

## Emergency stop and safety guard monitoring 1 channel KNA3-YS Part number 85102034



- "Emergency stop" & "Gate monitoring" functions
- Single channel operation
- Security with redundancy and feedback circuit
- 3 "NO" security contacts
- 1 "NC" monitoring contact
- Security category 3 (according to EN 954-1)
- Performance Level (PL) d, safety category 3 to EN ISO 13849-1
- SIL Claimed Level (SIL CL) 2 to IEC/EN 62061
- Terminals : fixed screw terminals or plugin cage clamp terminals

### Part numbers

| Type             | Terminals | Voltages | Supply frequency range (Hz) | Outputs     |
|------------------|-----------|----------|-----------------------------|-------------|
| 85102034 KNA3-YS | Screws    | 110 VAC  | 50/60                       | 3 NO + 1 NC |

### Specifications

#### Operating characteristics

|                                |   |
|--------------------------------|---|
| Functions                      | Emergency stop<br>Monitoring of safety gates  |
| Operation                      | 1 channel   |
| Control input                  | Manual restart with On-button (Y1 - Y2 terminals)<br>Automatic restart (Y1 - Y2 linked) |
| Failure detection              | Between terminal Y1 and common  |
| Display of output state by LED | Power supply : PWR<br>Outputs : OUT (relays K1 & K2)                                    |

#### Supply

|                             |  |
|-----------------------------|--|
| Supply voltage              | 85 102 031 / 85 103 031 : 24 VDC<br>85 102 034 / 85 103 034 : 110 VAC<br>85 102 035 / 85 103 035 : 230 VAC         |
| Supply frequency range (Hz) | 50 / 60 for AC versions  |
| Operating range             | AC : -15 % / +10 % U<br>DC : ± 10 % U (at 10 % residual ripple)<br>DC : - 15 % / +10 % U (at 48 % residual ripple) |
| Consumption                 | 1,5 W (24 VDC)<br>3,5 VA (230 VAC)   |
| Initialization time         | 0,5 s  |

#### Precision

|   |                                    |
|---|------------------------------------|
| Maximum reset time                      | 40 ms (24 VDC)<br>200 ms (230 VAC) |
| Maximum response time on emergency stop | 70 ms (24 VDC)<br>35 ms (230 VAC)  |

#### Output specification

|   |   |
|---|---|
| Type                                    | Forcibly guided relays (positively driven)  |
| Number of safety circuits               | 3 NO  |
| Number of data circuits                 | 1 NF  |
| Nominal output voltage                  | 250 VAC max.  |
| Max. thermal current I for each contact | 5 A   |
| Maximum power rating                    | According to AC15 (NO contacts) : 3 A / 230 V AC<br>According to AC15 (NC contacts) : 2 A / 230 VAC<br>According to DC13 (NO contacts) : 4 A / 24 VDC ; 0,5 A / 110 VDC<br>According to DC13 (NC contacts) : 4 A / 24 VDC |
| Electrical endurance                    | At 5 A, 230 VAC, $\cos \phi = 1$ : $1,5 \times 10^5$ switching cycles<br>At 8 A, 24 VDC, according to DC 13 (NO contacts) : $25 \times 10^3$ (ON : 0,4 s ; OFF : 9,6 s)   |
| Mechanical life                         | $20 \times 10^6$ switching cycles   |
| Maximum rate                            | 600 switching cycles / h  |
| Protection against short circuits       | Max. fuse rating : 10 A gL<br>Line circuit breaker : B 6 A  |

#### Climatic environment

|  |               |
|--|---------------|
| Operating temperature (°C)                     | -15 → +55 °C  |
| Storage temperature (°C)                       | -25 → +85 °C  |
| Altitude                                       | < 2000m       |
| Climate resistance according to IEC/EN 60068-1 | 15 / 055 / 04 |

#### Mechanical environment

|  |  |
|--|--|
| Vibration resistance according to IEC/EN 60068-2-6 | Amplitude : 0,35 mm<br>Frequency : 10 →55 Hz |
|--|--|

**Electromagnetic environment**

|  |  |
|--|--|
| Immunity to electrostatic discharges acc. IEC/EN 61000-4-2                         | 8 kV (air)   |
| Immunity to radiated, radio-frequency, electromagnetic field acc. IEC/EN 61000-4-3 | 10 V / m   |
| Immunity to rapid transient bursts acc. to IEC/EN 61000-4-4                        | 2 kV   |
| Immunity to shock waves according to IEC/EN 61000-4-5                              | Between wires for power supply : 1 kV<br>Between wires and ground : 2 kV |
| Immunity to radio frequency in common mode acc. to IEC/EN 61000-4-6                | 10 V   |
| Interference suppression according to IEC/EN 55011                                 | Limit value class B  |

