

## Emergency stop and safety guard monitoring 1 channel KNA3-YS Part number 85102031



- "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
85102031 KNA3-YS	Screws	24 VDC	No	3 NO + 1 NC

### Specifications

#### Operating characteristics

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

#### Supply

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

#### Precision

Maximum reset time	40 ms (24 VDC) 200 ms (230 VAC)
Maximum response time on emergency stop	70 ms (24 VDC) 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 According to AC15 (NC contacts) : 2 A / 230 VAC According to DC13 (NO contacts) : 4 A / 24 VDC ; 0,5 A / 110 VDC 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 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 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 Frequency : 10 →55 Hz
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**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 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) 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 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**

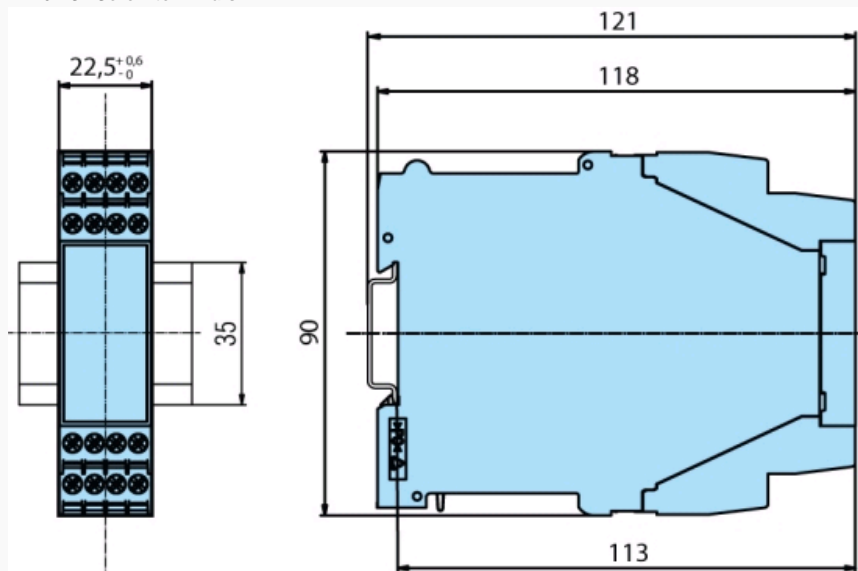
<b>EN ISO 13849-1:</b>		
Category:	3	
PL:	d	
MTTF <sub>d</sub> :	180,3	a (year)
DC <sub>avg</sub> :	99,0	%
d <sub>op</sub> :	365	d/a (days/year)
h <sub>op</sub> :	24	h/d (hours/day)
t <sub>cycle</sub> :	3600	s/cycle
	≅ 1	/h (hour)
<b>IEC EN 62061 IEC EN 61508:</b>		
SIL CL:	2	IEC EN 62061
SIL	2	IEC EN 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)



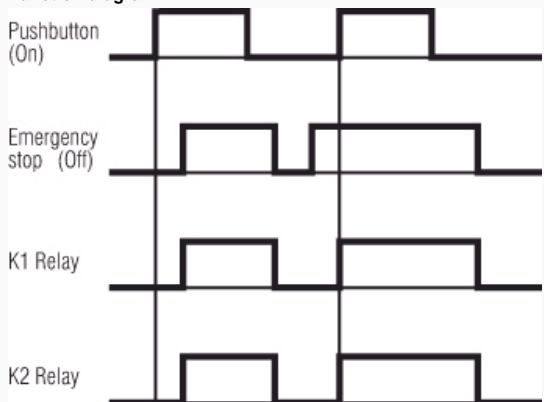
## Dimensions (mm)

## KNA3-YS - Screw terminals



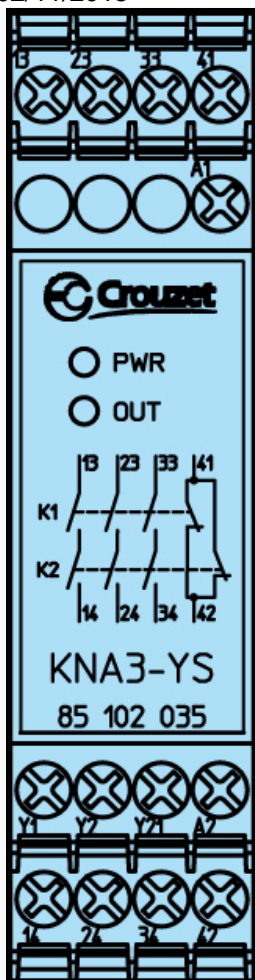
## Curves

## Function diagram



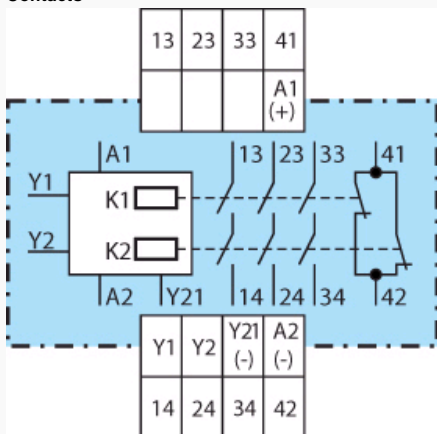
## Connections

## Front face drawing KNA3-YS



**Connections**

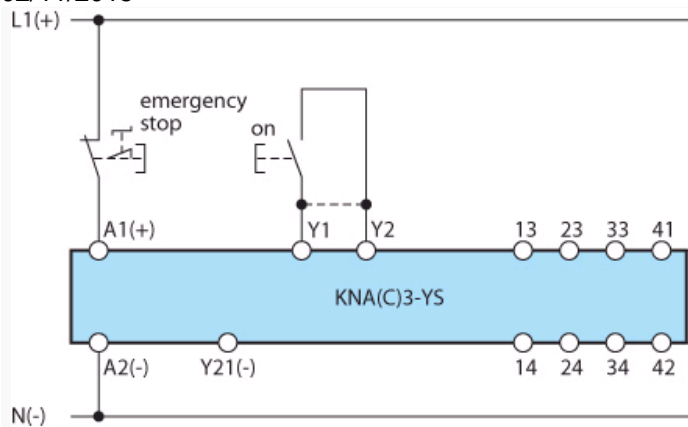
**Contacts**



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**

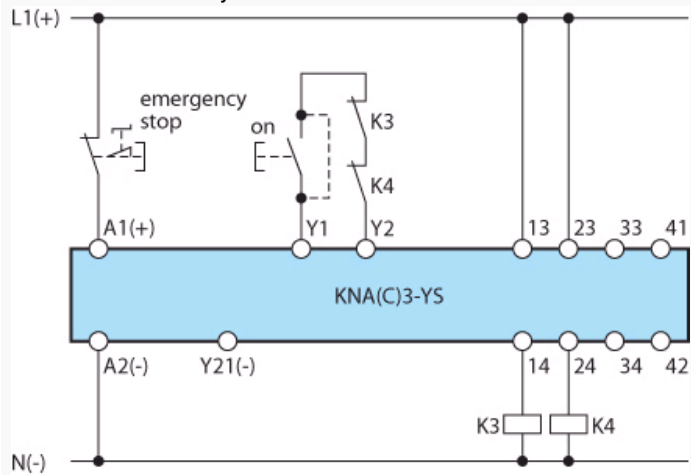
Single channel emergency-stop circuit without feed back loop, with or without automatic restart



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)