

## Standstill monitoring KSW3-JS Part number 85102331



- Function "Stillstand detection without sensors"
- Independent of rotation direction
- Security with redundancy and feedback circuit
- 3 forcibly guided "NO" security contacts
- 1 forcibly guided "NC" security contact
- 1 "NO" monitoring contact
- 2 semiconductor monitoring outputs
- Performance Level (PL) e, safety category 4 to EN ISO 13849-1
- SIL Claimed Level (SIL CL) 3 to IEC/EN 62061

### Part numbers

Type	Terminals	Voltages	Outputs
85102331 KSW3-JS	Screws	24 VDC	3 NO + 1 NC

### Specifications

#### Operating characteristics

Functions	Standstill detection on motors without sensors
Return loop	Y1, Y2
Failure detection	Broken wire detection in measure circuit
Display of output state by LED	Power supply : PWR (green = operation, red = internal error) Output : OUT (yellow = e.m.f. > U, green flashes = time progression of t, permanent green = output contacts enabled) Error : ERR (flashing codes)

#### Supply

Supply voltage	85 102 331 : 24 VDC
Operating range	± 10 % U
Consumption	3 W

#### Precision

Release delay for detection of running motor	< 100 ms
Standstill time delay	0,2 → 6 adjustable

#### Output specification

Type	Forcibly guided relays (positively driven)
Number of safety circuits	3 NO
Number of data circuits	1 NC
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 VAC at 40 °C According to AC15 (NC contacts) : 2 A / 230 VAC at 40 °C According to DC13 (NO contacts) : 2 A / 24 VDC at 40 °C According to DC13 (NC contacts) : 2 A / 24 VDC at 40 °C
Electrical endurance	For 5 A, 230 VAC, cos φ = 0,5 : > 2 x 10 <sup>5</sup> switching cycles
Mechanical life	50 x 10 <sup>6</sup> switching cycles
Maximum rate	1200 switching cycles / h
Protection against short circuits	Max. fuse rating : 4 A gL Line circuit breaker : C 6 A

#### Climatic environment

Operating temperature (°C)	-25 → +60
Storage temperature (°C)	-40 → +75
Altitude	< 2000 m
Climate resistance according to IEC/EN 60068-1	25 / 060 / 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	20 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 : 2 kV (AC - U), 1 kV (24 VDC) Between measuring input L1 / L2 / L3 : 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 (UL94V0)	Thermoplastic with V0 extinction behaviour
Protection (IEC/EN 60529) - Casing	IP40
Protection (IEC/EN 60529) - Term. block	IP20
Mounting	DIN-rail
Weight (g)	400

**Safety standards**

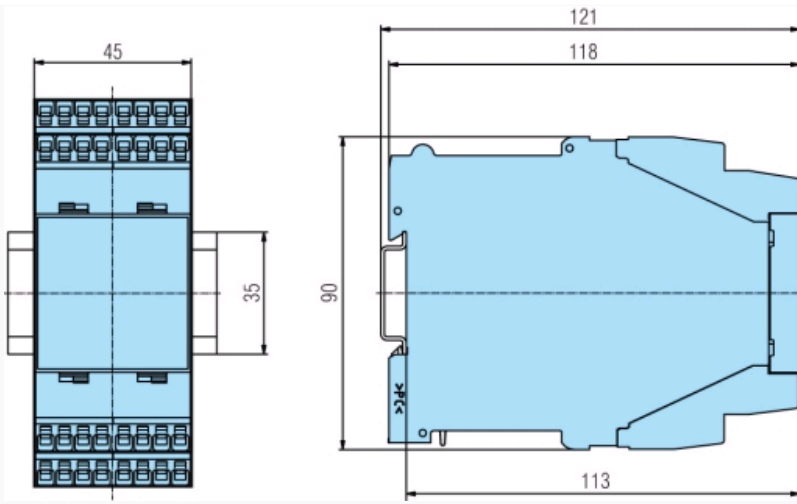
Approvals	CE, TÜV, UL/CSA
Environmental directive 2002/95/CE	RoHS
Environmental regulation 1907/2006	Reach
Security data according to EN ISO 13849-1	Performance Level (PL) : e Catégorie : 4
SIL Claimed Level (SIL CL) to IEC/EN 62061	3
Safety Integrity Level (SIL) according to CEI/EN 61508	3
Safety category to EN 954-1	4

**Principles**

<b>EN ISO 13849-1:</b>		
Category:	4	
PL:	e	
MTTF <sub>d</sub> :	93	a (years)
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> :	28,8E+03	s/cycle
	≅ 1	/8 h (hours)

