



SICK



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UE 43-6 MF Series
Safety Relay

1 Safety

The UE 43-6 MF Safety Relays meet safety-related requirements up to Safety Category 4 (EN 954) and including Stop Category 0 (EN 60 204).
The wires for the input and output signals shall be routed outside the control cabinet, according to the safety category to be used.

1.1 Safety regulations

- Assembly and electrical connection must only be carried out by competent persons.
The national and international legal provisions apply to the use and installation of safety relays as well as to commissioning and routine technical checks, in particular - the Machinery Directive 98/37/EEC - the Provision and Use of Work Equipment Regulation 89/655/EEC - the Low Voltage Directive 73/23/EEC - the EMC Directive 98/336/EEC - the Safety Regulations, plus - the Accident Prevention Regulations and Safety Rules

- Manufacturers and users of the machine, on which the safety devices are used, are responsible for agreeing all current safety regulations and rules with their competent authority, and for observing them.
The operating instructions are to be headed and kept for future reference.
The tests shall be carried out by competent persons or by persons specifically authorised and instructed, and they shall be documented so as they are traceable at any time.

1.2 Areas of application

- The UE 43-6 MF Safety Relay is intended for use on safety sensors with potential free contacts, such as:
- Emergency Stops (EN 418): single- or dual-channel
- Safety interlocks (EN 1088): single- or dual-channel, such as safety doors.
- Safety circuits as per EN 60 204-1, such as with movable guards.

1.3 Use in accordance with the regulations

For any other use, and in the event of modifications to the unit, or if the unit has been opened, even as part of assembly and installation, any warranty claims against SICK

AG shall become null and void.

1.4 Environmentally correct disposal

Unusable and irreparable units should always be disposed of in accordance with the applicable waste disposal regulations specific to the country concerned. SICK will be pleased to assist in disposing of units.

2 Product description

2.1 Construction and operation of the unit

The inputs of the UE 43-6 MF Safety Relay have been designed for connection to the respective safety sensors mentioned in the Section entitled "Areas of application". The normally open output circuits serve as safety relevant outputs. The signal circuits are non safety relevant output circuits.

2.2 Functions of the units

Table with 2 columns: Input/Control, Output/Signal

Actuating the sensor causes the safety outputs to open. Manual or automatic Reset and EDM are implemented by means of external switching, depending on application (see 4.2.3 Reset and 4.2.4 EDM).
Short circuit detection of the input circuits: A short circuit can be detected using dual-channel switching of the input circuits when these are switched with opposing polarities (Fig. 4 and 5).
Monitoring of synchronisation: Upon activating the input circuits, synchronisation is monitored. Only if input 2 closes by no later than 0,5 sec after input 1 do the output circuits close.

Table with 3 columns: Description, Colour, Function

2.3 Indicators

3 Assembly

Control cabinet installation only!
The UE 43-6 MF Safety Relay is only suitable for installation into control cabinets having a minimum protective type of enclosure to Class IP 54.
Installation of the units is made by snapping on to a mounting rail.

4 Electrical installation

Isolate the system!
The system shall be isolated, to prevent any inadvertent system startup or electrical hazard.

Contact protection to EN 50 178

To ensure contact protection to EN 50 178, observe notes in Technical Data.

Instructions

- Wiring of the external device monitoring (EDM) shall be performed in the same control cabinet.
To prevent the contacts of the final switching relays welding, an overcurrent

protection device (short-circuit protection (Operating Class gG)) should be selected according to the appropriate utilisation category and incorporated into the output paths (see Technical Data and fig. 2, fuse F 2 / F 3 F 4 / F 5 / F 6 / F 7).

- If capacitive or inductive loads are connected to the output circuits, a protective circuit (spark suppression) shall be provided.
The wires for the input and output signals shall be routed outside the control cabinet, according to the safety category to be used (EN 954).
The details given in Technical Data must be observed.

4.1 Wiring of connections

Table with 2 columns: Terminal, Description

4.2 Operating modes

4.2.1 Single-channel operation

The safety sensor is connected between S 11 and S 12. S 12 - Y 3 and S 21 - S 22 must be jumpered (see fig. 3).

4.2.2 Dual-channel operation with short circuit detection of the input circuits

The potential free outputs of the safety sensor are to be connected between S 11 - S 12 and S 21 - S 22. S 33 - Y 3 must be jumpered(see fig. 4 and 5).

4.2.3 Reset

Manual reset
For manual reset a reset button having a normally open contact is wired between contacts S 12 and S 34. Y 1 - S 37 must be jumpered.
The reset button is to be installed outside the danger zone in such a manner that it cannot be activated from within the danger zone. In addition, the operator must have full visual command of the danger zone. This Reset is monitored. Where Emergency Stop is activated, manual Reset must be used.

