



Safety relays

The adequate solution for every application

The adequate solution for every application



Safety relays

SICK's wide range of safety solutions – from single-channel emergency stop pushbuttons to safety laser scanners

with PNP outputs – can be connected using SICK safety relays. Safety relays are ideal for flexible, cost-effective machine

integration. With SICK's broad safety portfolio, you'll find a solution for nearly any application.



Safety relays

Selection guide safety relays 4



Output expansion modules for OSSDs 6

UE10-2FG 6

UE12-2FG 12

UE10-30S 16



Evaluation units for switching contacts 24

UE23-2MF 24

UE23-3MF 28

UE42-2HD 32

UE43-2MF 38

UE43-3MF 44

UE43-3AR 50

UE43-4AR 54

UE44-3SL 58

UE45-3S1 64



Evaluation units for safety sensors . . .70

UE48-20S 70

UE48-30S 76



Contact expansions.82

UE10-4XT 82

UE11-4DX 86

Selection guide safety relays

	UE10-2FG	UE12-2FG	UE10-3OS	UE23-2MF	UE23-3MF	UE42-2HD	UE43-2MF	
Application								
Safety command devices				■	■		■	
Safety switches				■	■		■	
Two-hand controls Type III C, in accordance with EN 574						■		
Pressure sensitive mats in 4 wire technology								
Opto-electronic protective devices	■	■	■					
Contact expansion								
Functions								
Manual reset (monitored)				■	■		■	
Automatic reset	■	■	■	■	■	■	■	
External device monitoring (EDM)				■	■	■	■	
Path for external device monitoring (EDM)	■	■	■					
Cross circuit detection and sequence monitoring for dual-channel actuation						■	■	
Supports discrepancy monitoring						■	■	
Time delay								
Number of enable current paths								
2	■	■		■		■	■	
3			■		■			
4								
Number of signalling current paths								
0	■	■						
1			■	■	■	■	■	
2								
Page	6	12	16	24	28	32	38	

	UE43-3MF	UE43-3AR	UE43-4AR	UE44-3SL	UE45-3S1	UE48-2OS	UE48-3OS	UE10-4XT	UE11-4DX
	■	■	■	■	■	■	■		
	■	■	■	■	■	■	■		
						■	■		
						■	■		
								■	■
	■			■	■	■	■		
	■	■	■	■	■	■	■		
	■	■	■	■	■	■	■		
								■	■
	■	■	■	■	■	■	■		
	■								
				■	■				■
						■			
	■	■		■ ¹⁾	■ ²⁾		■		
			■					■	■
			■	■	■		■		
	■	■				■			
								■	■
	44	50	54	58	64	70	76	82	86

¹⁾ 2 N/O contacts for a direct integration into a machine environment
 1 N/O contact for a magnetic release, time delayed up to 30 s

²⁾ 2 N/O contacts for a direct integration into a machine environment
 1 N/O contact for stop category 1 applications, time delayed up to 30 s

The ideal solution to integrate relay outputs



Product description

The UE10-2FG safety relay is an optimal output module for opto-electronic protective devices or safety controllers. By protecting machines and systems, the

safety relay takes over the electrical signals and reliably switches the connected actuators.

At a glance

- Ideal for applications with opto-electronic protective devices and safety controllers with OSSD outputs
- Fast response time of 10 ms
- Compact design
- 2 contact outputs
- Feedback path for external device monitoring (EDM)
- Screw-type terminals or plug-in screw-type terminals
- Coded plugs for all slots

Your benefits

- Faster response times provide short safety distances
- Saves space in the control cabinet thanks to its compact design
- Reduced wiring effort for fast and easy system commissioning



Additional information

Detailed technical data 7

Ordering information 8

Dimensional drawings 9

Internal circuitry 9

Connection diagrams 10

→ www.mysick.com/en/UE10-2FG

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508) ¹⁾ SILCL3 (EN 62061) ¹⁾
Category	Category 4 (EN ISO 13849) ¹⁾
Performance level	PL e (EN ISO 13849) ¹⁾
B _{10d} parameter	1 x 10 ⁵ switching cycles (AC-15, 230 V, I = 2 A) 2.5 x 10 ⁵ switching cycles (AC-15, 230 V, I = 1 A) 5.4 x 10 ⁵ switching cycles (DC-13, 24 V, I = 0.5 A) 1 x 10 ⁷ switching cycles (DC-13, 24 V, I ≤ 2 A)
PFHd (mean probability of a dangerous failure per hour)	7.0 x 10 ⁻¹⁰ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)

¹⁾ If the feedback current path Y1 - Y2 (external device monitoring) is monitored using an appropriate main unit.

Electrical data

General electrical data

Voltage supply	B1/A2, B2/A2
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Power consumption	≤ 2 W (DC)
Residual ripple	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_s.

Input circuits: B1, B2

Input voltage	24 V DC (16.8 V DC ... 27.6 V DC)
Input current	≤ 50 mA
Reset time	≤ 30 ms
Test pulse width	≤ 1 ms

Electrical output circuits: 13/14, 23/24, Y1/Y2

Response time	≤ 10 ms
Number of enable current (N/O) contacts	2, relevant for safety
Number of contactor monitoring (N/C) contacts	1, external device monitoring
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	10 V AC/DC ... 250 V AC/DC
Contactor monitoring contact	0.1 V AC/DC ... 60 V AC/DC
Switching current	
Enable current contact	10 mA ... 6 A
Contactor monitoring contact	1 mA ... 300 mA
Switching power	≤ 1,500 VA (AC) ≤ 200 W (DC)
Usage category	AC-15/DC-13
Rated operating current (voltage)	3 A (230 V AC) 4 A (24 V DC)
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	1 x 10 ⁵ switching cycles

Operating data

	UE10-2FG2D0	UE10-2FG3D0
Rated impulse withstand voltage U_{imp}	4 kV	
Overvoltage category	II	
Rated insulation voltage U_i	300 V AC	
Test voltage	1.2 kV (50 Hz) (EN 60439-1)	
Enclosure rating		
Clamps	IP 20 (EN 60529)	
Housing	IP 40 (EN 60529)	
Ambient operating temperature	0 °C ... +55 °C	
Storage temperature	-25 °C ... +75 °C	
Connection type	Screw-type terminals	Plug-in screw-type terminals
Conductor cross-section		
Single wire (2x, same cross-section)	0.2 mm ² ... 1 mm ²	
Single wire (1x)	0.2 mm ² ... 4 mm ²	0.2 mm ² ... 2.5 mm ²
Fine wire with ferrules (2x, same cross-section)	0.2 mm ² ... 0.5 mm ²	0.2 mm ² ... 1.5 mm ²
Fine wire with ferrules (1x)	0.2 mm ² ... 2.5 mm ²	
Dimensions (W x H x D)	17.8 mm x 89.8 mm x 70.8 mm	17.8 mm x 105.5 mm x 70.8 mm
Weight	91 g	

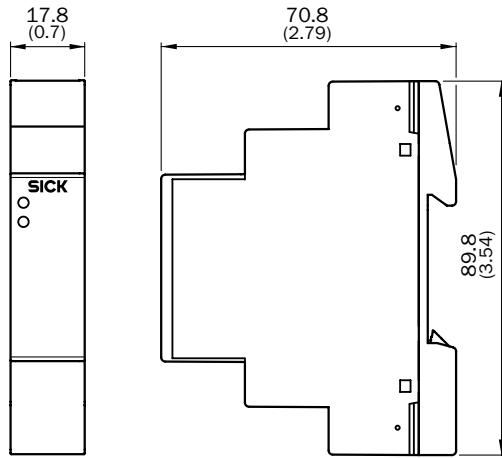
Ordering information

Connection type	Type	Part no.
Screw-type terminals	UE10-2FG2D0	1043915
Plug-in screw-type terminals	UE10-2FG3D0	1043916

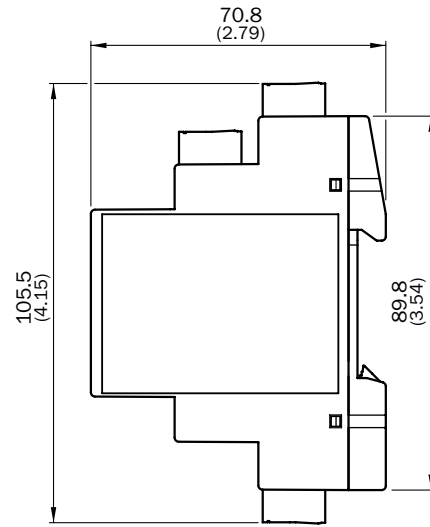
Dimensional drawings

dimensions in mm (inch)

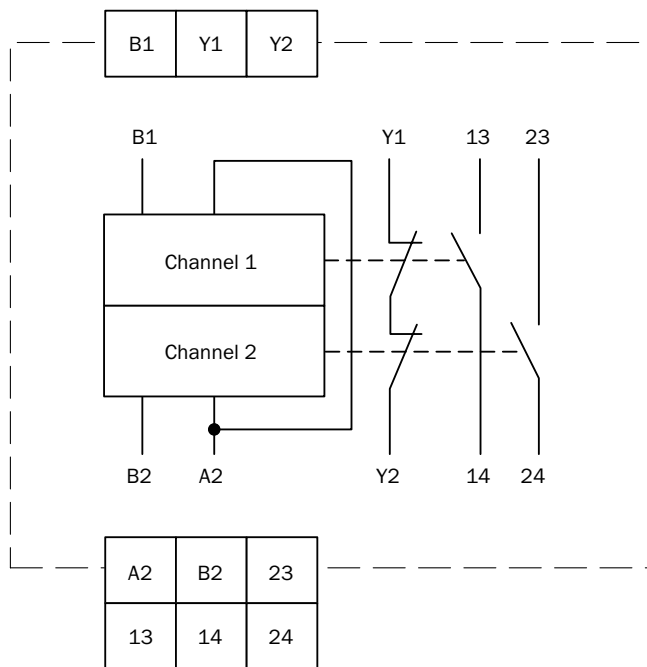
Screw-type terminals



Plug-in screw-type terminals

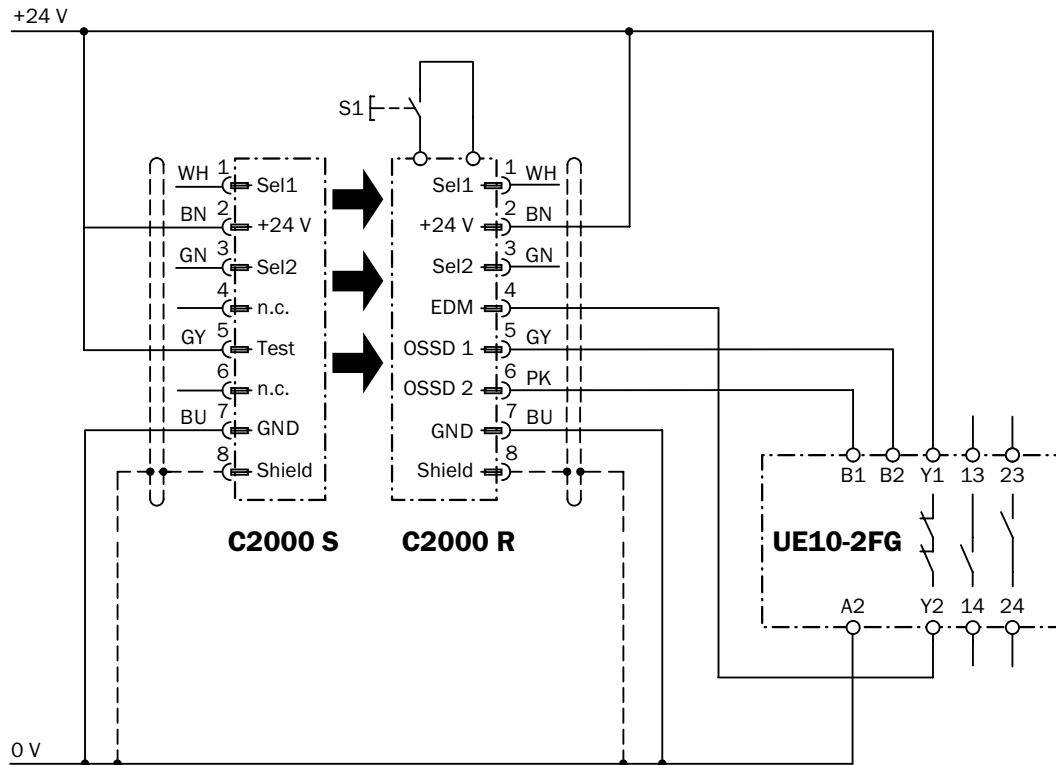


Internal circuitry



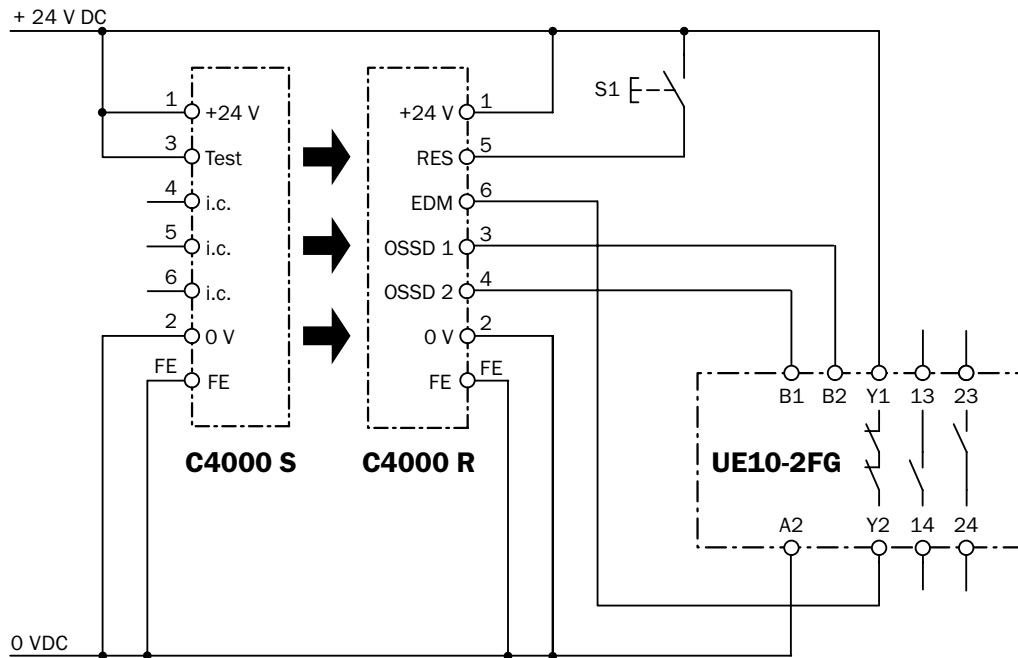
Connection diagrams

C2000 RES/EDM safety light curtain connected to UE10-2FG safety relay



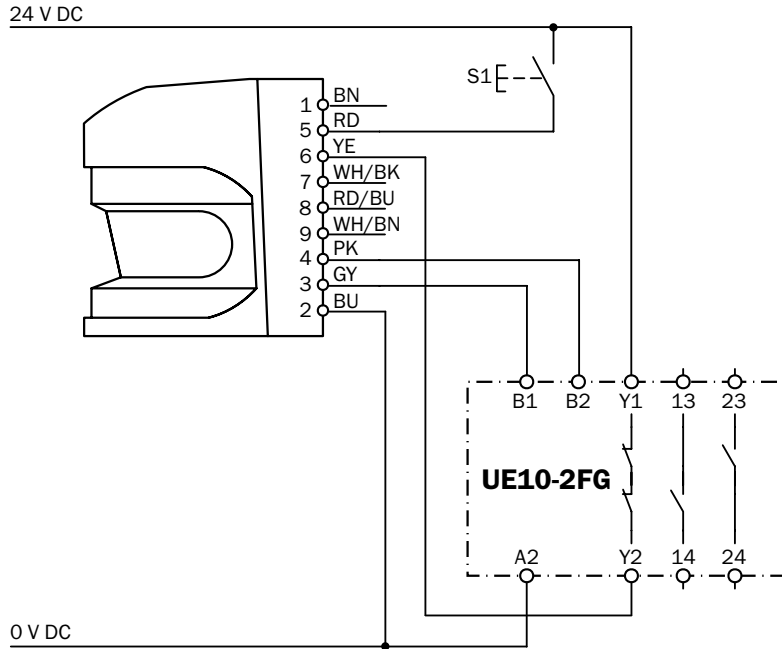
Operating mode: with manual reset and external device monitoring

C4000 Standard/Advanced safety light curtain connected to UE10-2FG safety relay



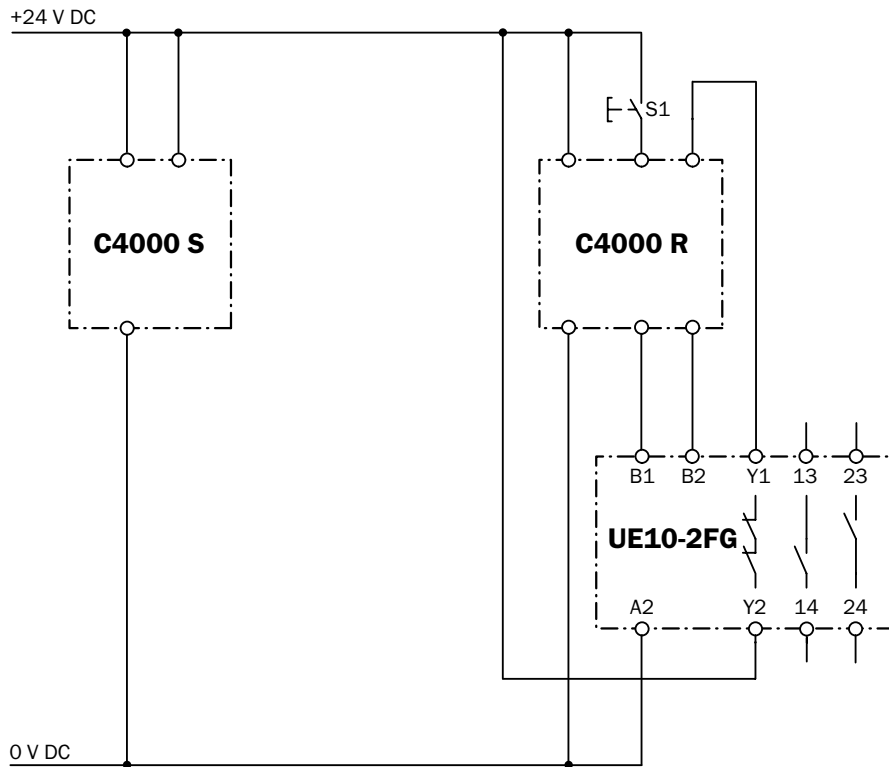
Operating mode: with manual reset and external device monitoring

S3000 Standard safety laser scanner connected to UE10-2FG safety relay



Operating mode: with manual reset and external device monitoring

C4000 Micro safety light curtain connected to UE10-2FG safety relay



Operating mode: with manual reset and external device monitoring

Minimum required space with a maximum of contact outputs



Product description

The UE12-2FG safety relay is an optimal output expansion module for opto-electronic protective devices or safety controllers. By the protection of ma-

chines and plants the safety relay takes over the electrical signals and switches the connected actuators reliably.

At a glance

- Ideal for applications with opto-electronic protective devices and safety controllers with OSSD outputs
- Fast response time of 10 ms
- Compact design
- 2 contact outputs
- Up to 20 contact outputs via cascading
- Feedback path for external device monitoring (EDM)
- Screw-type terminals or plug-in screw-type terminals
- Coded plugs for all slots

Your benefits

- Faster response times provide short safety distances
- Saves space in the control cabinet thanks to its compact design
- Reduced wiring effort for fast and easy system commissioning
- No unnecessary outputs, thereby reducing costs



Additional information

Detailed technical data..... 13

Ordering information..... 14

Dimensional drawings 15

Connection diagram 15

→ www.mysick.com/en/UE12-2FG

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508) ¹⁾ SILCL3 (EN 62061) ¹⁾
Category	Category 4 (EN ISO 13849) ¹⁾
Performance level	PL e (EN ISO 13849) ¹⁾
B _{10d} parameter	1 x 10 ⁵ switching cycles (AC-15, 230 V, I = 2 A) 2.5 x 10 ⁵ switching cycles (AC-15, 230 V, I = 1 A) 5.4 x 10 ⁵ switching cycles (DC-13, 24 V, I = 0.5 A) 1 x 10 ⁷ switching cycles (DC-13, 24 V, I ≤ 2 A)
PFHd (mean probability of a dangerous failure per hour)	1.2 x 10 ⁻⁹ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)

¹⁾ If the feedback current path Y1 - Y2 (external device monitoring) is monitored using an appropriate main unit.

Electrical data

General electrical data

Voltage supply	B1/A2, B2/A2
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Power consumption	≤ 2 W (DC)
Residual ripple	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_s.

Input circuits: B1, B2

Input voltage	24 V DC (16.8 V DC ... 27.6 V DC)
Input current	≤ 50 mA
Reset time	≤ 30 ms
Test pulse width	≤ 1 ms

Electrical output circuits: 13/14, 23/24, Y1/Y2

Response time	≤ 10 ms
Number of enable current (N/O) contacts	2, relevant for safety
Number of contactor monitoring (N/C) contacts	1, external device monitoring
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	10 V AC/DC ... 250 V AC/DC
Contactor monitoring contact	0.1 V AC/DC ... 60 V AC/DC
Switching current	
Enable current contact	10 mA ... 6 A
Contactor monitoring contact	1 mA ... 300 mA
Switching power	≤ 1,500 VA (AC) ≤ 200 W (DC)
Usage category	AC-15/DC-13
Rated operating current (voltage)	3 A (230 V AC) 4 A (24 V DC)
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	1 x 10 ⁵ switching cycles

Operating data

	UE12-2FG2D0	UE12-2FG3D0
Rated impulse withstand voltage U_{imp}	4 kV	
Overvoltage category	II	
Rated insulation voltage U_i	300 V AC	
Test voltage	1.2 kV (50 Hz) (EN 60439-1)	
Enclosure rating		
Clamps	IP 20 (EN 60529)	
Housing	IP 40 (EN 60529)	
Ambient operating temperature	0 °C ... +55 °C	
Storage temperature	-25 °C ... +75 °C	
Connection type	Screw-type terminals	Plug-in screw-type terminals
Conductor cross-section		
Single wire (2x, same cross-section)	0.2 mm ² ... 1 mm ²	
Single wire (1x)	0.2 mm ² ... 4 mm ²	0.2 mm ² ... 2.5 mm ²
Fine wire with ferrules (2x, same cross-section)	0.2 mm ² ... 0.5 mm ²	0.2 mm ² ... 1.5 mm ²
Fine wire with ferrules (1x)	0.2 mm ² ... 2.5 mm ²	
Dimensions (W x H x D)	17.8 mm x 89.8 mm x 70.8 mm	17.8 mm x 105.5 mm x 70.8 mm
Weight	91 g	

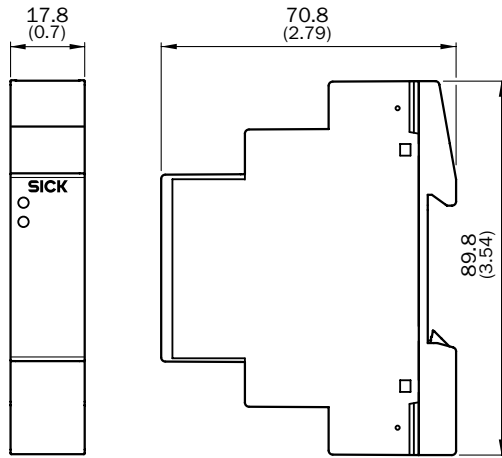
Ordering information

Connection type	Type	Part no.
Screw-type terminals	UE12-2FG2D0	1043917
Plug-in screw-type terminals	UE12-2FG3D0	1043918

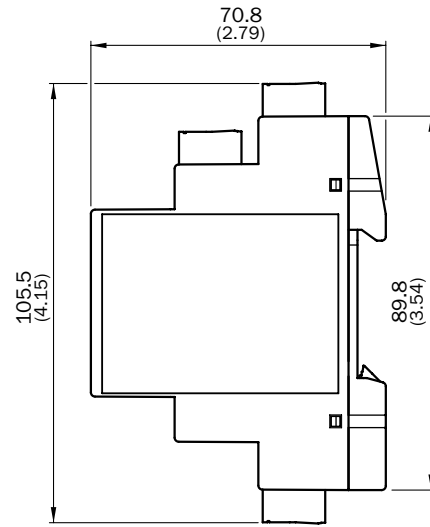
Dimensional drawings

dimensions in mm (inch)

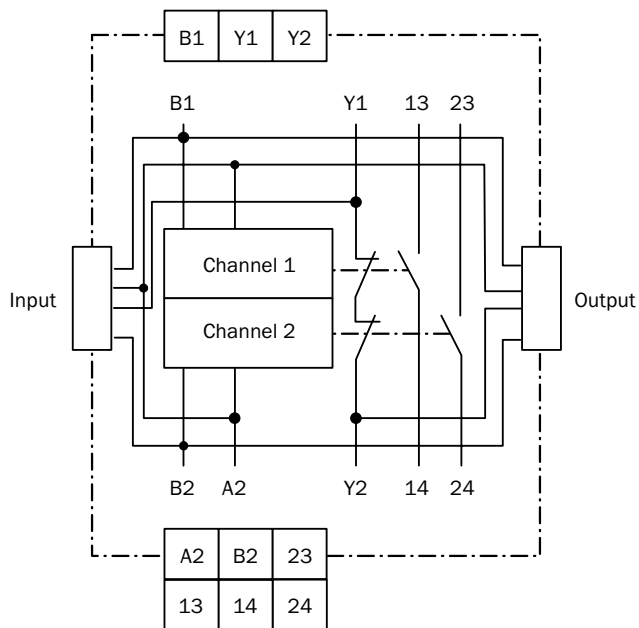
Screw-type terminals



Plug-in screw-type terminals



Connection diagram



The universal output expansion module



Product description

The UE10-30S safety relay offers a complete group of needed contacts. The relay takes over the safety related signals out of the sensors and sends

this information to the internal contacts, which intern switches the actuators. The safety relay also offers a diagnostic and shows the status of the system.