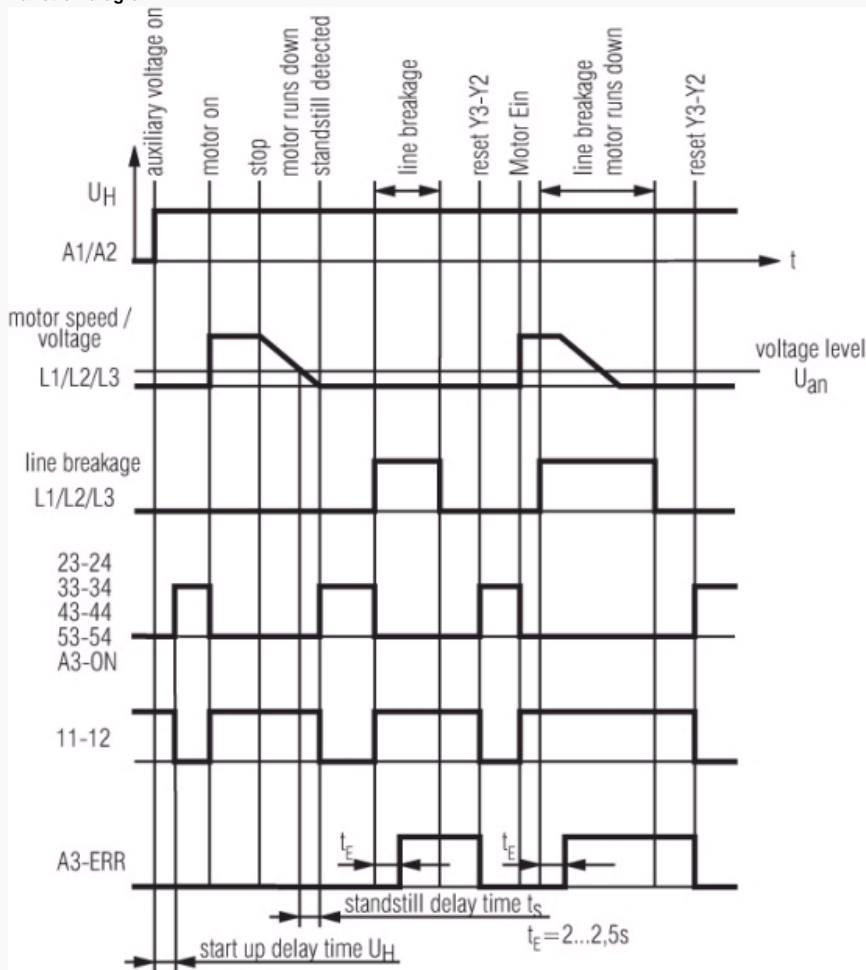
<b>IEC/EN 62061 IEC/EN 61508:</b>		
SIL CL:	3	IEC/EN 62061
SIL	3	IEC/EN 61508
HFT <sup>*)</sup> :	1	
DC <sub>avg</sub> :	99,0	%
SFF	99,7	%
PFH <sub>D</sub> :	4,10E-10	h <sup>-1</sup>
*) HFT = Hardware failure tolerance		

