



STANDSTILL MONITOR


STANDSTILL MONITORING WITHOUT ADDITIONAL SENSORS


Motion Control safety controllers



SICK
Sensor Intelligence.

Standstill monitoring without additional sensors







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Product description

The Standstill Monitor MOC3ZA is a safety device for machine drives and serves to protect against dangerous movements. It also measures the residual voltage meaning that no additional sensors are required for the purpose of standstill monitoring. This renders the device suitable for applications with three-phase, single-phase and direct

current motors. For optimum integration into the work environment the Standstill Monitor MOC3ZA is available in three different versions – depending on the supply voltage.

The positively guided safety contacts enable the device to be connected to all of SICK's safe control solutions.

At a glance

- Standstill monitoring by means of residual voltage measurement
- 3 normally open and 1 normally closed positively guided safety contacts
- 2 application diagnostic outputs for semiconductors
- 1 application diagnostic output normally open
- PL e (EN ISO 13849), SIL3 (IEC 61508), SILCL3 (EN 62061)
- Maximum motor supply voltage 690 V
- Adjustable voltage threshold and standstill period

Your benefits

- Quick mounting and installation thanks to the lack of additional wiring requirements
- Simple commissioning with a screwdriver
- Easy to retrofit as the subsequent mounting of sensors is not necessary

→ www.sick.com/Standstill_Monitor
 For more information, just enter the link and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Detailed technical data

You can find more detailed data in the operating instructions. Download at www.mysick.com.

General data

Safety-related parameters	
Safety integrity level	SIL3 (IEC 61508), SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Stop category	1 (EN 60204)
Performance level	PL e (EN ISO 13849-1)
PFHd (mean probability of a dangerous failure per hour)	4.1×10^{-8}
T_M (mission time)	20 years

Electrical data

Supply voltage (A1/A2)

	MOC3ZA-KAZ33D3	MOC3ZA-KAZ33A3	MOC3ZA-KAZ33A6	MOC3ZA-KAZ34D3	MOC3ZA-KAZ34A3	MOC3ZA-KAZ34A6
Supply voltage V_s	24 V DC (21.6 V DC ... 28.8 V DC)	230 V AC (184 V AC ... 253 V AC)	400 V AC (320 V AC ... 440 V AC)	24 V DC (21.6 V DC ... 28.8 V DC)	230 V AC (184 V AC ... 253 V AC)	400 V AC (320 V AC ... 440 V AC)
Maximum power consumption	≤ 4 W	≤ 6 VA	≤ 10 VA	≤ 4 W	≤ 6 VA	≤ 10 VA
Residual ripple	≤ 10 %					

Supply voltage semiconductor diagnostic outputs (A3/A4)

Supply voltage V_s	24 V DC (11 V DC ... 30 V DC)
Residual ripple	≤ 10 %

Measurement inputs (L1/L2/L3)

Measured/motor voltage	≤ 690 V AC
For UL 508 applications only	≤ 600 V AC
Voltage threshold U_{an}	20 mV ... 400 mV, adjustable
Standstill time t_s	0.2 s ... 6 s, adjustable
Hysteresis (for detection of running motor)	100 %
Response time	≤ 100 ms

Safety outputs: Normally open contact (13/14, 23/24, 33/34)

Positively guided N/C contacts: Normally closed contact (41/42)

Contact configuration (safety contacts)	3 contacts NO, 1 contact NC
Contact type	Relay, positively guided
Nominal switching voltage	250 V AC
Switching capacity in accordance with AC 15	NO contacts: 3 A/230 V AC (EN 60947-5-1), NC contact: 2 A/230 V AC (EN 60947-5-1)
Switching capacity in accordance with DC 13	2 A/24 V DC (EN 60947-5-1)
Maximum switching frequency	≤ 1,200 /h
Contact service life at 230 V / 5 A (AC) $\cos \varphi = 0.5$	≥ 2×10^5 switching operations
Mechanical life	≥ 50×10^6 switching operations

Application diagnostics outputs (not safe)

Semiconductor application diagnostics outputs (ON, ERR)	Electrically isolated supply via A3/A4, $I_{max} = 100$ mA (short-circuit protected), ON for Release, ERR for Error
Signal contacts 53/54 (normally open contact)	3 A/250 V AC G. P.