At a glance

- Ideal for applications with opto-electronic protective devices and safety controllers with OSSD outputs
- Output expansion for a safe processing of OSSD output signals
- 3 safety outputs, 1 application diagnostic output
- Feedback path for external device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- Offers all needed contact paths in a compact form
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data 17

Ordering information 19

Dimensional drawings 20

Internal circuitry 21

Connection diagrams 22

→ www.mysick.com/en/UE10-30S

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508) ¹⁾ SILCL3 (EN 62061) ¹⁾
Category	Category 4 (EN ISO 13849) ¹⁾
Performance level	PL e (EN ISO 13849) ¹⁾
B _{10d} parameter	1.26 x 10 ⁶ switching cycles (AC-15, 230 V, I = 1.5 A) 5.9 x 10 ⁶ switching cycles (AC-15, 230 V, I = 0.75 A) 4.35 x 10 ⁵ switching cycles (DC-13, 24 V, I = 2.5 A) 1 x 10 ⁷ switching cycles (DC-13, 24 V, I = 0.63 A)
PFHd (mean probability of a dangerous failure per hour)	3.0 x 10 ⁻⁸ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)

¹⁾ If the feedback current path Y1 - Y2 (external device monitoring) is monitored using an appropriate main unit.

Electrical data

General electrical data

Voltage supply	B1-B2/B3-B4
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Power consumption	2.4 W (DC)

Input circuits: B1-B2/B3-B4

Input voltage	24 V DC (15 V DC ... 30 V DC)
Input current	≤ 500 mA

Electrical output circuits: 13/14, 23/24, 33/34, 41/42, Y1/Y2

Response time	≤ 20 ms ¹⁾
Number of enable current (N/O) contacts	3, relevant for safety
Number of signalling current (N/C) contacts	1, not safety-relevant
Number of contactor monitoring (N/C) contacts	1, external device monitoring
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Signalling current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Contactor monitoring contact	10 V DC ... 24 V DC
Switching current	
Enable current contact	5 mA ... 6 A
Signalling current contact	5 mA ... 6 A
Contactor monitoring contact	5 mA ... 100 mA
Total current	≤ 12 A
Usage category	AC-15/DC-13

¹⁾ K1/K2.

Table continued → p. 18

Rated operating current (voltage)	4 A (230 V AC) 360 switching cycles/h 3 A (230 V AC) 3600 switching cycles/h 4 A (24 V DC) 360 switching cycles/h 2.5 A (24 V DC) 3600 switching cycles/h
Maximum switching frequency	3600/h
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	2 x 10 ⁶ switching cycles

Operating data

	UE10-30S2DO	UE10-30S3DO
Rated impulse withstand voltage U_{imp}	4 kV	
Overvoltage category	III ¹⁾	
Rated insulation voltage U_i	300 V AC	
Test voltage	2 kV (50 Hz) (EN 60439-1)	
Enclosure rating		
Clamps	IP 20 (EN 60529)	
Housing	IP 40 (EN 60529)	
Interference emission	EN 61000-6-4	
Interference resistance	EN 61000-6-2	
Ambient operating temperature	-25 °C ... +55 °C	
Storage temperature	-25 °C ... +75 °C	
Connection type	Screw-type terminals	Plug-in screw-type terminals
Conductor cross-section		
Single wire (2x, same cross-section)	0.14 mm ² ... 0.75 mm ²	
Single wire (1x)	0.14 mm ² ... 2.5 mm ²	
Fine wire with ferrules (2x, same cross-section)	0.2 mm ² ... 0.5 mm ²	
Fine wire with ferrules (1x)	0.25 mm ² ... 2.5 mm ²	
Dimensions (W x H x D)	22.5 mm x 114 mm x 96.5 mm	
Weight	0.2 kg	

¹⁾ See operating instructions.

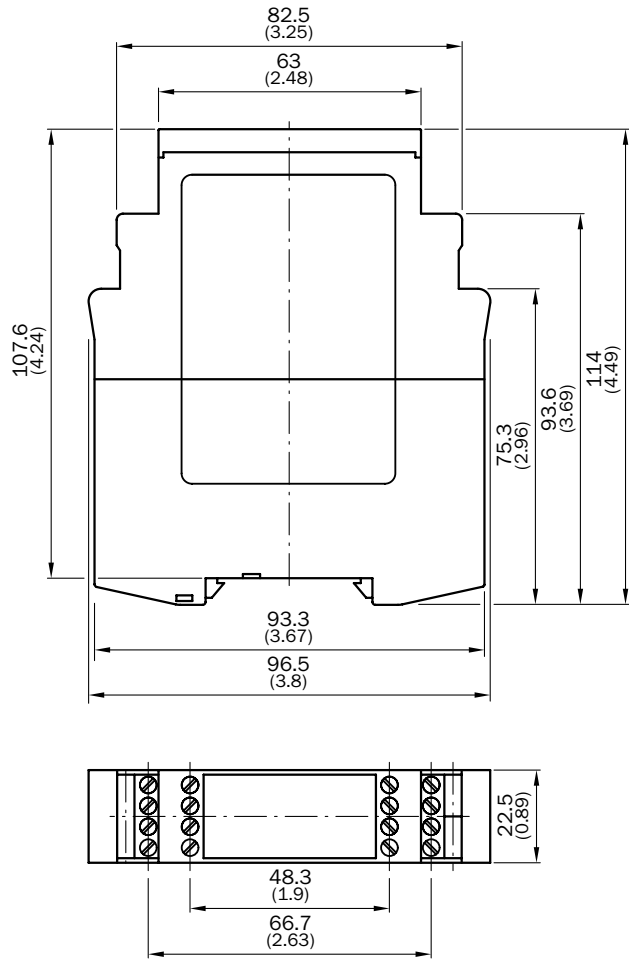
Ordering information

Connection type	Type	Part no.
Screw-type terminals	UE10-30S2DO	6024917
Plug-in screw-type terminals	UE10-30S3DO	6024918

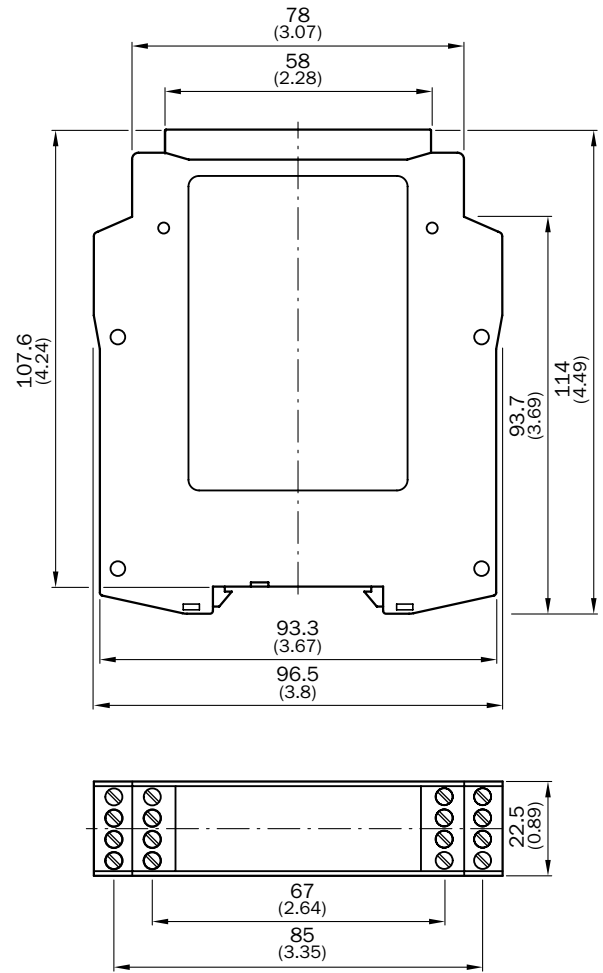
Dimensional drawings

dimensions in mm (inch)

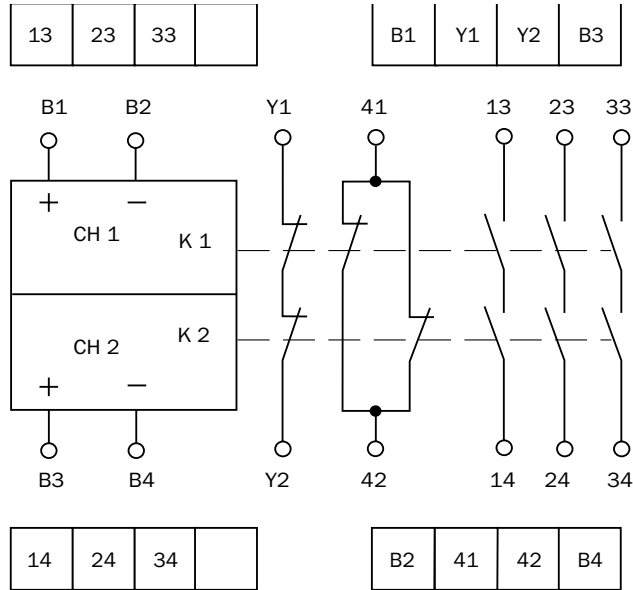
Screw-type terminals



Plug-in screw-type terminals



Internal circuitry



Function

If the semiconductor outputs of the installed safety device (e.g., C4000, S3000) are energized, then the safety output contacts will close.

When at least one of the semiconductor outputs of the safety device becomes de-energized, then the output contacts revert back to open circuit status.

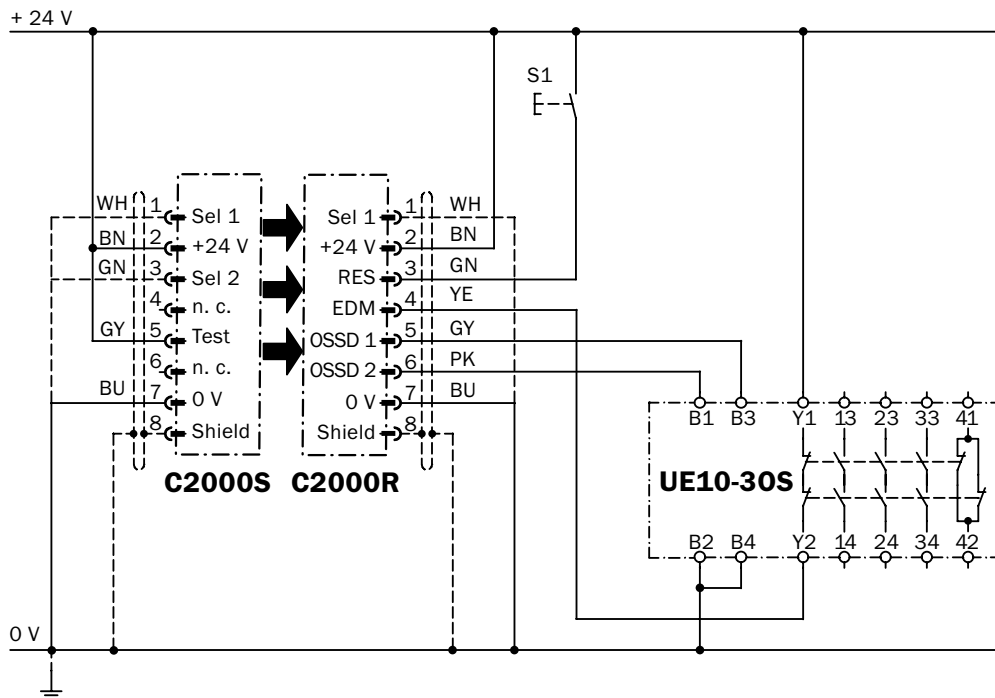
If restart interlock is needed, then this is achieved in the safety device, for example with a C4000 or S3000.

External device monitoring (EDM)

Category 3 or 4, which determines the performance level according to EN ISO 13849, requires monitoring of contactors for the detection of failures. This is provided in the connected protective device, for example in the C4000 or S3000. The normally closed contact (Y1 -Y2) in the UE10-30S unit is a part of this contactor monitoring system.

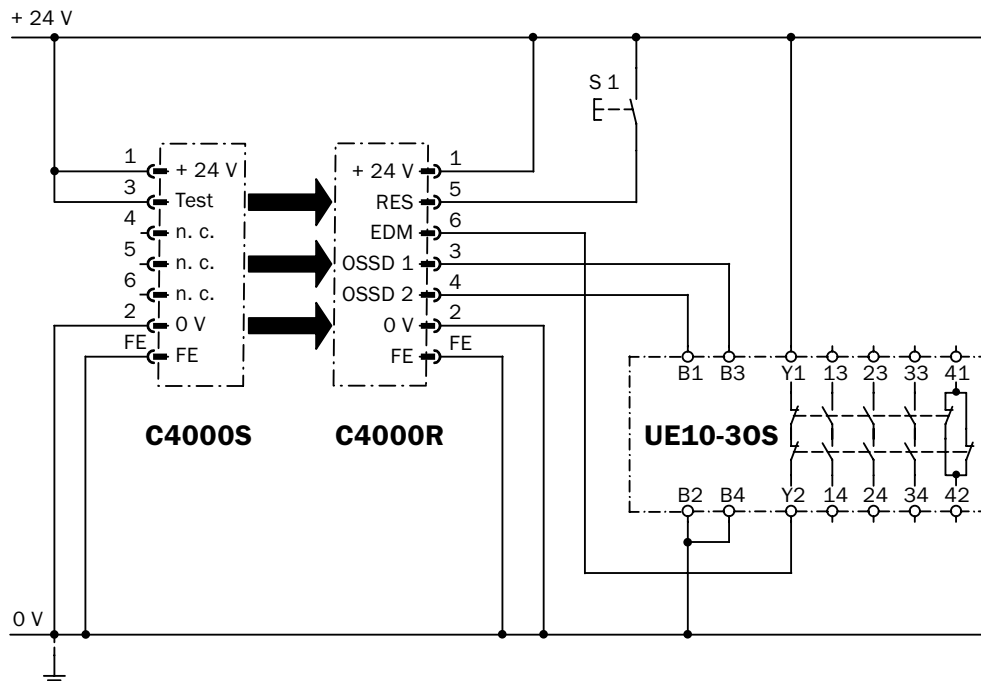
Connection diagrams

C2000 RES/EDM safety light curtain connected to UE10-30S safety relay



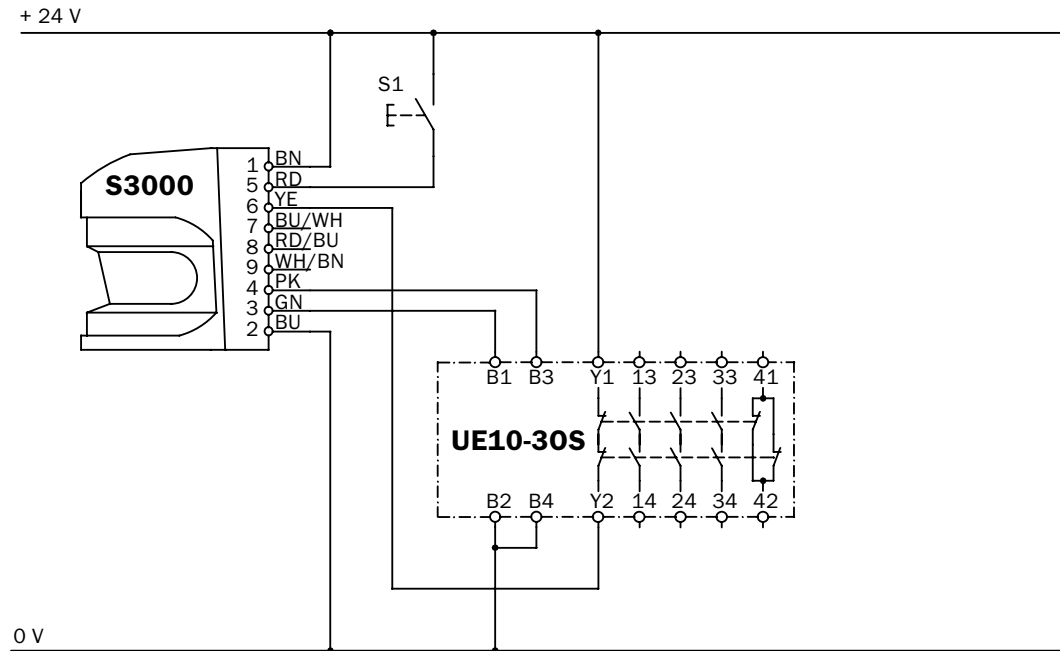
Operating mode: with manual reset and external device monitoring

C4000 Standard/Advanced safety light curtain connected to UE10-30S safety relay



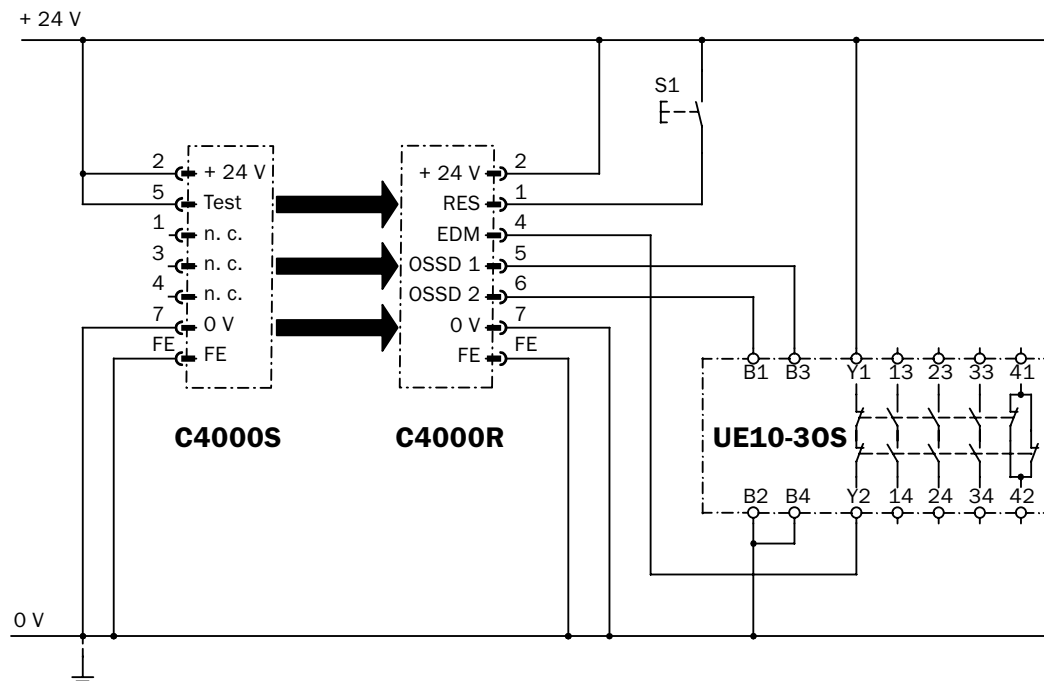
Operating mode: with manual reset and external device monitoring

S3000 Standard safety laser scanner connected to UE10-30S safety relay



Operating mode: with manual reset and external device monitoring

C4000 Micro safety light curtain connected to UE10-30S safety relay



Operating mode: with manual reset and external device monitoring

Application-specific relay for safety switches and emergency stop pushbuttons



Product description

The U23-2MF safety relay quickly and efficiently monitors mechanical sensors, such as emergency stop pushbuttons and safety switches. The integrated

functions provide a manual/automatic reset and monitor the relay's integrated contacts and the actuators contacts.

At a glance

- Ideal for the connection of emergency stop pushbuttons and safety switches
- 2 safety outputs, 1 application diagnostic output
- Manual or automatic reset
- External device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- Saves costs thanks to its application-oriented construction
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data..... 25

Ordering information..... 26

Dimensional drawings 27

Connection diagram 27

→ www.mysick.com/en/UE23-2MF

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
B _{10d} parameter	5.45 x 10 ⁴ switching cycles (AC-15, 230 V, I = 3 A) 1.26 x 10 ⁶ switching cycles (AC-15, 230 V, I = 1.5 A) 5.9 x 10 ⁶ switching cycles (AC-15, 230 V, I = 0.75 A) 4.35 x 10 ⁵ switching cycles (DC-13, 24 V, I = 2.5 A) 1 x 10 ⁷ switching cycles (DC-13, 24 V, I = 0.63 A)
PFHd (mean probability of a dangerous failure per hour)	3.0 x 10 ⁻⁶ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Stop category	0 (EN 60204-1)

Electrical data

General electrical data

	UE23-2MF2A3	UE23-2MF2A4	UE23-2MF2D3
Supply voltage	A1, A2		
	230 V AC (196 V AC ... 253 V AC)	115 V AC (98 V AC ... 132 V AC)	24 V DC (19.2 V DC ... 30 V DC)
Power consumption	≤ 3 VA		≤ 1 W
Residual ripple	-		≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_S.

Control voltage: Y1-Y2-Y3

	UE23-2MF2A3	UE23-2MF2A4	UE23-2MF2D3
Control voltage	≤ 40 V DC		U _V - 2 V DC ... U _V
Control current	≤ 20 mA		
Fuse	PTC resistor		
Reset time			
Manual	≤ 70 ms		
Automatic	≤ 600 ms		
Galvanized decoupling	✓		-

Electrical output circuits: 13/14, 23/24, 31/32

Response time	≤ 80 ms ¹⁾
Number of enable current (N/O) contacts	2, relevant for safety
Number of signalling current (N/C) contacts	1, not safety-relevant
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	10 V ... 230 V AC / 10 V ... 300 V DC
Signalling current contact	10 V ... 230 V AC / 10 V ... 300 V DC
Switching current	
Enable current contact	10 mA ... 6 A
Signalling current contact	10 mA ... 6 A
Total current	≤ 12 A

¹⁾ K1/K2.