**Housing**

|   |  |
|---|--|
| Material : self-extinguishing (UL94VO)  | Thermoplastic with V0 extinction behaviour |
| Protection (IEC/EN 60529) - Casing      | IP40                                       |
| Protection (IEC/EN 60529) - Term. block | IP20                                       |
| Mounting                                | DIN-rail                                   |
| Weight (g)                              | 200 (24 VDC)<br>270 (230 VAC)              |

**Safety standards**

|  |  |
|--|--|
| Approvals  | CE, TÜV, cULus                             |
| Environmental directive 2002/95/CE                     | RoHS                                       |
| Environmental regulation 1907/2006                     | Reach                                      |
| Security data according to EN ISO 13849-1              | Performance Level (PL) : d<br>Category : 3 |
| SIL Claimed Level (SIL CL) to IEC/EN 62061             | 2  |
| Safety Integrity Level (SIL) according to CEI/EN 61508 | 2  |
| Safety category to EN 954-1                            | 3  |

**Principles**

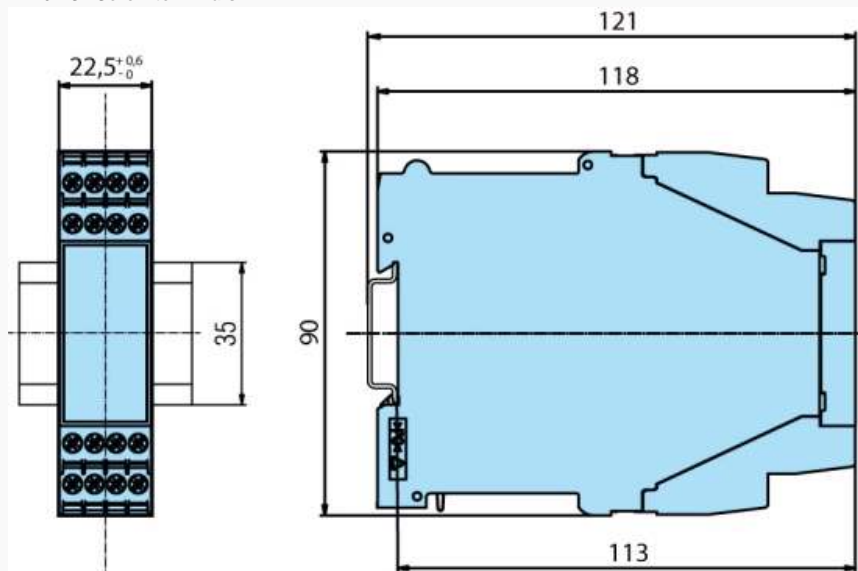
|                                       |          |                 |
|---------------------------------------|----------|-----------------|
| <b>EN ISO 13849-1:</b>                |          |                 |
| Category:                             | 3        |                 |
| PL:                                   | d        |                 |
| MTTF <sub>d</sub> :                   | 180,3    | a (year)        |
| DC <sub>avg</sub> :                   | 99,0     | %               |
| d <sub>op</sub> :                     | 365      | d/a (days/year) |
| h <sub>op</sub> :                     | 24       | h/d (hours/day) |
| t <sub>cycle</sub> :                  | 3600     | s/cycle         |
|                                       | ≅ 1      | /h (hour)       |
| <b>IEC EN 62061<br/>IEC EN 61508:</b> |          |                 |
| SIL CL:                               | 2        | IEC EN 62061    |
| SIL                                   | 2        | IEC EN 61508    |
| HFT <sup>*)</sup> :                   | 1        |                 |
| DC <sub>avg</sub> :                   | 99,0     | %               |
| SFF                                   | 99,7     | %               |
| PFH <sub>D</sub> :                    | 2,60E-10 | h <sup>-1</sup> |
| *) HFT = Hardware failure tolerance   |          |                 |

## Dimensions (mm)



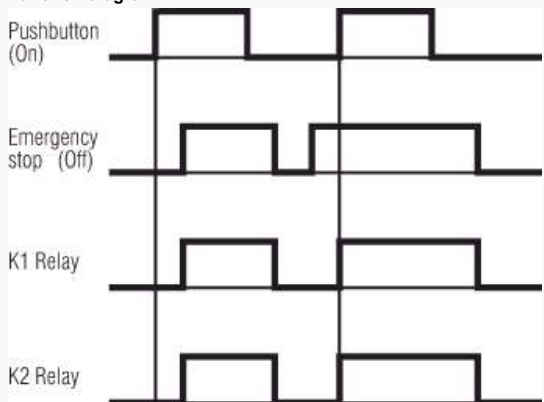
## Dimensions (mm)

