wieland

PRODUCT CATALOG

INDUSTRIAL **SAFETY**

Safe System Solutions for Automation Technology

HELLO
WIELAND ELECTRIC

Tradition and innovation - Wieland is representing the synergy of these two guiding principles for more than 100 years.

At Wieland Electric, we are proud to be the world market leader in electrical connections, and have been focusing on safe and innovative technologies since our founding. The beginnings of our success lie in the legendary Wieland Clamp, the first-ever safe electrical connector. Since then, innovation has pushed us to develop safer and more efficient ways to electrify the world.

Expanding from a component-only manufacturer, we are now one of the leading suppliers of innovative, future-oriented, and complete electrical solutions. We divide our focus into two main areas, Building and Industry. Our Building Solutions focus on decentralized power distribution and pluggable connections in all kinds of architectures and infrastructures. From in-store displays and lighting to hospitals and airports, and any structure in between – you build it, we power it! Our Industry Solutions center around functional safety for machines, industrial networking (IIoT and VPN), and power distribution. At Wieland, we keep your productivity going in mechanical engineering, wind power, material handling, thermo-processing, HVAC, and many other industries.

We are at our customers' side in every step of the project, right from the start. Our experts offer consulting, on-site services, and technical support. We see ourselves as service providers, trainers and subject-matter experts.

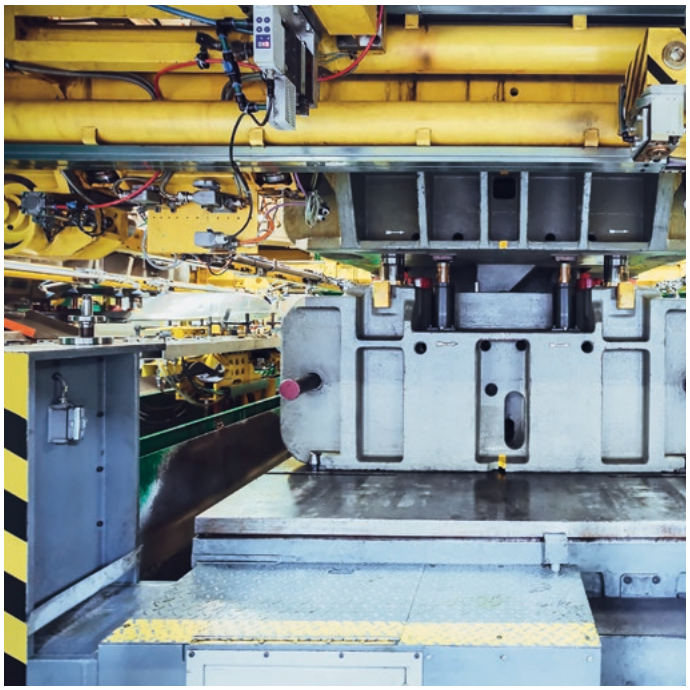
1910
Founded in Bamberg

1600+
Employees worldwide

6
Production sites

70+
Countries worldwide

CONTENTS



OVERVIEW OF **SAFETY** TECHNOLOGY

From the safety sensors of the **sensor** PRO series through the **safe** RELAY safety relays and the modular, with the screwdriver configurable, safety modules **samos**® to the programmable modular safety control **samos**® PRO you always get the suitable product for the protection of man and machine.

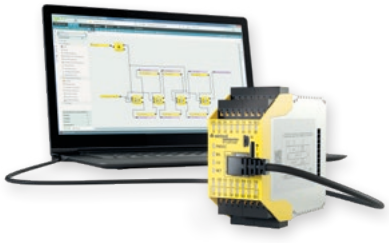
Tested technology

Of course, Wieland Electric offers only thoroughly tested and certified safety technology (i.e., all technical safety products have been approved by recognized testing institutes and meet current regulations and standards).

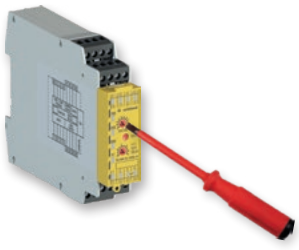
WE OFFER YOU:

+ INTUITIVE SOFTWARE
+ MODULAR SAFETY CONTROLLER
+ COMPACT SAFETY CONTROLLER
+ UNIVERSAL SAFETY RELAYS
+ SAFE SIGNAL DETECTION

SAMOS® PRO COMPACT



SAMOS®



SAFE RELAY

SENSOR PRO

wieland

FIT FOR **SAFETY** WITH **WIELAND**

Wieland supports and advises you – from the planning stage right through to start-up – throughout the entire life cycle of a machine or production system. The broad portfolio of safety switching devices covers all important safety functions and fulfills even complex customer requirements.

IMPORTANT STANDARDS FOR MORE SAFETY

The safety products from Wieland Electric fulfil a number of international standards and regulations with machine and system safety for various applications playing a major role.

- **EN/IEC 60204-1**
- **EN/IEC 61508**
- **EN/IEC 62061**
- **EN ISO 13849-1**
- **EN/IEC 61511**

SOLUTIONS FOR MANY INDUSTRIES

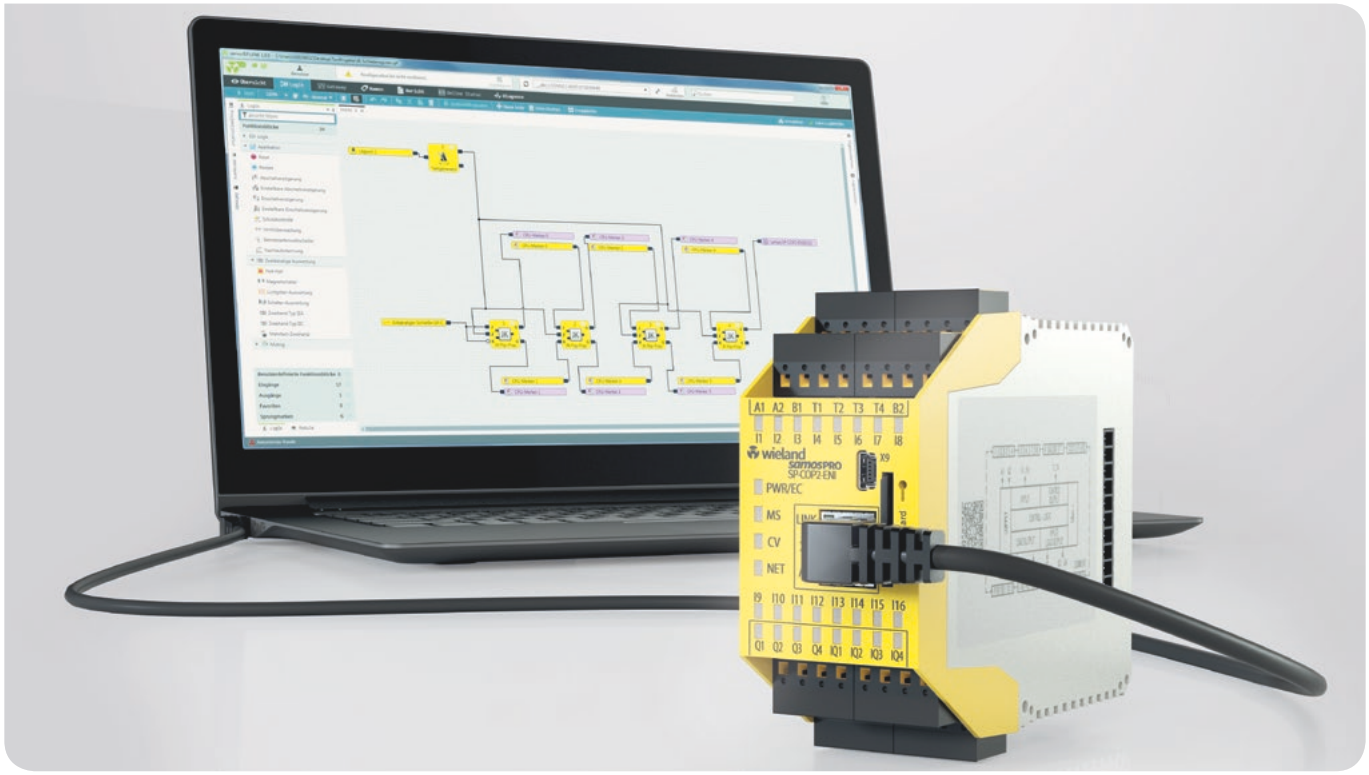
The safety requirements for machine and system control are becoming more demanding in all areas. Wieland Electric offers tailored, innovative solutions ranging from sensors right down to safety control.

SOLUTIONS:

+ MACHINE BUILDING INDUSTRY
+ FIRING SYSTEMS
+ PRESSES
+ INTRA LOGISTICS

SAMOS® PRO COMPACT

The safety control of the next generation



With the highest power in the smallest space, the safety control samos®PRO COMPACT sets new standards in the area of machine automation.

OVERVIEW OF BENEFITS

- 24 safe in- and outputs on 45 mm construction width for space and cost savings
- USB and Ethernet interfaces for remote maintenance always on board
- PROFINET IO, EtherNet/IP and Modbus TCP are integrated in the basic module
- 2 externe Gateways für EtherCAT, PROFIBUS DP and CANopen
- 4 A switching power at each individual pair of outputs to save small contactors and relays
- Ambient temperature –25 °C to +65 °C
- Modular extendability to up to 172 safe in-/outputs, 12 I/O modules
- Optical display of all in- and outputs in system
- Screw or push-in terminals (included in scope of delivery)

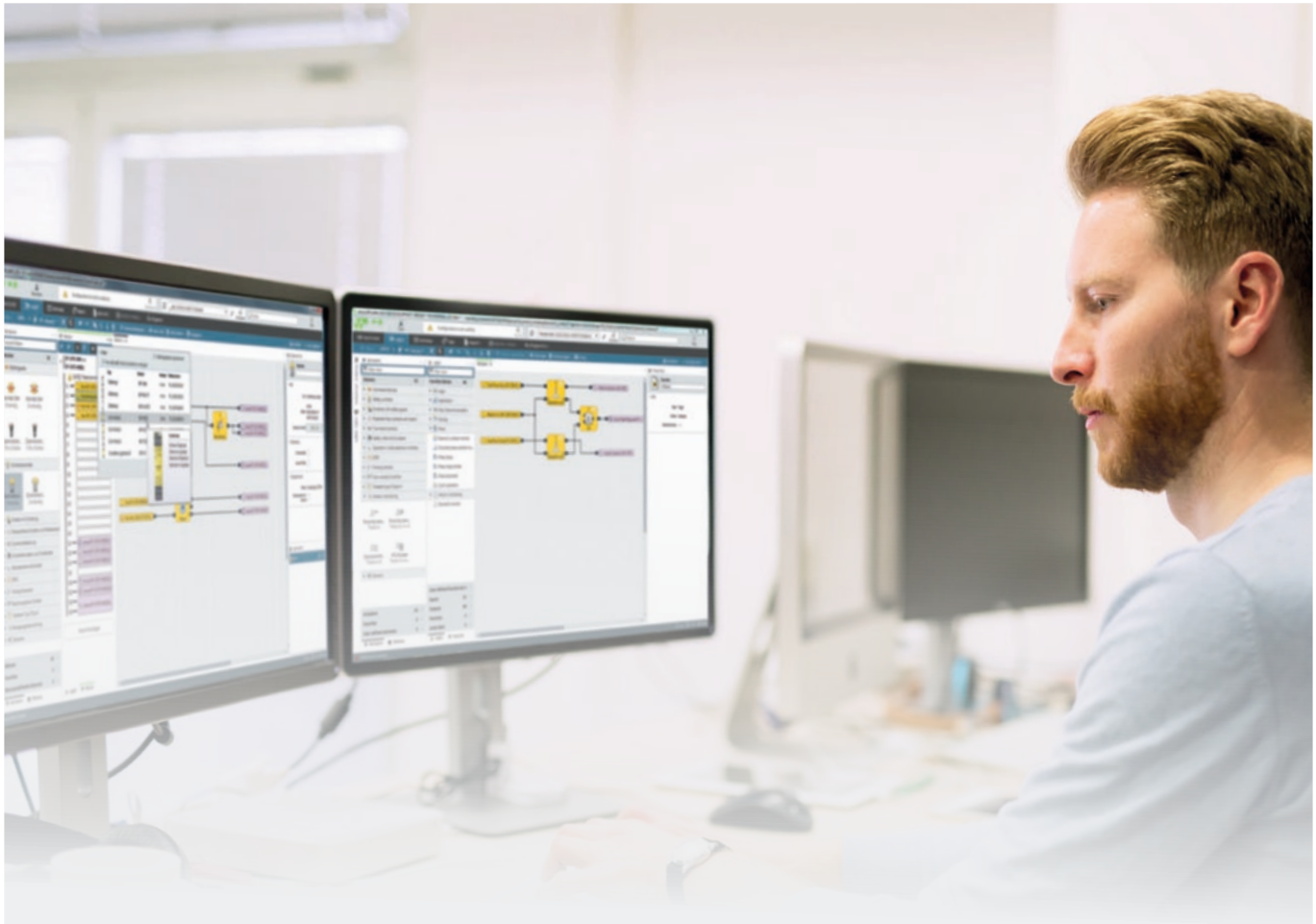
SAMOS® PRO COMPACT

Enhanced functionality with PLUS variant

	STANDARD			PLUS		
Type/ Feature	SP-COP1-A SP-COP1-C	SP-COP2-EN-A SP-COP2-EN-C	SP-COP2-ENI-A SP-COP2-ENI-C	SP-COP1-P-A SP-COP1-P-C	SP-COP2-EN-P-A SP-COP2-EN-P-C	SP-COP2-ENI-P-A SP-COP2-ENI-P-C
Programming via USB Interface	x	x	x	x	x	x
Programming via Ethernet Interface		x	x		x	x
PROFIBUS DP, CANopen, EtherCAT (*)	x	x	x	x	x	x
PROFINET I/O, Modbus TCP,EtherNet/IP			x			x
Advanced Security	x	x	x	x	x	x
Display Values				x	x	x
Muting Library	x	x	x	x	x	x
Press Library				x	x	x
Analog Library				x	x	x
Combustion Library				x	x	x

