

- ▶ Industrial design
- ▶ Width 22.5mm
- ▶ Single or dual channel activation
- ▶ 2 N/O safety contacts and 1 N/C control contact
- ▶ Cross monitoring
- ▶ Stop-category 0 (according to EN 60204-1)
- ▶ Safety-category 3 (according to EN 954-1)



Technical data

1. Functions

Basic unit for emergency stop and safety gates applications

2. Indicators

Green LED (SUPPLY) ON: indication of supply voltage
 Green LED (K1) ON/OFF: indication of relay output
 Green LED (K2) ON/OFF: indication of relay output

3. Mechanical design

Self-extinguishing plastic housing, IP rating IP40
 Mounted on DIN-Rail TS 35 according to EN 50022
 Mounting position: any
 Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20
 Initial torque: 0.5 to 0.6Nm
 Terminal capacity:
 2 x 0.14 to 0.75mm² without multicore cable end
 1 x 0.14 to 2.5mm² without multicore cable end
 2 x 0.25 to 0.5mm² with/without multicore cable end
 1 x 0.25 to 2.5mm² flexible with multicore cable end

4. Input circuit

Supply voltage: 24V AC/DC terminals A1-A2
 Tolerance: -15% to +10%
 Rated frequency: 50 to 60Hz
 Rated consumption: 24V DC 1.5W
 24V AC 3.5VA (2.1W)
 Duration of operation: 100%
 Residual ripple for DC: 2.4Vss

5. Output circuit

2 forced normally open safety contacts and 1 forced normally closed control contact
 Switching capacity: 1380VA (6A / 230V AC/DC)
 Rated current: max. 6A
 Total current all contacts: max. 12A
 Fusing: 6A fast acting
 Mechanical life: 10 x 10⁶ operations
 Switching frequency:
 3600/h at I_e 6A / U_e 230V AC (AC-15)
 3600/h at I_e 3A / U_e 24V DC resp.
 360/h at I_e 6A / U_e 24V DC (DC-13)
 Insulation voltage: 300V AC (according to IEC 664-1)
 Surge voltage: 4kV, overvoltage category III (according to IEC 664-1)

6. Control circuit

(only for supplying the control inputs)

Line resistance: S12-S33 ≤70Ω
 S21-S33 ≤70Ω
 S21-S22 ≤70Ω

Control contacts S11, S21, S33:

Galvanically separated: No (A1-A2-S11-S21-S33)
 Rated output voltage: ≤24V DC
 Rated current: 50mA
 Short circuit current I_k: max. 2.2A (S11-S33 to A2)
 Fusing: PTC-resistor
 Response time: 2s
 Reset time: 3s

Control contacts S12, S22, S31:

Rated current: S12 30mA
 S31, S22 20mA
 Response time t_{A1}: K1, K2 80ms
 Response time t_{A2}: K1, K2 600ms
 Release time t_R: K1, K2 40ms
 Release time t_{R1}: K1, K2 100ms
 Simultaneity time t_S: 500ms
 Activation time t_M: S34, S35 50ms
 Reset time t_W: 500ms

7. Ambient conditions

Ambient temperature: -25 to +55°C (according to IEC 68-1)
 Storage temperature: -25 to +70°C
 Transport temperature: -25 to +70°C
 Relative humidity: 83% (at 23°C), 93% (at 40°C) (according to DIN 50016)
 Pollution degree: 3 outside, 2 inside (according to IEC 664-1)

Functions

Basic unit for emergency stop and safety gates applications

After the supply voltage is applied to terminals A1/A2, and if the E-stop momentary contact switch is not activated, the control logic is energised with the RESET switch. This triggers the terminal relays K1 and K2. The latter become self locking through their own contacts. After this switch on phase, the two enabling current paths, which are intended for the output, are closed (terminal connection 13/14, 23/24) and the control contact is opened (terminal connection 31/32). Three LEDs provide a display, and these LEDs are associated with the safety channels K1/K2 and the supply voltage. If the E-stop switch is activated, the current leads for the K1 and K2 relays are interrupted. The enabling current paths are interrupted an the control contact is closed.

