FIESSLER ELEKTRONIK

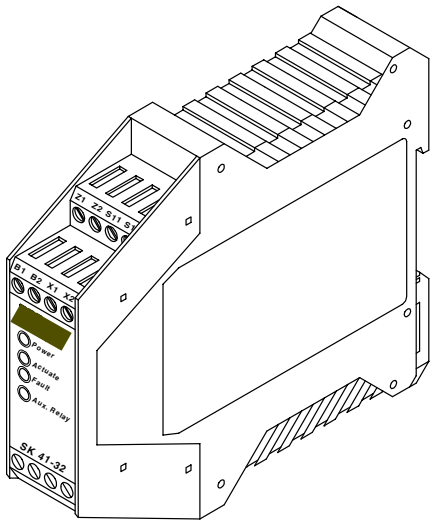
Data sheet

Control box STM STK 41-32 for safety mats STM

The single-channel SK 41-32 switchgear finds application in the evaluation of safety contact mats as well as in providing security of pinch and shear points caused by safety contact edges and safety bumpers.
The switchgear is designed in accordance with EN 954-1 for Category 3. In order to meet Category 3 requirements, the switchgear has been designed to be redundant, diversified, and equipped with two safety relays which query each other and are force guided. In order to permit the quiescent current of the circuit element to be monitored, a terminal resistor has been integrated in the signal transmitter. When the desired quiescent current is flowing, the output relay is activated and the switching contact is closed. If the signal transmitter is activated or the safety circuit is interrupted, the relay switching contact opens. The switch states of the relays and the applied circuit voltage are indicated by LEDs.

Signal Indicators

Green LED	Power
Yellow LED	Actuate
	edge activated
Red LED	Fault
	safety circuit interrupted
Orange LED	Aux. Relay



Connection terminals

X1,X2	Connection signal transmitter
13,14	Contact, safety relay 1
23,24	Contact, safety relay 2
	Relay contacts are switched in series
	via the wire bridge between 14-23.
31-32	Contact auxiliary relay
Z1-Z2	Manual reset connection
S11-S12	Encoder input, reset
A1-A2	Supply voltage 230V 50/60Hz
B1-B2	Supply voltage 24V AC/DC

Important Safety Information

- Only specially trained personnel familiar with these operating instructions and the applicable regulations governing work safety and accident prevention may install and commission the switchgear.
- Before performing any work on the switchgear it must be disconnected from the power supply and its lack of power must be checked.
- All safety regulations applicable to electrotechnology and mandated by the professional association are to be observed.

Proper Use

The SK 41-32 safety switchgear is intended for use in safety circuits for safety contact mats, safety bumpers, and safety contact edges.

Note

- The switchgear permits operation with 230 V or with 24 V. Connecting the circuit voltage to the wrong terminals will destroy the switchgear.
- The recording contact 33, 34 serves merely as an auxiliary contact (display, etc.) and may not be included in the safety circuit.
- The switchgear is to be installed in a circuit cabinet.
- Do not install it near strong heat sources.
- The switchgear contains no user-serviceable parts. Opening the housing or performing any modifications will result in the warranty being voided.

Operating Modes

- The safety circuits can be output separately or switched in series.
- Automatic reset (factory presetting, S11/S12 unbridged): After the signal transmitter has been activated/has failed, or after a power failure, the switchgear automatically releases the safety circuit.
- Manual reset (S11/S12 bridged): After the signal transmitter has been activated/has failed, or after a power failure, the switchgear only releases the safety circuit after the reset button has been pressed. This prevents the equipment from accidentally restarting.

Mounting

The compact and easily installed safety switchgear is designed for installation on a standard 35 mm DIN rail in the circuit cabinet.

Commissioning

- Connect the supply voltage to terminals A1/A2 for 230 V AC or to terminals B1 (+) / B2 (-) for 24 V AC/DC.
- Connect the signal transmitter to terminals X1/X2.
- For manual reset, bridge terminals S11/S12 (factory presetting automatic reset: S11/S12 unbridged) and connect the reset button to terminals Z1/Z2.
- Connect the safety circuit being monitored to terminals 13-24. For redundant continuation of the switching contacts, remove the factory installed bridge between terminals 14-23.