* These gateways are available as additional extension module

The last letter on the nameplate has the following meaning: **-A**: Screw terminals, **-C**: Push in terminals



SAMOS® PLAN 6 PROGRAMMING SOFTWARE

Intuitive + flexible + license-free

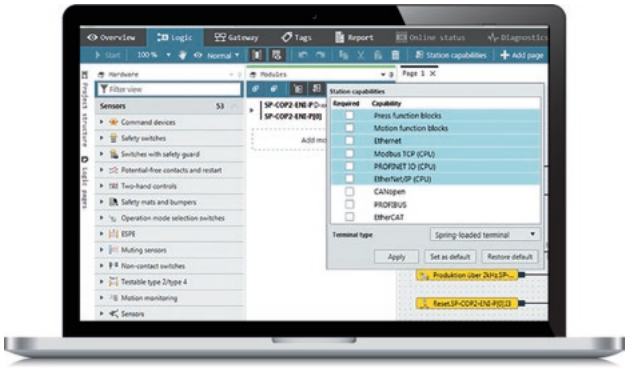
Our samos® PLAN 6 programming software for the samos® PRO COMPACT range now makes programming even easier. samos® PLAN 6 assists PLC programmers, electrical design engineers and developers with the planning, validation, verification and documentation of the safety application.

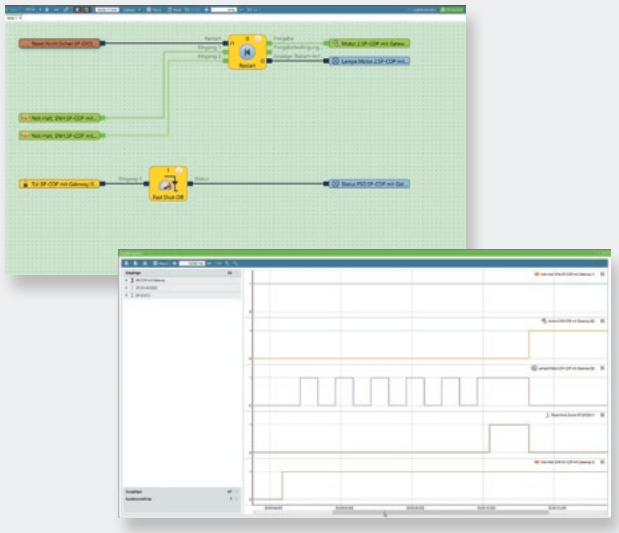
+ Intuitive operation through automatic hardware configuration
+ Error-free commissioning through integrated simulation and logic analysis
+ Comprehensive library with TÜV-certified function blocks
+ Comfortable operation with multiple screens, dockable and undockable windows
+ Fast setup of the machine through forcing
+ Configurable project documentation with one mouse click (one-click report)

INTUITIVE CONFIGURATION

samos® PLAN 6 offers automatic hardware configuration.

- Easy entry to programming
- No detailed product knowledge required
- Select features instead of modules
- On-the-fly configuring & programming
- Less engineering effort





SIMULATION INSTEAD OF TESTING

Simulate your programmed logic in real-time on the PC instead of looking for faults on the machine.

- Offline function simulation
- Signal selection via drag & drop
- Fast signal change and debouncing
- Deceleration up to a factor of 20
- Simulation exported to Excel
- Documentation as a PDF with one click

FASTER VALIDATION

In online mode with oscilloscope function, you can quickly validate, verify and document your safety functions on-site.

- Online recording on a laptop
- Long-term recording for troubleshooting
- Validation and verification on-site
- Fast documentation via PDF export

PARAMETERIZATION INSTEAD OF PROGRAMMING

Error-free parameterization through TÜV-certified application modules.

- Simplified CE declaration thanks to TÜV-certified function blocks
- Functions for presses
- Muting functions, specially for light grids and light curtains
- Adjustable switch on and off delay
- Analog signal processing

TÜVRheinland®
Functional Safety
Type Approved
FS

FLEXIBLE SCREENS

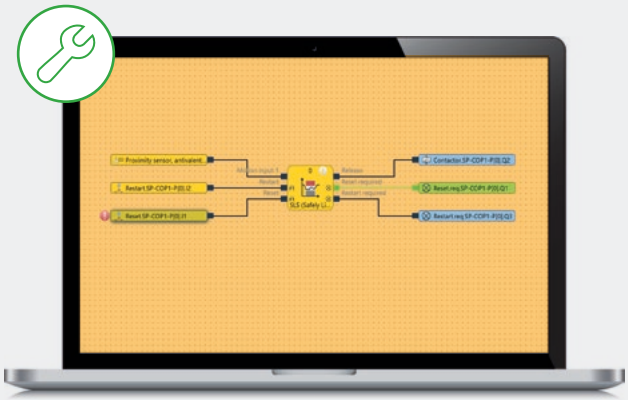
Configure the software to fullfill your requirements by individually adapting your workspace.

- Docking and undocking window arrangement
- Flexible with multiple screens
- Clear diagnosis, verification and troubleshooting
- Selectable Start view (HW, logic)
- Customized and savable layouts (laptop, PC, tablet)

FAST MACHINE SETUP

Simply emulate missing sensor hardware with the forcing function.

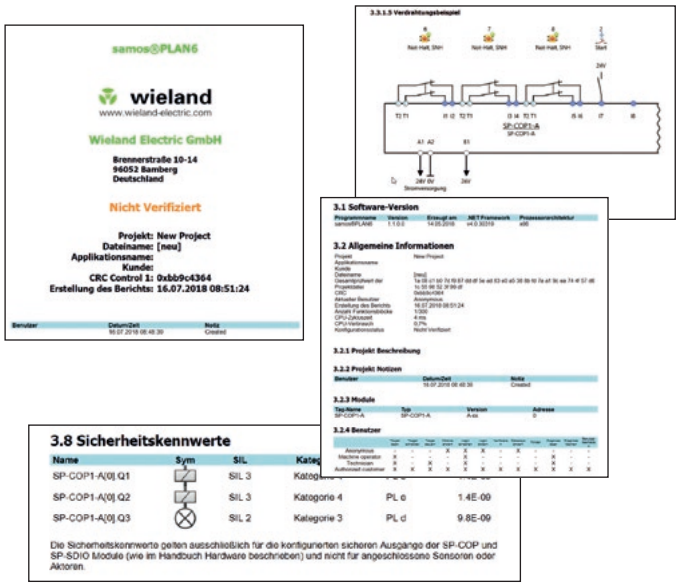
- Comfortable machine setup with forcing for missing sensors
- Time-limited forcing up to 8 hours
- Minimal errors at shift change
- Fast troubleshooting thanks to diagnostics messages



GLOBAL REMOTE DIAGNOSTICS

With samos® PLAN 6 and the integrated Ethernet interface, you and your system are connected worldwide, therefore you save expensive service call outs.

- Initial diagnosis via LEDs, Touch Panels or PLCs
- Remote diagnosis via integrated Ethernet
- Remote access to samos® PRO via VPN router
- Remote via LAN, WLAN or mobile radio
- Fast troubleshooting during machine breakdown
- Advanced security against manipulation



ONE-CLICK REPORT GENERATION

Document your projects with one click.

- Cover sheet with project info and CRC
- Optional manipulation protection with falsification code
- Easy to order thanks to parts list
- Time saving with wiring examples
- Safety values (SIL, Kat, PL, PFHd)
- Comfortable calculation of the overall performance level

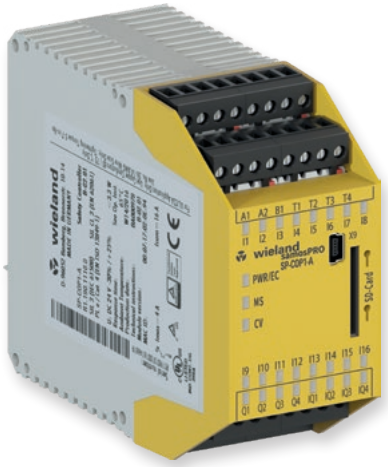
PROTECTION AGAINST MANIPULATION

Protect your machines against manipulation and hacker attacks with the new "Advanced Security" capability.

- No project modification on the controller without falsification code
- Extra precautions against unauthorized access via Ethernet
- Project runs only on a specified controller
  ▸ More control over spare parts business
- The controller runs only with the original project
  ▸ Protection against SD card change

SAMOS® PRO COMPACT

STANDARD VARIANT



APPLICATIONS

- Machine building industry
- SIL_{CL} 3 (EN 62061-1)
- PL e / Category 4 (EN ISO 13849-1)

FEATURES

- 20 inputs, 4 outputs on the basic module
- 116 safe inputs and 52 outputs with I/O extension ¬modules
- Extension with 2 external gateway modules
- Mini USB programming interface
- SD slot for program memory
  (Order type for SD card: SP-COP-CARD)
- Terminals are included in the scope of delivery
- Libary for muting

OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Features STANDARD	Part no.	P.U.
SP-COP1-A	24 V DC	Screw terminals, pluggable		R1.190.1110.0	1
SP-COP1-C	24 V DC	Push-in terminals, pluggable		R1.190.1120.0	1
SP-COP2-EN-A	24 V DC	Screw terminals, pluggable	Ethernet	R1.190.1210.0	1
SP-COP2-EN-C	24 V DC	Push-in terminals, pluggable	Ethernet	R1.190.1220.0	1
SP-COP2-ENI-A	24 V DC	Screw terminals, pluggable	Industrial Ethernet	R1.190.1310.0	1
SP-COP2-ENI-C	24 V DC	Push-in terminals, pluggable	Industrial Ethernet	R1.190.1320.0	1

TECHNICAL DATA			
Function	Safety control		
Function display	24 LED green (in-/outputs)		
	3 LED green/red/yellow (module status)		
Supply circuit			
Operating voltage range	16.8 V DC to 30 V DC		
Rated power	3.5 W		
Electrical isolation supply circuit - control circuit	No		
Safe input circuit I_n	**SP-COP1**	**SP-COP2-EN**	**SP-COP2-ENI**
Quantity/type	20 / digital	20 (16) / digital	20 (16) / digital
Primary voltage range	15 V DC to 30 V DC	15 V DC to 30 V DC	15 V DC to 30 V DC
Nominal current	2 mA	2 mA	2 mA
Safe output circuit Q_n			
Quantity/type	4 / digital	4 (8) / digital	4 (8) / digital
Rated output voltage	24 V DC	24 V DC	24 V DC
Output current per output	4 A	4 A	4 A
Short-circuit protective device	Yes	Yes	Yes
Interfaces			
USB Mini interface	Yes	Yes	Yes
Ethernet interface	No	Yes	Yes
Industrial Ethernet protocol (basis module)	No	No	Modbus TCP, Profinet, Ethernet IP
Industrial Ethernet protocol (with gateway module)	ETHERCAT, PROFIBUS DP, CANopen	ETHERCAT, PROFIBUS DP, CANopen	ETHERCAT, PROFIBUS DP, CANopen
Program memory	External	External	External
General data			
Protection class as per DIN EN 60529 (housing/terminals)	IP20		
Air and creepage distances	EN 60664-1		
Ambient temperature / storage temperature	-25 °C – +65 °C / -25 °C – +75 °C		
Standards	EN 61508, EN 60204, EN 62061, EN ISO 13849-1, EN 81-20/50, EN 692, EN 693, EN/IEC 61511, EN 50156-1		
Approvals	TÜV, cULus		

