

# Safety relay

## Manual or automatic reset

### UE 43-3 MF



#### Safety class

Class 4

#### Supply voltage

AC: 24 V AC, 115 V AC, 120 V AC, 230 V AC; DC: 24 V DC

#### Output contacts

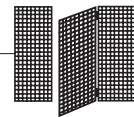
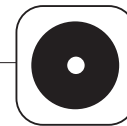
Safety  3      Auxiliary  1

#### Dimensions

75 x 45 x 120.5 mm

#### Function

- Dual-channel wiring with short circuit detection
- Reset automatic/manual
- External Device Monitoring (EDM)



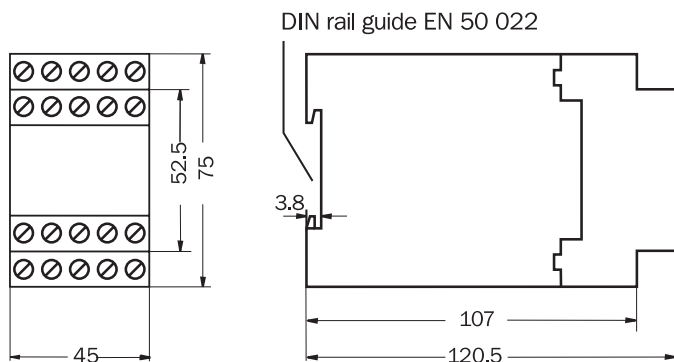
#### Features

- Safety Category 4 approved to EN 954-1
- Stop Category 0 approved to EN 60 204-1
- 3 NO safe circuits + 1 NC auxiliary circuit
- Automatic or manual reset
- External Device Monitoring (EDM)
- 3 LED signals
- Inputs for safety devices with 1 or 2 NC contacts
- Monitors the integrity of connection of safety circuit

#### Applications

- Redundant circuits and auto control for emergency stops and safety switches
- Monitor movable guards

## Dimensions



## Functionality

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 “K2” and “K3” illuminate). In the case of Manual Reset, this is only effected 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 UE 43-3 MF 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.

### Reset

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

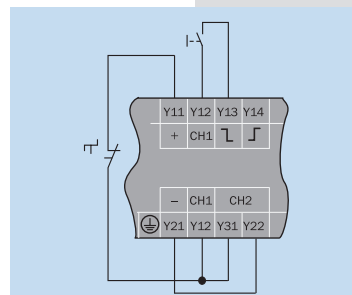
For Automatic resetting, Y 12 - Y 14 must be linked.

### Cross circuit detection

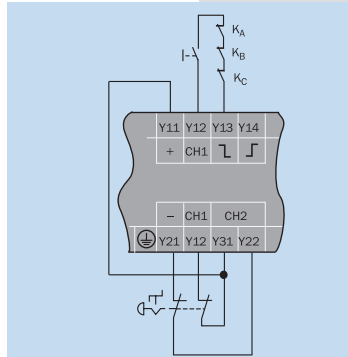
Cross circuit is detected on dual-channel wired systems, if these are wired with opposing polarity.

### Monitoring of synchronization

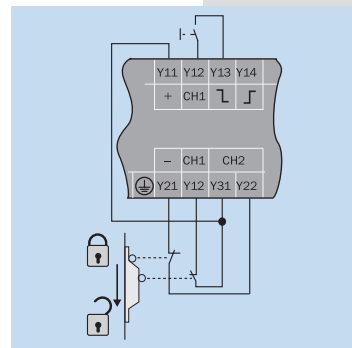
If input 2 closes no later than 0.5 seconds after input 1, the output circuits close. If input 2 closes before input 1, the monitoring of synchronization will not be effected, and the output circuits will close. This monitoring only takes place in Automatic Reset.



Example of a connection of emergency stops to individual channel with manual reset of safety relay.



Example of connection of emergency button to dual channel, manual reset and EDM.



Example of connection between a safety limit stop to dual channel and manual reset.