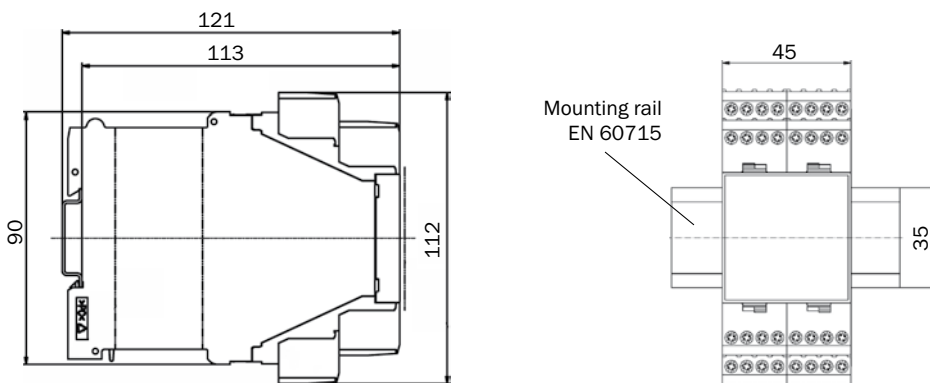
Operating data

	MOC3ZA-KAZ33D3	MOC3ZA-KAZ33A3	MOC3ZA-KAZ33A6	MOC3ZA-KAZ34D3	MOC3ZA-KAZ34A3	MOC3ZA-KAZ34A6
Enclosure rating	EN/IEC 60529					
Clamps	IP 20					
Housing	IP 40					
Vibration resistance	10 Hz ... 55 Hz (EN 60068-2-6)					
Amplitude	0.35 mm					
Ambient operating temperature	-25 °C ... +60 °C					
Storage temperature	-40 °C ... +75 °C					
Electromagnetic compatibility (EMC)	Class B (EN 55011)					
Connection type	Plug-in screw type terminal Cable gland			Plug-in spring terminals Cable gland		
Dimensions (W x H x D)	45 mm x 112 mm x 121 mm					
Weight	Approx. 400 g					

Ordering information

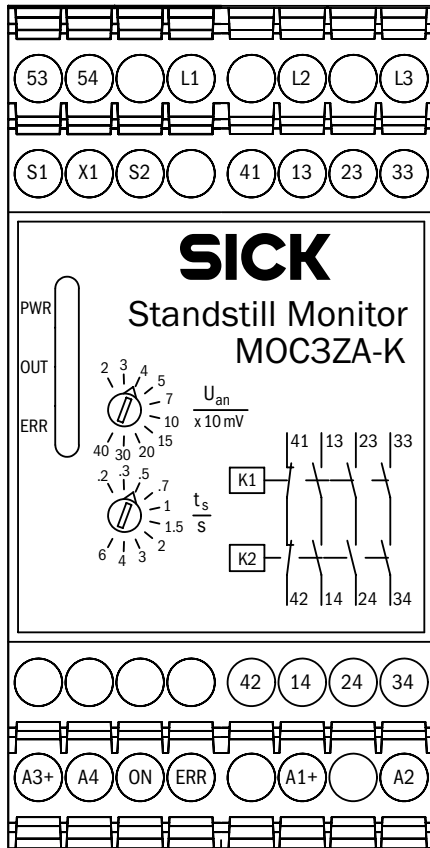
Connection type	Supply voltage V_s	Type	Part no.
Plug-in screw type terminal	24 V DC	MOC3ZA-KAZ33D3	6044981
	230 V AC	MOC3ZA-KAZ33A3	6044982
	400 V AC	MOC3ZA-KAZ33A6	6044983
Plug-in spring terminals	24 V DC	MOC3ZA-KAZ34D3	6047866
	230 V AC	MOC3ZA-KAZ34A3	6047865
	400 V AC	MOC3ZA-KAZ34A6	6047864