SAMOS® PRO COMPACT

PLUS MODULE

APPLICATIONS

- Machine building industry
- Presses
- Combustion plants
- SIL_{CL} 3 (EN 62061-1)
- PL e / Kategorie 4 (EN ISO 13849-1)

FEATURES

- Includes all features of the STANDARD version
- Display for data (temperature, counter) in samos® PLAN
- Data about gateways for HMIs or SPSn
- Libary for analoge sensors
- Libary for combustion technology
- Libary for muting
- Libary for press

OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Features STANDARD +	Part no.	P.U.
SP-COP1-P-A	24 V DC	Screw terminals, pluggable	Press, analog	R1.190.1130.0	1
SP-COP1-P-C	24 V DC	Push-in terminals, pluggable	Press, analog	R1.190.1140.0	1
SP-COP2-EN-P-A	24 V DC	Screw terminals, pluggable	Ethernet, press, analog	R1.190.1230.0	1
SP-COP2-EN-P-C	24 V DC	Push-in terminals, pluggable	Ethernet, press, analog	R1.190.1240.0	1
SP-COP2-ENI-P-A	24 V DC	Screw terminals, pluggable	Industrial Ethernet, press, analog	R1.190.1330.0	1
SP-COP2-ENI-P-C	24 V DC	Push-in terminals, pluggable	Industrial Ethernet, press, analog	R1.190.1340.0	1

TECHNICAL DATA			
Function	Safety control		
Function display	24 LED green (in-/outputs)		
	3 LED green/red/yellow (module status)		
Supply circuit			
Operating voltage range	16.8 V DC to 30 V DC		
Rated power	3.5 W		
Electrical isolation supply circuit - control circuit	No		
Safe input circuit I_n	**SP-COP1**	**SP-COP2-EN**	**SP-COP2-ENI**
Quantity/type	20 / digital	20 (16) / digital	20 (16) / digital
Primary voltage range	15 V DC to 30 V DC	15 V DC to 30 V DC	15 V DC to 30 V DC
Nominal current	2 mA	2 mA	2 mA
Safe output circuit Q_n			
Quantity/type	4 / digital	4 (8) / digital	4 (8) / digital
Rated output voltage	24 V DC	24 V DC	24 V DC
Output current per output	4 A	4 A	4 A
Short-circuit protective device	Yes	Yes	Yes
Interfaces			
USB Mini interface	Yes	Yes	Yes
Ethernet interface	No	Yes	Yes
Industrial Ethernet protocol (basis module)	No	No	Modbus TCP, Profinet, Ethernet IP
Industrial Ethernet protocol (with gateway module)	ETHERCAT, PROFIBUS DP, CANopen	ETHERCAT, PROFIBUS DP, CANopen	ETHERCAT, PROFIBUS DP, CANopen
Program memory	External SD card	External SD card	External SD card
General data			
Protection class as per DIN EN 60529 (housing/terminals)	IP20		
Air and creepage distances	EN 60664-1		
Ambient temperature / storage temperature	-25 °C – +65 °C / -25 °C – +75 °C		
Standards	EN 61508, EN 60204, EN 62061, EN ISO 13849-1, EN 81-20/50, EN 692, EN 693, EN/IEC 61511, EN 50156-1		
Approvals	TÜV, cULus		

SP-SDIO

INPUT- / OUTPUT MODULE

APPLICATIONS

- Machine building industry
- Presses
- Combustion plants
- Intra logistics
- SIL_{CL} 3 (EN 62061-1)
- PL e / Category 4 (EN ISO 13849-1)

FEATURES

- 8 safe inputs
- 4 safe outputs (with/without output test-pulses)
- 2 outputs (e.g., test signals)

OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Remarks	Part no.	P.U.
SP-SDIO84-P1-K-A	24 V DC	Screw terminals, pluggable	with/without output test-pulses	R1.190.0030.0	1
SP-SDIO84-P1-K-C	24 V DC	Push-in terminals, pluggable	with/without output test-pulses	R1.190.0040.0	1

TECHNICAL DATA	
Function display	13 LEDs, green/red
Power supply circuit	
Operating voltage range	16.8 V DC to 30 V DC
Rated consumption	1.8 W
Electrical isolation power supply circuit - control circuit	no
Safe input circuit I1 – I8	
Quantity / type	8 / digital
Input voltage range	15 V DC to 30 V DC
Rated current	3 mA
Safe output circuits Q1 – Q4	
Quantity / type	4 / digital
Output voltage	24 V DC
Output current I_n per exit	4 A
Output circuits X1, X2	
Quantity / type	2 / digital
Output voltage	24 V DC
Output current I_n per exit	0.5 A
General data	
Protection degree according to DIN 60529 (housing / terminals)	IP40 / IP20
Creepage distances and clearances	EN 60664-1
Ambient temperature / storage temperature	-25°C – +65°C / -25°C – +75°C
Standards	EN 61508, EN 61511, EN 62061, EN ISO 13849-1, EN 50156-1
Approvals	TÜV, cULus

SP-SDI

INPUT MODULE

APPLICATIONS

- Machine building industry
- Presses
- Combustion plants
- Intra logistics
- SIL_{CL} 3 (EN 62061-1)
- PL e / Category 4 (EN ISO 13849-1)

FEATURES

- 8 safe inputs
- 8 outputs (e.g., test signals)

OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SP-SDI8-P1-K-A	24 V DC	Screw terminals, pluggable	R1.190.0050.0	1
SP-SDI8-P1-K-C	24 V DC	Push-in terminals, pluggable	R1.190.0060.0	1

TECHNICAL DATA	
Function display	13 LEDs, green/red
Power supply circuit	
Operating voltage range	16.8 V DC to 30 V DC
Rated consumption	1.8 W
Electrical isolation power supply circuit - control circuit	no
Safe input circuit I1 – I8	
Quantity / type	8 / digital
Input voltage range	15 V DC to 30 V DC
Rated current	3 mA
Output circuits X1, X2	
Quantity / type	2 / digital
Output voltage	24 V DC
Output current I_n per exit	0.5 A
General data	
Protection degree according to DIN 60529 (housing / terminals)	IP40 / IP20
Creepage distances and clearances	EN 60664-1
Ambient temperature / storage temperature	-25°C – +65°C / -25°C – +75°C
Standards	EN 61508, EN 61511, EN 62061, EN ISO 13849-1, EN 50156-1
Approvals	TÜV, cULus

NOTE:
Safe relay contacts are expanded using the series SNE contact expansion relay (from Page 68).
Types **SNE 4024K** and **SNE 4012K** in particular are ideal for contact expansion.

SP-SA

ANALOG INPUT MODULE*)

APPLICATIONS

- Machine building industry
- Process industry
- Combustion plants
- up to SIL_{CL} 3 (EN 62061-1)
- up to PL e / Category 4 (EN ISO 13849-1)

FEATURES

- 4 safe analog inputs
- Galvanic isolation
- Limits monitoring
- Mathematical functions
- Scaling

OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Remarks	Part no.	P.U.
SP-SAR4-A	DC 24 V	Screw terminals, pluggable	4 safe inputs RTD	R1.190.1610.0	1
SP-SAR4-C	DC 24 V	Push-in terminals, pluggable	4 safe inputs RTD	R1.190.1620.0	1
SP-SAC4-A	DC 24 V	Screw terminals, pluggable	4 safe inputs 0-20 mA	R1.190.1630.0	1
SP-SAC4-C	DC 24 V	Push-in terminals, pluggable	4 safe inputs 0-20 mA	R1.190.1640.0	1
SP-SACR22-A	DC 24 V	Screw terminals, pluggable	2 safe inputs RTD, 2 safe inputs 0-20 mA	R1.190.1650.0	1
SP-SACR22-C	DC 24 V	Push-in terminals, pluggable	2 safe inputs RTD, 2 safe inputs 0-20 mA	R1.190.1660.0	1

TECHNICAL DATA			
Function display	6 LED green/red		
Power supply circuit			
Operating voltage range	16,8 V DC to 30 V DC		
Rated consumption	1,5 W		
Electrical isolation	yes (input circuit - supply circuit)		
Safe input circuit I_n	**SP-SAR4**	**SP-SAC4**	**SP-SACR22**
Quantity / type	4 / analog	4 / analog	4 / analog
Input type	4 x temperature-dependent resistor (RTD)	4 x power interface	2 x temperature-dependent resistor (RTD) 2 x power interface
Sensor type	PT100, PT200, PT500, PT1000, NI100, NI1000	0 - 20 mA, 4 - 20 mA	PT100, PT200, PT500, PT1000, NI100, NI1000 0 - 20 mA, 4 - 20 mA
Resolution	16 Bit	16 Bit	16 Bit
General data			
Protection degree according to DIN 60529	IP20		
Creepage distances and clearances	EN 60664-1		
Ambient temperature / storage temperature	-25 °C - +65 °C / -25 °C - +70 °C		
Standards	EN 61508, EN 61511, EN 62061, EN ISO 13849-1, EN 50156-1		
Approvals	TÜV, UL (pending)		

*) Available from quarter 2/2019

SP-DIO

STANDARD I/O-MODUL

APPLICATIONS

- Machine building
- Presses
- Firing systems
- Intra logistics

FEATURES

- 4 standard inputs
- 4 standard outputs
- 4 configurable standard in-/outputs

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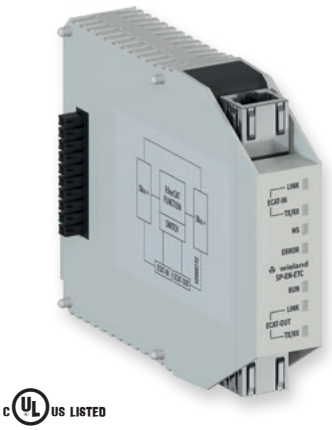
OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SP-DIO84-K-A	24 V DC	Screw terminal, pluggable	R1.190.1050.0	1
SP-DIO84-K-C	24 V DC	Push-in terminal, pluggable	R1.190.1060.0	1

FUNCTION DISPLAY	
Function display	13 LED, green/red
Function display	
Operating voltage range U_B	16.8 V DC to 30 V DC
Rated power	0,5 W
Electrical isolation supply circuit - control circuit	no
Standard input circuits I_n, IY_n	
Quantity / type	4 (8) / digital
Input voltage range	15 V DC to 30 V DC
Nominal current	3 mA
Standard output circuits Q_n, IY_n	
Quantity / type	4 (8) / digital
Output voltage	24 V DC
Output current I_n per output	0.5 A
Short-circuit protective device	yes
General data	
Protection class as per DIN EN 60529 (housing/terminals)	IP40 / IP20
Air and creepage distances	EN 60664-1
Ambient temperature / storage temperature	-25°C – +65°C / -40°C – +70°C
Standards	EN 60204, EN 50156-1
Approvals	cULus

GATEWAY



SP-EN-ETC

FEATURES

- EtherCAT industrial Ethernet protocol
- Bidirectional communication with PLC
- Transfer of 50 bytes of data
- Simple configuration with samos® PLAN 6

SP-CANOPEN

FEATURES

- Fieldbus protocol CANopen
- Bidirectional communication with PLC
- Transfer rate up to 1 MBit/s
- Transfer of 50 bytes of data
- Simple configuration with samos® PLAN 6
- For new projects and extended diagnostics use R1.190.0210.1
- For backward compatibility and existing projects please use R1.190.0210.0

SP-PROFIBUS-DP

FEATURES

- Fieldbus protocol PROFIBUS-DP
- Bidirectional communication with PLC
- Transfer rate 12 MBaud
- Transfer of 50 bytes of data
- Simple configuration with samos® PLAN 6
- For new projects and extended diagnostics use R1.190.0190.1
- For backward compatibility and existing projects please use R1.190.0210.0

OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Remark	Part no.	P.U.
SP-CANopen	24 V DC	CANopen with extented diagnosis (with SP-COPx starting version D-xx)	R1.190.0210.1	1
SP-PROFIBUS-DP	24 V DC	PROFIBUS DP with extented diagnosis (with SP-COPx starting version D-xx)	R1.190.0190.1	1
SP-EN-ETC	24 V DC	ETHERCAT	R1.190.0160.0	1

STARTER SET & ACCESSORIES

SAMOS®PRO COMPACT **STARTER SET**

- A safe way to get started
- Contains all required components
- With programming tool samos®PLAN 6

SP-COP-STARTER-SET:

Set including SP-COP2-EN-A, SP-COP-CARD1, SP-PLAN6, SP-CABLE-USB1, SP-CABLE-ETH1

SP-COP-CARD1

SP-CABLE-USB1

SP-CABLE-ETH1

SAMOS®PRO **ACCESSORIES**

Contents of the sarter set

- SP-COP-CARD1: Memory-card for SP-COP
- SP-CABLE-USB1: USB cable for SP-COP, 1.8 m
- SP-CABLE-ETH1: Ethernet cable for SP-COP, 2 m
- Programming software samos®PLAN 6

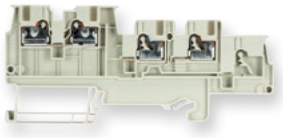
You can get the free programming tool samos®PLAN 6 at **www.wieland-electric.com** Support / Software & Apps

STARTER SET & ACCESSORIES

HMI-ECO

FURTHER SAMOS®PRO ACCESSORIES

- For HMI-ECO touch panels and hmi plan visualization software, see Industrial Communication brochure (0801.0)



WTP 1,5 I/O -3

- Three-wire initiator/actuator terminal with push-in connection for mounting on MR 35

SHIELDED CABLE TERMINALS FASIS WST .../T35

- For mounting on TS 35 mounting rail

SAFETY SCHRAUBKL. SET

- Screw terminal set with 4 different codings for 5 devices

SAFETY PUSH IN SET

- Push-in terminal set with 4 different codings for 5 devices

OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Part no.	P.U.
SP-COP-CARD1	Memory-card for SP-COP	R1.190.1000.0	1
SP-CABLE-USB1	USB cable for SP-COP, 1.8 m	R1.190.1010.0	1
SP-CABLE-ETH1	Ethernet cable for SP-COP, 2 m	R1.190.1020.0	1
SP-FILTER1	samos® PRO-Output-Filter, 680nF	R1.190.0260.0	1
SP-FILTER2	samos® PRO-Output-Filter, 2,2uF	R1.190.0270.0	1
SP-COP-STARTER-SET	Content: SP-COP2-EN-A, SP-COP-CARD1, SP-PLAN6, SP-CABLE-USB1, SP-CABLE-ETH1	R1.190.1100.0	1
HMI-LICENSE-SINGLE	Single-user license for HMIs, programming software for HMIs	ZW.000.0170.0	1
HMI-ECO-043	HMI Eco touch panel, 4.3" color, TFT, 480 x 272 pixels	83.050.0000.0	1
HMI-ECO-070	HMI Eco touch panel, 7" color widescreen, TFT, 800 x 480 pixels	83.050.0001.0	1
HMI-ECO-100	HMI Eco touch panel, 10" color, TFT, 1024 x 600 pixels	83.050.0002.0	1
SP-COVER	SD card slot cover for SP-COP modules	R1.190.1040.0	1
SAFETY SCHRAUBKL.SET	Screw terminal set with 4 different codings for 5 devices	99.208.9999.9	1
SAFETY PUSH IN SET	Push-in terminal set with 4 different codings for 5 devices	99.209.9999.9	1
WTP 1,5 I/O -3	fasis - multi-tier block with diodes	56.202.8055.0	100
APFN 2,5 E/35	End plate	07.312.7355.0	10
WST 8 / TS 35	Shield cable terminals for mounting on mounting rail for cable diameters from 3 to 8 mm	Z2.803.6010.0	10
WST 13,5 / TS 35	Shield cable terminals for mounting on mounting rail for cable diameters from 4 to 13.5 mm	Z2.803.6110.0	10
WST 20 / TS 35	Shield cable terminals for mounting on mounting rail for cable diameters from 10 to 20 mm	Z2.803.6210.0	10

SAMOS® – SAFETY MADE **SIMPLE**

samos® stands for SAfety MOdular System. The safety system with just a multifunctional, permanently coded basic modules is built on the modular kit principle and grows module by module along with the safety task.

- samos® combines a wide variety of safety sensors which monitor a machine or system for technical safety either individually, in combination or all together.
- samos® replaces special devices with pre-defined, practice-oriented function blocks for monitoring emergency stop, position switches, two-hand buttons and light curtains, for example.
- samos® uses safe logical link functions for simple creation of dependent or independent safety zones.
- samos® offers comprehensive diagnosis by gateways via Profibus-DP, CANopen and DeviceNet or via Industrial Ethernet.

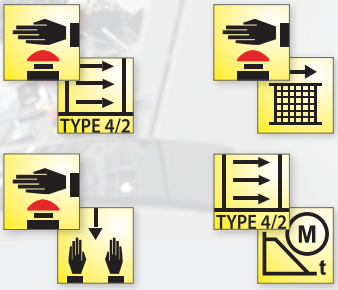
All safety functions are set with a screwdriver without programming software and can be read at the device.

EXAMPLE: SINGLE FUNCTIONS

- Emergency stop
- Safety door
- Controlled stopping
- Monitoring BWS type 4
- Monitoring BWS type 2 with testing
- Testable PDF sensors
- Safe position monitoring
- Static valve monitoring
- Two-hand applications to IIIA and IIIC
- 4-wire switching mats

Set release delay of output Q4 or Q3 and Q4

EXAMPLE: COMBINATION FUNCTIONS



EXAMPLE: DUAL FUNCTIONS

EXAMPLE: SPECIAL FUNCTIONS

- Jog mode
- Setup mode
- MUTING and BYPASS

SAMOS® – MAXIMUM **FLEXIBILITY**

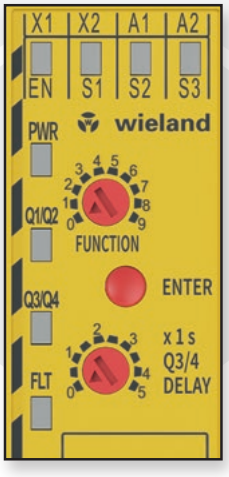
INTELLIGENTLY CONNECTED MODULES

The modules are connected to a standard DIN rail and pressed together. Connected on the left of the rail is the Master, the obligatory base module (with coding 1), input modules (coding matches the base module arranged to the left) and relay output modules. All modules in the samos overall system are permanently coded and are always permanently assigned to a similarly permanently coded basic module, which eliminates any confusion during service work, for instance.

The relay modules are integrated in the function via external wiring. If necessary such system group are made up of basic modules, input modules and relay output modules can be wired together. This allows the implementation of a wide variety of input/output functions with separate or combined effects.

FUNCTIONS WITH ADDED VALUE

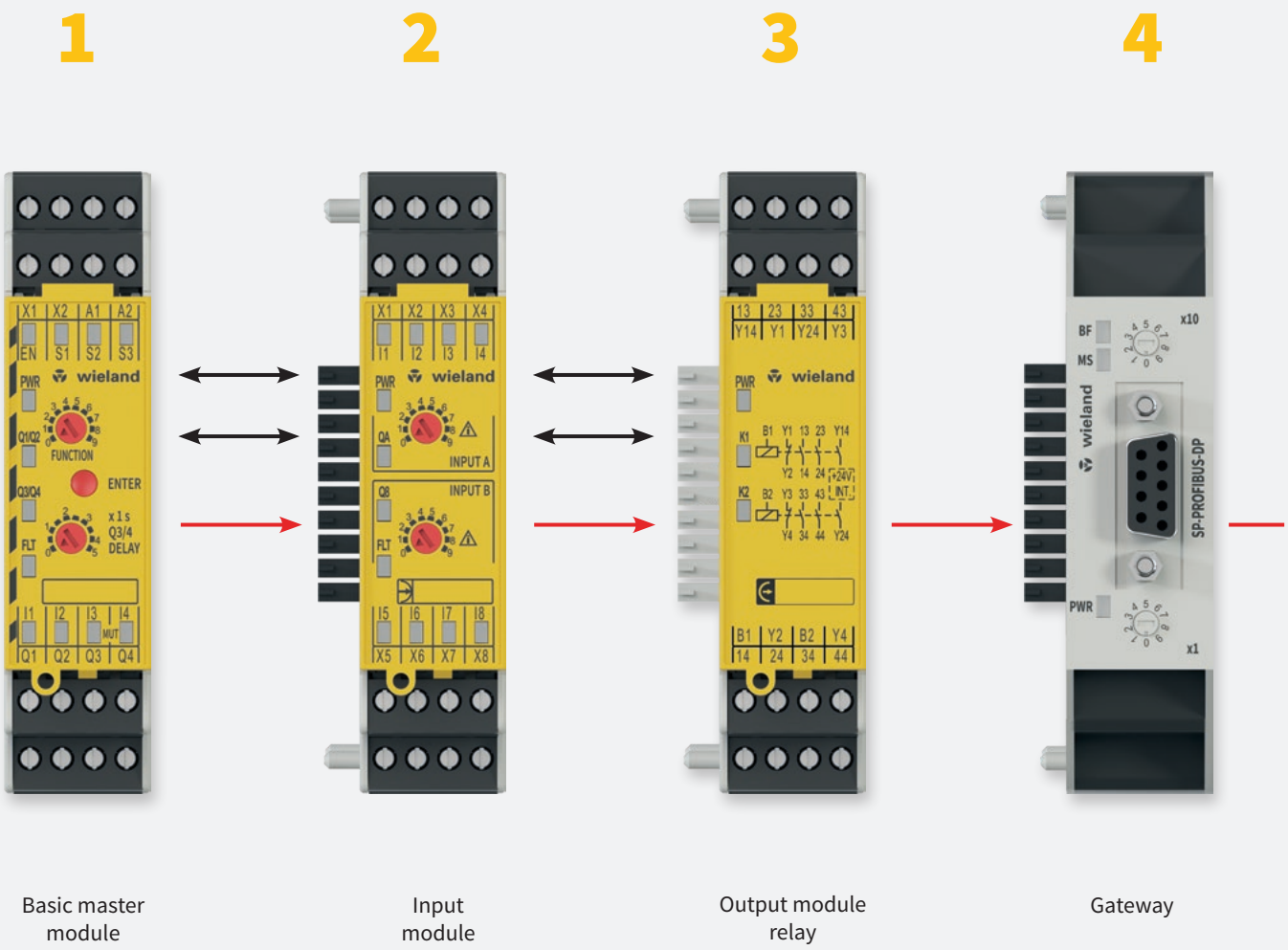
The functions of the basic module and the input modules are set either individually or in combination on the front with 10-position rotary switches (e.g. emergency stop and protective door monitoring with controlled shutdown). Additional functions such as automatic reset, startup and re-startup blocking or retriggering of the off-delay are implemented with terminal configuration.



samos® MODULES

Clear handling – maximum flexibility

The clear and simple user interface helps to implement safe solutions.



MODULAR DESIGN

In its maximum configuration **samos®** consists of one basic master module and additional modules to expand function blocks, inputs and outputs.