Automatic reset

S 12 - S 34 must be jumpered. No jumper between Y 1 - Y 37.

4.2.4 External device monitoring (EDM)

This is only effective during Reset.

Connecting the normally closed contacts of the external relays with Y 1 - Y 2 ensures static monitoring of the contactors. When no external device monitoring is wanted a jumper is to be made between Y 1 - Y 2.

5 Commissioning

Monitor the danger zone!

Prior to commissioning, it must be ensured that nobody is in the danger zone. The safety regulations and test instructions as described above are to be headed. The following functional tests/checks are to be carried out during commissioning:

5.1 Manual reset, functional testing

After applying the supply voltage (LED SUPPLY illuminates), the normally open outputs are opened. If the connected sensor is not activated (i.e. the input circuits are closed), the LEDs CH 1 and CH 2 illuminate. The safety outputs close, and the signal circuits open after the reset button is activated (LED K 1 and K 2 illuminate). While the rest button is being pressed, LED K 3 illuminates.
Activation of the sensor (opening of one or both input circuits) initiates the opening of the six safety outputs and the closing of the signal circuits (LEDs CH 1, CH 2, K 1 and K 2 extinguished).

5.2 Automatic reset, functional testing

After applying the supply voltage (LED SUPPLY illuminates), the safety outputs remain open until the sensor closes the input circuits (LEDs CH 1 and CH 2 illuminate and K 3 signals a successful Auto Reset with a short blinking). The safety output circuits then close and the signal circuit opens (LED K 1 and K 2 illuminate). Activation of the sensor (opening of one or both input circuits) opens the six safety output circuits and closes the signal circuits (LED K 1 and K 2 extinguished).

Tip: The signal circuit 71/72 is related to K 1 and 81/82 is related to K 2. These outputs can be used to gauge the correct working function of the unit.

5.3 Regular inspection / testing of the safety equipment by trained technical personnel

- Test the system within the specified period in accordance with current national regulations!
Following modifications to the machine or the safety device, the system shall be examined in accordance with the commissioning specification given above.

6 Maintenance

In operation, the UE 43-6 MF Safety Relay is maintenance-free.

7 Technical data

see Table

8 Ordering data

Table with 3 columns: Version, Type, Order No.

9 Appendix

9.1 Approvals

BG, cULus, GS

9.2 Examples of circuits

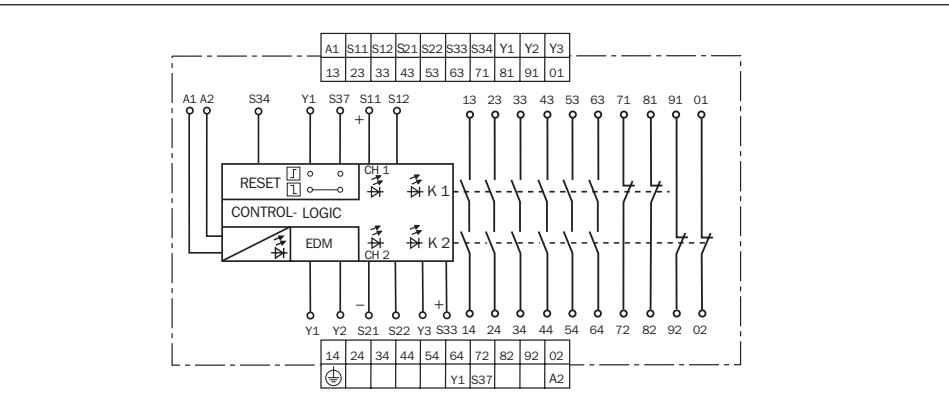


Fig. 1: Internal wiring UE 43-6 MF

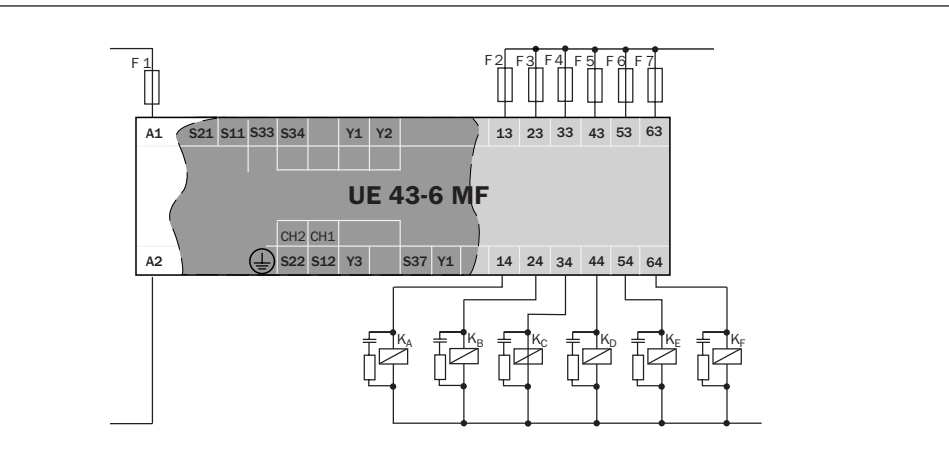


Fig. 2: Basic wiring: voltage supply, 6 output circuits (see Technical Data)