Table continued → p. 26

Usage category	AC-15/DC-13
Rated operating current (voltage)	4 A (230 V AC) 360 switching cycles/h 3 A (230 V AC) 3600 switching cycles/h 4 A (24 V DC) 360 switching cycles/h 2.5 A (24 V DC) 3600 switching cycles/h
Maximum switching frequency	3600/h
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	2 x 10 ⁶ switching cycles

Operating data

Rated impulse withstand voltage U _{imp}	6 kV
Overvoltage category	III
Rated insulation voltage U _i	300 V AC
Test voltage	3.5 kV (50 Hz) (EN 60439-1)
Enclosure rating	Clamps IP 20 (EN 60529) Housing IP 40 (EN 60529)
Interference emission	EN 60947-5-1
Interference resistance	EN 61326-3-1
Ambient operating temperature	-25 °C ... +55 °C
Storage temperature	-25 °C ... +75 °C
Connection type	Screw-type terminals
Conductor cross-section	Single wire (2x, same cross-section) 0.14 mm ² ... 0.75 mm ² Single wire (1x) 0.14 mm ² ... 2.5 mm ² Fine wire with ferrules (2x, same cross-section) 0.2 mm ² ... 0.5 mm ² Fine wire with ferrules (1x) 0.25 mm ² ... 2.5 mm ²
Dimensions (W x H x D)	22.5 mm x 123 mm x 93.5 mm
Weight	0.27 kg

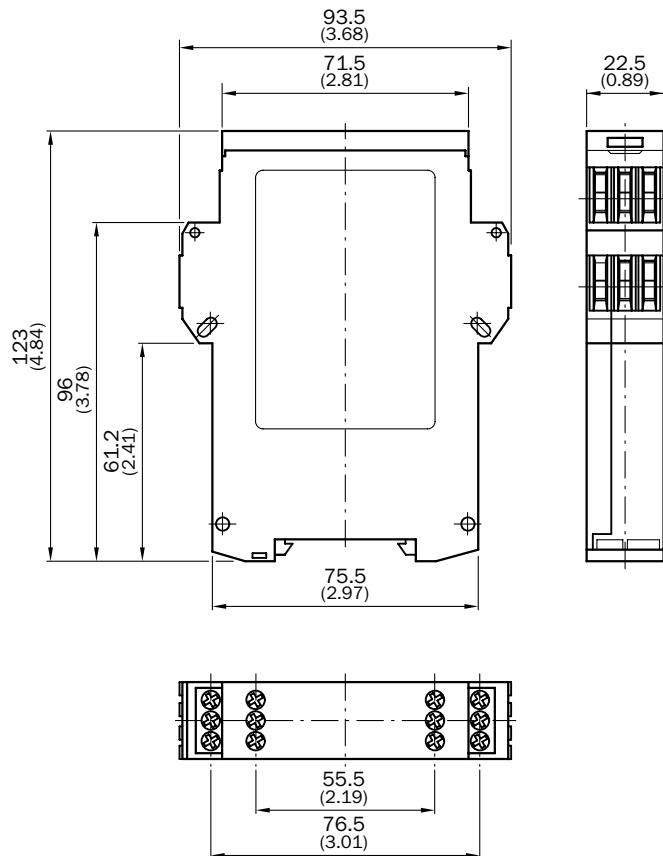
Ordering information

Supply voltage	Type	Part no.
230 V AC	UE23-2MF2A3	6026148
115 V AC	UE23-2MF2A4	6026147
24 V DC	UE23-2MF2D3	6026146

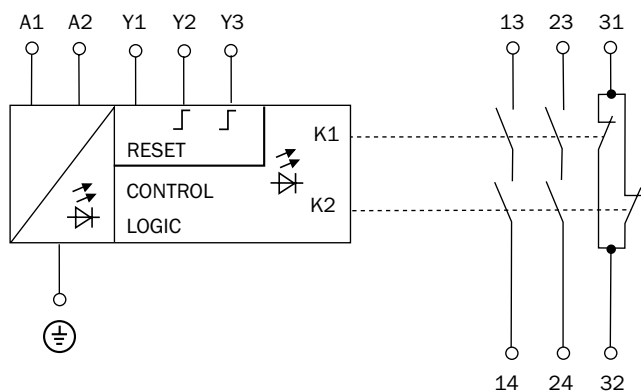
Dimensional drawings

dimensions in mm (inch)

Screw-type terminals



Connection diagram



Function

The connected emergency stop pushbuttons or safety switches are controlled by the supply voltage.

After applying the supply voltage (LED SUPPLY illuminates), the normally open contacts remain in the open state. If the connected sensor is not activated (i.e., the input circuits are closed), then the normally open contacts close immediately in automatic reset (LED "K1, K2" illuminates). In the case of manual reset, this only occurs after pressing the reset button.

External device monitoring (EDM)

The unit can take over the function of external device monitoring. The contactor monitoring system monitors the external relays through their normally closed contacts.

Manual reset

For manual resetting, a pushbutton must be connected to terminals Y1 and Y3. This reset is monitored.

Automatic reset

For automatic resetting, Y1 - Y2 must be linked.

Connection solution for safety switches and emergency stop pushbuttons



Product description

The UE23-3MF safety relay quickly and efficiently monitors mechanical sensors. The integrated functions provide

a manual/automatic reset and monitor the relay's integrated contacts and the actuators contacts.

At a glance

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

Your benefits

- Saves space in the control cabinet thanks to its compact design
- Saves costs thanks to its application-oriented construction
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data 29
 Ordering information 30
 Connection diagram 31

→ www.mysick.com/en/UE23-3MF

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
B _{10d} parameter	3 x 10 ⁵ switching cycles (AC-15, 230 V, I = 5 A) 2 x 10 ⁶ switching cycles (DC-15, 230 V, I = 2 A) 7 x 10 ⁶ switching cycles (DC-13, 24 V, I = 1 A)
PFHd (mean probability of a dangerous failure per hour)	1.0 x 10 ⁻⁶ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Stop category	0 (EN 60204-1)

Electrical data

General electrical data

	UE23-3MF2A3	UE23-3MF2D2
Supply voltage	230 V AC (196 V AC ... 253 V AC)	24 V DC (19.2 V DC ... 30 V DC)
	A1, A2	
Power consumption	≤ 3 VA	≤ 1 W
Residual ripple	-	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_S.

Control voltage: Y1 - Y2 - Y3

	UE23-3MF2A3	UE23-3MF2D2
Control voltage	≤ 40 V DC	U _V - 2 V DC ... U _V
Control current	≤ 20 mA	
Short-circuit current	≤ 250 mA	
Fuse	8 A gG, with tripping characteristics B or C	
Reset time		
Manual	≤ 70 ms	
Automatic	≤ 600 ms	
Galvanized decoupling	✓	-

Electrical output circuits: 13 - 14, 23 - 24, 31 - 32

Response time	≤ 80 ms ¹⁾
Number of enable current (N/O) contacts	3, relevant for safety
Number of signalling current (N/C) contacts	1, not safety-relevant
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	5 V AC ... 230 V AC / 5 V DC ... 300 V DC
Signalling current contact	5 V AC ... 230 V AC / 5 V DC ... 300 V DC
Switching current	
Enable current contact	10 mA ... 8 A
Signalling current contact	10 mA ... 5 A

¹⁾ K1/K2.

Table continued → p. 30

Usage category	AC-15/DC-13
Rated operating current (voltage)	5 A (230 V AC) 360 switching cycles/h 5 A (24 V DC) 360 switching cycles/h
Maximum switching frequency	3600/h
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	1 x 10 ⁶ switching cycles

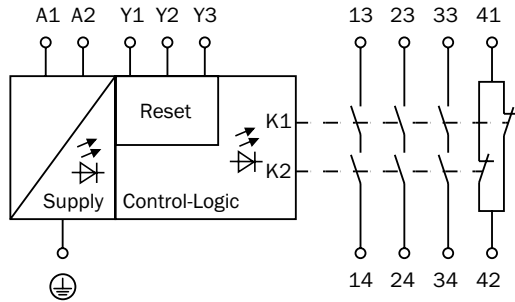
Operating data

	UE23-3MF2A3	UE23-3MF2D2
Rated impulse withstand voltage U _{imp}	4 kV	
Overvoltage category	II	
Rated insulation voltage U _i	300 V AC	
Test voltage	2.2 kV (50 Hz) (EN 60439-1)	
Enclosure rating		
Clamps	IP 20 (EN 60529)	
Housing	IP 40 (EN 60529)	
Interference emission	EN 60947-5-1	
Interference resistance	EN 61326-3-1	
Ambient operating temperature	-25 °C ... +55 °C	
Storage temperature	-25 °C ... +75 °C	
Connection type	Screw-type terminals	
Conductor cross-section		
Single wire (2x, same cross-section)	0.14 mm ² ... 0.75 mm ²	
Single wire (1x)	0.14 mm ² ... 2.5 mm ²	
Fine wire with ferrules (2x, same cross-section)	0.25 mm ² ... 0.5 mm ²	
Fine wire with ferrules (1x)	0.25 mm ² ... 2.5 mm ²	
Dimensions (W x H x D)	22.5 mm x 123 mm x 93.5 mm	
Weight	0.25 kg	0.2 kg

Ordering information

Supply voltage	Type	Part no.
230 V AC	UE23-3MF2A3	6034597
24 V DC	UE23-3MF2D2	6034595

Connection diagram



Function

The connected emergency stop pushbuttons or safety switches are controlled by the supply voltage.

After applying the supply voltage (LED SUPPLY illuminates), the normally open contacts remain in the open state. If the connected sensor is not activated (i.e., the input circuits are closed), then the normally open contacts close immediately in automatic reset (LED "K1, K2" illuminates). In the case of manual reset, this only occurs after pressing the reset button.

External device monitoring (EDM)

The unit can take over the function of external device monitoring. The contactor monitoring system monitors the external relays through their normally closed contacts.

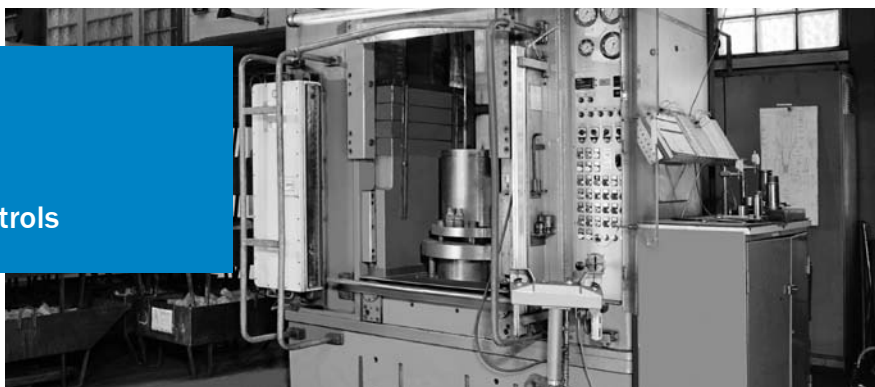
Manual reset

For manual resetting, a pushbutton must be connected to terminals Y1 and Y3. This reset is monitored.

Automatic reset

For automatic resetting, Y1 - Y2 must be linked.

Safety relays for two-hand controls



Product description

The UE42-2HD safety relay takes over the control of the 2 pushbuttons of a two-hand control device with each push-button having 2 antivalent contact pairs.

The safety relay controls the antivalence of the pushbuttons and monitors the maximum discrepancy time of 500 ms between both pushbuttons.

At a glance

- Evaluation unit for two-hand controls Type III C, in accordance with EN 574
- Discrepancy time 500 ms
- 2 safety outputs, 1 application diagnostic output
- Monitoring of the external actuators possible
- External device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- Complete monitoring and evaluation of two-hand controls
- Saves costs thanks to its application-oriented construction
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data 33

Ordering information 34

Dimensional drawings 35

Internal circuitry 36

Connection diagrams 37

→ www.mysick.com/en/UE42-2HD

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
B _{10d} parameter	1.26 x 10 ⁶ switching cycles (AC-15, 230 V, I = 1.5 A) 5.9 x 10 ⁶ switching cycles (AC-15, 230 V, I = 0.75 A) 4.35 x 10 ⁵ switching cycles (DC-13, 24 V, I = 2.5 A) 1 x 10 ⁷ switching cycles (DC-13, 24 V, I = 0.63 A)
PFHd (mean probability of a dangerous failure per hour)	3.0 x 10 ⁻⁸ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)

Electrical data

General electrical data

Voltage supply	A1, A2
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Supply voltage	A1, A2 24 V DC (20.4 V DC ... 26.4 V DC)
Power consumption	≤ 2.4 W (DC)
Residual ripple	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_s.

Input circuits: Y11, Y12, Y14, Y21, Y22, Y23

Control voltage	24 V DC
Control current	40 mA
Short-circuit current	≤ 2 A, between Y14, Y22 and A2
Fuse	PTC resistor

Electrical output circuits: 13/14, 23/24, 31/32

Response time	≤ 50 ms
Number of enable current (N/O) contacts	2, relevant for safety
Number of signalling current (N/C) contacts	1, not safety-relevant
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Signalling current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Switching current	
Enable current contact	10 mA ... 6 A
Signalling current contact	10 mA ... 6 A
Total current	≤ 12 A
Usage category	AC-15/DC-13

Table continued → p. 34

Rated operating current (voltage)	4 A (230 V AC) 360 switching cycles/h 3 A (230 V AC) 3600 switching cycles/h 4 A (24 V DC) 360 switching cycles/h 2.5 A (24 V DC) 3600 switching cycles/h
Maximum switching frequency	3600/h
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	2 x 10 ⁶ switching cycles

Operating data

	UE42-2HD2D2	UE42-2HD3D2
Rated impulse withstand voltage U _{imp}	4 kV	
Overvoltage category	II	
Rated insulation voltage U _i	300 V AC	
Test voltage	2 kV (50 Hz) (EN 60439-1)	
Enclosure rating		
Clamps	IP 20 (EN 60529)	
Housing	IP 40 (EN 60529)	
Interference emission	EN 61000-6-4	
Interference resistance	EN 61000-6-2	
Ambient operating temperature	-25 °C ... +55 °C	
Storage temperature	-25 °C ... +75 °C	
Connection type	Screw-type terminals	Plug-in screw-type terminals
Conductor cross-section		
Single wire (2x, same cross-section)	0.14 mm ² ... 0.75 mm ²	
Single wire (1x)	0.14 mm ² ... 2.5 mm ²	
Fine wire with ferrules (2x, same cross-section)	0.2 mm ² ... 0.5 mm ²	
Fine wire with ferrules (1x)	0.25 mm ² ... 2.5 mm ²	
Dimensions (W x H x D)	22.5 mm x 114 mm x 96.5 mm	
Weight	0.2 kg	

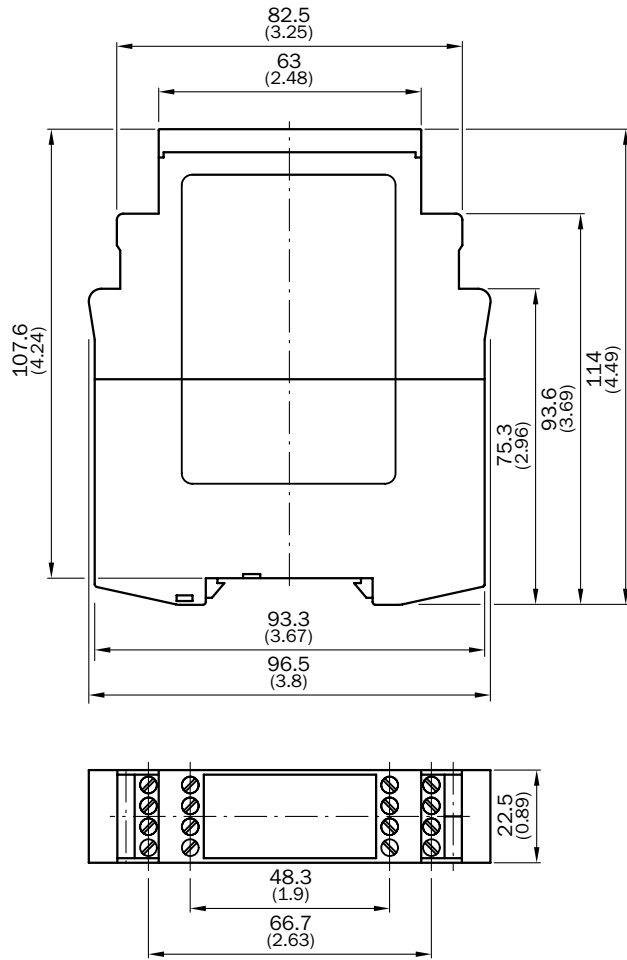
Ordering information

Connection type	Type	Part no.
Screw-type terminals	UE42-2HD2D2	6024878
Plug-in screw-type terminals	UE42-2HD3D2	6024881

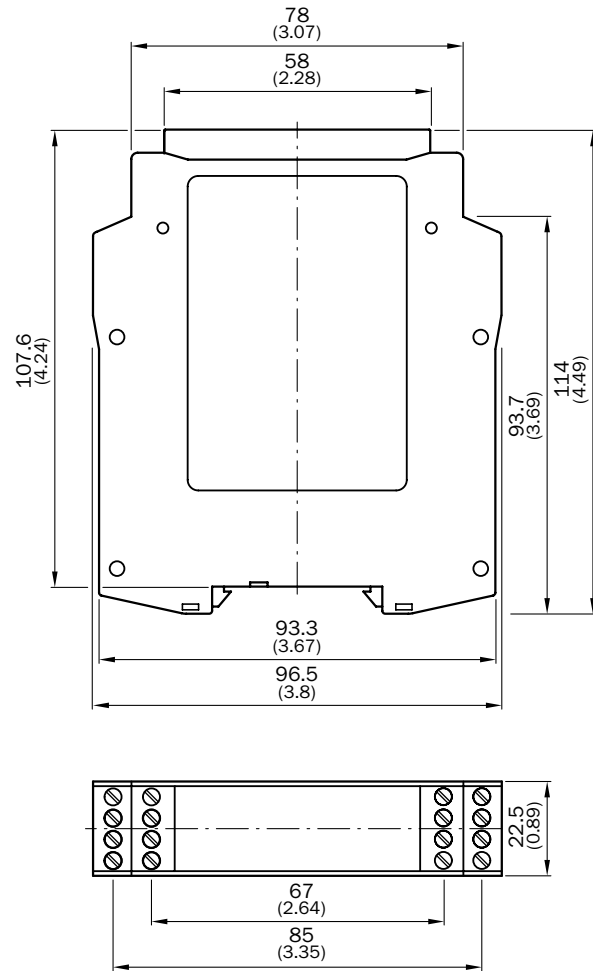
Dimensional drawings

dimensions in mm (inch)

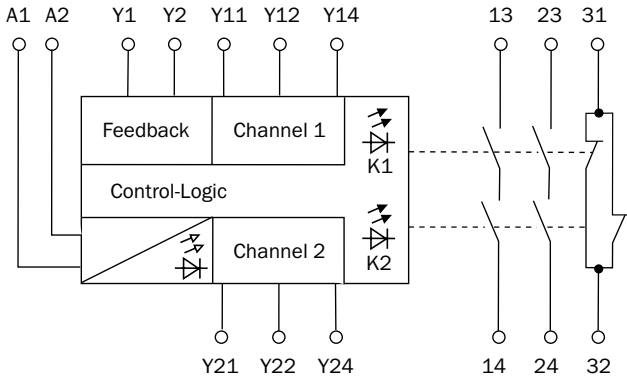
Screw-type terminals



Plug-in screw-type terminals



Internal circuitry



Function

The UE42-2HD unit corresponds to EN 574 type III C. To release the outputs, the two inputs (e.g., two-hand pushbuttons) must be actuated within 0.5 sec.

After applying the supply voltage to terminals A1 - A2, the LED SUPPLY illuminates to indicate that electrical power is present. Pressing the two-hand pushbuttons S1 and S2 at the same time (see connection diagrams) closes the two normally open contacts. Releasing one of the buttons will cause the circuits to open.

A renewed attempt to initiate starting is only possible if both start buttons are set to their nominal start position (for two-hand pushbuttons units: if both have been released) and the normally closed contact is closed.

External device monitoring (EDM)

The UE42-2HD can take over the function of external device monitoring. The normally closed contacts of the external relays are switched in series and connected to terminals Y1 - Y2.

Automatic start

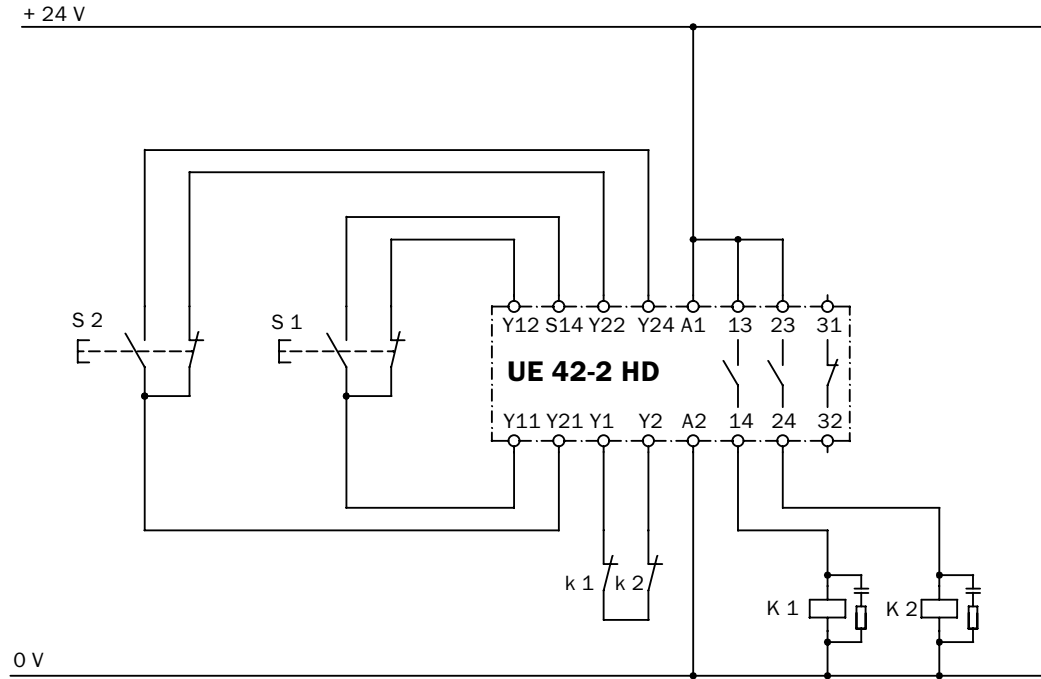
The UE42-2HD has an automatic start facility.

Monitoring of simultaneous activation

The pressing of the start buttons at the same time is monitored. Only when both start buttons are activated within 0.5 sec do normally open contacts close and the normally closed contact opens.