- Up to **12** safe active modules (input modules)
- Up to **4** additional safe passive output module relays
- **1** additional gateway

1 Basic master module

Safety module with 9 function blocks, 8 safe inputs and 4 safe outputs (also suitable for stand-alone operation)

2 Input module

Expansion module with 10 function blocks and 8 safe inputs

3 Output module relay

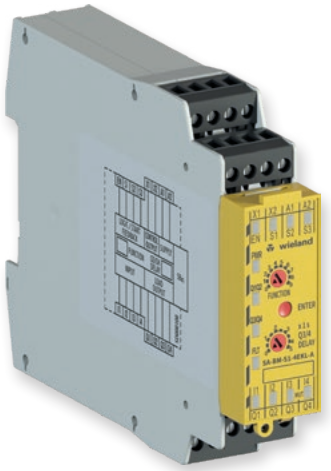
Expansion modules with 2 or 4 safe, potential-free relay contacts

4 Gateway

Fieldbus or Ethernet gateways for easy diagnosis of the **samos®** system

SA-BM

BASIC MODULE



APPLICATIONS

- Machine building industry
- Combustion plants
- SIL_{CL} 3 (EN 62061-1)
- PL e / Category 4 (EN ISO 13849-1)

FEATURES

- 9 function blocks
- 4 inputs for safety sensors
- 4 safe semiconductor inputs
- Adjustable OFF- delay

OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Coding	Part no.	P.U.
SA-BM-S1-4EKL-A, 5s	24 V DC	Screw terminals, pluggable	1	R1.180.0010.0	1
SA-BM-S1-4EKL-A, 50s	24 V DC	Screw terminals, pluggable	1	R1.180.0020.0	1
SA-BM-S1-4EKL-C, 5s	24 V DC	Push-in terminals, pluggable	1	R1.180.0360.0	1
SA-BM-S1-4EKL-C, 50s	24 V DC	Push-in terminals, pluggable	1	R1.180.0370.0	1

TECHNICAL DATA	
Function display	12 LEDs, green/red
Power supply circuit	
Operating voltage range	19.2 V DC to 30 V DC
Rated consumption	1.8 W
Electrical isolation power supply circuit - control circuit	no
Safe input circuit I1 – I4	
Input voltage range	15 V DC to 30 V DC
Rated current	3 mA
Safe control circuits EN, S1 – S3	
Input voltage range	15 V DC to 30 V DC
Rated current	3 mA
Safe output circuits Q1 – Q4	
Output voltage	24 V DC
Output current I_n per exit	2 A
Output circuits X1, X2	
Output voltage	24 V DC
Output current I_n per exit	0.5 A
General technical data	
Protection degree according to DIN 60529 (housing / terminals)	IP40 / IP20
Creepage distances and clearances	EN 60664-1
Ambient temperature / storage temperature	-25°C – +55°C / -25°C – +75°C
Standards	EN 61508, EN 62061, EN ISO 13849-1, EN 50156-1
Approvals	TÜV, cULus

SA-IN

INPUT MODULE

APPLICATIONS

- Machine building industry
- Combustion plants
- SIL_{CL} 3 (EN 62061-1)
- PL e / Category 4 (EN ISO 13849-1)

FEATURES

- 10 functional modules
- 2 x 4 inputs for sensors
- 2 x 4 test signal outputs

OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Coding	Part no.	P.U.
SA-IN-S1-K-A	24 V DC	Screw terminals, pluggable	**1**	R1.180.0070.0	1
SA-IN-S1-K-C	24 V DC	Push-in terminals, pluggable	**1**	R1.180.0420.0	1

TECHNICAL DATA	
Function display	12 LEDs, green/red
Power supply circuit	
Operating voltage range	19.2 V DC to 30 V DC
Rated consumption	1.2 W
Electrical isolation power supply circuit - control circuit	no
Safe input circuit I1 – I8	
Input voltage range	15 V DC to 30 V DC
Rated current	3 mA
Output circuits X1, X8	
Output voltage	24 V DC
Output current I_n per exit	0.5 A
General technical data	
Protection degree according to DIN 60529 (housing / terminals)	IP40 / IP20
Creepage distances and clearances	EN 60664-1
Ambient temperature / storage temperature	-25°C – +55°C / -25°C – +75°C
Standards	EN 61508, EN 62061, EN ISO 13849-1, EN 50156-1
Approvals	TÜV, cULus

SA-OR

OUTPUT MODULE

APPLICATIONS

- Machine building industry
- Combustion plants
- SIL_{CL} 3 (EN 62061-1)
- PL e / Category 4 (EN ISO 13849-1)

FEATURES

- Output module **SA-OR-S1**
- 2 x 2 safe enabling with switching up to 230 V AC / 6 A
- 2 x outputs 24 V DC / 50 mA
- 2 x 1 feedback circuit (NC contact)

- Output module **SA-OR-S2**
- 1 x 2 safe enabling with switching up to 230 V AC / 6 A
- 1 x 1 potential-carrying safe output 24 V DC / 50 mA for signaling or safe logical operation
- 1 x 1 feedback circuit (NC contact)

OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SA-OR-S1-4RK-A	24 V DC	Screw terminals, pluggable	R1.180.0080.0	1
SA-OR-S2-2RK-A	24 V DC	Screw terminals, pluggable	R1.180.0320.0	1
SA-OR-S1-4RK-C	24 V DC	Push-in terminals, pluggable	R1.180.0430.0	1
SA-OR-S2-2RK-C	24 V DC	Push-in terminals, pluggable	R1.180.0440.0	1

TECHNICAL DATA	
Function display	3 or 2 LEDs, green
Input circuit B1, B2	
Input voltage range	18 V DC to 30 V DC
Electrical isolation power supply circuit – input circuit	no
Electrical isolation input circuit - output circuit	yes
Electrical isolation power supply circuit - output circuit	yes
Rated consumption	2.2 W to 1.1 W
Release delay	30 ms
Output circuits (relays)	
Switching voltage	230 V AC
Output current I_n per exit	6 A
Output circuits (Y14, Y24)	
Switching voltage	30 V DC
Output current I_n per exit	75 mA
General technical data	
Protection degree according to DIN 60529 (housing / terminals)	IP40 / IP20
Creepage distances and clearances	EN 60664-1
Ambient temperature / storage temperature	-25°C – +55°C / -25°C – +75°C
Standards	EN 62061, EN ISO 13849-1, EN 50156-1
Approvals	TÜV, cULus


VIETATO
FUMARE

SAFE RELAY – **UNIVERSAL** SAFETY **RELAYS**

The safe RELAY safety relays offer customized solutions for the safety of man and machine.

These devices combine excellent technical performance with efficient use in everyday industrial applications. Compact design, flexible use and flexible connection methods are the decisive advantages of these devices.

Depending on the application and the selected device, the safety relays can be used up to PL e / Category 4 (EN ISO 13849-1) or SIL 3 (EN 62061).

VERSATILE APPLICATION OPTIONS

- Emergency stop monitoring
- Monitoring of protective doors and interlocks
- Light curtain monitoring
- Two-hand relay
- Monitoring of valves and limit value switches
- Safe contact expansions

Further informations about the screw terminal set and the push-in terminal set see page 21.

safe RELAY

Safety relays

The simple and safe connection for every situation.

SNA, SNO, SNS, SNT, SNZ

Basic devices

The basic devices of the SNA, SNO, SNS, SNT and SNZ device families feature a safe internal logic component for the monitoring of the respective safety functions.

SNV

Basic devices with time function

The basic devices of the SNV device families feature a safe internal logic component for the monitoring of the respective safety functions.

In addition, these devices offer time-delayed, safe outputs and a corresponding time setting on the device.

SNE

Contact expansion relays

The contact expansion relays of the SNE device family feature a redundant internal structure and are used for contact multiplication on, for example, basic devices.

OVERVIEW – BASIC DEVICES

Type	SNO 4083KM	SNO 4062K/KM	SNO 4063K/KM	SNA 4043K/KM	SNA 4044K/KM	SNA 4063K/KM	SNA 4064K/KM
Page	38	40	42	44	44	46	46
Application	PL e, SK4	PL e, SK4	PL e, SK4	PL e, SK4	PL e, SK4	PL e, SK4	PL e, SK4
	SIL 3	SIL 3	SIL 3	SIL 3	SIL 3	SIL 3	SIL 3
	MAGNET, TYPE 4/2 2)	MAGNET, TYPE 4/2	MAGNET, TYPE 4/2	MAGNET, TYPE 4/2	MAGNET, TYPE 4/2	MAGNET, TYPE 4/2	MAGNET, TYPE 4/2
		2)	2)				
Input Circuits	IN	IN	IN 2)	IN	IN	IN	IN
	IN, IN	IN	IN	IN	IN	IN	IN
	CROSSMON	CROSSMON	CROSSMON	CROSSMON	CROSSMON	CROSSMON	CROSSMON
	CH1 tsync CH2 0,5 1,5						
Start	SAFE START, AUTO-RESET	AUTO-RESET	AUTO-RESET	AUTO-RESET	AUTO-RESET		
	RESET	RESET, RESET	RESET, RESET	RESET	RESET	RESET	RESET
		COMBI RESET 3)	COMBI RESET 3)				
Contacts	SAFE 3	SAFE 2	SAFE 3	SAFE 3	SAFE 4	SAFE 3	SAFE 4
	1	1		1		1	
Characteristics	MONO FLOP	MONO FLOP	MONO FLOP	MONO FLOP	MONO FLOP	MONO FLOP	MONO FLOP
	DIAGNOSIS						
Rated voltage DC (V)	24	24	12 24	24	24	24	24
Rated voltage AC (V)	115-230		24 115-120 230	24 115-120 230	24 115-120 230	24 115-120 230	24 115-120 230

1) PLe contact expansion 2) 24 V devices only
3) possible only in isolated cases and according to the risk assessment of the machine functions

	SNO 4003K	SNO 1012K	SNS 4074K/4084K	SVM 4001K	SNT 4M63K	SNZ 4052K	SNZ 1022K
	48	50	52	54	56	58	60
	PL d 1) SK3 1)	PL d SK3	PL e SK4	PL e SK4	PL e SK4	PL e SK4	PL c SK1
	SIL 2 1)	SIL 2	SIL 3	SIL 3	SIL 3	SIL 3	SIL 1
			n M t, M <n	n M t, M <n	MAGNET		
	IN	IN	IN		IN	2x IN	IN
	IN	IN	IN		IN, IN		
			CROSSMON		CROSSMON	CROSSMON	CROSSMON
						CH1 tsync CH2 0,5	CH1 tsync CH2 0,5
	AUTO-RESET	AUTO-RESET	AUTO-RESET	AUTO-RESET	AUTO-RESET	AUTO-RESET	AUTO-RESET
	RESET, RESET	RESET	RESET, RESET		RESET, RESET		
	SAFE 3	SAFE 2	SAFE 4	SAFE 2	SAFE 3	SAFE 2	SAFE 1
	1		2			1	
				DIAGNOSIS		C	A
	24	24	24	24	24	24	24
	24 115-120 230	24			24 115-120 230	24 115-120 230	24 115-230

safe RELAY

For glossary, see cover page 140

OVERVIEW – BASIC DEVICES WITH TIME FUNCTION

Type	SNV 4063KL	SNV 4063KP	SNV 4074SL	SNV 4076SL	SNV 4274SL	SNV 4074ST
Page	62	64	66	66	68	68
Application	PL e, SK4 1) SIL 3 1) MAGNET, TYPE 4/2 n M t	PL e, SK4 1) SIL 3 1) MAGNET, TYPE 4/2 n M t	PL e, SK4 SIL 3 MAGNET, TYPE 4/2 n M t	PL e, SK4 SIL 3 MAGNET, TYPE 4/2 n M t	PL e, SK4 SIL 3 MAGNET, TYPE 4/2 n M t	PL e, SK4 SIL 3 MAGNET, TYPE 4/2 n M t
Input Circuits	IN IN CROSSMON	IN IN CROSSMON	IN IN CROSSMON CH1 tsync CH2 1,0	IN IN CROSSMON CH1 tsync CH2 1,0	IN IN CROSSMON CH1 tsync CH2 1,0	IN IN CROSSMON CH1 tsync CH2 1,0
Start	AUTO-RESET RESET, RESET COMBI RESET	AUTO-RESET RESET, RESET	SAFE START, AUTO-RESET RESET, RESET	SAFE START, AUTO-RESET RESET, RESET	SAFE START, AUTO-RESET RESET, RESET	SAFE START, AUTO-RESET RESET, RESET
Contacts	SAFE 2, SAFE 1	SAFE 2, SAFE 1	SAFE 2, SAFE 2 2, 2	SAFE 3, SAFE 3 1	SAFE 2, SAFE 2 2, 2	SAFE 2, SAFE 2 1
Characteristics	OFF-DELAY	ON-DELAY	OFF-DELAY DIAGNOSIS, MONO FLOP	OFF-DELAY DIAGNOSIS, MONO FLOP	OFF-DELAY, RE-TRIGGER DIAGNOSIS, MONO FLOP	ON-DELAY DIAGNOSIS, MONO FLOP
Rated voltage DC (V)	24	24	24	24	24	24
Rated voltage AC (V)			115-230	115-230	115-230	115-230

1) applies to undelayed contacts; the following applies to delayed contacts: PL d / category 3 / SILCL 2
2) depends on the category of the basic device or the safety analysis