Dimensional drawing



All dimensions in mm

Device overview and connections



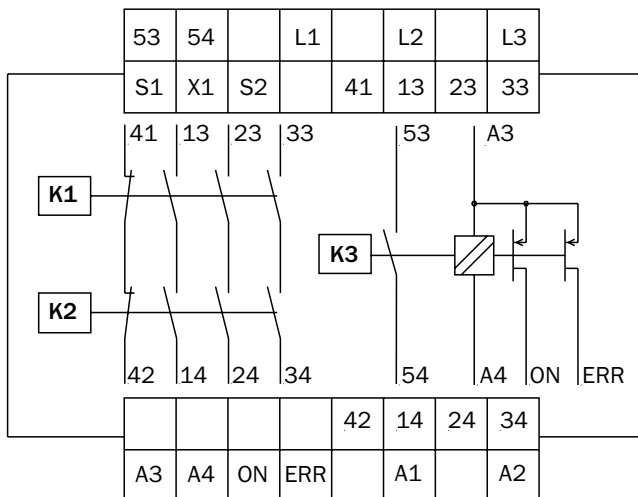
Control elements

Control elements	Function
Rotary switch U_{an}	Voltage threshold (U_{an}) setting for standstill detection
Rotary switch t_s	Standstill delay time (t_s) setting for enabling the safety contacts

Clamps

Clamps	Usage
L1/L2/L3	Measurement channels, connections to the motor
41/42	Positively guided NC contacts
13/14, 23/24, 33/34	Safety contacts (normally open contact)
53/54	Signal contacts (normally open contact)
S1/X1	Connection for feedback circuit (External device monitoring, EDM)
S2/X1	Deletion of errors caused externally
A1/A2	Supply voltage (PWR) of the device
A3/A4	Supply voltage for the semiconductor outputs
ON	Semiconductor application diagnostic output for output state of the safety contacts
ERR	Semiconductor application diagnostic output for error message