## KNA3-YS - Screw terminals



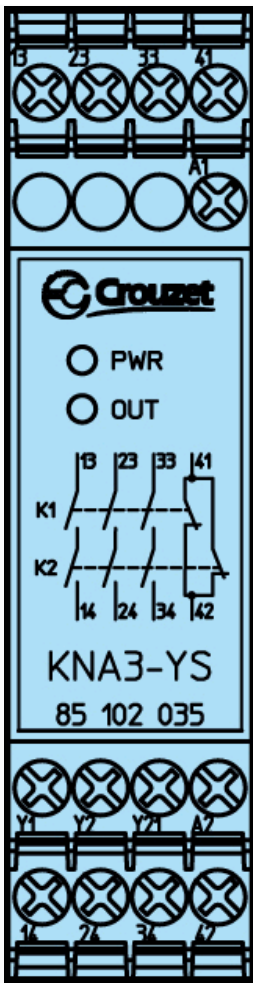
## Curves

## Function diagram



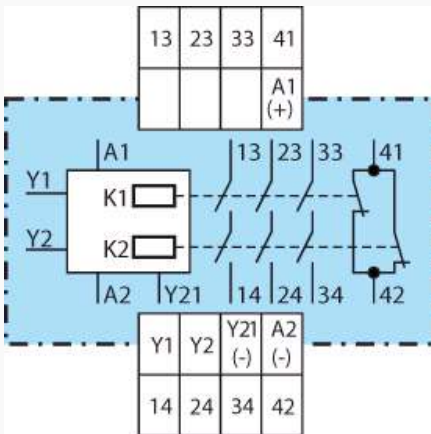
## Connections

## Front face drawing KNA3-YS



## Connections

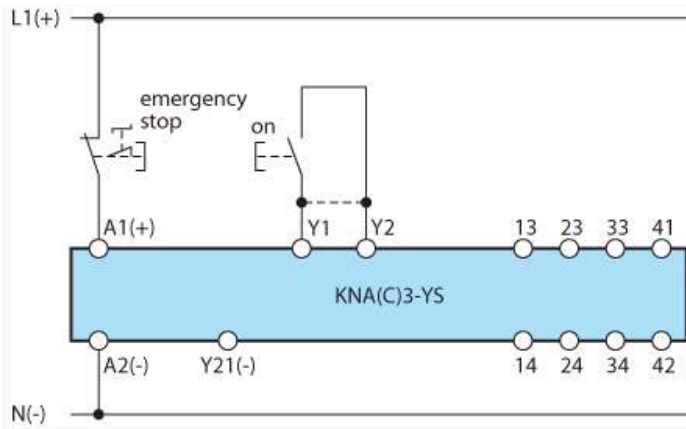
### Contacts



A1 (+) : + / L A2 : - / N Y1, Y2 : Validation Input Y21 (-) : Measure Output (-) of secondary used for example in IT networks for insulation control 13, 14, 23, 24, 33, 34 : Safety circuit outputs (forcibly guided NO contacts) 41, 42 : Monitoring output (forcibly guided NC contact)

## Applications

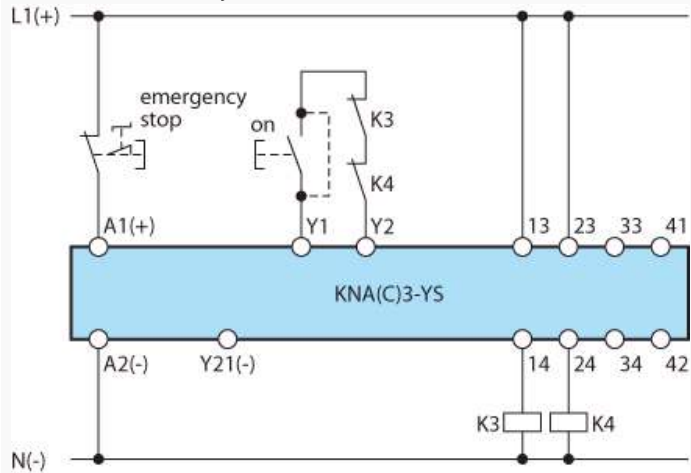
Single channel emergency-stop circuit without feed back loop, with or without automatic restart



For automatic restart, terminals Y1 - Y2 must be linked. No ON-pushbutton necessary

### Applications

#### Contact reinforcement by external contactors



For currents > 5 A, the output contacts can be reinforced by external contactors. Functioning of the external contactors is monitored by looping the NC contacts into the start circuit (Y1-Y2)