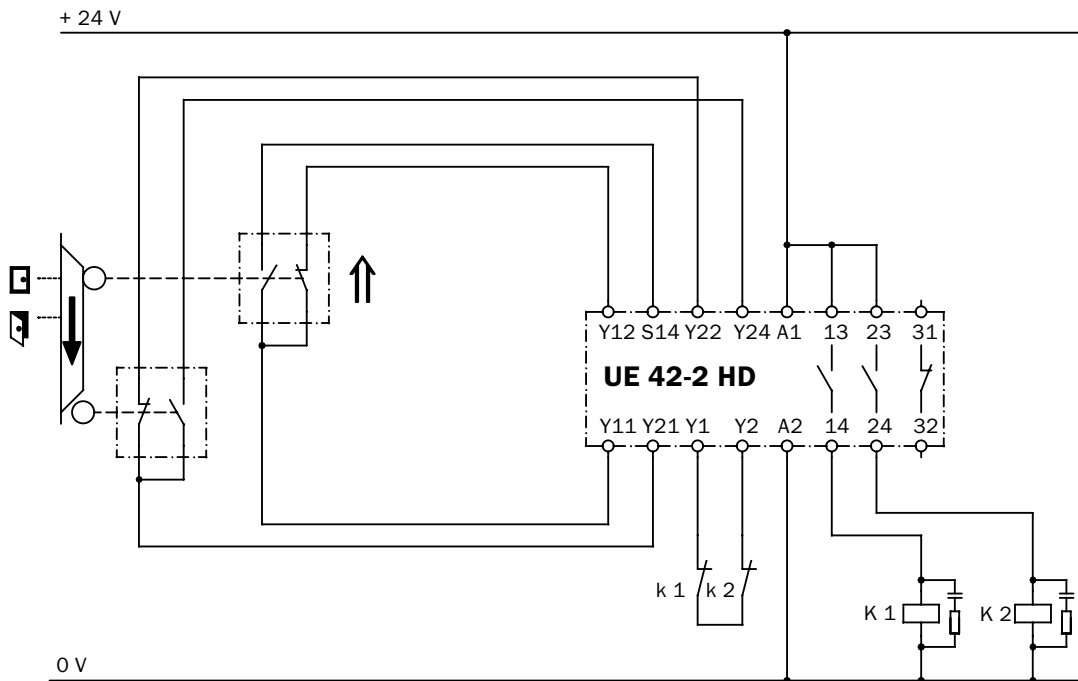
Connection diagrams

Two-hand control with UE42-2HD safety relay, dual-channel system



Operating mode: with automatic start and external device monitoring (EDM)

Two safety switches connected to UE42-2HD safety relay, dual-channel system



Operating mode: with automatic start and external device monitoring (EDM)

Optimal monitoring of safety switches and emergency stop pushbuttons



Product description

The UE43-2MF safety relay monitors all safety switches and emergency stop pushbuttons, via cross-circuit detection, sequence monitoring and discrepancy

time monitoring. The safety relay provides both a manual and an automatic reset.

At a glance

- Evaluation unit for emergency stop pushbuttons and safety switches
- Cross circuit detection and sequence monitoring for dual-channel actuation
- Supports discrepancy monitoring
- 2 safety outputs, 1 application diagnostic output
- Manual or automatic reset
- External device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- Complete monitoring and evaluation of sensors
- The sequence monitoring takes over the evaluation of non-contact safety switches
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data 39

Ordering information 41

Dimensional drawings 41

Internal circuitry 42

Connection diagrams 43

→ www.mysick.com/en/UE43-2MF

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
B _{10d} parameter	1.26 x 10 ⁶ switching cycles (AC-15, 230 V, I = 1.5 A) 5.9 x 10 ⁶ switching cycles (AC-15, 230 V, I = 0.75 A) 4.35 x 10 ⁵ switching cycles (DC-13, 24 V, I = 2.5 A) 1 x 10 ⁷ switching cycles (DC-13, 24 V, I = 0.63 A)
PFHd (mean probability of a dangerous failure per hour)	3.0 x 10 ⁻⁸ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Stop category	0 (EN 60204-1)

Electrical data

General electrical data

Voltage supply	A1, A2
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Supply voltage	A1, A2 24 V AC/DC (20.4 V AC/DC ... 26.4 V AC/DC)
Power consumption	≤ 4.6 VA (AC) ≤ 2.6 W (DC)
Residual ripple	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_s.

Control voltage: S33/S11, S21

Control voltage	22 V DC
Control current	40 mA ... 100 mA
Short-circuit current	≤ 2 A, between S33 / S11 and S21
Fuse	PTC resistor

Input circuits: S12, S31, S22, S34, S35

Input current		
	S12, S31/S22	40 mA ... 100 mA
	S34/S35	5 mA ... 50 mA
Reset time		
	Manual	≤ 40 ms
	Automatic	≤ 500 ms
Activation time of reset button		≥ 50 ms
Synchronous time monitoring		≤ 500 ms
Cable resistance		≤ 35 Ω

Electrical output circuits: 13/14, 23/24, 31/32

Response time	≤ 25 ms ¹⁾
Number of enable current (N/O) contacts	2, relevant for safety
Number of signalling current (N/C) contacts	1, not safety-relevant
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Signalling current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Switching current	
Enable current contact	10 mA ... 6 A
Signalling current contact	10 mA ... 6 A
Total current	≤ 12 A
Usage category	AC-15/DC-13
Rated operating current (voltage)	4 A (230 V AC) 360 switching cycles/h 3 A (230 V AC) 3600 switching cycles/h 4 A (24 V DC) 360 switching cycles/h 2.5 A (24 V DC) 3600 switching cycles/h
Maximum switching frequency	3600/h
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	1 x 10 ⁵ switching cycles

¹⁾ K1/K2.

Operating data

	UE43-2MF2D2	UE43-2MF3D2
Rated impulse withstand voltage U _{imp}	4 kV	
Overvoltage category	II	
Rated insulation voltage U _i	300 V AC	
Test voltage	2 kV (50 Hz) (EN 60439-1)	
Enclosure rating		
Clamps	IP 20 (EN 60529)	
Housing	IP 40 (EN 60529)	
Interference emission	EN 61000-6-4	
Interference resistance	EN 61000-6-2	
Ambient operating temperature	-25 °C ... +55 °C	
Storage temperature	-25 °C ... +75 °C	
Connection type	Screw-type terminals	Plug-in screw-type terminals
Conductor cross-section		
Single wire (2x, same cross-section)	0.14 mm ² ... 0.75 mm ²	
Single wire (1x)	0.14 mm ² ... 2.5 mm ²	
Fine wire with ferrules (2x, same cross-section)	0.2 mm ² ... 0.5 mm ²	
Fine wire with ferrules (1x)	0.25 mm ² ... 2.5 mm ²	
Dimensions (W x H x D)	22.5 mm x 114 mm x 96.5 mm	
Weight	0.2 kg	

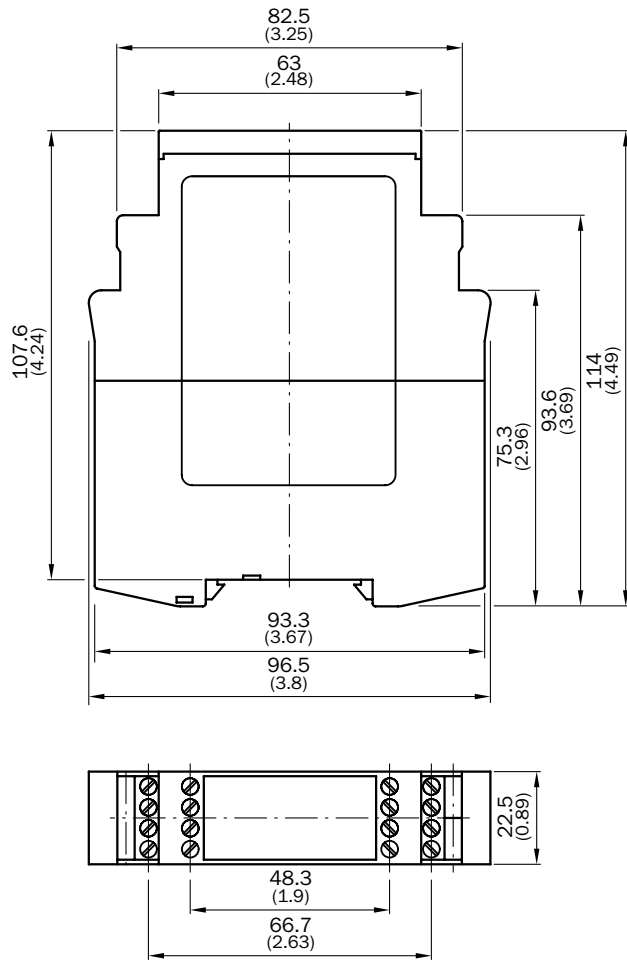
Ordering information

Connection type	Type	Part no.
Screw-type terminals	UE43-2MF2D2	6024893
Plug-in screw-type terminals	UE43-2MF3D2	6024894

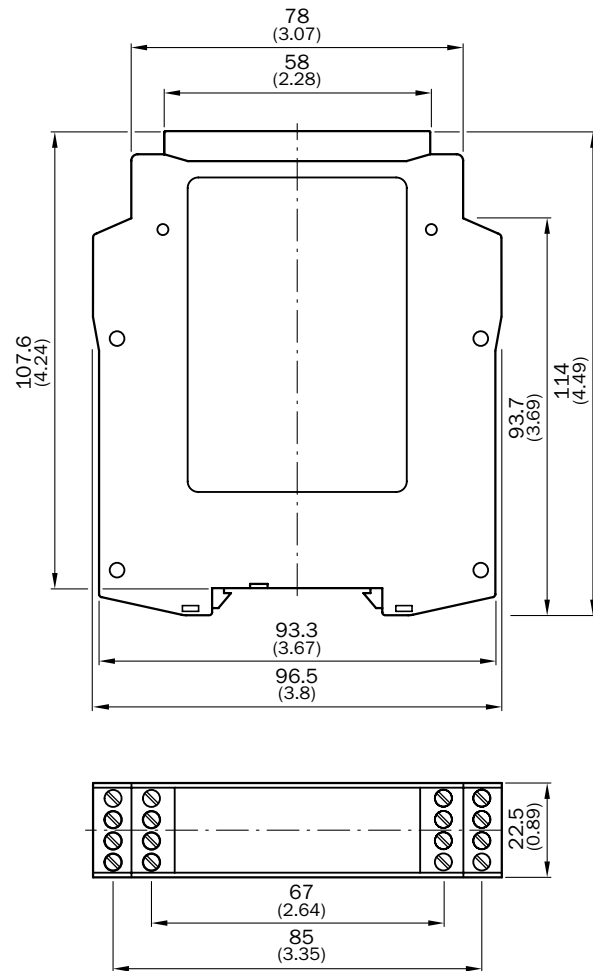
Dimensional drawings

dimensions in mm (inch)

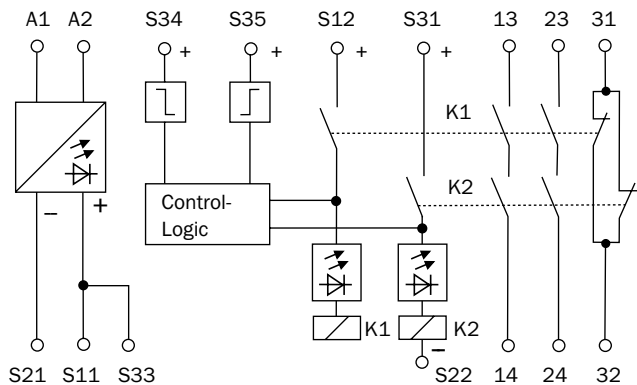
Screw-type terminals



Plug-in screw-type terminals



Internal circuitry



Function

After applying the supply voltage (LED SUPPLY illuminates), the normally open contacts remain in the opened state. If the connected sensor is not activated (i.e., the input circuits are closed), then the normally open contacts close immediately in automatic reset (LED K1 and K2 illuminate). In the case of manual reset, this only occurs after pressing and releasing the reset button. Activation of the sensor (opening of one or both input circuits) affects the opening of the normally open outputs (LED K1 and K2 off).

External device monitoring (EDM)

The UE43-2MF unit can take over the function of external device monitoring. The contactor monitoring system monitors the external relays by means of their normally closed contacts.

Manual reset

For manual reset, a pushbutton must be connected to terminals S33 - S34. Reset is monitored.

Automatic reset

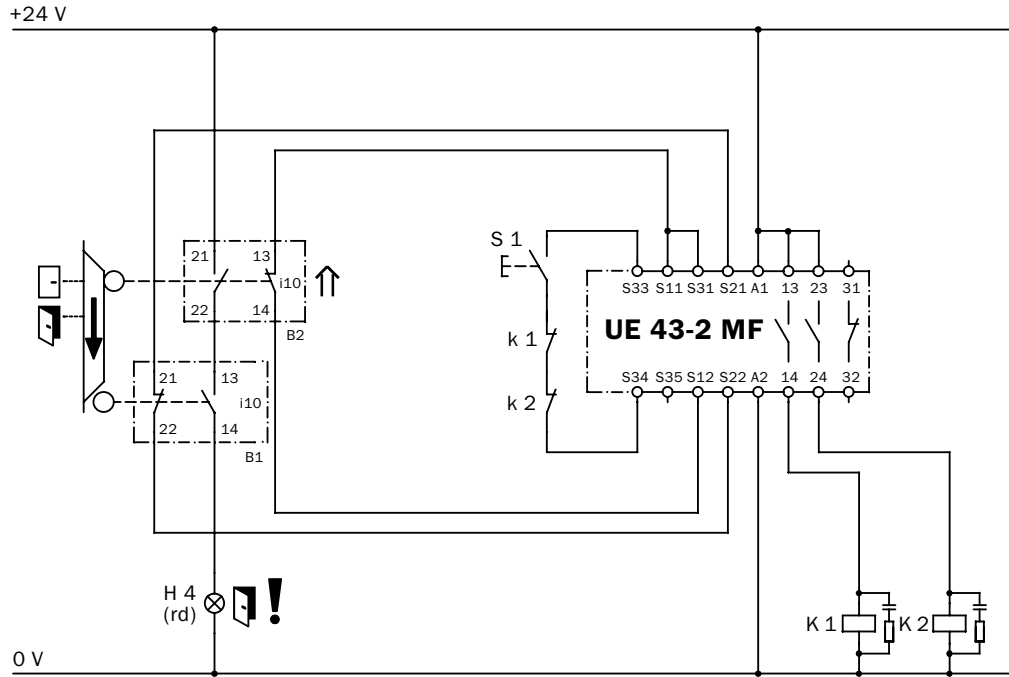
For automatic reset, S12 - S35 must be linked.

Cross-circuit detection

Cross-circuit is detected on dual-channel wired systems if these are wired with opposing polarity.

Connection diagrams

Two i10 safety switches to UE43-2MF safety relay, dual-channel system



Operating mode: with manual reset and external device monitoring (EDM)

Complete monitoring of safety switches and emergency stop pushbuttons



Product description

The UE43-3MF safety relay monitors all safety switches and emergency stop pushbuttons, via cross-circuit detection,

sequence monitoring and discrepancy time monitoring.

At a glance

- Evaluation unit for emergency stop pushbuttons and safety switches
- Cross circuit detection and sequence monitoring for dual-channel actuation
- Supports discrepancy monitoring
- 3 safety outputs, 1 application diagnostic output
- Manual or automatic reset
- External device monitoring (EDM)

Your benefits

- Complete monitoring and evaluation of sensors
- Offers all needed contact paths in a compact form
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data 45

Ordering information 47

Dimensional drawings 47

Internal circuitry 48

Connection diagrams 49

→ www.mysick.com/en/UE43-3MF

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
B _{10d} parameter	1 x 10 ⁶ switching cycles (AC-15, 230 V, I = 0.5 A) 3.5 x 10 ⁵ switching cycles (DC-13, 24 V, I = 2 A) 1.2 x 10 ⁶ switching cycles (DC-13, 24 V, I = 0.5 A)
PFHd (mean probability of a dangerous failure per hour)	3.0 x 10 ⁻⁸ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Stop category	0 (EN 60204-1)

Electrical data

General electrical data

	UE43-3MF2A0	UE43-3MF2A1	UE43-3MF2A2	UE43-3MF2A3	UE43-3MF2D3
Voltage supply	A1, A2				
Output circuit > 25 V AC / 60 V DC	PELV				
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV				
Supply voltage	A1, A2				
	24 V AC (20.4 V AC ... 26.4 V AC)	115 V AC (97.8 V AC ... 126.5 V AC)	120 V AC (102 V AC ... 132 V AC)	230 V AC (195.5 V AC ... 253 V AC)	24 V DC (20.4 V DC ... 26.4 V DC)
Power consumption	≤ 3.2 VA (AC)				≤ 1 W (DC)
Residual ripple	-				≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_S.

Control voltage: Y11, Y21

	UE43-3MF2A0	UE43-3MF2A1	UE43-3MF2A2	UE43-3MF2A3	UE43-3MF2D3
Control voltage	24 V DC				
Control current	40 mA				
Short-circuit current	≤ 1 A, between Y11 and A2				
Fuse	Short-circuit protected transformer				PTC resistor
Galvanized decoupling	✓ (between A1, A2 and Y11, Y21, PE)				-

Input circuits: Y12, Y31, Y22

Input current	Y12, Y31	≤ 15 mA
Reset time	Manual	150 ms
	Automatic	800 ms
Synchronous time monitoring		≤ 500 ms
Cable resistance		≤ 70 Ω

Electrical output circuits: 13/14, 23/24, 33/34, 41/42

Response time	≤ 50 ms ¹⁾
Number of enable current (N/O) contacts	3, relevant for safety
Number of signalling current (N/C) contacts	1, not safety-relevant
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Signalling current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Switching current	
Enable current contact	10 mA ... 6 A
Signalling current contact	10 mA ... 6 A
Total current	≤ 18 A
Usage category	AC-15/DC-13
Rated operating current (voltage)	6 A (230 V AC) 3600 switching cycles/h 4 A (24 V DC) 360 switching cycles/h 3 A (24 V DC) 3600 switching cycles/h
Maximum switching frequency	3600/h
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	2 x 10 ⁶ switching cycles

¹⁾ K1/K2.

Operating data

	UE43-3MF2A0	UE43-3MF2A1	UE43-3MF2A2	UE43-3MF2A3	UE43-3MF2D3
Rated impulse withstand voltage U _{imp}	4 kV				
Overvoltage category	II				
Rated insulation voltage U _i	300 V AC				
Test voltage	2 kV (50 Hz) (EN 60439-1)				
Enclosure rating					
Clamps	IP 20 (EN 60529)				
Housing	IP 40 (EN 60529)				
Interference emission	EN 61000-6-4				
Interference resistance	EN 61000-6-2				
Ambient operating temperature	-25 °C ... +55 °C				
Storage temperature	-25 °C ... +75 °C				
Connection type	Screw-type terminals				
Conductor cross-section					
Single wire (2x, same cross-section)	0.14 mm ² ... 0.75 mm ²				
Single wire (1x)	0.14 mm ² ... 2.5 mm ²				
Fine wire with ferrules (2x, same cross-section)	0.2 mm ² ... 0.5 mm ²				
Fine wire with ferrules (1x)	0.25 mm ² ... 2.5 mm ²				
Dimensions (W x H x D)	45 mm x 120.5 mm x 75 mm				
Weight	0.36 kg				0.3 kg

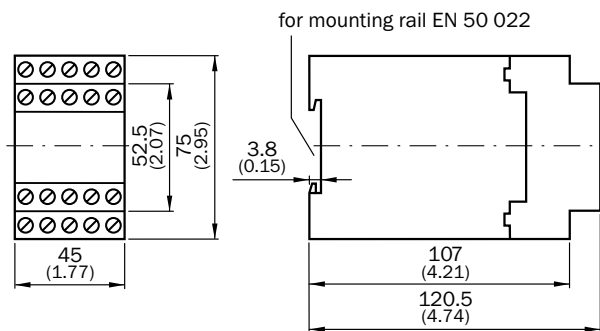
Ordering information

Supply voltage	Type	Part no.
24 V AC	UE43-3MF2A0	6024898
115 V AC	UE43-3MF2A1	6024899
120 V AC	UE43-3MF2A2	6024900
230 V AC	UE43-3MF2A3	6024901
24 V DC	UE43-3MF2D3	6024897

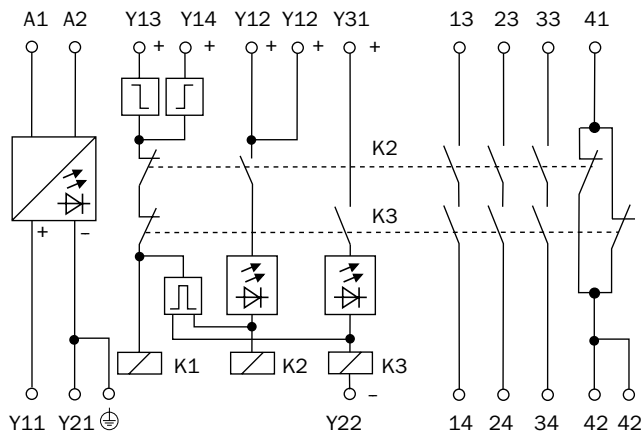
Dimensional drawings

dimensions in mm (inch)

Screw-type terminals



Internal circuitry



Function

After applying the supply voltage (LED SUPPLY illuminates), the normally open contacts remain open. If the connected sensor is not activated (i.e. the input circuits are closed), the normally open contacts close immediately in automatic reset (LED K2 and K3 illuminate). In the case of manual resetting, this only occurs upon pressing and releasing the reset button.

Activation of the sensor (opening of one or both input circuits) affects the opening of the normally open contacts (LED K2 and K3 off).

External device monitoring (EDM)

The UE43-3MF unit can take over the external device monitoring. The contactor monitoring system monitors the external relays by way of their normally closed contacts.

Manual reset

For manual reset, a pushbutton must be connected to terminals Y12 and Y13. Reset is monitored.

Automatic reset

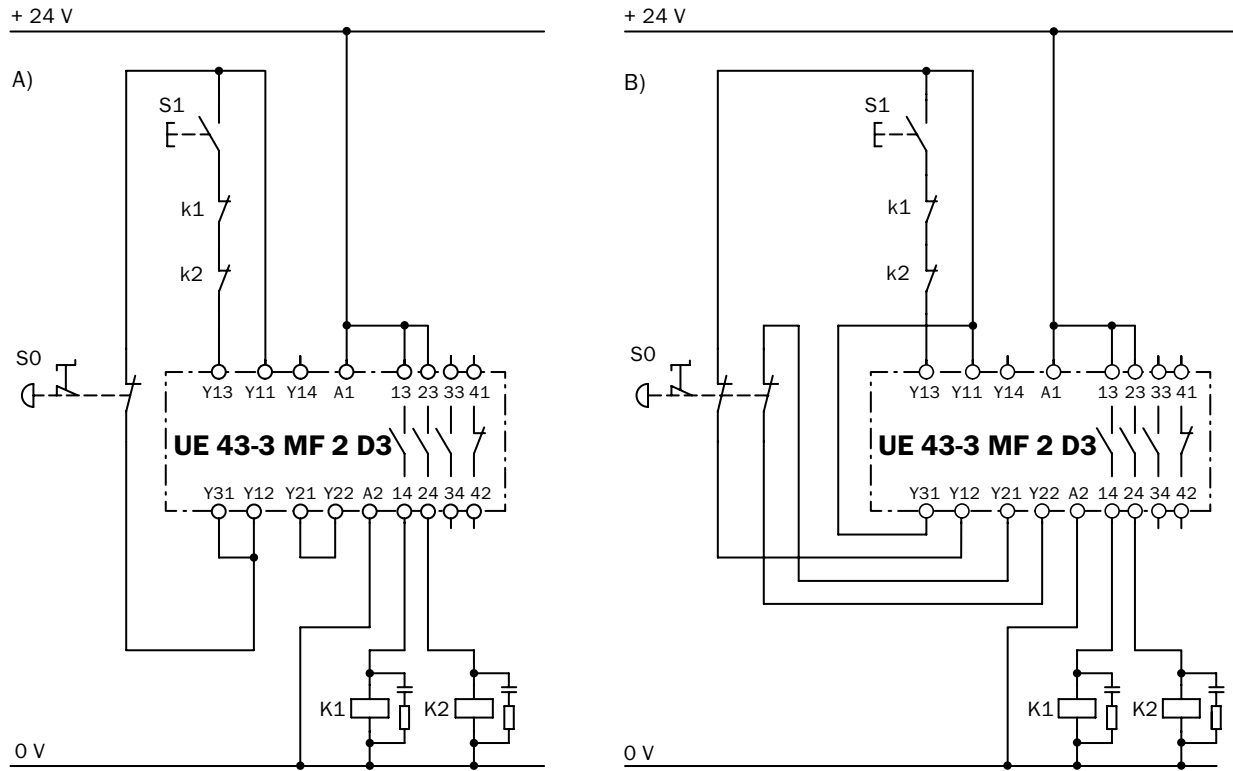
For automatic reset, Y12 - Y14 must be linked.

Cross-circuit detection

Cross-circuit is detected on dual-channel wired systems, if these are wired with opposing polarity.