## UE 43-3 MF

General data description	min.	typ.	max
Supply voltage to A1/A2 for DC units Electrical output circuit > 25 V AC/60 V DC Electrical output circuit < 25 V AC/60 V DC	PELV PELV or SELV		
Voltage supply to A1/A2 on AC units			Use of earth conductor terminal
Safety category: EN 954-1			4
Stop category: EN 60 204	0		
Supply voltage $V_S$ (A1/A2)			
UE 43-3 MF 2 D3	20.4 V DC	24 V DC	26.4 V DC
UE 43-3 MF 2 A0	20.4 V AC	24 V AC	26.4 V AC
UE 43-3 MF 2 A1	97.75 V AC	115 V AC	126.5 V AC
UE 43-3 MF 2 A2	102.0 V AC	120 V AC	132.0 V AC
UE 43-3 MF 2 A3	195.5 V AC	230 V AC	253.0 V AC
Power consumption			
AC		2.5 W/3.2 V A	
DC		1.0 W	
Residual ripple in DC mode (within the limits of $V_S$ )			2.4 V <sub>pp</sub>
Nominal frequency in AC mode	50Hz		60Hz
<b>Control voltage Y11 and Y21</b>			
Control voltage		24 V DC	
Control current		40 mA	
Short circuit current between Y11 and A2			1000 mA
Fuse			
AC units	short circuit resistant transformer		
DC units	PTC resistor		
Reaction time by cross connection			3 sec
Galvanic separation between A1/A2 and Y11 - Y21 - PE	only on AC units		
<b>Input circuits (Y12 and Y31 - Y 22)</b>			
Input current Y12 and Y31			15 mA
Input current at Y 13 and Y 14 (reset circuit)			40 mA
Reset time			
Manual (Y13)		150 ms	250 ms
Automatic (Y14)		0.8 s	1.2 s
Synchronization time			500 ms
Line resistance at the input circuit			< 70 Ohm
Input time upon applying supply voltage	100 ms		
<b>Output circuits (13-14, 23-24, 33-34, 41-42)</b>			
Response time (K2/K3)			50 ms
Minimum time outputs will stay off			40 ms
<b>Relay contacts</b>			
	3 normally open contacts (NO), safety relevant 1 normally closed contact (NC), not safety relevant		
Contact type	Positively guided		
Contact material	Silver alloy; gold-plated		
Load capacity of contacts			
Switching voltage	10 V AC/DC		230 V AC/30 V DC
Switching current	10 mA		6 A
Total current across all contacts			18 A
Application category to EN 60 947-5-1	AC-15 Ue 230 V AC, $I_e$ 6 A (3600 c/h) AC-15 Ue 230 V AC, $I_e$ 6 A (360 c/h) DC-13 Ue 24 V DC, $I_e$ 3 A (3600 c/h)		
Permitted switching frequency			3600 c/h
Mechanical service life (switching cycles)	$1 \times 10^7$		
Electrical service life (dependent upon loading)	$2 \times 10^6$		
<b>Operating data</b>			
Surge voltage rating ( $V_{imp}$ )			4 kV
Excess voltage category			III
Contamination rating of the unit (EN 50 178)			
External			3
Internal			2
Voltage rating			300 V AC
Test voltage $V_{eff}$ (50 Hz) EN 60 439-1			2.0 kV
Protection type			
Housing	IP 40		
Terminals	IP 20		
Radio interference	DIN EN 61 000-6-4		
Interference emission according to	DIN EN 61 000-6-4		
Ambient operating temperature	-25° C		+ 55° C
Storage temperature	-25° C		+ 75° C
Cross sections of electrical conductors			
single strand wire (2 x, identical cross section)	0.75 mm <sup>2</sup>		2.5 mm <sup>2</sup>
single strand wire (1 x)	0.75 mm <sup>2</sup>		2.5 mm <sup>2</sup>
fine stranded wire with terminal crimps	0.75 mm <sup>2</sup>		
(2 x, identical cross section)	0.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>
fine stranded wire with terminal crimps (1 x)	0.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>
Weight	AC unit: 0.36 kg; DC unit: 0.30 kg		