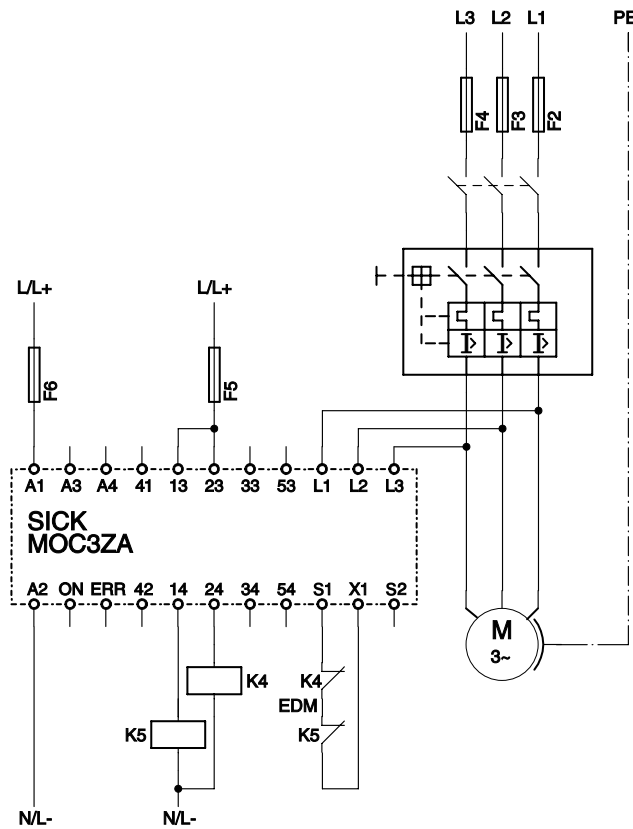
Connection diagram



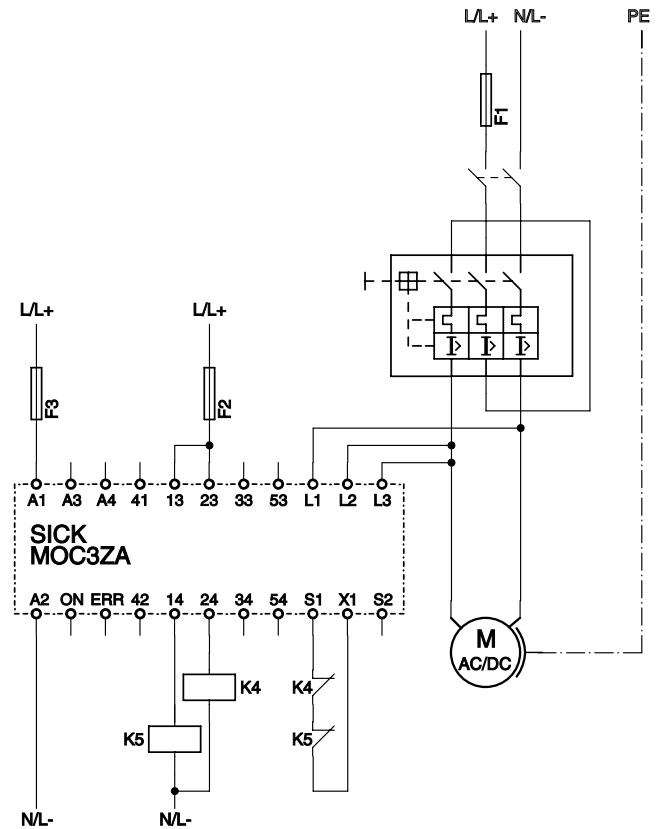
Connection diagrams

You can find more connection diagrams at www.mysick.com.

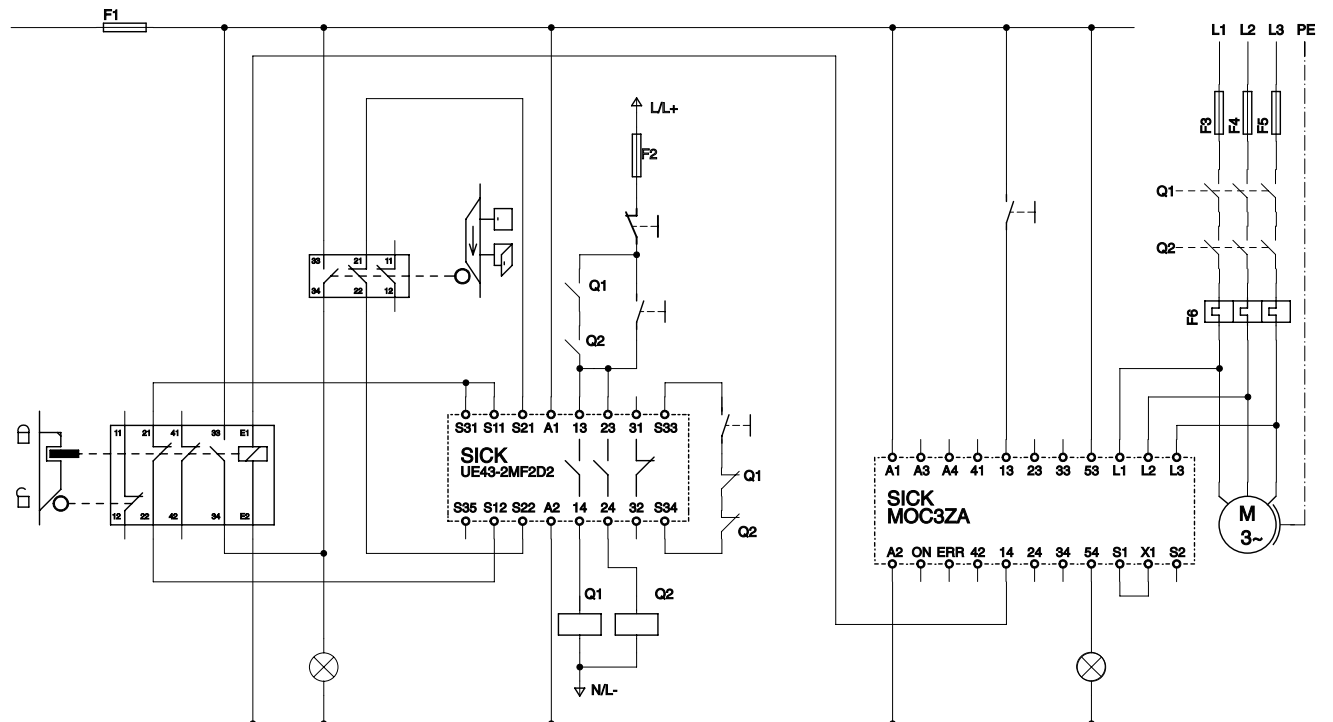
Connection of the MOC3ZA to a three-phase motor