With a two-channel connection of the E-stop switch and cross monitoring wiring of the E-stop circuit, it is possible to monitor the presence of a short circuit between the connected cables (cross monitoring) and ground faults. An internal electronic circuit protects the emergency stop relay from damages. After eliminating the fault the item will return into operation after about 3s.

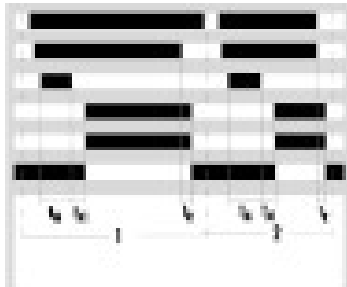
RESET key monitoring.

The ZK21x22 is equipped with the monitoring feature for the RESET key. The device can be enabled with the falling edge (RESET released) or the rising edge (RESET closed) of the signal (terminals S34 or S35). For the specific use in the E-stop applications with manual start the RESET key must be connected to terminals S33/34. The RESET can only be enabled with the falling edge of the RESET key signal. In order to start the RESET key has to be closed and released. For those applications with protective gates where an automatic reset has to be performed, it is necessary to jumper terminals S35 with S12. The device will react at the rising edge of the signal.

Simultaneity check

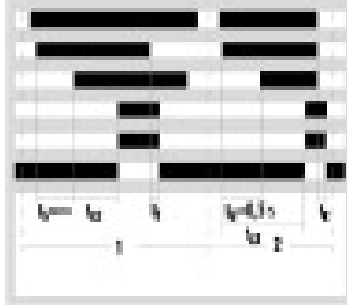
Depending on the required safety standard for the selected protective gate application, it is necessary to insert an one or two channel safety limit switch. With two channel activation this product features an optional simultaneity check of the limit switches. If selected, the limit switches must be positioned in a way that channel 1 will be closed before channel 2 otherwise the simultaneity time would be infinite ($t_G = \infty$).

dual channel E-stop application



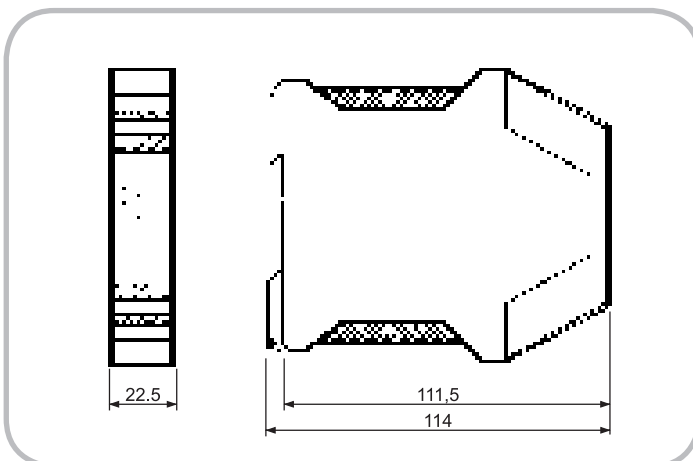
- A1/A2 supply voltage, LED SUPPLY
- S12, S22 E-stop
- S34 Reset (including reset key monitoring)
- K1, LED K1
- K2, 13/14, 23/24, LED K2
- 31/32
- t_{A1} response time (with reset key monitoring)
- t_R release time for e-stop
- t_M minimum activation time
- 1 E-stop via A1/A2

dual channel protective gate



- A1/A2 supply voltage, LED SUPPLY
- S22
- S12
- K1, LED K1
- K2, 13/14, 23/24, LED K2
- 31/32
- t_{A2} response time (with reset key monitoring)
- t_R release time for e-stop
- t_S simultaneity time
- 1 E-stop via S12, S22
- 2 E-stop

Dimensions



Connections