**Dimensions (mm)****Dimensions (mm)****Screw terminals**



Curves

Function diagram

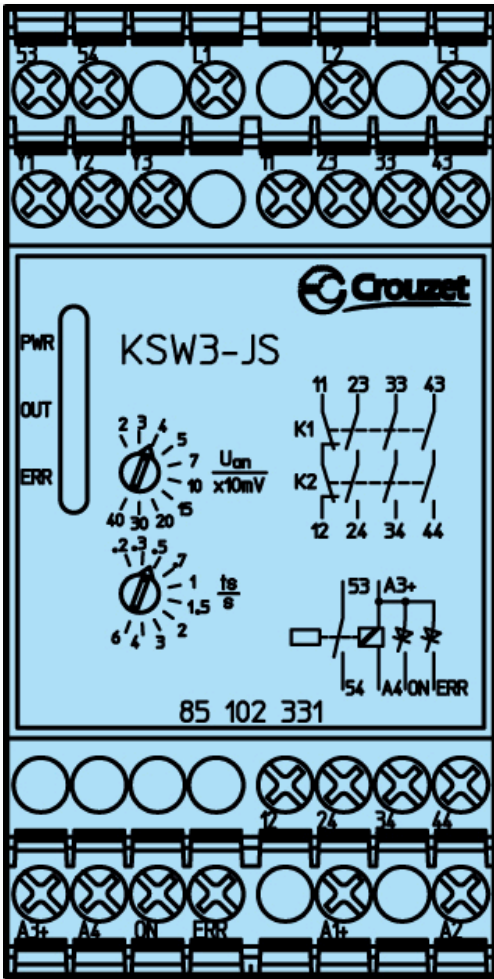


Connections



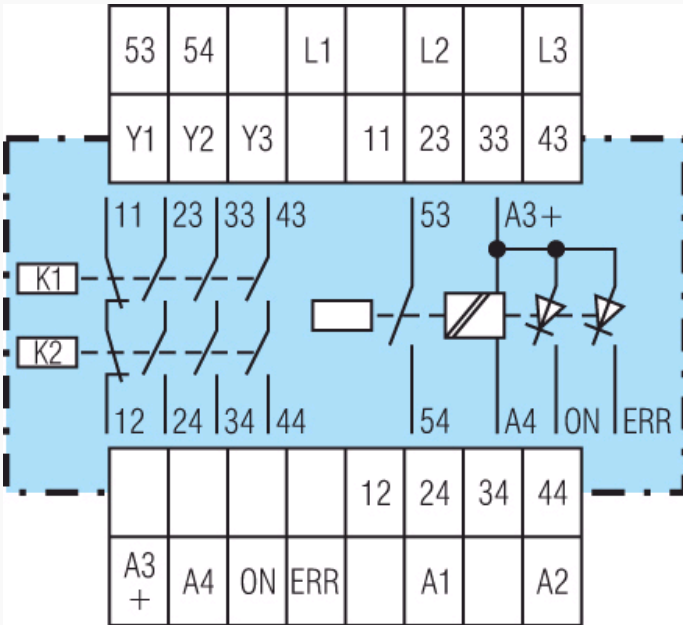
Connections

Front face drawing



**Connections**

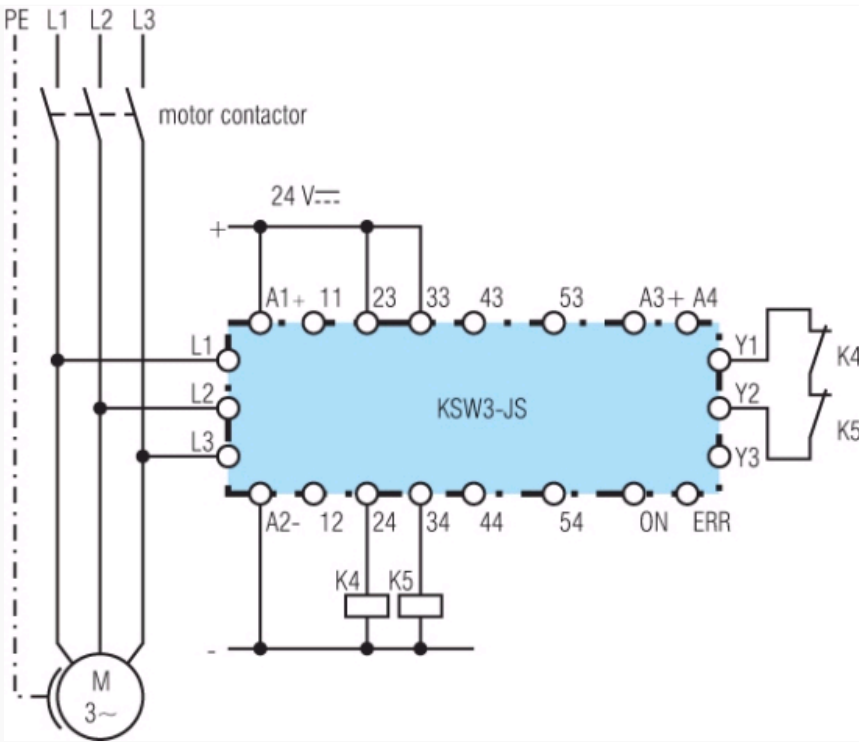
**Contacts**



L1, L2, L3 : Connection to monitored motor 11, 12 : Safety circuit output (forcibly guided NC contact) 23, 24, 33, 34, 43, 44 : Safety circuit outputs (forcibly guided NO contacts) 53, 54 : Monitoring output (NO contact) Y1, Y2 : Connection of feedback circuit (for external contactors) Y2, Y3 : Manual reset for external faults A1+, A2 : Auxiliary supply (UH) A3+, A4 : Supply for semiconductor outputs ON : Semiconductor output indicated state of safety contacts ERR : Semiconductor output indicates failures