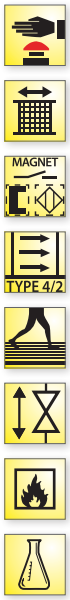
CONTACT EXPANSION RELAYS

Type	SNE 1	SNE 4003K	SNE 4004K	SNE 4004KV	SNE 4012K	SNE 4024K	SNE 4028S
Page	70	72	74	74	76	76	78
Application	PL e SK4 2)	PL e SK4 2)	PL d SK3 2)	PL d SK3 2)	PL e SK4 2)	PL e SK4 2)	PL e SK4 2)
	SIL 3 2)	SIL 3 2)	SIL 2 2)	SIL 2 2)	SIL 3 2)	SIL 3 2)	SIL 3 2)
							
							
							
							
Input Circuits	IN	IN	IN	IN	IN	IN	IN
		IN					IN
		CROSSMON					CROSSMON
Start							
Contacts	SAFE 2	SAFE 3	SAFE 4	SAFE 4	SAFE 2	SAFE 4	SAFE 8
		1	1	1			1
Characteristics				OFF-DELAY			
Rated voltage DC (V)	24	24	24	24	24	24	24
Rated voltage AC (V)			24				24 115-230

For glossary, see cover page 140

SNO 4083KM

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS



APPLICATIONS

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of light barriers
- Up to PL e / Categorie 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Stop Category 0 according to EN 60204-1
- Single-channel or two-channel control
- Two-channel control with NC/NC or NC/NO
- Manual or automatic start
- SafeStart
- Cross monitoring
- Synchronous time monitoring for two-channel control
- 3 enabling current path / 1 signalling current path

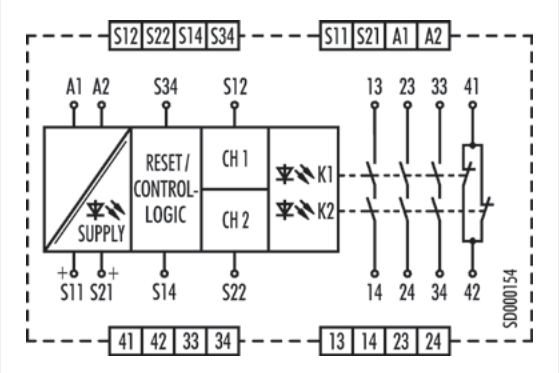
FUNCTION

After the supply voltage is applied to terminals A1/A2 and the safety inputs are closed, the enabling current paths (NO contacts) are closed and the signal current path (NC contact) is opened automatically or by pressing the reset button (manual monitored start). When the safety inputs are opened/ de-energized the enabling current paths (NO contacts) are opened immediately and the signal current path (NC contact) is closed.

- **Reduced installation work** – The SNO 4083KM requires fewer connection cables, irrespective of whether operation with or without cross monitoring is desired. This saves time and money when it comes to wiring.
- **Universal application** – The two-channel control of the device is carried out by either an NC/NC or an NC/NO combination of the safety sensor.
  In the case of two-channel control of the device, a synchronous time is automatically monitored between the two channels.
- **SafeStart function** – When the device is used with a manual start, the reset input is automatically monitored for a rising and falling signal edge.
  A manual reset signal is only accepted if the control inputs of the device are activated by the safe transducer (e.g. emergency stop button) during the entire activation procedure.
- **Monoflop function** – This function is integrated into the device and prevents device interlocking under all circumstances. This is a decisive advantage in applications where very short interruptions of the safety-related signals can occur, or in the case of transducers with bouncing contacts or safe optical sensors (BWS), for example.
- **Simple diagnosis** – The device features an intelligent display system that shows the user the different operating modes of the device in its different applications. This means, for example, that when the control inputs are closed and manual start has been selected, a reset signal is displayed, which has not yet been given. Fault states in the control (e.g. synchronous time exceeded or a short-circuit in two-channel control) are also signaled to the user via a blinking code.

CIRCUIT DIAGRAM

SNO 4083KM



OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Synchr. Time	Terminals	Part no.	P.U.
SNO 4083KM-A	24 V DC	1.5 s	Screw terminals, pluggable	R1.188.3580.0	1
SNO 4083KM-A	115-230 V AC	1.5 s	Screw terminals, pluggable	R1.188.3590.0	1
SNO 4083KM-C	24 V DC	1.5 s	Push-in terminals, pluggable	R1.188.3600.0	1
SNO 4083KM-C	115-230 V AC	1.5 s	Push-in terminals, pluggable	R1.188.3610.0	1
SNO 4083KM-A	24 V DC	0.5 s	Screw terminals, pluggable	R1.188.3830.0	1
SNO 4083KM-A	115-230 V AC	0.5 s	Screw terminals, pluggable	R1.188.3840.0	1
SNO 4083KM-C	24 V DC	0.5 s	Push-in terminals, pluggable	R1.188.3850.0	1
SNO 4083KM-C	115-230 V AC	0.5 s	Push-in terminals, pluggable	R1.188.3860.0	1

TECHNICAL DATA		
Function		Emergency stop relay
Function display		3 LEDs, green
Power supply circuit		
Rated voltage U_N	A1, A2	24 V DC/ 115-230 V AC
Rated consumption	24 V DC	1.6 W
	115-230 V AC	1.8 W / 4.0 VA
Rated frequency		50 - 60 Hz
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		yes (at U_N = 115-230 V AC)
Control circuit		
Rated output voltage	S11/S21	22.5 V DC
Input current / peak current	S12, S22	25 mA / 100 mA
	S14, S34	3 mA / 5 mA
Response time t_{A1} / t_{A2}		250 ms
Minimum ON time t_M		60 ms
Recovery time t_W		120 ms
Release time t_R		< 35 ms
Synchronous time t_S		0.5 s / 1.5 s
Permissable test pulse time t_{TP}		< 0,8 ms
Max. resistivity, per channel [1]	24 V DC	≤ (5 + (1.176 x U_B / U_N - 1) x 100) Ω
	115-230 V AC	≤ 12 Ω
Output circuit		
Enabling paths	13/14, 23/24, 33/34	normally open contact
Signaling paths	41/42	normally closed contact
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling / signaling path	230 V AC
Max. thermal current I_{th}	enabling / signaling path	6 A / 2 A
Max. total current I^2 of all current path	(Tu = 55 °C) / (Tu = 65 °C)	25 A^2 / 9 A^2
Application category (NO)	AC-15	U_e 230V, I_e 5 A
	DC-13	U_e 24V, I_e 5A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +65 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		1 x 0,25 mm^2 – 1.5 mm^2
Weight	24 V AC/DC device / AC device	0.2 kg
Standards		EN ISO 13849-1, EN 62061, EN 81-20/50, EN 50156-1, EN 61511
Approvals		TÜV, cULus, CCC, GL

[1] If two-channel devices are installed as single channel, the value is halved.

SNO 4062K/KM

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS

APPLICATIONS

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of light barriers
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Stop Category 0 according to EN 60204-1
- Reset button monitoring
- Manual or automatic start
  Single-channel or two-channel control
- Cross monitoring
- 2 enabling current paths, 1 signal current path

FUNCTION

SNO 4062K

The device is a two-channel switching device for emergency stop applications with self-monitoring on each ON-OFF cycle. It complies with EN 60204-1 and is equipped with forcibly guided relays.

BASIC FUNCTION:

With supply voltage applied to terminals A1/A2 and the safety inputs closed, pressing the reset button closes the enabling current paths (manual start). When the safety inputs are opened/ de-energized the enabling current paths will open.

- **Manual start** When the safety inputs are closed, a button is used to open reset input S34 (triggering with falling edge) or to close reset input S35 (triggering with rising edge).
- **Automatic start** Reset input S35 is connected to S33. The device starts with the rising edge of the signal on safety input S12.

SNO 4062KM

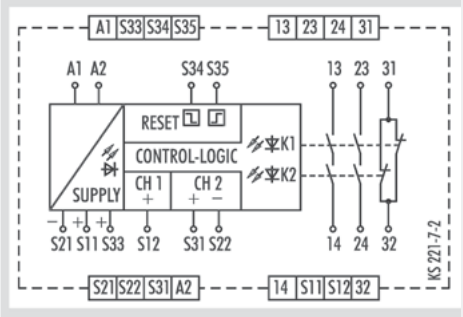
The function of this device corresponds to that of the SNO 4062K without synchrocheck. The device is suitable for connecting to light curtains for Type 4 (EN 61496-1) and connecting to short-circuit forming 4-wire safety mats, switching strips or switching edges (without monitoring resistance).

- **Safety mats** The device must be operated with two channels and cross monitoring. If there is resistance < 50 Ω / channel and a short circuit between the channels (S11/S12 and S21/S22) the enabling paths open and the SUPPLY LEDs flashes.
- **Light curtain for Type 4 (EN 61496-1)** The device will be operated with two channels and without cross monitoring, if the light curtain connected to the OSSD detects a shunt fault on its own.

For applications with tactile operating modes (rapid ON-OFF cycles, for example with manual supply) we recommend using SNO 4062KM.

CIRCUIT DIAGRAM

SNO 4062K /KM



OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SNO 4062K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.0700.2	1
SNO 4062KM-A	24 V AC/DC	Screw terminals, pluggable	R1.188.0720.2	1
SNO 4062K-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.2000.0	1

TECHNICAL DATA		
Function		Emergency stop relay
Function display		3 LEDs, green
Power supply circuit		
Rated voltage U_N	A1, A2	24 V AC/DC
Rated consumption	24 V DC (K / KM)	2.0 W / 2.1 W
Rated frequency		50 - 60 Hz
Operating voltage range U_B		0,85 - 1,1 x U_N
Electrical isolation supply circuit - control circuit		no
Control circuit		
Rated output voltage	S11, S33/S21	22 V DC
Input current / peak current	S12, S31/S22	40 mA / 100 mA
	S34, S35	5 mA / 50 mA
Response time t_{A1} / t_{A2}		40 ms / 500 ms (KM: 40 ms / 80 ms)
Minimum ON time t_M		50 ms
Recovery time t_W		150 ms
Release time t_R		< 25 ms
Synchronous time t_S		200 ms (CH1 → CH2)
Permissable test pulse time t_{TP}		< 1ms
Max. resistivity, per channel [1]		≤ (5 + (1.176 x U_B / U_N - 1) x 100) Ω
Output circuit		
Enabling paths	13/14, 23/24	normally open contact
Signaling paths	31/32	normally closed contact
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling / signaling path	230 V AC
Max. thermal current I_{th}	enabling / signaling path	6 A / 3 A
Max. total current I^2 of all current path	(Tu = 55 °C)	9 A^2
Application category (NO)	AC-15	U_e 230 V, I_e 3 A
	DC-13	U_e 24 V, I_e 2.5A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		1 x 0.25 mm^2 – 1.5 mm^2
Weight	24 V AC/DC device / AC device	0.21 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		DGUV, cULus, CCC

[1] If two-channel devices are installed as single channel, the value is halved.

SNO 4063K/KM

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS

APPLICATIONS

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of light barriers
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Stop Category 0 according to EN 60204-1
- Manual or automatic start
- Cross monitoring
- Single-channel or two-channel control
- 3 enabling current paths

FUNCTION

SNO 4063K

The device is a two-channel switching device for emergency stop applications with self-monitoring on each ON-OFF cycle. It complies with EN 60204-1 and is equipped with forcibly guided relays.

After supply voltage has been applied to the A1/A2 terminals and the safety inputs have been closed, pressing the reset button closes the enabling current paths (manual start). When the safety inputs are opened/de-energized the enabling current paths will open.

- **Manual start** When the safety inputs are closed, a button is used to open reset input S34 (triggering with falling edge) or to close reset input S35 (triggering with rising edge).
- **Automatic start** Reset input S35 is connected to S33. The device starts with the rising edge of the signal on safety input S12.

SNO 4063KM

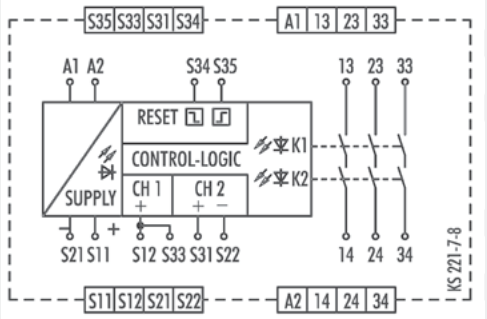
The function of this device corresponds to that of the SNO 4063K. The device is suitable for connecting to light curtains for Type 4 (EN 61496-1) and to short-circuit forming 4-wire safety mats, switching strips or switching edges (without monitoring resistance).