Connection diagrams

Emergency stop switch connected to UE43-3MF2D3 safety relay



Operating mode: with manual reset and external device monitoring. **A)** Single-channel system, **B)** Dual-channel system

Fast monitoring of safety switches



Product description

The UE43-3AR safety relay monitors all safety switches via cross-circuit detection and sequence monitoring with automatic reset.

At a glance

- Evaluation unit for safety switches
- Cross circuit detection and sequence monitoring for dual-channel actuation
- 3 safety outputs, 1 application diagnostic output
- Automatic reset
- External device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- Complete monitoring and evaluation of sensors
- Faster response times provide short safety distances
- Saves space in the control cabinet thanks to its compact design
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data..... 51
 Ordering information..... 52
 Dimensional drawings 53
 Connection diagram 53

→ www.mysick.com/en/UE43-3AR

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
B _{10d} parameter	3 x 10 ⁵ switching cycles (AC-15, 230 V, I = 5 A) 2 x 10 ⁶ switching cycles (DC-15, 230 V, I = 2 A) 7 x 10 ⁶ switching cycles (DC-13, 24 V, I = 1 A)
PFHd (mean probability of a dangerous failure per hour)	1.30 x 10 ⁻⁸ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Stop category	0 (EN 60204-1)

Electrical data

General electrical data

Voltage supply	A1, A2
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Supply voltage	A1, A2 24 V AC/DC (20.4 V AC/DC ... 26.4 V AC/DC)
Power consumption	≤ 2.8 VA (AC) ≤ 1.3 W (DC)
Residual ripple	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_S.

Control voltage: S11

Control voltage	22 V DC (19.2 V DC ... 40 V DC)
Control current	55 mA

Input circuits: S12, S52, S22

Input voltage	22 V DC (19.2 V DC ... 26.6 V DC)
Input current	25 mA
Cable resistance	≤ 70 Ω

Input circuits: S34

Input voltage	22 V DC (19.2 V DC ... 26.6 V DC)
Input current	5 mA
Cable resistance	≤ 25 Ω
Reset time	
Automatic	≤ 350 ms

Electrical output circuits: 13/14, 23/24, 33/34, 41/42

Response time	≤ 10 ms ¹⁾
Number of enable current (N/O) contacts	3, relevant for safety
Number of signalling current (N/C) contacts	1, not safety-relevant
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	5 V AC/DC ... 300 V AC/DC
Signalling current contact	5 V AC/DC ... 300 V AC/DC
Switching current	
Enable current contact	10 mA ... 8 A
Signalling current contact	10 mA ... 8 A
Usage category	AC-15/DC-13
Rated operating current (voltage)	4 A (230 V AC) 360 switching cycles/h 4 A (24 V DC) 3600 switching cycles/h
Maximum switching frequency	3600/h
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	1 x 10 ⁶ switching cycles

¹⁾ K1/K2.

Operating data

	UE43-3AR2D2	UE43-3AR3D2
Rated impulse withstand voltage U _{imp}	4 kV	
Overvoltage category	II	
Rated insulation voltage U _i	300 V AC	
Test voltage	2 kV (50 Hz) (EN 60439-1)	
Enclosure rating		
Clamps	IP 20 (EN 60529)	
Housing	IP 40 (EN 60529)	
Interference emission	EN 61000-6-4	
Interference resistance	EN 61000-6-2	
Ambient operating temperature	-25 °C ... +55 °C	
Storage temperature	-25 °C ... +70 °C	
Connection type	Screw-type terminals	Plug-in screw-type terminals
Conductor cross-section		
Single wire (2x, same cross-section)	0.14 mm ² ... 0.75 mm ²	
Single wire (1x)	0.14 mm ² ... 2.5 mm ²	
Fine wire with ferrules (2x, same cross-section)	0.25 mm ² ... 0.5 mm ²	
Fine wire with ferrules (1x)	0.25 mm ² ... 2.5 mm ²	
Dimensions (W x H x D)	22.5 mm x 114 mm x 96.5 mm	
Weight	0.27 kg	

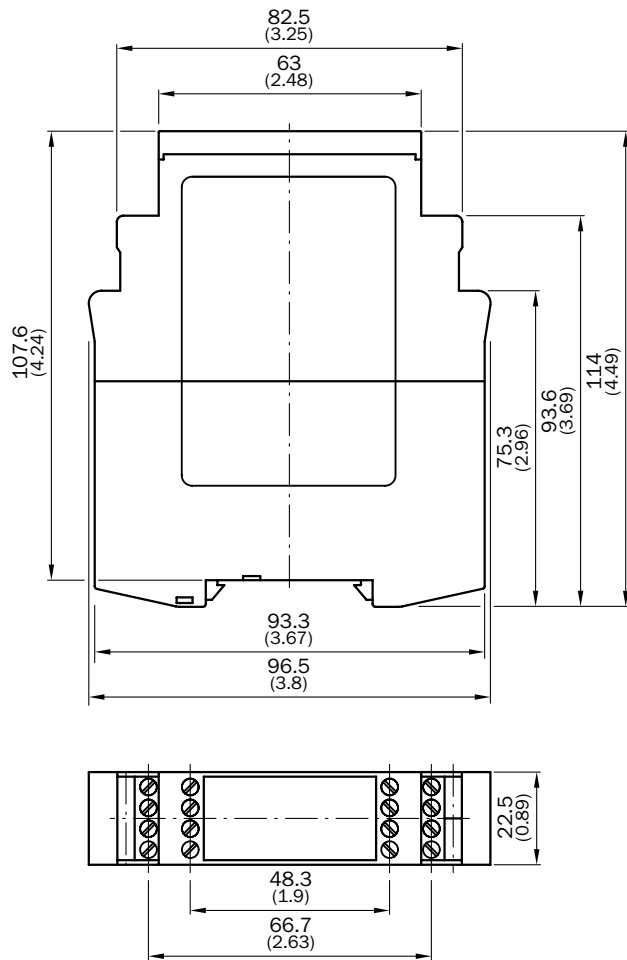
Ordering information

Connection type	Type	Part no.
Screw-type terminals	UE43-3AR2D2	6034565
Plug-in screw-type terminals	UE43-3AR3D2	6034568

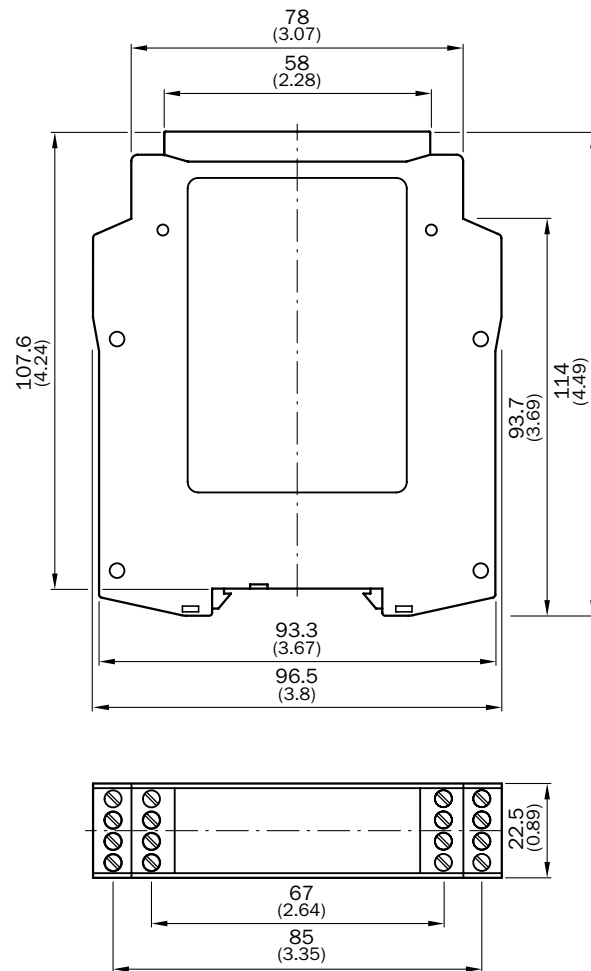
Dimensional drawings

dimensions in mm (inch)

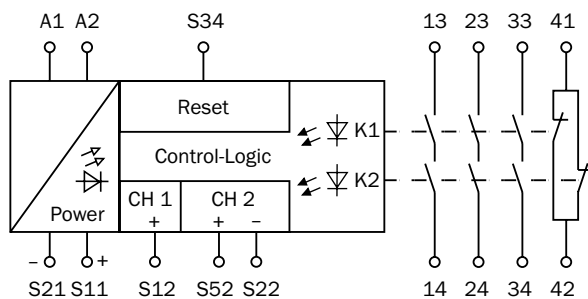
Screw-type terminals



Plug-in screw-type terminals



Connection diagram



Function

After applying the supply voltage (LED SUPPLY illuminates), the normally open contacts remain in the opened state. If the connected sensor is not activated (i.e., the input circuits are closed), then the normally open contacts close immediately in automatic reset (LED K1 and K2 illuminate). Activation of the sensor (opening of one or both input circuits) affects the opening of the normally open outputs (LED K1 and K2 off).

External device monitoring (EDM)

The UE43-3AR unit can take over the function of external de-

vice monitoring. The contactor monitoring system monitors the external relays by means of their normally closed contacts.

Connecting the EDM contacts between S11 and S34 replaces the wire link.

Automatic reset

For automatic resetting, S11 - S34 must be linked.

Cross-circuit detection

Cross-circuit is detected on dual-channel wired systems, if these are wired with opposing polarity.

Safety relay with four safety outputs for monitoring safety switches



Product description

The UE43-4AR safety relay monitors all safety switches via cross-circuit detection and sequence monitoring with an

automatic reset. In addition, the module offers four safety outputs.

At a glance

- Evaluation unit for safety switches
- Cross circuit detection and sequence monitoring for dual-channel actuation
- 4 safety outputs
- Automatic reset
- External device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- Complete monitoring and evaluation of sensors
- Faster response times provide short safety distances
- Saves space in the control cabinet thanks to its compact design
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data..... 55

Ordering information..... 56

Dimensional drawings 57

Connection diagram 57

→ www.mysick.com/en/UE43-4AR

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
B _{10d} parameter	3 x 10 ⁵ switching cycles (AC-15, 230 V, I = 5 A) 2 x 10 ⁶ switching cycles (DC-15, 230 V, I = 2 A) 7 x 10 ⁶ switching cycles (DC-13, 24 V, I = 1 A)
PFHd (mean probability of a dangerous failure per hour)	1.30 x 10 ⁻⁸ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Stop category	0 (EN 60204-1)

Electrical data

General electrical data

Voltage supply	A1, A2
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Supply voltage	A1, A2 24 V AC/DC (20.4 V AC/DC ... 26.4 V AC/DC)
Power consumption	≤ 2.8 VA (AC) ≤ 1.3 W (DC)
Residual ripple	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_S.

Control voltage: S11

Control voltage	22 V DC (19.2 V DC ... 40 V DC)
Control current	55 mA

Input circuits: S12, S52, S22

Input voltage	22 V DC (19.2 V DC ... 26.6 V DC)
Input current	25 mA
Cable resistance	≤ 70 Ω

Input circuits: S34

Input voltage	22 V DC (19.2 V DC ... 26.6 V DC)
Input current	5 mA
Cable resistance	≤ 25 Ω
Reset time	Automatic ≤ 350 ms

Electrical output circuits: 13/14, 23/24, 33/34, 41/42

Response time	≤ 10 ms ¹⁾
Number of enable current (N/O) contacts	4, relevant for safety
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	5 V AC/DC ... 300 V AC/DC
Switching current	
Enable current contact	10 mA ... 8 A
Usage category	AC-15/DC-13
Rated operating current (voltage)	4 A (230 V AC) 360 switching cycles/h 4 A (24 V DC) 3600 switching cycles/h
Maximum switching frequency	3600/h
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	1 x 10 ⁶ switching cycles

¹⁾ K1/K2.

Operating data

	UE43-4AR2D2	UE43-4AR3D2
Rated impulse withstand voltage U _{imp}	4 kV	
Overvoltage category	II	
Rated insulation voltage U _i	300 V AC	
Test voltage	2 kV (50 Hz) (EN 60439-1)	
Enclosure rating		
Clamps	IP 20 (EN 60529)	
Housing	IP 40 (EN 60529)	
Interference emission	EN 61000-6-4	
Interference resistance	EN 61000-6-2	
Ambient operating temperature	-25 °C ... +55 °C	
Storage temperature	-25 °C ... +70 °C	
Connection type	Screw-type terminals	Plug-in screw-type terminals
Conductor cross-section		
Single wire (2x, same cross-section)	0.14 mm ² ... 0.75 mm ²	
Single wire (1x)	0.14 mm ² ... 2.5 mm ²	
Fine wire with ferrules (2x, same cross-section)	0.25 mm ² ... 0.5 mm ²	
Fine wire with ferrules (1x)	0.25 mm ² ... 2.5 mm ²	
Dimensions (W x H x D)	22.5 mm x 114 mm x 96.5 mm	
Weight	0.27 kg	

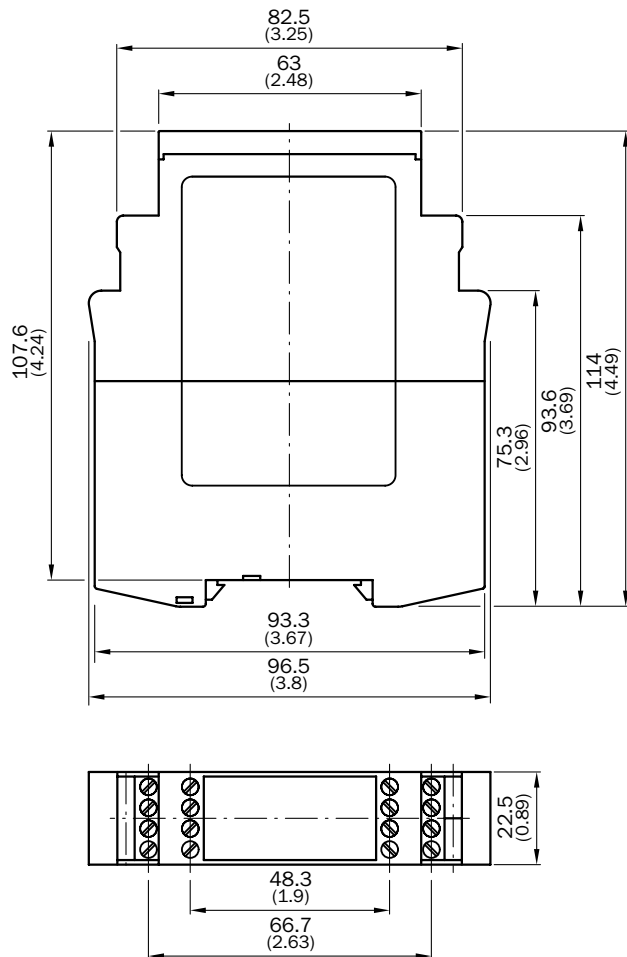
Ordering information

Connection type	Type	Part no.
Screw-type terminals	UE43-4AR2D2	6034772
Plug-in screw-type terminals	UE43-4AR3D2	6034775

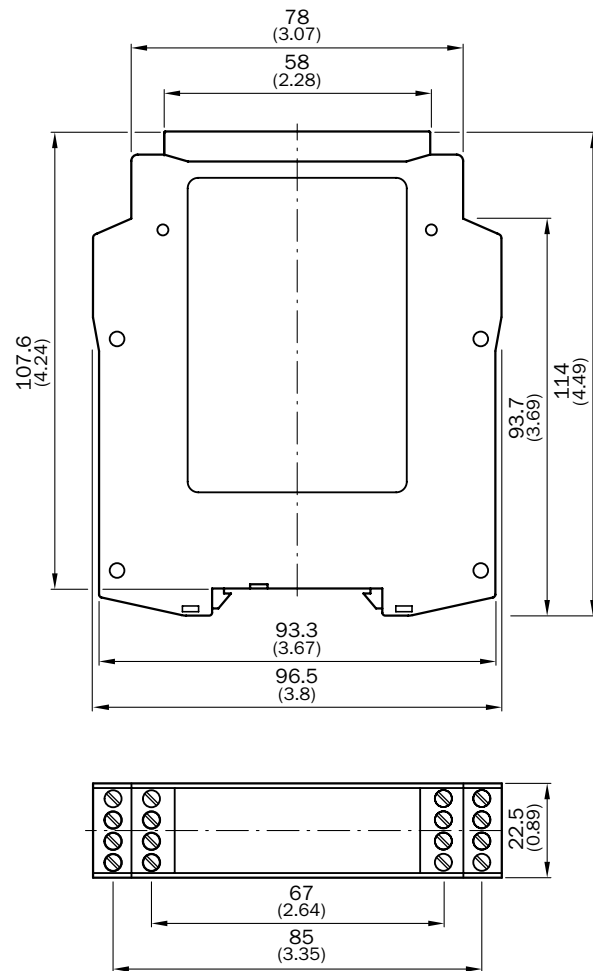
Dimensional drawings

dimensions in mm (inch)

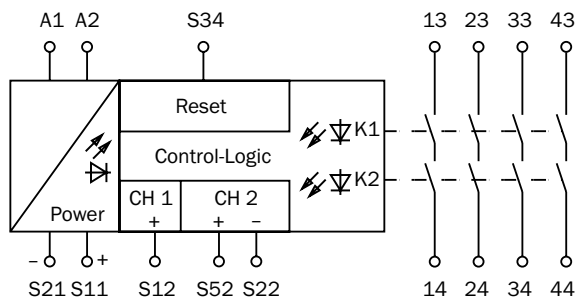
Screw-type terminals



Plug-in screw-type terminals



Connection diagram



Function

After applying the supply voltage (LED SUPPLY illuminates), the normally open contacts remain open. If the connected sensor is not activated or the protective field of the connected electro-sensitive protective equipment (ESPE) is not broken (i.e. the input circuits are closed), then the normally open contacts close immediately in automatic reset, LED K1 and K2 illuminate. The activation of the sensor or incursion into the protective field of the non-contact safety device (open state of one of the two input circuits) affects the opening of the normally open contacts (LED K1 and K2 off).

External device monitoring (EDM)

The UE43-4AR unit can take over external device monitoring. The contactor monitoring system monitors the external relays by way of their normally closed contacts. Connect the EDM contacts between S11 and S34, they replace the wire link.

Automatic reset

S11 - S34 must be linked.

Cross-circuit detection

Cross-circuit is detected on dual-channel wired systems, if these are wired with opposing polarity.

Compact safety relays for applications with mechanical locking switches



Product description

The UE44-3SL safety relay protects doors that require a locking device. The relay sends safety signals to unlock a mechanically protected door and unlocks it after a certain amount of time (max. 30 s). If the door closes again, it will lock

after a maximum time delay of 30 s, allowing the machine to safely start again. The third safety output, which works contrary to the two classical safety outputs, controls the release and the locking.

At a glance

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

Your benefits

- Complete monitoring and evaluation of sensors
- Time delay provides optimal protection of locked doors
- Adjustable time delay at the front of the device (up to 30 s) makes it easy for the user to change settings
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data 59

Ordering information 61

Dimensional drawings 61

Internal circuitry 62

Connection diagrams 63

→ www.mysick.com/en/UE44-3SL

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SILCL3 (EN 62061) ¹⁾ SILCL2 (EN 62061) ²⁾
Category	Category 4 (EN ISO 13849) ¹⁾ Category 3 (EN ISO 13849) ²⁾
Performance level	PL e (EN ISO 13849) ¹⁾ PL d (EN ISO 13849) ²⁾
B _{10d} parameter	4 x 10 ⁵ switching cycles (with maximum load)
PFHd (mean probability of a dangerous failure per hour)	3.0 x 10 ⁻⁸ (EN ISO 13849) ¹⁾ 2.0 x 10 ⁻⁸ (EN ISO 13849) ²⁾
T _M (mission time)	5 years (EN ISO 13849)
Stop category	0 (EN 60204-1)

¹⁾ For contacts 13/14, 23/24.

²⁾ For time contacts 37/38.

Electrical data

General electrical data

Voltage supply	A1, A2
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Supply voltage	A1, A2 24 V DC (20.4 V DC ... 26.4 V DC)
Power consumption	1.8 W (DC)
Residual ripple	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_s.

Control voltage: S11/S33, S21

Control voltage	22 V DC
Control current	60 mA
Short-circuit current	≤ 2.2 A, between S33/S11 and S21
Fuse	PTC resistor

Input circuits: S12, S31/S22

Input current	25 mA
Reset time	
Manual	≤ 30 ms
Automatic	≤ 750 ms
Activation time of reset button	≥ 250 ms
Synchronous time monitoring	≤ 500 ms
Cable resistance	≤ 85 Ω

Electrical output circuits: 13 - 14, 23 - 24, 37 - 38

	UE44-3SL2D33	UE44-3SL2D330	UE44-3SL3D33	UE44-3SL3D330
Response time	≤ 25 ms ¹⁾			
On-delay time	0.15 s ... 3 s	1.5 s ... 30 s	0.15 s ... 3 s	1.5 s ... 30 s
Number of enable current (N/O) contacts	2, category 4			
Number of on-delayed N/O contacts	1, category 3			
Contact type	Positively driven			
Contact material	Silver alloy, gold flashed			
Switching voltage	Enable current contact 10 V AC ... 230 V AC / 10 V DC ... 300 V DC			
Switching current	Enable current contact Total current 10 mA ... 6 A ≤ 12 A			
Usage category	AC-15/DC-13			
Rated operating current (voltage)	4 A (230 V AC) 360 switching cycles/h 3 A (230 V AC) 3600 switching cycles/h 4 A (24 V DC) 360 switching cycles/h 2.5 A (24 V DC) 3600 switching cycles/h			
Maximum switching frequency	3600/h			
Mechanical life (relay contacts)	5 x 10 ⁶ switching cycles			
Electrical life (relay contacts)	2 x 10 ⁶ switching cycles			

¹⁾ K1/K2.