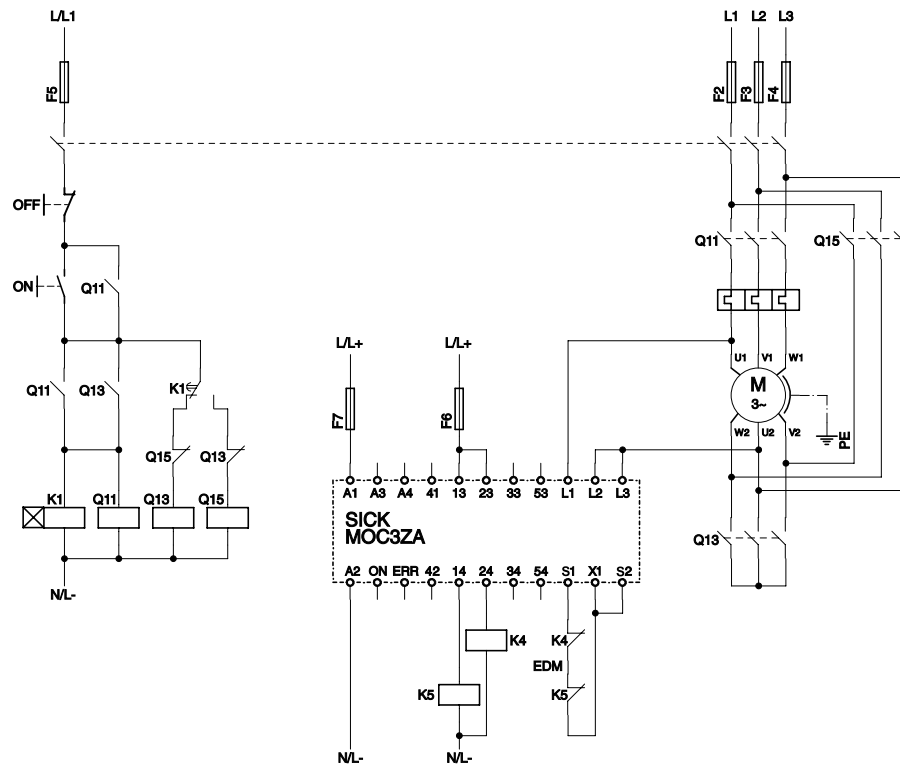
Connection of the MOC3ZA to a single-phase motor/DC motor



Guard unlocking with standstill detection



Star-delta circuit with timer relay and MOC3ZA



SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 7,400 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, we are always close to our customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services round out our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and further locations → www.sick.com