- **Safety mats** The device must be operated with two channels and cross monitoring. If there is resistance < 50 Ω / channel and a short circuit between the channels (S11/S12 and S21/S22) the enabling paths open and the SUPPLY LEDs flash.
- **Light curtain for Type 4 (EN 61496-1)** The device will be operated with two channels and without cross monitoring, if the light curtain connected to the OSSD detects a shunt fault on its own.

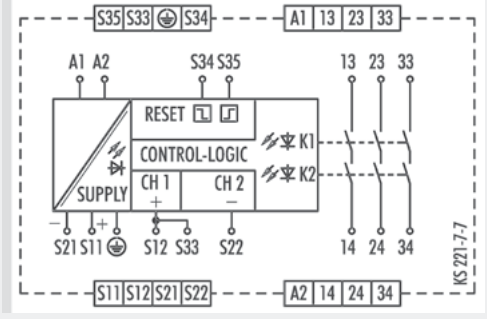
For applications with tactile operating modes (rapid ON-OFF cycles, for example at manual supply) we recommend the use of SNO 4063KM.

CIRCUIT DIAGRAM

SNO 4063K/KM **24 V AC/DC**



115-120 V AC / 230 V AC



OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SNO 4063K-A	12 V DC	Screw terminals, pluggable	R1.188.1120.0	1
	24 V AC / DC	Screw terminals, pluggable	R1.188.0990.0	1
	115 – 120 V AC	Screw terminals, pluggable	R1.188.1000.0	1
	230 V AC	Screw terminals, pluggable	R1.188.1010.0	1
SNO 4063K-C	24 V AC / DC	Push-in terminals, pluggable	R1.188.2450.0	1
SNO 4063KM-A	24 V AC / DC	Screw terminals, pluggable	R1.188.1280.0	1

TECHNICAL DATA		
Function		Emergency stop relay
Function display		3 LEDs, green
Power supply circuit		
Rated voltage U_N	A1, A2	24 V AC/DC, 115-120 V AC, 230 V AC
Rated consumption	24 V DC (K / KM)	2.0 W / 2.1 W
	115-120 V AC, 230 V AC	2.4 W / 4.4 VA
Rated frequency		50 - 60 Hz
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		yes (at U_N = 115-230 V AC, 230 V AC)
Control circuit		
Rated output voltage	S11/S21	22 V DC
Input current / peak current	S12/S33, S31/S22	40 mA / 100 mA
	S34, S35	5 mA / 50 mA
Response time t_{A1} / t_{A2}		40 ms / 600 ms
Minimum ON time t_M		50 ms
Recovery time t_W		100 ms
Release time t_R		< 25 ms
Synchronous time t_S		200 ms (CH1 → CH2)
Permissable test pulse time t_{TP}		< 1ms
Max. resistivity, per channel [1]	24 V AC/DC	≤ (5 + (1.176 x U_B / U_N - 1) x 100) Ω
	115-120 V AC, 230 V AC	≤ (5 + (1.176 x U_B / U_N - 1) x 100) Ω
Output circuit		
Enabling paths	13/14, 23/24, 33/34	normally open contact
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling path	230 V AC
Max. thermal current I_{th}	enabling path	6 A
Max. total current I^2 of all current path	(Tu = 55 °C)	9 A^2
Application category (NO)	AC-15	U_e 230 V, I_e 3 A
	DC-13	U_e 24 V, I_e 2.5 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		1 x 0.25 mm^2 – 1-5 mm^2
Weight	24 V AC/DC device / AC device	0-21 kg / 0-25 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		DGUV, cULus, CCC

[1] If two-channel devices are installed as single channel, the value is halved.

SNA 4043K/KM/KE, SNA 4044K/KM

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS

APPLICATIONS

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of light barriers
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Stop Category 0 according to EN 60204-1
- Single-channel or two-channel control
- Automatic start
- Manual reset without monitoring
- Cross monitoring
- 3 to 4 enabling current paths

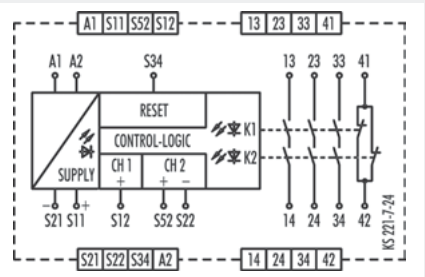
FUNCTION

Emergency stop and safety gate monitor The safety switching devices of our SNA product line are used to monitor safety sensors (emergency stop buttons, safety gate switches, etc.), feature a large number of safety switching contacts (3 NO contacts/1 NC contact or 4 NO contacts) with a total width of only 22.5 mm at a constant current of up to 8 A. They can be implemented in the extended temperature range up to 65° C.

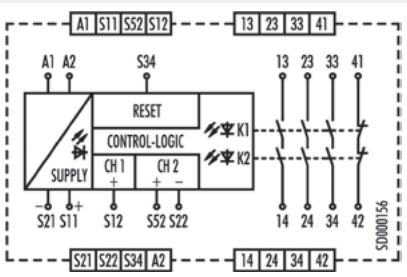
- **Automatic start** – Reset input S34 is connected to safety input S11. To monitor external contact blocks (EDM), their NC contacts must be connected in series between S34 and S11.
- **Manual start without monitoring** – Reset input S34 is connected to safety input S11 via a RESET button. To monitor external contact blocks (EDM), their NC contacts must be connected to the RESET button in series.
- **Monitoring of light curtains** – The KM device types are especially suitable for the monitoring of very fast tactile switching operations, for example in safety light curtain applications. Very short switch-off procedures of a few milliseconds are detected reliably and lead to the switching off of the internal relays.

CIRCUIT DIAGRAM

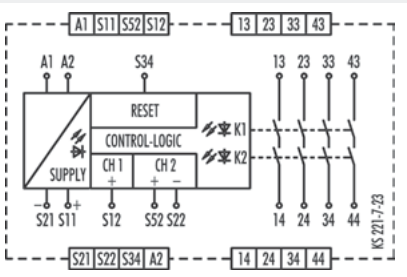
SNA 4043K/KM



SNA 4043KE



SNA 4044K/KM



OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SNA 4043K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1810.0	1
SNA 4043K-A	115-120 V AC	Screw terminals, pluggable	R1.188.1830.0	1
SNA 4043K-A	230 V AC	Screw terminals, pluggable	R1.188.1840.0	1
SNA 4043K-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.1940.0	1
SNA 4043KM-A	24 V AC/DC	Screw terminals, pluggable	R1.188.3250.0	1
SNA 4043KM-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.3400.0	1
SNA 4043KE-A	AC/DC 24 V	Screw terminals, pluggable	R1.188.3810.0	1
SNA 4043KE-C	AC/DC 24 V	Push-in terminals, pluggable	R1.188.3820.0	1
SNA 4044K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1860.0	1
SNA 4044K-A	115-120 V AC	Screw terminals, pluggable	R1.188.1880.0	1
SNA 4044K-A	230 V AC	Screw terminals, pluggable	R1.188.1890.0	1
SNA 4044K-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.1960.0	1
SNA 4044KM-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1480.0	1
SNA 4044KM-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.3410.0	1

TECHNICAL DATA			
Function			Emergency stop relay
Function display			3 LEDs, green
Power supply circuit			
Rated voltage U_N	A1, A2		24 V AC/DC / 42-48 V AC / 115-120 V AC/ 230 V AC
Rated consumption	24 V DC / 24 V AC		1.6 W / 2.9 VA
	42-48 V AC / 115-120 V AC / 230 V AC		2.3 W / 2.6 VA
Rated frequency			50 - 60 Hz
Operating voltage range U_B			0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit			yes (at U_N = 42-48 V AC, 115-230 V AC, 230 V AC)
Control circuit			
Rated output voltage	S11/S21		24 V DC
Input current / peak current	S12, S52/S22 | S34		25 mA / 100 mA | 5 mA / 50 mA
Response time t_{A1} / t_{A2}			350 ms / 350 ms
Minimum ON time t_M			100 ms
Recovery time t_W			750 ms
Release time t_R			10 ms
Synchronous time t_S			no
Permissable test pulse time t_{TP}			< 1 ms
Max. resistivity, per channel [1]		24V AC/DC	≤ (5 + (1.176 x U_B / U_N - 1) x 100) Ω
		42-48V AC/ 115-120 V AC, 230 V AC	≤ (5 + (1.176 x U_B / U_N - 1) x 100) Ω
Output circuit	SNA 4043K/KM	SNA 4044K/KM	
Enabling paths	13/14, 23/24, 33/34	13/14, 23/24, 33/34, 43/44	normally open contact
Signaling paths	41/42	---	normally closed contact
Contact assignment			forcebly guided
Contact type			Ag-alloy, gold-plated
Rated switching voltage	enabling / signaling path		230 V AC
Max. thermal current I_{th}	enabling / signaling path		8 A / 5 A
Max. total current I^2 of all current path	(Tu = 55 °C) / (Tu = 65 °C)		25 A^2 / 9 A^2
Application category (NO)		AC-15 | DC-13	U_e 230 V, I_e 3 A | U_e 24 V, I_e 3 A
Short-circuit protection (NO), lead fuse / circuit breaker			6 A class gG / melting integral < 100 A^2s
Mechanical life			10^7 switching cycles
General data			
Creepage distances and clearances between the circuits			EN 60664-1
Protection degree according to EN 60529 (housing / terminals)			IP40 / IP20
Ambient temperature / storage temperature			-25 °C - +65 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid		1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules		1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque			0.5 - 0.6 Nm
Wire ranges push-in terminals			1 x 0.25 mm^2 – 1.5 mm^2
Weight	24 V AC/DC device / AC device		0.21 kg / 0.25 kg
Standards			EN ISO 13849-1, EN 62061, EN 81-20/50, EN 50156-1, EN 61511
Approvals			TÜV, cULus, CCC, GL

[1] If two-channel devices are installed as single channel, the value is halved.

SNA 4063K/KM, SNA 4064K/KM

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS

APPLICATIONS

- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of light barriers
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Stop Category 0 according to EN 60204-1
- Single-channel or two-channel control
- Manual reset with monitoring
- Cross monitoring
- 3 to 4 enabling current paths

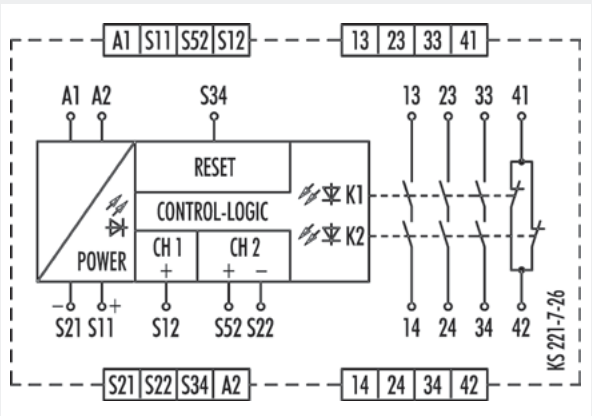
FUNCTION

After the supply voltage is applied to terminals A1/A2 and the safety inputs are closed, the enabling current paths (NO contacts) are closed and the signal current path (NC contact) is opened by pressing the reset button (manual start with monitoring). When the safety inputs are opened/de-energized, the enabling current paths (NO contacts) are opened immediately.

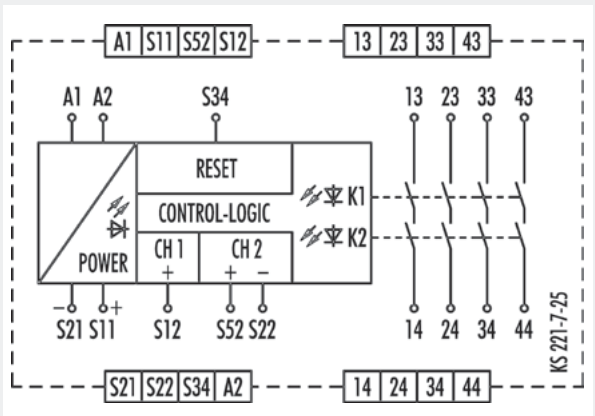
- **Manual start with monitoring** – Reset input S34 is connected to safety input S11 via a RESET button. To monitor external contact blocks (EDM), their NC contacts must be connected in series to the RESET button.
- **Monitoring of light curtains** – The **KM device types** are especially suitable for the monitoring of very fast tactile switching operations, for example in safety light curtain applications. Very short switch-off procedures of a few milliseconds are detected reliably and lead to the switching off of the internal relays.