Operating data

	UE44-3SL2D33	UE44-3SL2D330	UE44-3SL3D33	UE44-3SL3D330
Rated impulse withstand voltage U _{imp}	4 kV			
Overvoltage category	II			
Rated insulation voltage U _i	300 V AC			
Test voltage	2 kV (50 Hz) (EN 60439-1)			
Enclosure rating	Clamps Housing IP 20 (EN 60529) IP 40 (EN 60529)			
Interference emission	EN 61000-6-4			
Interference resistance	EN 61000-6-2			
Ambient operating temperature	-25 °C ... +55 °C			
Storage temperature	-25 °C ... +75 °C			
Connection type	Screw-type terminals		Plug-in screw-type terminals	
Conductor cross-section	Single wire (2x, same cross-section) Single wire (1x) Fine wire with ferrules (2x, same cross-section) Fine wire with ferrules (1x) 0.14 mm ² ... 0.75 mm ² 0.14 mm ² ... 2.5 mm ² 0.2 mm ² ... 0.5 mm ² 0.25 mm ² ... 2.5 mm ²			
Dimensions (W x H x D)	22.5 mm x 114 mm x 96.5 mm			
Weight	0.2 kg			

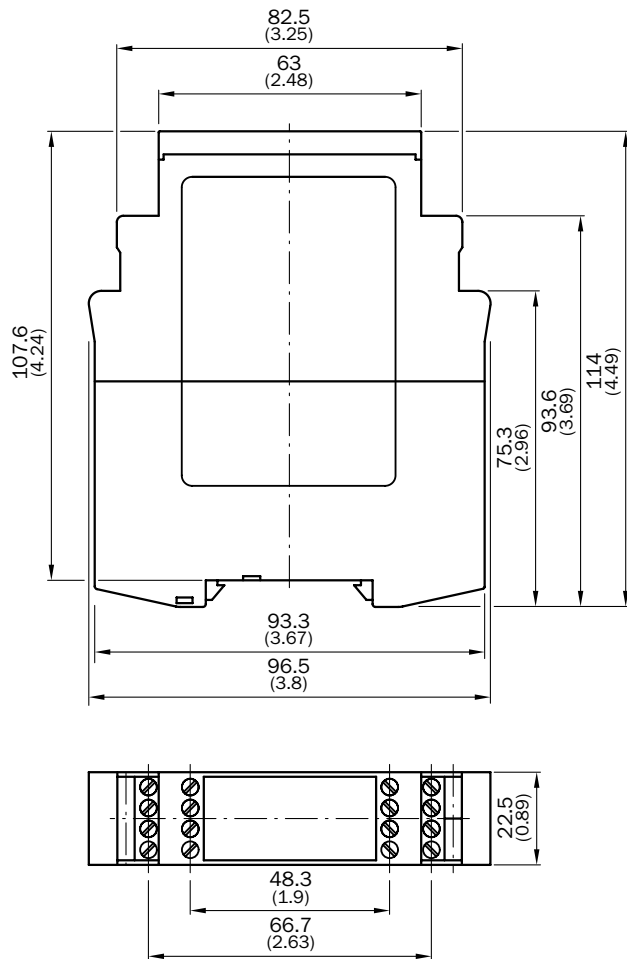
Ordering information

Connection type	On-delay time	Type	Part no.
Screw-type terminals	0.15 s ... 3 s	UE44-3SL2D33	6024907
	1.5 s ... 30 s	UE44-3SL2D330	6024909
Plug-in screw-type terminals	0.15 s ... 3 s	UE44-3SL3D33	6024908
	1.5 s ... 30 s	UE44-3SL3D330	6024910

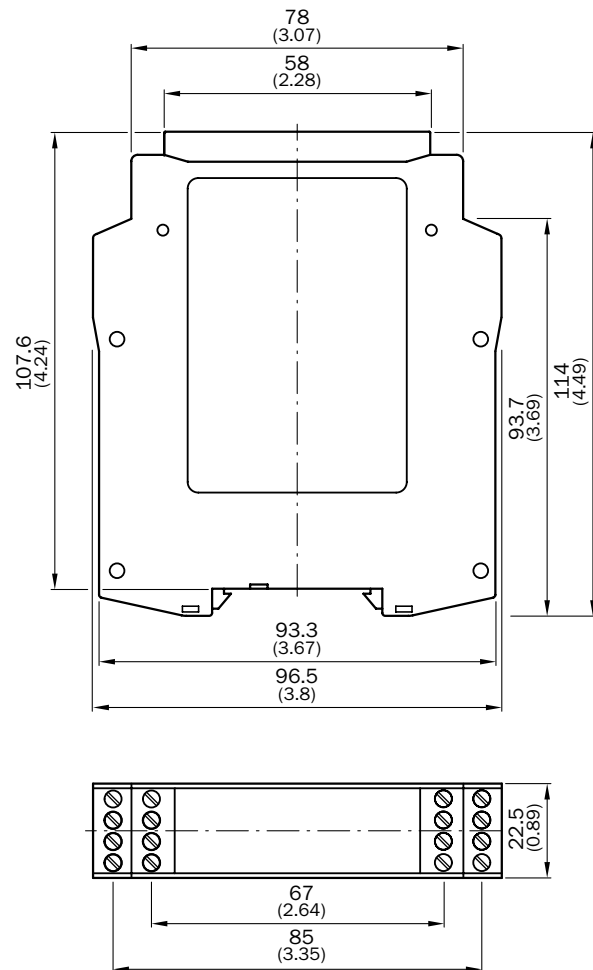
Dimensional drawings

dimensions in mm (inch)

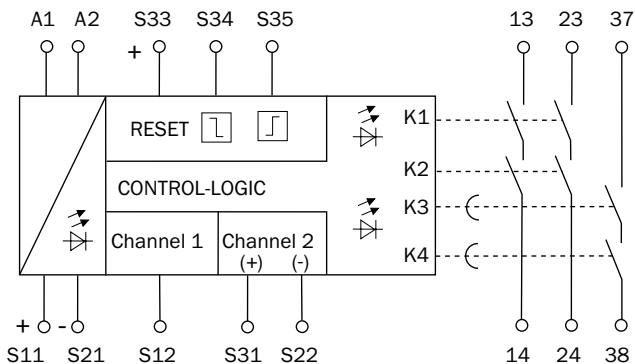
Screw-type terminals



Plug-in screw-type terminals



Internal circuitry



Function

After applying the supply voltage (LED SUPPLY illuminates), the normally open contacts (13 - 14 / 23 - 24) remain open. After completion of the on-delay set on the relay, the delay circuit (37 - 38) closes, and the LED K3/K4 illuminates. If the connected sensor is not activated (i.e., the input circuits are closed), the normally open contacts (13 - 14 / 23 - 24) close immediately during automatic reset, the LED K1/K2 illuminates, and the delay circuit (37 - 38) opens (LED K3/K4 off). In the case of manual reset, this only occurs after pressing and releasing the reset button.

The activation of the sensor (opening of one or both input circuits) affects the opening of both normally open contacts (13 - 14 / 23 - 24), with LEDs K1/K2 being off, and a time delayed closing of the third circuit (37 - 38), with LED K3/K4 illuminating.

External device monitoring (EDM)

The unit can take over external device monitoring. The contactor monitoring system monitors the external relays by way of their normally closed contacts.

Manual reset

For manual reset, a pushbutton is to be connected between 24 V DC supply and terminal S34. This reset is monitored. For applications with mechanical locking safety switches, only channel 2 must be closed during manual reset.

Automatic reset

For automatic reset, S12 - S35 must be linked. For applications with mechanical locking safety switches, only channel 1 must be closed during automatic reset.

Cross-circuit detection

Cross-circuit is detected on dual-channel wired systems, if these are wired with opposing polarity.

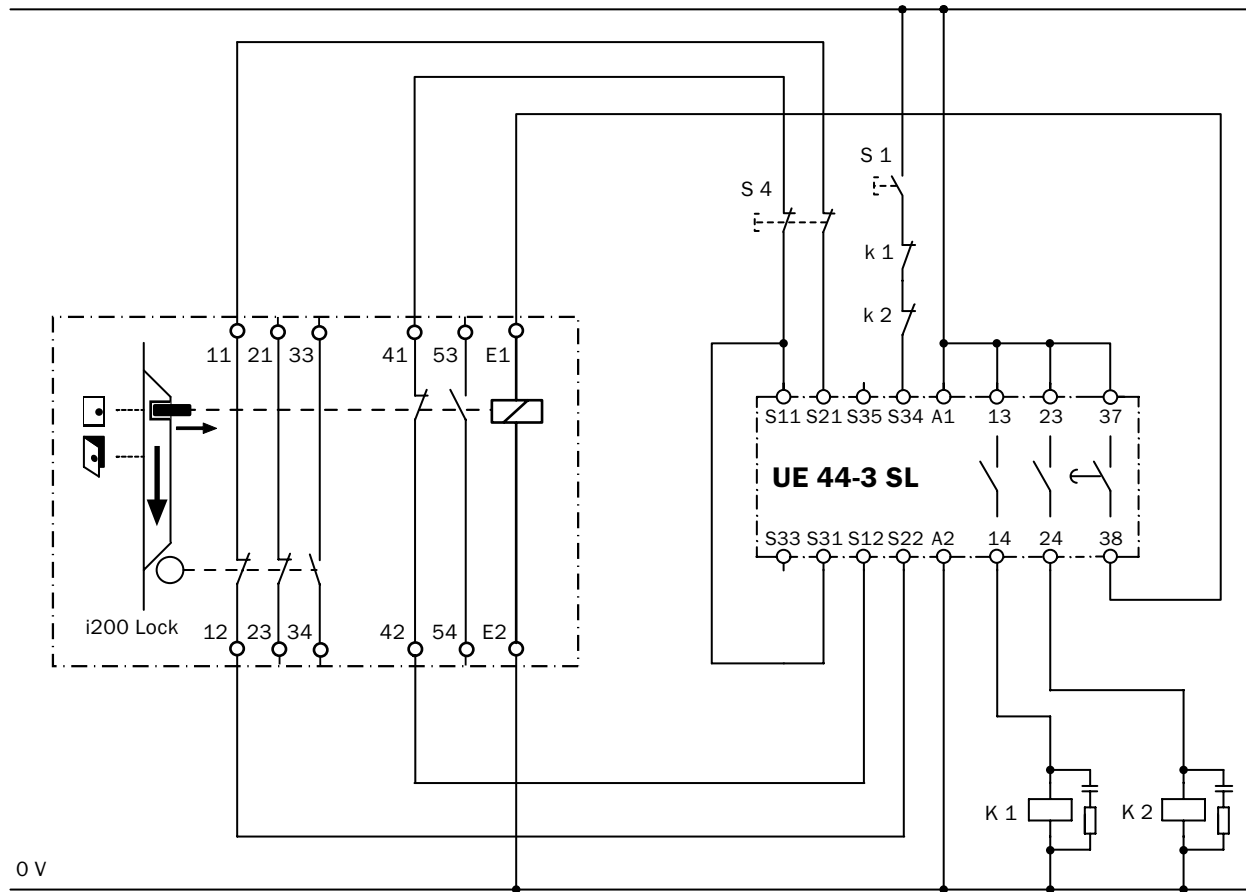
Monitoring of synchronization

Only if input 2 closes no later than 0.5 sec after input 1, do the output circuits close. If input 2 closes before input 1, the synchronization monitoring will not be affected and the output circuits will close. This monitoring only takes place in automatic reset.

Connection diagrams

i200 Lock safety locking device connected to UE44-3SL safety relay

+ 24 V



Operating mode: with manual reset and external device monitoring (EDM)

Safety stop via time delay



Product description

The UE45-3S1 safety relay monitors safety switches and emergency stop pushbuttons in applications with a safety brake.

It offers 2 safety contacts, which directly switch off some of the actuators. The other actuators must be active until the

machine has come to a complete stop. These actuators can be deactivated after a certain time.

This ensures the brake stops the machine, allowing access once the machine has come to a complete stop.

At a glance

- Ideal for the evaluation of emergency stop pushbuttons and safety switches
- Cross circuit detection and sequence monitoring for dual-channel actuation
- 2 N/O contacts for a direct integration into a machine environment
- 1 N/O contact for stop category 1 applications, time delayed up to 30 s
- Manual or automatic reset
- External device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- Complete monitoring and evaluation of sensors
- Time delay provides optimal protection of brake applications
- Adjustable time delay at the front of the device (up to 30 s) makes it easy for the user to change settings
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data 65

Ordering information 67

Dimensional drawings 67

Internal circuitry 68

Connection diagrams 69

→ www.mysick.com/en/UE45-3S1

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SILCL3 (EN 62061) ¹⁾ SILCL2 (EN 62061) ²⁾
Category	Category 4 (EN ISO 13849) ¹⁾ Category 3 (EN ISO 13849) ²⁾
Performance level	PL e (EN ISO 13849) ¹⁾ PL d (EN ISO 13849) ²⁾
B _{10d} parameter	4 x 10 ⁵ switching cycles (with maximum load)
PFHd (mean probability of a dangerous failure per hour)	3.0 x 10 ⁻⁸ (EN ISO 13849) ¹⁾ 2.0 x 10 ⁻⁸ (EN ISO 13849) ²⁾
T _M (mission time)	20 years (EN ISO 13849)
Stop category	
	0 (EN 60204-1) ¹⁾ 1 (EN 60204-1) ²⁾

¹⁾ For contacts 13/14, 23/24.

²⁾ For time contacts 37/38.

Electrical data

General electrical data

Voltage supply	A1, A2
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Supply voltage	A1, A2 24 V DC (20.4 V DC ... 26.4 V DC)
Power consumption	2.6 W (DC)
Residual ripple	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_s.

Control voltage: S11/S33, S21

Control voltage	22 V DC
Control current	60 mA
Short-circuit current	≤ 2.2 A, between S 11 and A 2
Fuse	PTC resistor

Input circuits: S12, S31/S22

Input current	S12/S31	25 mA
Reset time	Manual	≤ 30 ms
	Automatic	≤ 600 ms
Activation time of reset button (S34)		≤ 30 ms
Activation time of reset button (S35)		≤ 600 ms
Synchronous time monitoring		≤ 500 ms
Cable resistance		≤ 85 Ω

Electrical output circuits: 13 - 14, 23 - 24, 37 - 38

	UE45-3S12D33	UE45-3S12D330	UE45-3S13D33	UE45-3S13D330
Response time	25 ms ¹⁾			
Off-delay time	0.15 s ... 3 s	1.5 s ... 30 s	0.15 s ... 3 s	1.5 s ... 30 s
Number of enable current (N/O) contacts	2, category 4			
Number of off-delayed N/O contacts	1, category 3			
Contact type	Positively driven			
Contact material	Silver alloy, gold flashed			
Switching voltage	10 V AC ... 230 V AC / 10 V DC ... 300 V DC			
Switching current	10 mA ... 6 A			
Enable current contact	10 mA ... 6 A			
Total current	≤ 12 A			
Usage category	AC-15/DC-13			
Rated operating current (voltage)	4 A (230 V AC) 360 switching cycles/h 4 A (24 V DC) 360 switching cycles/h 2.5 A (24 V DC) 3600 switching cycles/h			
Maximum switching frequency	3600/h			
Mechanical life (relay contacts)	5 x 10 ⁶ switching cycles			
Electrical life (relay contacts)	2 x 10 ⁶ switching cycles			

¹⁾ K1/K2.

Operating data

	UE45-3S12D33	UE45-3S12D330	UE45-3S13D33	UE45-3S13D330
Rated impulse withstand voltage U _{imp}	4 kV			
Overvoltage category	II			
Rated insulation voltage U _i	300 V AC			
Test voltage	2 kV (50 Hz) (EN 60439-1)			
Enclosure rating	IP 20 (EN 60529)			
Clamps	IP 20 (EN 60529)			
Housing	IP 40 (EN 60529)			
Interference emission	EN 61000-6-4			
Interference resistance	EN 61000-6-2			
Ambient operating temperature	-25 °C ... +55 °C			
Storage temperature	-25 °C ... +75 °C			
Connection type	Screw-type terminals		Plug-in screw-type terminals	
Conductor cross-section	0.14 mm ² ... 0.75 mm ²			
Single wire (2x, same cross-section)	0.14 mm ² ... 0.75 mm ²			
Single wire (1x)	0.14 mm ² ... 2.5 mm ²			
Fine wire with ferrules (2x, same cross-section)	0.2 mm ² ... 0.5 mm ²			
Fine wire with ferrules (1x)	0.25 mm ² ... 2.5 mm ²			
Dimensions (W x H x D)	22.5 mm x 114 mm x 96.5 mm			
Weight	0.2 kg			

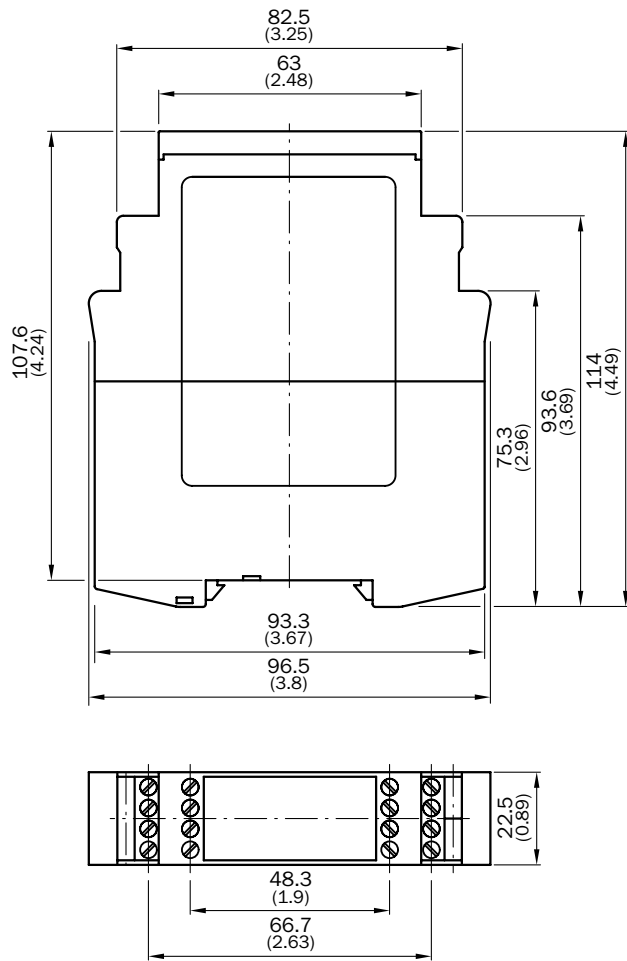
Ordering information

Connection type	Off-delay time	Type	Part no.
Screw-type terminals	0.15 s ... 3 s	UE45-3S12D33	6024911
	1.5 s ... 30 s	UE45-3S12D330	6024913
Plug-in screw-type terminals	0.15 s ... 3 s	UE45-3S13D33	6024912
	1.5 s ... 30 s	UE45-3S13D330	6024914

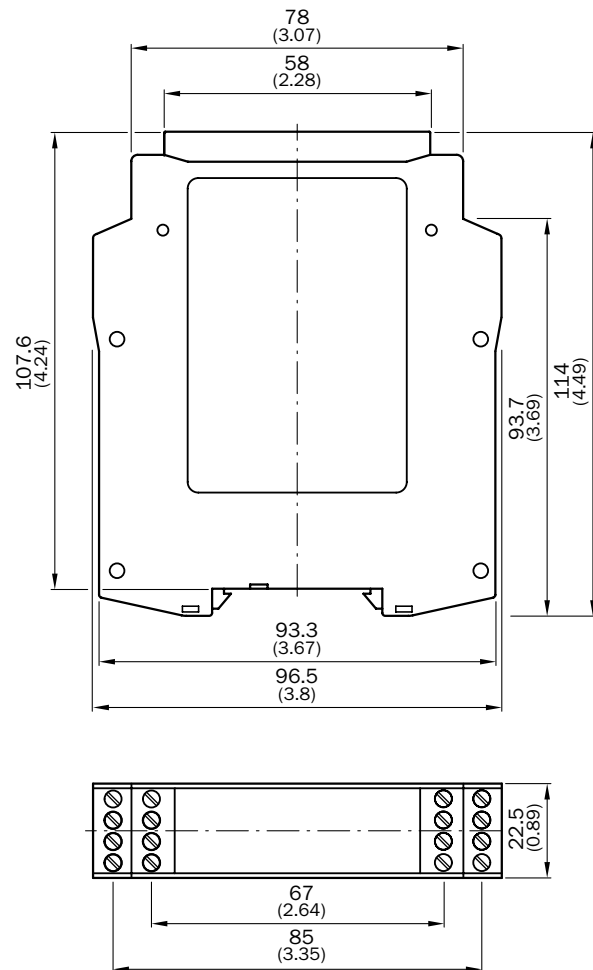
Dimensional drawings

dimensions in mm (inch)

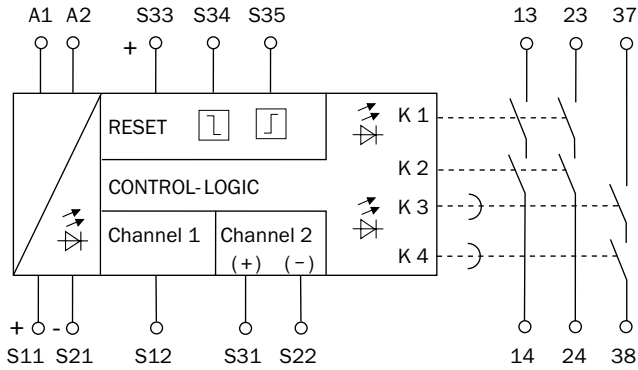
Screw-type terminals



Plug-in screw-type terminals



Internal circuitry



Function

After applying the supply voltage (LED SUPPLY illuminates), the normally open contacts remain open. If the connected sensor is not activated (i.e., the input circuits are closed), the normally open contacts close immediately during automatic resetting; LED K1/K2 and K3/K4 illuminate. In the case of manual resetting, this only occurs after pressing and releasing the reset button.

The activation of the sensor (opening of one or both input circuits) affects the opening of both normally open contacts (13 - 14 / 23 - 24) immediately, and a time delayed opening of the third circuit (37 - 38), with LED K1/K2 immediately going off and K3/K4 going off later.

External device monitoring (EDM)

The unit can take over external device monitoring. The contactor monitoring system monitors the external relays by way of their normally closed contacts.

Manual reset

For manual reset, a pushbutton must be connected to terminals S33 - S34. This reset is monitored.

Automatic reset

For automatic reset, S33 - S35 must be linked.

Cross-circuit detection

Cross-circuit is detected on dual-channel wired systems, if these are wired with opposing polarity.

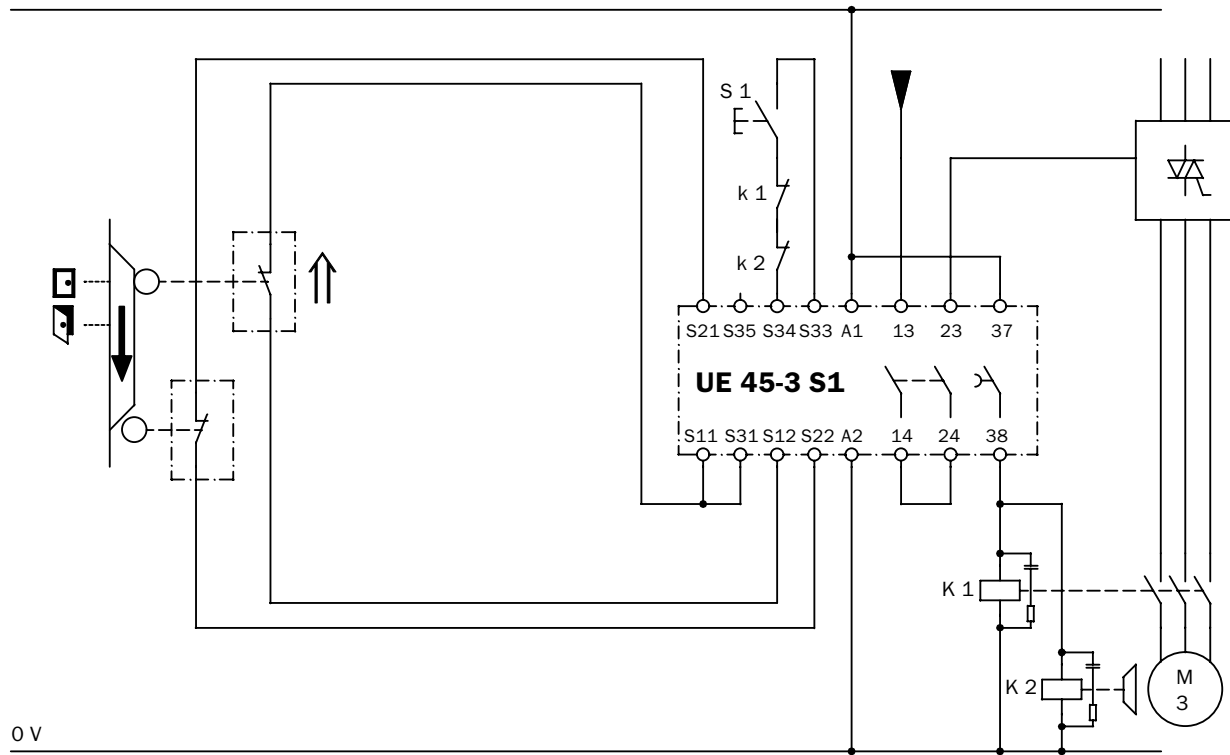
Monitoring of synchronization

Only if input 2 closes no later than 0.5 sec after input 1, do the output circuits close. If input 2 closes before input 1, the synchronization monitoring of will not be affected and the output circuits will close. This monitoring only takes place in automatic reset.

Connection diagrams

Two safety switches connected to UE45-3S1 safety relay

+ 24 V



0 V

Operating mode: with manual reset and external device monitoring (EDM)

Safety relay for all common safety applications



Product description

The UE48-20S safety relay can connect all common safety solutions. In the field of emergency stop pushbuttons, mechanical and non-contact safety switches it not only controls the signals, but controls the cross circuit detection and sequence monitoring as well. The

signals of the opto-electronic protective device are directly taken over and converted by the safety relay. The relay detects objects on the pressure-sensitive mat when it registers a short-circuit on the input circuit.

