- [www.sick.com/UE11-4DX](http://www.sick.com/UE11-4DX)
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Detailed addresses and further locations → www.sick.com