Troubleshooting

The LEDs can be used to localize a fault in the system. When the switchgear has been wired correctly and the supply voltage is switched on, only the green LED1 may go on. If the yellow LED2 and/or red LED3 go on, check the connections on the switchgear or switchgears (if several are connected in series). If the fault does not lie with the connections, check the function of the electronics by attaching an 8.2 k| resistor to the X1/X2 input on the switchgear. If the electronics then operates correctly, you must check the switchgears with an ohmmeter. To do this, the connection between the switchgear and the signal transmitter must be broken and then connected to the ohmmeter. With the signal transmitter not activated, the resistance must be 8.2 k| ±100 |. When the signal transmitter is activated, the resistance may not exceed 500 Ω

Technical Specifications

Supply voltage
Mains voltage: U_{net}: 230 V AC 50/60Hz
Low voltage: U_E: 24V AC/DC ±10%

Power consumption
P_{net}: 3 VA I_{net}: 13 mA
P_E: 1,15 VA I_E: 48 mA

Connection resistor, safety contact edges
R_A 8,2 KΩ
R_{AO} > 11,5 KΩ Upper switching threshold
R_{AU} < 5,5 KΩ Lower switching threshold

Safety class
Cat. 3 in accordance with EN 954-1

Safety relay
max. switching voltage 250 V ~ / 30 V -
max. switching current 5 A ~ / 5 A -
Mechanical service life > 106 activations

Auxiliary relay
max. switching voltage 250 V ~ / 30 V -
max. switching current 2,5 A ~ / 2, 5 A -
Mechanical service life > 10^6 activations

Switching times, safety relay
Reaction time < 30 ms
Release time about. 1s

Switching times, auxiliary relay
Reaction time 0,5 s
Release time 3 s

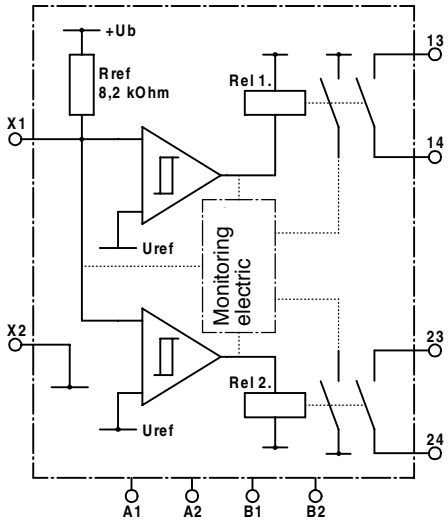
Housing
Polyamide
self-extinguishing, in accordance with UL 94-V2
Dimensions HxWxD 99 x 22,5 x 114 mm

Protection class
IP40 for the housing
IP20 for the terminals

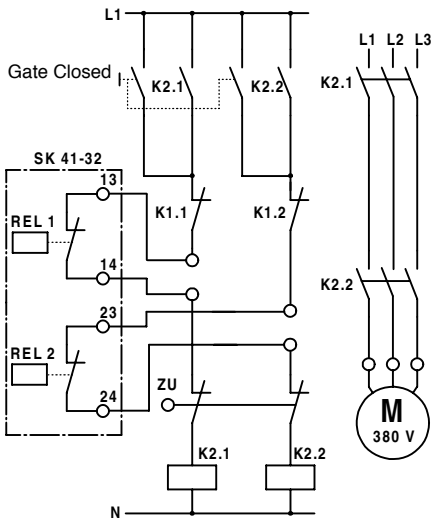
Weight 210 g

Temperature range -25°C bis +55°C

Connecting line cross-sections
0,75-1,5 mm2 Single or fine-strand line



Block terminal diagram SK 41-32



Motor protector 1 & 2

Gate Closed

Application example: Closure edge safety with the SK 41-32 switchgear. Shown are the control and primary circuit for the CLOSE movement. The control and primary circuits have redundant design.