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 for dual-channel actuation
- 2 safety outputs, 1 application diagnostic output
- Manual or automatic reset
- External device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- One module for all common applications simplifies machine integration
- Complete monitoring and evaluation of sensors
- The sequence monitoring takes over the evaluation of non-contact safety switches
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data 71

Ordering information 73

Dimensional drawings 73

Internal circuitry 74

Connection diagrams 75

→ www.mysick.com/en/UE48-20S

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
B _{10d} parameter	1.26 x 10 ⁶ switching cycles (AC-15, 230 V, I = 1.5 A) 5.9 x 10 ⁶ switching cycles (AC-15, 230 V, I = 0.75 A) 4.35 x 10 ⁵ switching cycles (DC-13, 24 V, I = 2.5 A) 1 x 10 ⁷ switching cycles (DC-13, 24 V, I = 0.63 A)
PFHd (mean probability of a dangerous failure per hour)	3.0 x 10 ⁻⁸ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Stop category	0 (EN 60204-1)

Electrical data

General electrical data

Voltage supply	A1, A2
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Supply voltage	A1, A2 24 V AC/DC (20.4 V AC/DC ... 26.4 V AC/DC)
Power consumption	≤ 4.6 VA (AC) ≤ 2.1 W (DC)
Residual ripple	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_s.

Control voltage: S11, S21, S33

Control voltage	22 V DC
Control current	40 mA ... 100 mA
Short-circuit current	≤ 300 mA, between S33 / S11 and S21
Fuse	Electronic fuse

Input circuits: S12, S22, S31, S34, S35

Input voltage	HIGH	17.4 V DC ... 26.4 V DC
	LOW	-3 V DC ... 5 V DC
Input current	S12, S22, S31	40 mA
	S34, S35	5 mA
Reset time	Manual	≤ 40 ms
	Automatic	≤ 80 ms
Activation time of reset button		≥ 50 ms
Test pulse width		≤ 1,000 μs
Test pulse rate		≤ 10 Hz
Cable resistance		≤ 35 Ω

Electrical output circuits: 13 - 14, 23 - 24, 31 - 32, 33 - 34

Response time	≤ 25 ms ¹⁾
Number of enable current (N/O) contacts	2, relevant for safety
Number of signalling current (N/C) contacts	1, not safety-relevant
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Signalling current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Switching current	
Enable current contact	10 mA ... 6 A
Signalling current contact	10 mA ... 6 A
Total current	≤ 12 A
Usage category	AC-15/DC-13
Rated operating current (voltage)	4 A (230 V AC) 360 switching cycles/h 3 A (230 V AC) 3600 switching cycles/h 4 A (24 V DC) 360 switching cycles/h 2.5 A (24 V DC) 3600 switching cycles/h
Maximum switching frequency	3600/h
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	2 x 10 ⁶ switching cycles

¹⁾ K1/K2.

Operating data

	UE48-20S2D2	UE48-20S3D2
Rated impulse withstand voltage U _{imp}	4 kV	
Overvoltage category	II	
Rated insulation voltage U _i	300 V AC	
Test voltage	2 kV (50 Hz) (EN 60439-1)	
Enclosure rating		
Clamps	IP 20 (EN 60529)	
Housing	IP 40 (EN 60529)	
Interference emission	EN 61000-6-4	
Interference resistance	EN 61000-6-2	
Ambient operating temperature	-25 °C ... +55 °C	
Storage temperature	-25 °C ... +75 °C	
Connection type	Screw-type terminals	Plug-in screw-type terminals
Conductor cross-section		
Single wire (2x, same cross-section)	0.14 mm ² ... 0.75 mm ²	
Single wire (1x)	0.14 mm ² ... 2.5 mm ²	
Fine wire with ferrules (2x, same cross-section)	0.2 mm ² ... 0.5 mm ²	
Fine wire with ferrules (1x)	0.25 mm ² ... 2.5 mm ²	
Dimensions (W x H x D)	22.5 mm x 114 mm x 96.5 mm	
Weight	0.21 kg	

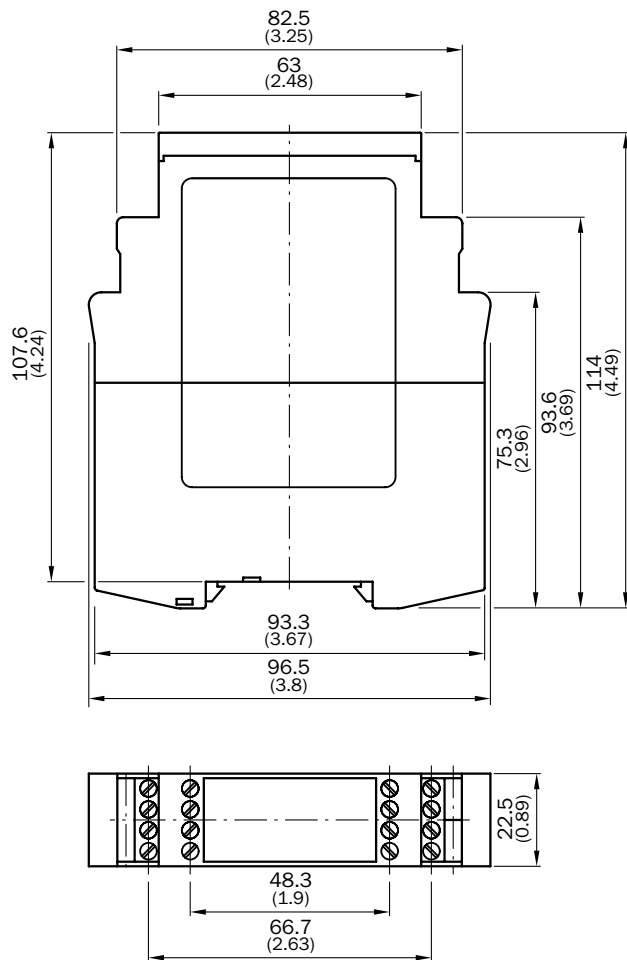
Ordering information

Connection type	Type	Part no.
Screw-type terminals	UE48-20S2D2	6024915
Plug-in screw-type terminals	UE48-20S3D2	6024916

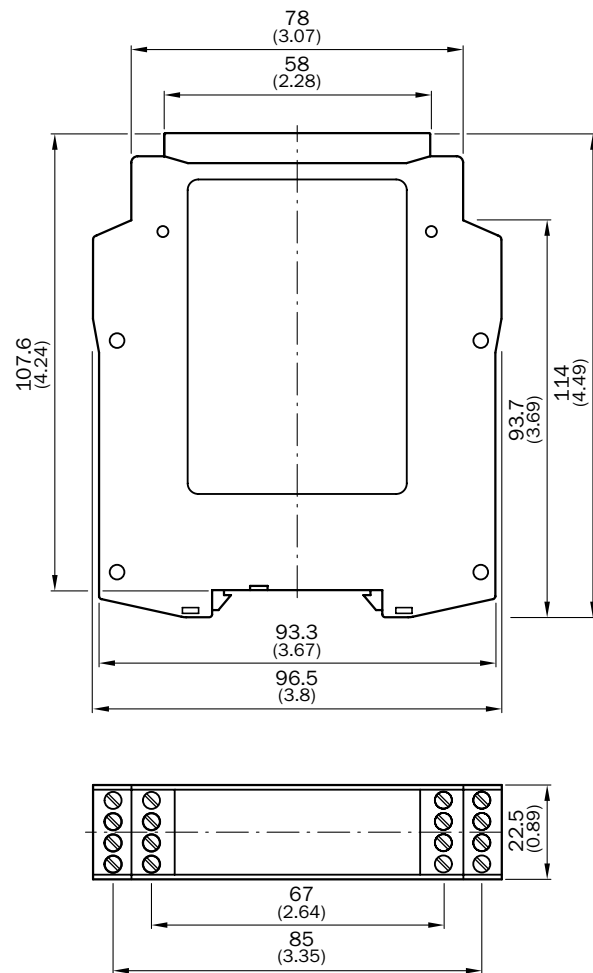
Dimensional drawings

dimensions in mm (inch)

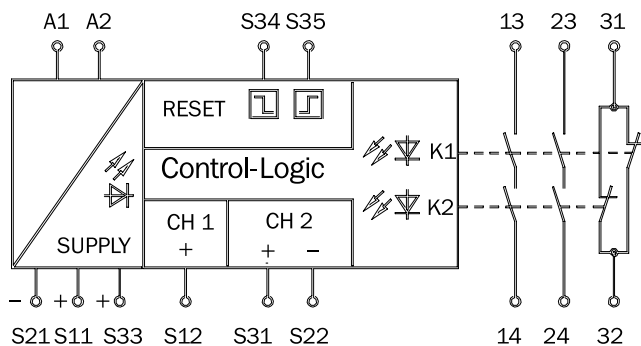
Screw-type terminals



Plug-in screw-type terminals



Internal circuitry



Function

After applying the supply voltage (LED SUPPLY illuminates), the normally open contacts remain open. If the connected sensor is not activated or the protective field of the connected electro-sensitive protective equipment (ESPE) is not broken (i.e., the input circuits are closed), then the normally open contacts close immediately in automatic reset; LEDs K1 and K2 illuminate. In the case of manual resetting, this only occurs after pressing and releasing the reset button. The activation of the sensor or incursion into the protective field of the non-contact safety device (open state of one of the two input circuits) affects the opening of the normally open contacts (LED K1 and K2 off).

External device monitoring (EDM)

The unit can take over external device monitoring. The contactor monitoring system monitors the external relays by way of their normally closed contacts.

Manual reset

For manual reset, a pushbutton must be connected to terminals S33 - S34. This reset is monitored.

Automatic reset

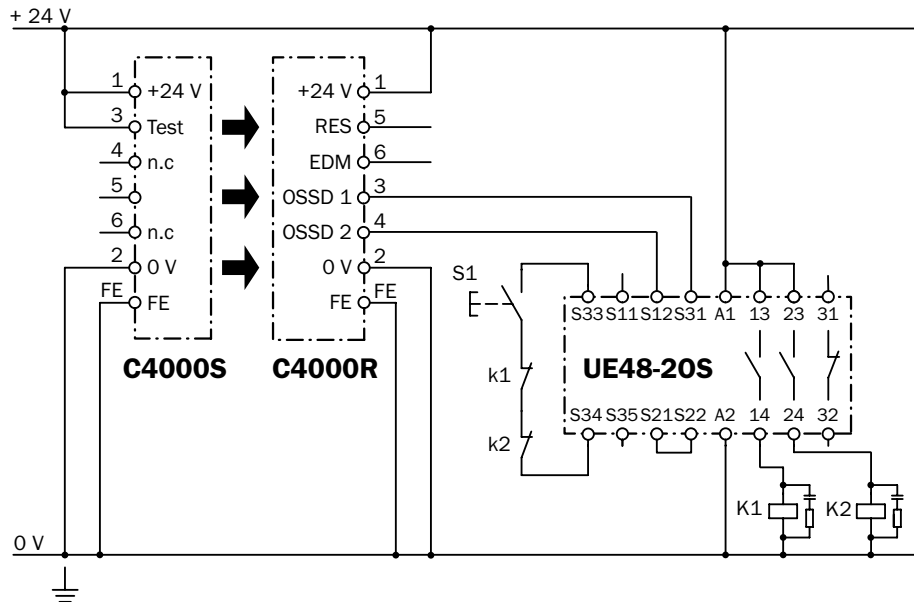
For ESPE's: S33 - S35 must be linked; for applications with potential free contacts on the input circuit, S12 - S35 must be linked.

Cross-circuit detection

Cross-circuit is detected on dual-channel wired systems, if these are wired with opposing polarity.

Connection diagrams

C4000 Basic safety light curtain connected to UE48-20S safety relay



Operating mode: with manual reset and external device monitoring (EDM)

Safety relay with 3 safety outputs for all common safety applications



Product description

The UE48-30S safety relay offers a variety of versatile functions that can solve all common safety applications. In the field of safety switches, emergency stop pushbuttons and non-contact switches, the safety relay controls not only the sig-

nals, but also the cross-circuit detection and sequence monitoring. The signals of the opto-electronic protective devices are directly taken over and converted by the safety relay.

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 for dual-channel actuation
- 3 safety outputs
- Manual or automatic reset
- External device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- One module for all common applications simplifies machine integration
- Complete monitoring and evaluation of sensors
- The sequence monitoring takes over the evaluation of non-contact safety switches
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data..... 77
 Ordering information..... 79
 Dimensional drawings 80
 Connection diagram 81

→ www.mysick.com/en/UE48-30S

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
B _{10d} parameter	1.26 x 10 ⁶ switching cycles (AC-15, 230 V, I = 1.5 A) 5.9 x 10 ⁶ switching cycles (AC-15, 230 V, I = 0.75 A) 4.35 x 10 ⁵ switching cycles (DC-13, 24 V, I = 2.5 A) 1 x 10 ⁷ switching cycles (DC-13, 24 V, I = 0.63 A)
PFHd (mean probability of a dangerous failure per hour)	3.0 x 10 ⁻⁸ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Stop category	0 (EN 60204-1)

Electrical data

General electrical data

Voltage supply	A1, A2
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Supply voltage	A1, A2 24 V AC/DC (20.4 V AC/DC ... 26.4 V AC/DC)
Power consumption	4.6 VA (AC), 2.1 W (DC)
Residual ripple	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_s.

Control voltage: S11, S21

Control voltage	22 V DC
Control current	40 mA ... 100 mA
Short-circuit current	≤ 300 mA, between S 33 / S 11 and S 21
Fuse	Electronic fuse

Input circuits: S12, S31, S22, S34, S35

Input voltage	HIGH LOW	17.4 V DC ... 26.4 V DC -3 V DC ... 5 V DC
Input current	S12, S31/S22 S34/S35	40 mA 5 mA
Reset time	Manual Automatic	≤ 40 ms ≤ 80 ms
Activation time of reset button		≥ 50 ms
Test pulse width		≤ 1,000 μs
Test pulse rate		≤ 10 Hz
Cable resistance		≤ 35 Ω

Electrical output circuits: 13/14, 23/24, 33/34

Response time	≤ 25 ms ¹⁾
Number of enable current (N/O) contacts	3, relevant for safety
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Switching current	
Enable current contact	10 mA ... 6 A
Total current	≤ 12 A
Usage category	AC-15/DC-13
Rated operating current (voltage)	4 A (230 V AC) 360 switching cycles/h 3 A (230 V AC) 3600 switching cycles/h 4 A (24 V DC) 360 switching cycles/h 2.5 A (24 V DC) 3600 switching cycles/h
Maximum switching frequency	3600/h
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	2 x 10 ⁶ switching cycles

¹⁾ K1/K2.

Operating data

	UE48-30S2D2	UE48-30S3D2
Rated impulse withstand voltage U _{imp}	4 kV	
Overvoltage category	II	
Rated insulation voltage U _i	300 V AC	
Test voltage	2 kV (50 Hz) (EN 60439-1)	
Enclosure rating		
Clamps	IP 20 (EN 60529)	
Housing	IP 40 (EN 60529)	
Interference emission	EN 61000-6-4	
Interference resistance	EN 61000-6-2	
Ambient operating temperature	-25 °C ... +55 °C	
Storage temperature	-25 °C ... +75 °C	
Connection type	Screw-type terminals	Plug-in screw-type terminals
Conductor cross-section		
Single wire (2x, same cross-section)	0.14 mm ² ... 0.75 mm ²	
Single wire (1x)	0.14 mm ² ... 2.5 mm ²	
Fine wire with ferrules (2x, same cross-section)	0.2 mm ² ... 0.5 mm ²	
Fine wire with ferrules (1x)	0.25 mm ² ... 2.5 mm ²	
Dimensions (W x H x D)	22.5 mm x 114 mm x 96.5 mm	
Weight	0.21 kg	

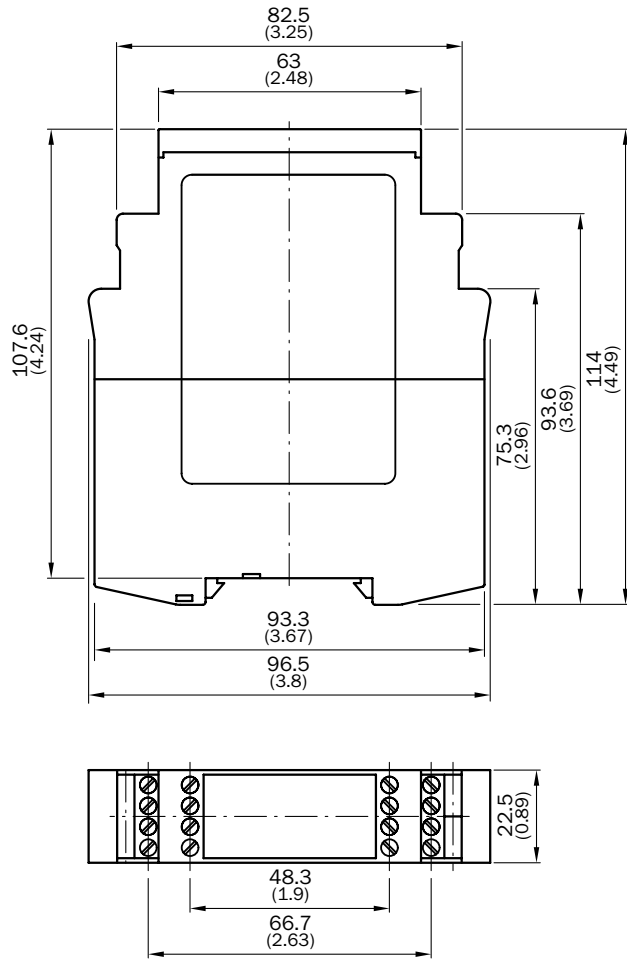
Ordering information

Connection type	Type	Part no.
Screw-type terminals	UE48-30S2D2	6025089
Plug-in screw-type terminals	UE48-30S3D2	6025097

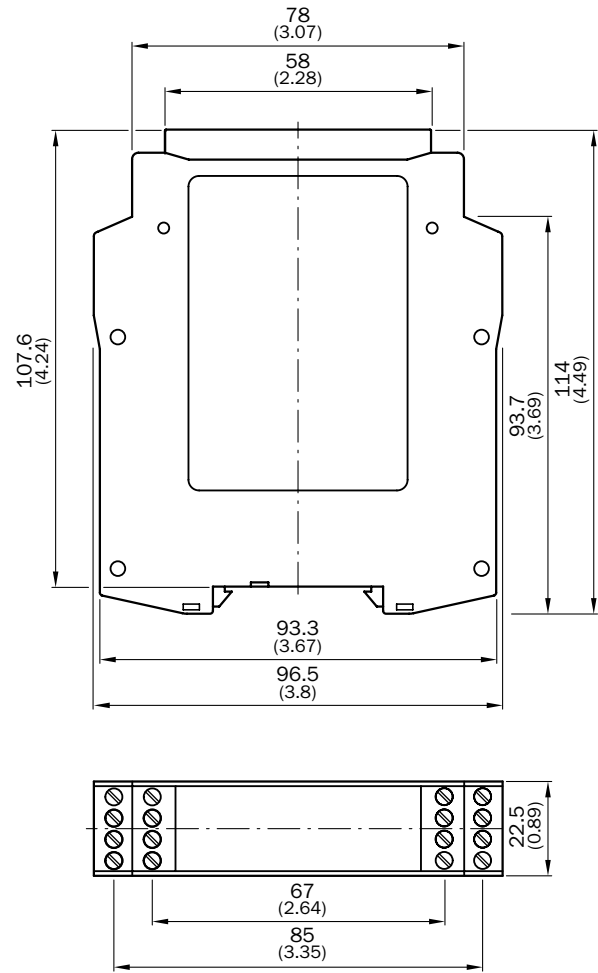
Dimensional drawings

dimensions in mm (inch)

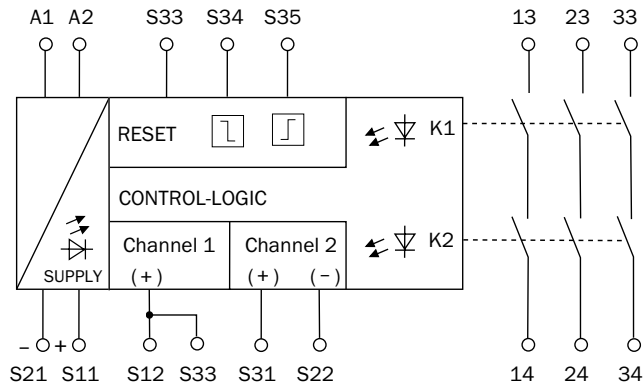
Screw-type terminals



Plug-in screw-type terminals



Connection diagram



Function

After applying the supply voltage (LED SUPPLY illuminates), the normally open contacts remain open. If the connected sensor is not activated or the protective field of the connected electro-sensitive protective equipment (ESPE) is not broken (i.e., the input circuits are closed), then the normally open contacts close immediately in automatic reset; LEDs K1 and K2 illuminate. In the case of manual resetting, this only occurs after pressing and releasing the reset button. The activation of the sensor or incursion into the protective field of the non-contact safety device (open state of one of the two input circuits) affects the opening of the normally open contacts (LED K1 and K2 off).

External device monitoring (EDM)

The unit can take over external device monitoring. The contactor monitoring system monitors the external relays by way of their normally closed contacts.

Manual reset

For manual reset, a pushbutton must be connected to terminals S33 - S34. This reset is monitored.

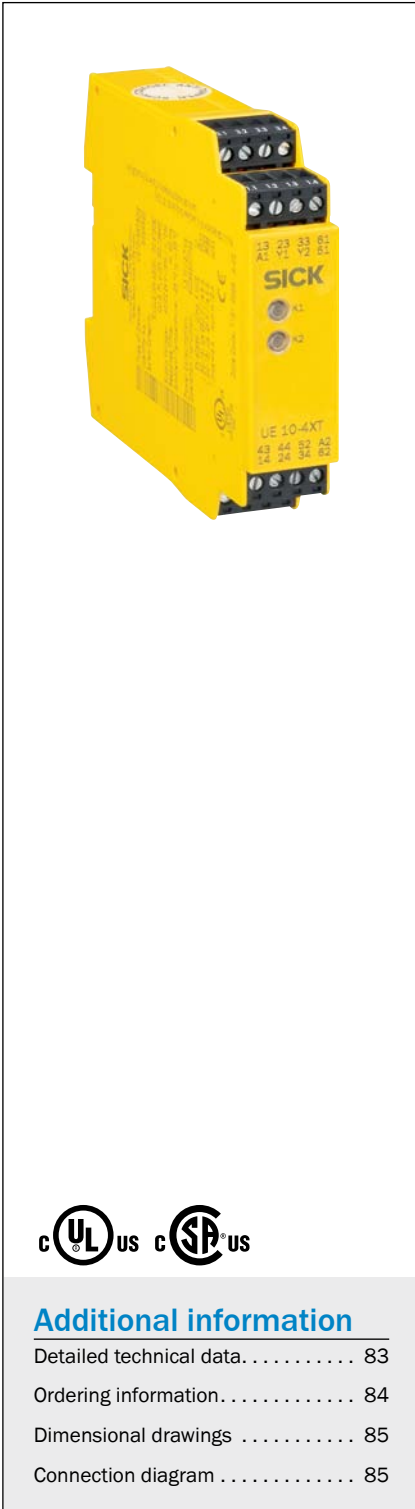
Automatic reset

For ESPE's: S33 - S35 must be linked; for applications with potential free contacts on the input circuit, S12 - S35 must be linked.

Cross-circuit detection

Cross-circuit is detected on dual-channel wired systems, if these are wired with opposing polarity.

Contact expansion for all safety relays



Product description

The UE10-4XT safety relay expands evaluation units from the safety relays product family group. It has four safety

outputs and two application diagnostic outputs and can switch an array of actuators.