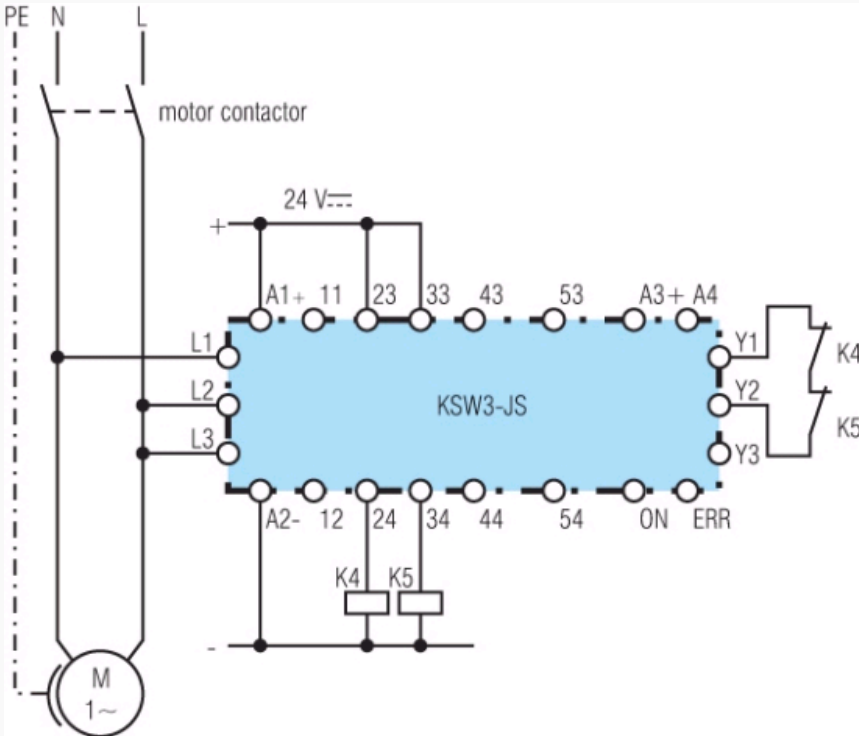
**Applications**

With 3-phase motor



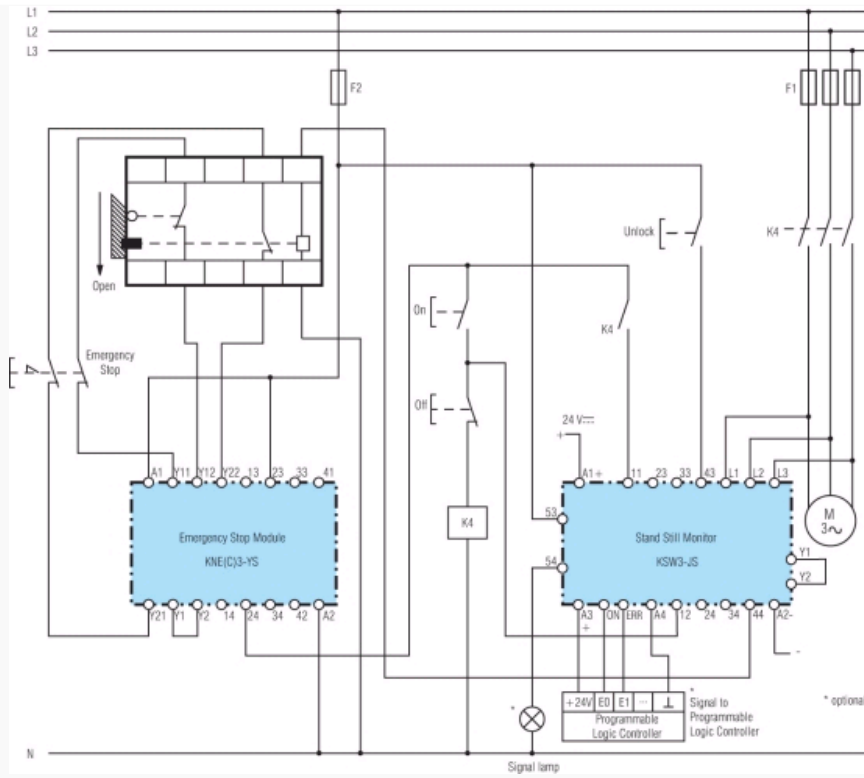
**Applications**

With single-phase motor



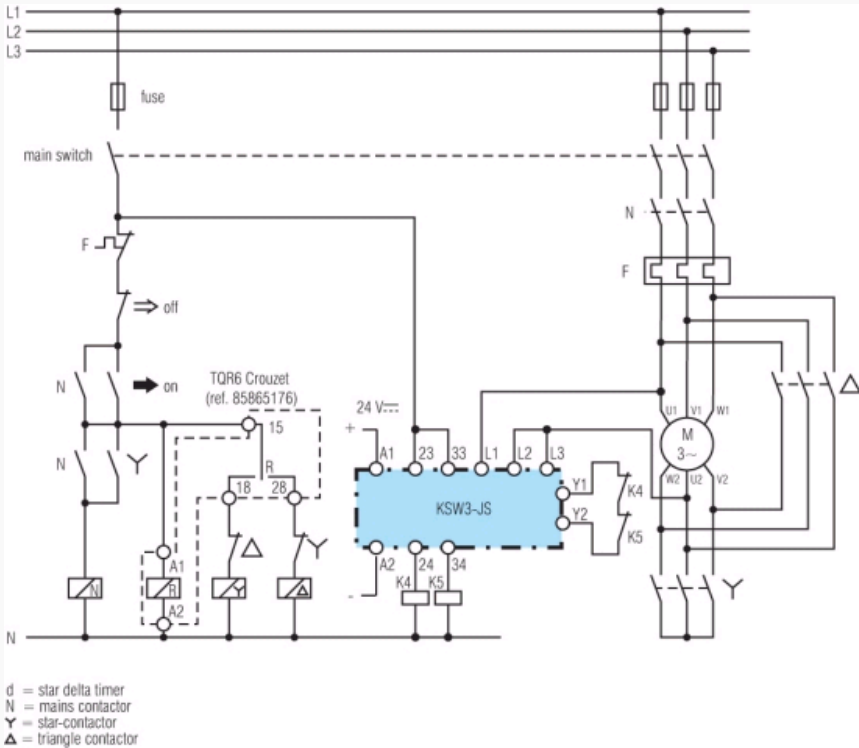
**Applications**

Typical connection combination with E-stop