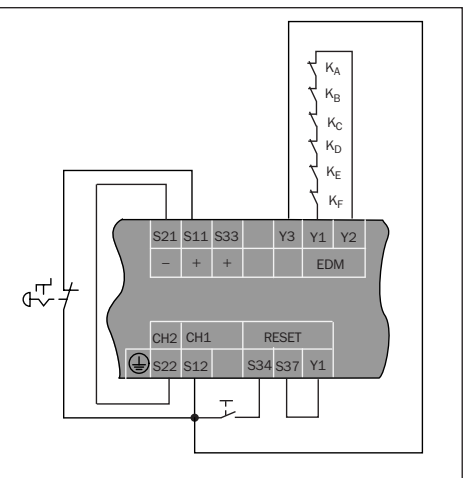
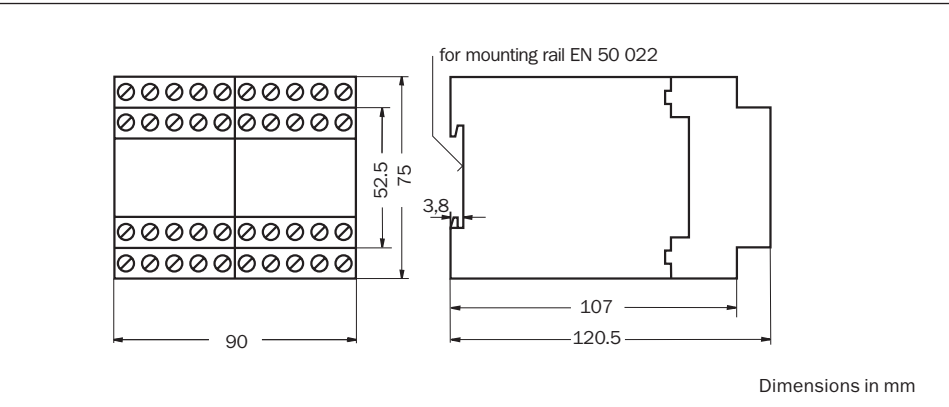


Fig. 3: Example connection of a UE 43-6 MF with single-channel emergency stop with manual reset, external device monitoring

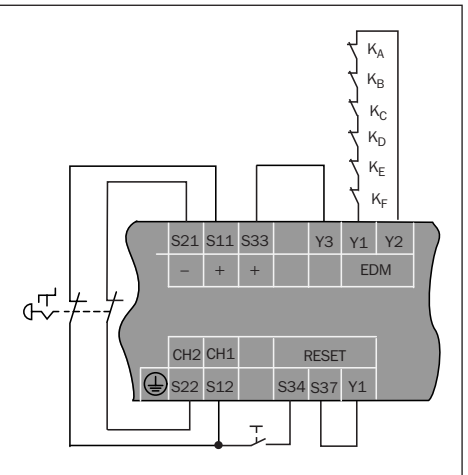


Fig. 4: Example connection of a UE 43-6 MF with dual-channel emergency stop, manual reset, external device monitoring

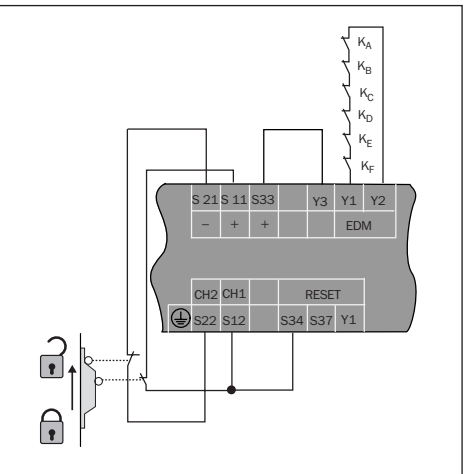


Fig. 5: Example connection of a UE 43-6 MF with dual-channel safety door with short circuit detection of the input circuits, external device monitoring

Technical Data UE 43-6 MF table containing General System Data, Control voltage for S 11 and S 33, Input circuits, Relay contacts, Operational data, and Weight.