At a glance

- 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

Your benefits

- Offers all needed contact paths in a compact form
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data..... 83

Ordering information..... 84

Dimensional drawings 85

Connection diagram 85

→ www.mysick.com/en/UE10-4XT

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508) ¹⁾ SILCL3 (EN 62061) ¹⁾
Category	Category 4 (EN ISO 13849) ¹⁾
Performance level	PL d (EN ISO 13849) ¹⁾
B _{10d} parameter	1 x 10 ⁶ switching cycles (AC-15, 230 V, I = 0,5 A) 3.5 x 10 ⁵ switching cycles (DC-13, 24 V, I = 2 A) 1.2 x 10 ⁶ switching cycles (DC-13, 24 V, I = 0,5 A)
PFHd (mean probability of a dangerous failure per hour)	2.0 x 10 ⁻⁷ (EN ISO 13849)
T _M (mission time)	4 years (EN ISO 13849)

¹⁾ If the feedback current path Y1 - Y2 (external device monitoring) is monitored using an appropriate main unit.

Electrical data

General electrical data

Voltage supply	A1, A2
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Supply voltage	A1, A2 24 V AC/DC (20.4 V AC/DC ... 26.4 V AC/DC)
Power consumption	2.7 VA (AC), 1.5 W (DC)
Residual ripple	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_s.

Electrical output circuits: 13/14, 23/24, 33/34, 43/44, 51/52, 61/62, Y1/Y2

Response time	≤ 70 ms ¹⁾
Number of enable current (N/O) contacts	4, relevant for safety
Number of signalling current (N/C) contacts	2, not safety-relevant
Number of contactor monitoring (N/C) contacts	1, external device monitoring
Contact type	Positively driven
Contact material	Silver alloy, gold flashed
Switching voltage	
Enable current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Signalling current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC
Contactor monitoring contact	10 V DC ... 24 V DC
Switching current	
Enable current contact	10 mA ... 6 A
Signalling current contact	10 mA ... 2 A
Contactor monitoring contact	10 mA ... 100 mA
Total current	≤ 12 A
Usage category	AC-15/DC-13
Rated operating current (voltage)	3 A (230 V AC) 3600 switching cycles/h 4 A (24 V DC) 360 switching cycles/h 2.5 A (24 V DC) 3600 switching cycles/h
Maximum switching frequency	3600/h
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles
Electrical life (relay contacts)	2 x 10 ⁶ switching cycles

¹⁾ K1/K2.

Operating data

	UE10-4XT2D2	UE10-4XT3D2
Rated impulse withstand voltage U_{imp}	4 kV	
Overvoltage category	III ¹⁾	
Rated insulation voltage U_i	300 V AC	
Test voltage	2 kV (50 Hz) (EN 60439-1)	
Enclosure rating		
Clamps	IP 20 (EN 60529)	
Housing	IP 40 (EN 60529)	
Interference emission	EN 61000-6-4	
Interference resistance	EN 61000-6-2	
Ambient operating temperature	-25 °C ... +55 °C	
Storage temperature	-25 °C ... +75 °C	
Connection type	Screw-type terminals	Plug-in screw-type terminals
Conductor cross-section		
Single wire (2x, same cross-section)	0.14 mm ² ... 0.75 mm ²	
Single wire (1x)	0.14 mm ² ... 2.5 mm ²	
Fine wire with ferrules (2x, same cross-section)	0.2 mm ² ... 0.5 mm ²	
Fine wire with ferrules (1x)	0.25 mm ² ... 2.5 mm ²	
Dimensions (W x H x D)	22.5 mm x 114 mm x 96.5 mm	
Weight	0.2 kg	

¹⁾ See operating instructions.

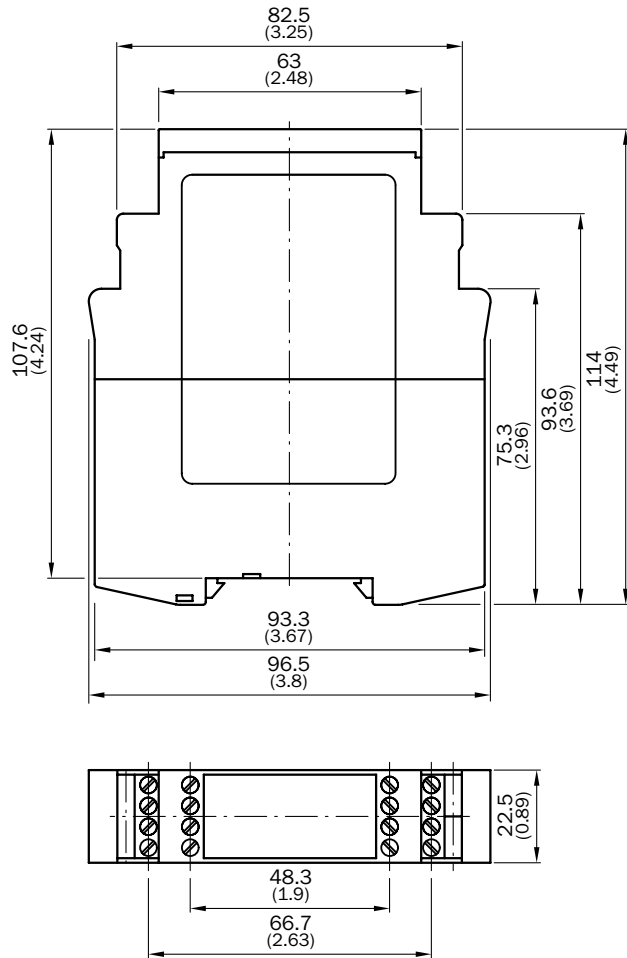
Ordering information

Connection type	Type	Part no.
Screw-type terminals	UE10-4XT2D2	6024919
Plug-in screw-type terminals	UE10-4XT3D2	6024920

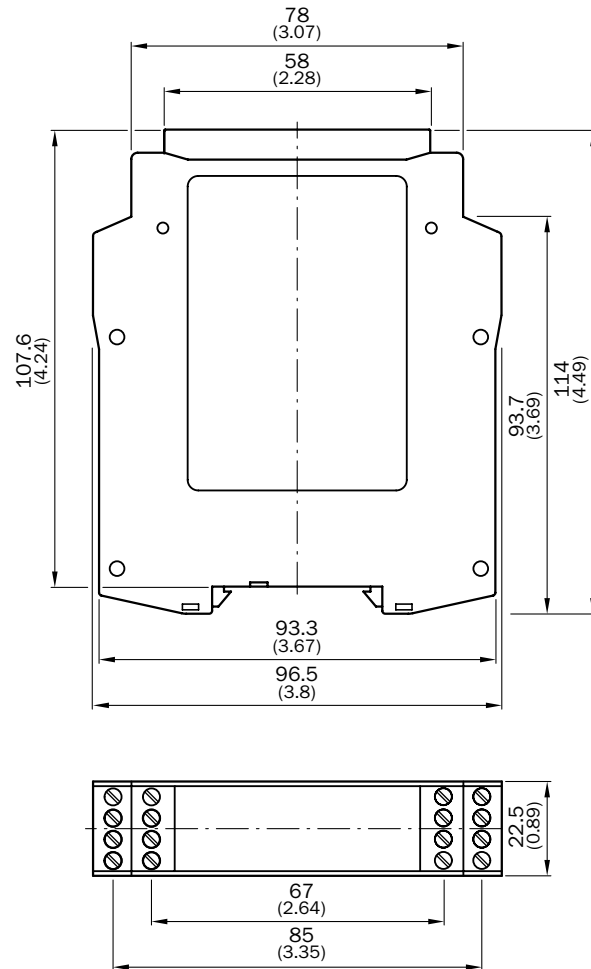
Dimensional drawings

dimensions in mm (inch)

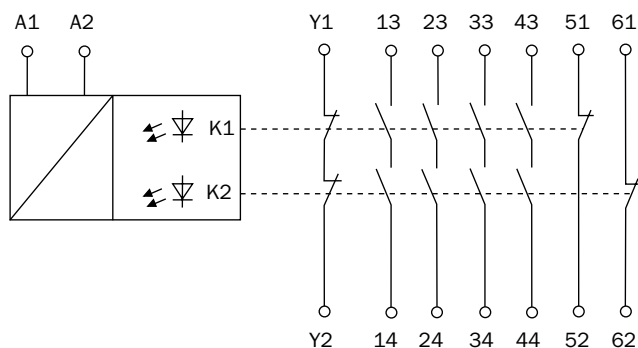
Screw-type terminals



Plug-in screw-type terminals



Connection diagram



Function

The supply voltage of the contact expansion module is linked to the main unit's output contact.

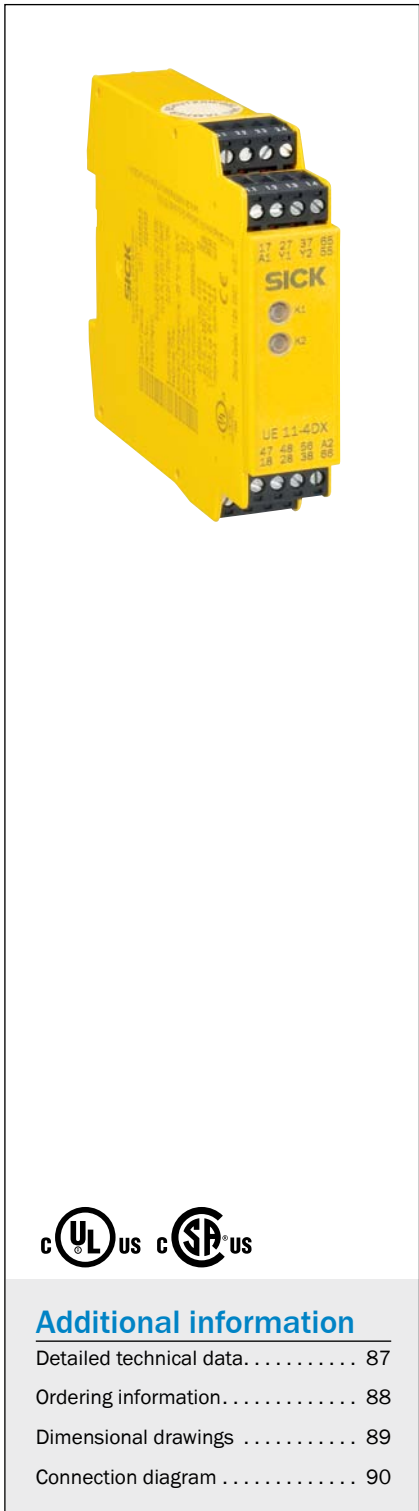
Upon applying the supply voltage to terminals A1 and A2, relays K1 and K2 are energized (the LEDs for both relays illuminate): The 4 output contacts close and the two normally closed contacts and the EDM (feedback) circuit switch to open circuit status.

When the output contacts of the standard unit open (e.g., by activation of the emergency stop), the relays K1 and K2 de-energize: The normally open contacts open, and the two normally closed contacts close.

External device monitoring (EDM)

If external device monitoring is implemented in the connected main unit, then the normally closed contacts (Y1 - Y2) prevent the main unit from resetting, when K1 and/or K2 do not de-energize.

Time-delayed contact expansion for all safety relays



Product description

The UE11-4DX safety relay expands evaluation units from the safety relays product family group. It has four safety outputs and two application diagnos-

tic outputs and can switch an array of actuators. All safety outputs have a pre-defined time delay.

At a glance

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

Your benefits

- Offers all needed contact paths in a compact form
- Time delay for optimal protection of brake applications
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry



Additional information

Detailed technical data..... 87

Ordering information..... 88

Dimensional drawings 89

Connection diagram 90

→ www.mysick.com/en/UE11-4DX

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508) ¹⁾ SILCL3 (EN 62061) ¹⁾
Category	Category 4 (EN ISO 13849) ¹⁾
Performance level	PL d (EN ISO 13849) ¹⁾
B _{10d} parameter	1 x 10 ⁶ switching cycles (AC-15, 230 V, I = 0.5 A) 3.5 x 10 ⁵ switching cycles (DC-13, 24 V, I = 2 A) 1.2 x 10 ⁶ switching cycles (DC-13, 24 V, I = 0.5 A)
PFHd (mean probability of a dangerous failure per hour)	2.0 x 10 ⁻⁷ (EN ISO 13849)
T _M (mission time)	4 years (EN ISO 13849)

¹⁾ If the feedback current path Y1 - Y2 (external device monitoring) is monitored using an appropriate main unit.

Electrical data

General electrical data

Voltage supply	A1, A2
Output circuit > 25 V AC / 60 V DC	PELV
Output circuit ≤ 25 V AC / 60 V DC	PELV or SELV
Supply voltage	A1, A2 24 V DC (20.4 V DC ... 26.4 V DC)
Power consumption	1 W (DC)
Residual ripple	≤ 2.4 V _{pp} ¹⁾

¹⁾ In DC operation, within the limits of V_s.

Electrical output circuits: 17/18, 27/28, 37/38, 47/48, 55/56, 65/66, Y1/Y2

	UE11-4DX2D30.5	UE11-4DX2D31	UE11-4DX2D32	UE11-4DX2D33	UE11-4DX3D30.5	UE11-4DX3D31	UE11-4DX3D32	UE11-4DX3D33
Off-delay time	0.5 s	1 s	2 s	3 s	0.5 s	1 s	2 s	3 s
Number of enable current (N/O) contacts	4, relevant for safety							
Number of signalling current (N/C) contacts	2, not safety-relevant							
Number of contactor monitoring (N/C) contacts	1, external device monitoring							
Contact type	Positively driven							
Contact material	Silver alloy, gold flashed							
Switching voltage								
Enable current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC							
Signalling current contact	10 V AC ... 230 V AC / 10 V DC ... 300 V DC							
Contactor monitoring contact	10 V DC ... 24 V DC							
Switching current								
Enable current contact	10 mA ... 6 A							
Signalling current contact	10 mA ... 2 A							
Contactor monitoring contact	10 mA ... 100 mA							
Total current	≤ 12 A							
Usage category	AC-15/DC-13							

Table continued → p. 88

	UE11-4DX2D30.5	UE11-4DX2D31	UE11-4DX2D32	UE11-4DX2D33	UE11-4DX3D30.5	UE11-4DX3D31	UE11-4DX3D32	UE11-4DX3D33
Rated operating current (voltage)	3 A (230 V AC) 3600 switching cycles/h 4 A (24 V DC) 360 switching cycles/h 2.5 A (24 V DC) 3600 switching cycles/h							
Maximum switching frequency	3600/h							
Mechanical life (relay contacts)	1 x 10 ⁷ switching cycles							
Electrical life (relay contacts)	2 x 10 ⁶ switching cycles							

Operating data

	UE11-4DX2D30.5	UE11-4DX2D31	UE11-4DX2D32	UE11-4DX2D33	UE11-4DX3D30.5	UE11-4DX3D31	UE11-4DX3D32	UE11-4DX3D33
Rated impulse withstand voltage U _{imp}	4 kV							
Overvoltage category	III ¹⁾							
Rated insulation voltage U _i	300 V AC							
Test voltage	2 kV (50 Hz) (EN 60439-1)							
Enclosure rating								
Clamps	IP 20 (EN 60529)							
Housing	IP 40 (EN 60529)							
Interference emission	EN 61000-6-4							
Interference resistance	EN 61000-6-2							
Ambient operating temperature	-25 °C ... +55 °C							
Storage temperature	-25 °C ... +75 °C							
Connection type	Screw-type terminals				Plug-in screw-type terminals			
Conductor cross-section								
Single wire (2x, same cross-section)	0.14 mm ² ... 0.75 mm ²							
Single wire (1x)	0.14 mm ² ... 2.5 mm ²							
Fine wire with ferrules (2x, same cross-section)	0.2 mm ² ... 0.5 mm ²							
Fine wire with ferrules (1x)	0.25 mm ² ... 2.5 mm ²							
Dimensions (W x H x D)	22.5 mm x 114 mm x 96.5 mm							
Weight	0.2 kg							

¹⁾ See operating instructions.

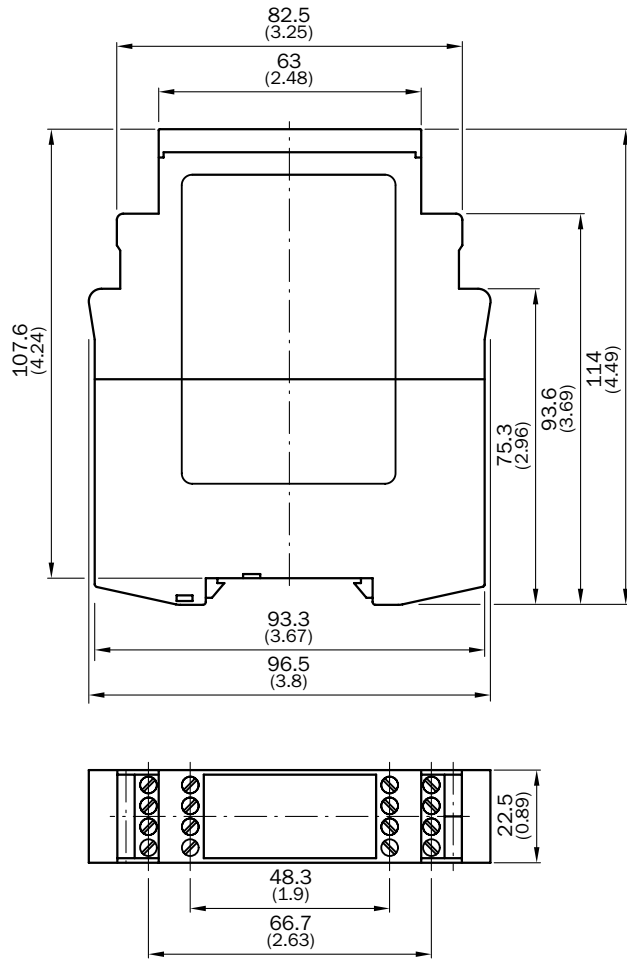
Ordering information

Connection type	Off-delay time	Type	Part no.
Screw-type terminals	0.5 s	UE11-4DX2D30.5	6024921
	1 s	UE11-4DX2D31	6024922
	2 s	UE11-4DX2D32	6024923
	3 s	UE11-4DX2D33	6024924
Plug-in screw-type terminals	0.5 s	UE11-4DX3D30.5	6024925
	1 s	UE11-4DX3D31	6024926
	2 s	UE11-4DX3D32	6024927
	3 s	UE11-4DX3D33	6024928

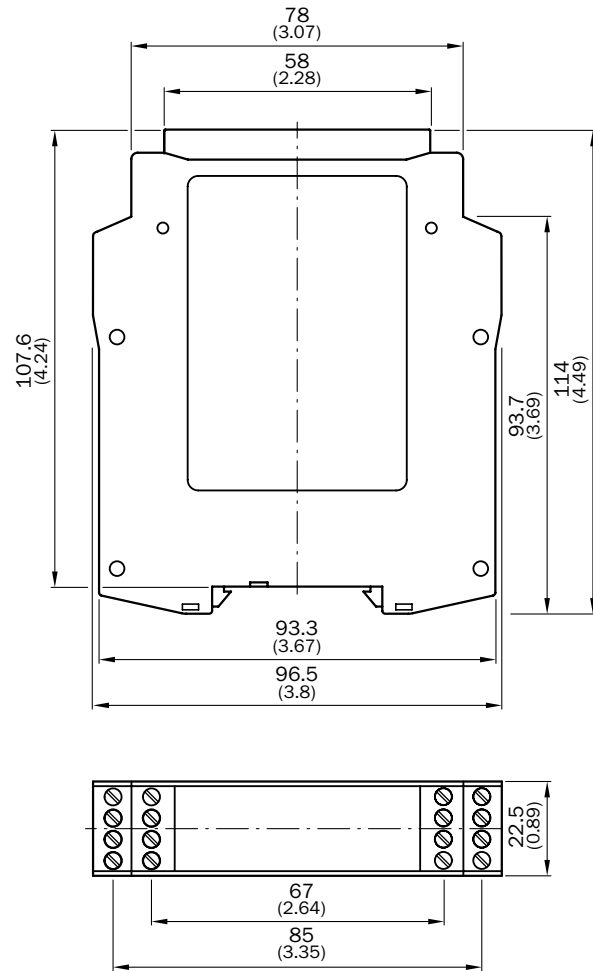
Dimensional drawings

dimensions in mm (inch)

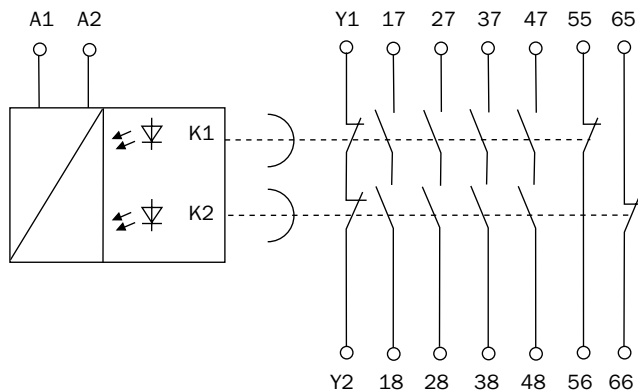
Screw-type terminals



Plug-in screw-type terminals



Connection diagram



Function

The supply voltage of the contact expansion module is triggered by the standard unit's output contact.

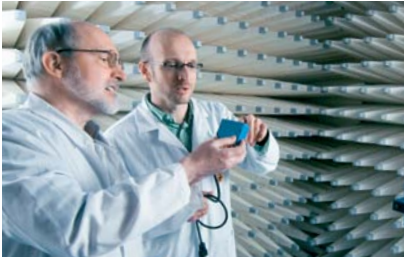
Upon applying the supply voltage to terminals A1 and A2, relays K1 and K2 are energized (the LEDs for both relays illuminate): The 4 output contacts close and the two normally closed contacts and the EDM (feedback) circuit switch to open circuit status.

When the output contacts of the standard unit open (e.g., by activation of the emergency stop switch), the relays K1 and K2 de-energize after a unit specific delay. These fixed switch-off delay times of 0.5 s, 1 s, 2 s and 3 s are according to the type. This is achieved by means of capacitors to ensure that the off-delay runs its full duration, even during power supply failures. Only after the delay period has expired do the relays K1 and K2 return to their neutral rest position. With the combination of UE11-4DX (with off-delayed) and a standard unit, stop category 1 (EN 418) can be realized.

External device monitoring (EDM)

If external device monitoring is implemented in the upstream installed standard unit, then the normally closed contacts (Y1 - Y2) prevent the standard unit from resetting, when K1 and/or K2 do not de-energize.

SICK at a glance



Leading technologies

With a staff of more than 5,800 and nearly 50 subsidiaries and representations worldwide, SICK is one of the leading and most successful manufacturers of sensor technology. The power of innovation and solution competency have made SICK the global market leader. No matter what the project and industry may be, talking with an expert from SICK will provide you with an ideal basis for your plans – there is no need to settle for anything less than the best.



Unique product range

- Non-contact detecting, counting, classifying, positioning and measuring of any type of object or media
- Accident and operator protection with sensors, safety software and services
- Automatic identification with bar code and RFID readers
- Laser measurement technology for detecting the volume, position and contour of people and objects
- Complete system solutions for analysis and flow measurement of gases and liquids



Comprehensive services

- SICK LifeTime Services – for safety and productivity
- Application centers in Europe, Asia and North America for the development of system solutions under real-world conditions
- E-Business Partner Portal www.mysick.com – price and availability of products, requests for quotation and online orders

Worldwide presence with subsidiaries in the following countries:

Australia
Belgium/Luxembourg
Brasil
Česká Republika
Canada
China
Danmark
Deutschland
España
France
Great Britain
India
Israel
Italia
Japan

México
Nederland
Norge
Österreich
Polska
România
Russia
Schweiz
Singapore
Slovenija
South Africa
South Korea
Suomi
Sverige
Taiwan
Türkiye
United Arab Emirates
USA

Please find detailed addresses and additional representatives and agencies in all major industrial nations at www.sick.com