**Applications**

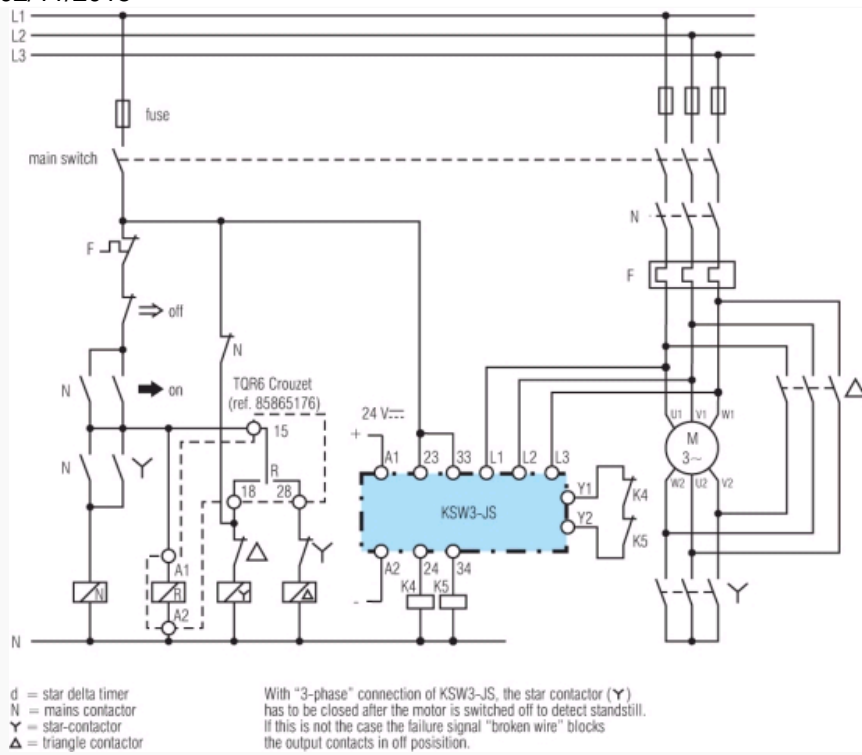
**Typical connection combination with star delta timer**



2-phase connection

**Applications**

**Typical connection combination with star delta timer**



3-phase connection