CIRCUIT DIAGRAM

SNA 4063K/KM



SNA 4064K/KM



OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SNA 4063K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1440.0	1
SNA 4063K-A	115-120 V AC	Screw terminals, pluggable	R1.188.1450.0	1
SNA 4063K-A	230 V AC	Screw terminals, pluggable	R1.188.1460.0	1
SNA 4063K-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.1950.0	1
SNA 4063K-C	230 V AC	Push-in terminals, pluggable	R1.188.5000.0	1
SNA 4063KM-A	24 V AC/DC	Screw terminals, pluggable	R1.188.3290.0	1
SNA 4063KM-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.3420.0	1
SNA 4064K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1900.0	1
SNA 4064K-A	115-120 V AC	Screw terminals, pluggable	R1.188.1920.0	1
SNA 4064K-A	230 V AC	Screw terminals, pluggable	R1.188.1930.0	1
SNA 4064K-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.1970.0	1
SNA 4064KM-A	24 V AC/DC	Screw terminals, pluggable	R1.188.3360.0	1
SNA 4064KM-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.3430.0	1

TECHNICAL DATA			
Function			Emergency stop relay
Function display			3 LEDs, green
Power supply circuit			
Rated voltage U_N	A1, A2		24 V AC/DC / 115-120 V AC / 230 V AC
Rated consumption	24V DC / 24 V AC		1.6 W / 2.9 VA
	42-48V AC / 115-120V AC / 230 V AC		2.3 W / 2.6 VA
Rated frequency			50 - 60 Hz
Operating voltage range U_B			0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit			yes (at U_N = 115-230 V AC, 230 V AC)
Control circuit			
Rated output voltage	S11/S21		24 V DC
Input current / peak current	S12, S52/S22 | S34		25 mA / 100 mA | 5 mA / 50 mA
Response time t_{A1} / t_{A2}			100 ms / ---
Minimum ON time t_M			100 ms
Recovery time t_W			750 ms
Release time t_R			10 ms
Synchronous time t_S			no
Permissable test pulse time t_{TP}			< 1 ms
Max. resistivity, per channel [1]		24V AC/DC	≤ (5 + (1,176 x U_B / U_N - 1) x 100) Ω
		42-48V AC/ 115-120 V AC, 230 V AC	≤ (5 + (1,176 x U_B / U_N - 1) x 100) Ω
Output circuit	SNA 4063K/KM	SNA 4064K/KM	
Enabling paths	13/14, 23/24, 33/34	13/14, 23/24, 33/34, 43/44	normally open contact
Signaling paths	41/42	---	normally closed contact
Contact assignment			forcebly guided
Contact type			Ag-alloy, gold-plated
Rated switching voltage	enabling / signaling path		230 V AC
Max. thermal current I_{th}	enabling / signaling path		8 A / 5 A
Max. total current I^2 of all current path	(Tu = 55 °C) / (Tu = 65 °C)		25 A^2 / 9 A^2
Application category (NO)		AC-15 | DC-13	U_e 230 V, I_e 3 A | U_e 24 V, I_e 3 A
Short-circuit protection (NO), lead fuse / circuit breaker			6 A class gG / melting integral < 100 A^2s
Mechanical life			10^7 switching cycles
General data			
Creepage distances and clearances between the circuits			EN 60664-1
Protection degree according to EN 60529 (housing / terminals)			IP40 / IP20
Ambient temperature / storage temperature			-25 °C - +65 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid		1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules		1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque			0-5 - 0-6 Nm
Wire ranges push-in terminals			1 x 0-25 mm^2 bis 1-5 mm^2
Weight	24 V AC/DC device / AC device		0-21 kg / 0-25 kg
Standards			EN ISO 13849-1, EN 62061, EN 81-20/50, EN 50156-1, EN 61511
Approvals			TÜV, cULus, CCC, GL

[1] If two-channel devices are installed as single channel, the value is halved.

SNO 4003K

MONITORING OF EMERGENCY STOP AND SAFETY GATES

APPLICATIONS

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Up to PL d / Category 3 (EN ISO 13849-1)*
- Up to SIL_{CL} 2 (EN 62061)*

FEATURES

- Stop Category 0 according to EN 60204-1
- Single-channel or two-channel control
- Manual or automatic start
- 3 enabling current paths, 1 signal current path
- Feedback loop for monitoring external contactors

* PL e contact expansion

FUNCTION

The device is a single-channel switching device for emergency stop applications with self-monitoring on each ON-OFF cycle. It complies with EN 60204-1 and is equipped with forcibly guided relays.

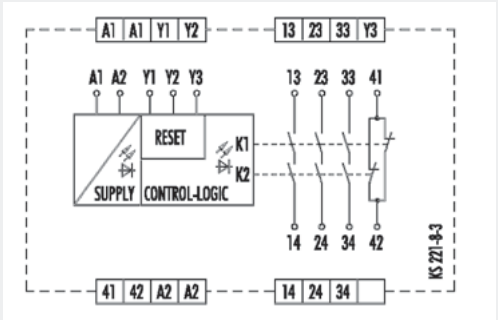
The device has either two Y2 reset inputs (without reset monitoring) or two Y3 reset inputs (with reset monitoring). The K1 and K2 relays are actuated eitherautomatically (bridge Y1 Y2) or after the reset button (on Y1 Y3) has been pressed. They become self-locking through their own contacts, if there is an electrical connection between terminal A1 and the supply voltage (emergency stop button, position switches).

After this switch-on phase the enabling current paths are closed and the signaling current path is open.

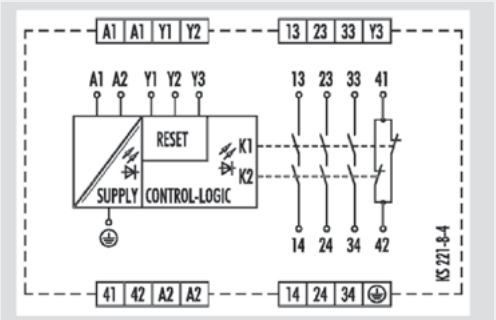
If the electrical connections between terminal A1 and the supply voltage are interrupted, the enabling current paths open and the signaling current path closes. The energized state (self-locking) of the two channels is indicated by a green LED K1, K2. The second green LED indicates that supply voltage has been applied. The set-up of an emergency stop facility after stop Category 0 (EN 60204-1) is possible.

CIRCUIT DIAGRAM

SNO 4003K **24 V AC/DC**



115-120 V AC / 230 V AC



OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SNO 4003K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.0500.1	1
	115 – 120 V AC	Screw terminals, pluggable	R1.188.0900.1	1
	230 V AC	Screw terminals, pluggable	R1.188.0910.1	1
SNO 4003K-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.1990.0	1
	115 – 120 V AC	Push-in terminals, pluggable	R1.188.4000.0	1
	230 V AC	Push-in terminals, pluggable	R1.188.4010.0	1

TECHNICAL DATA		
Function		Emergency stop relay
Function display		2 LEDs, green
Power supply circuit		
Rated voltage U_N	A1, A2	24 V AC/DC / 115-120 V AC / 230 V AC
Rated consumption	24 V DC	1.3 W
	115-120 V AC, 230 V AC	2.2 W / 3.9 VA
Rated frequency		50 - 60 Hz
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		yes (at U_N = 115-120 V AC, 230 V AC)
Control circuit		
Rated output voltage	Y1	24 V DC
Input current / peak current	Y2, Y3	90 mA / 1500 mA
Response time t_{A1} / t_{A2}		60 ms
Minimum ON time t_M (Manueller Start)		60 ms
Recovery time t_W		200 ms
Release time t_R		60 ms
Max. resistivity	24V AC/DC	≤ (2.5 + (1.176 x U_B / U_N - 1) x 50) Ω
	115-120 V AC, 230 V AC	≤ (7.5 + (1.176 x U_B / U_N - 1) x 150) Ω
Output circuit		
Enabling paths	13/14, 23/24, 33/34	
Signaling paths	41/42	normally closed contact
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling / signaling path	230 V AC
Max. thermal current I_{th}	enabling / signaling path	8 A / 5 A
Max. total current I^2 of all current path	(Tu = 55 °C)	9 A^2
Application category (NO)	AC-15	U_e 230 V, I_e 5 A
	DC-13	U_e 24 V, I_e 5A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		1 x 0.25 mm^2 – 1.5 mm^2
Weight	24 V AC/DC device / AC device	0.20 kg / 0.25 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		DGUV, cULus, CCC

SNO 1012K

MONITORING OF EMERGENCY STOP AND SAFETY GATES

APPLICATIONS

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Up to PL d / Category 3 (EN ISO 13849-1)
- Up to SIL_{CL} 2 (EN 62061)

FEATURES

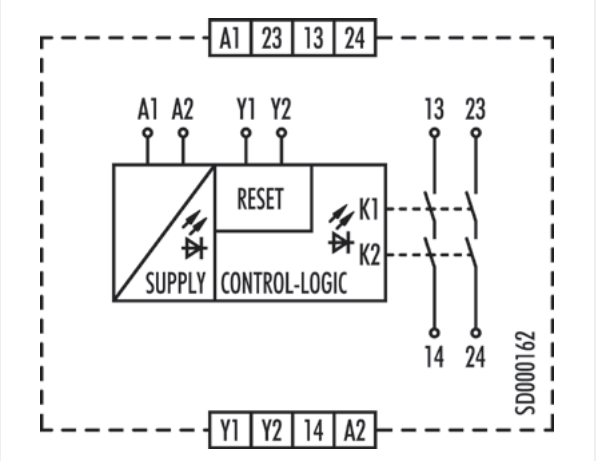
- Stop Category 0 according to EN 60204-1
- Single-channel or two-channel control
- Manual or automatic start
- 2 enabling current paths
- Check of external contactors (EDM)
- Compact design

FUNCTION

After the operating voltage (L+/L1) is applied via an unactuated emergency stop button or safety gate contact on A1 and A2, the device can be switched on via a Y1/Y2-connected reset button. When the device is on, the internal relays K1 and K2 are energized and the enabling current paths 13/14 and 23/24 are closed. When the emergency stop button or the safety gate contact is actuated, the current supply of the internal relays is interrupted and the enabling current paths are opened.

CIRCUIT DIAGRAM

SNO 1012K



OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SNO 1012K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.3740.0	1
SNO 1012K-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.3750.0	1

TECHNICAL DATA		
Function		Emergency stop relay
Function display		2 LEDs, green
Power supply circuit		
Rated voltage U_N	A1, A2	24 V AC/DC
Rated consumption	24 V DC	1 W / 2 VA
Rated frequency		50 - 60 Hz
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		no
Control circuit		
Rated output voltage	Y1	24 V DC
Input current / peak current	Y2	50 mA / 70 mA
Response time t_{A1} / t_{A2}		< 20 ms / < 70 ms
Minimum ON time t_M		30 ms
Recovery time t_W		> 200 ms
Release time t_R		< 70 ms
Max. resistivity		≤ (2.5 + (1.176 x U_B / U_N - 1) x 50) Ω
Output circuit		
Enabling paths	13/14, 23/24	normally open contact
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage		240 V AC / 50V DC
Max. thermal current I_{th}	enabling path	6 A
Max. total current I^2 of all current path	(Tu = 55 °C)	72 A^2 / 9 A^2
Application category (NO)	AC-15	U_e 230 V, I_e 3 A
	DC-13	U_e 24 V, I_e 3 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A^2s
Mechanical life		10 x 10^6 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		2 x 0.25 mm^2 – 1.5 mm^2
Weight		0.12 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		TÜV, cULus, CCC

SNS 4074K / SNS 4084K

STANDSTILL MONITOR

APPLICATIONS

- Standstill monitoring
- Monitoring of electrical lockout devices
- Control of spring-actuated tumblers
- Monitoring of low rotational speeds in setup operation
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Reliable monitoring of dynamic input signals
- Adjustable monitoring frequency 0.1 – 99 Hz
- 4 selectable operating mode groups
- Single-channel or two-channel control
- Manual or automatic start
- Cross monitoring
- 4 safe semi-conductor outputs

STANDSTILL MONITORING FUNCTION

The SNS 4084K standstill monitor provides for the safe monitoring of the frequency of a signal at inputs I1 to I4 of the device. If the frequency of the impulses is higher than the frequency set at the rotary switches (0.1 – 99 Hz), outputs Q1/Q2 will switch off. This monitoring function can be used to detect the standstill or a lower, safer rotational speed of a machine.

In applications of this sort, a spring-actuated or magnet-actuated tumbler of an electric interlocking device, for example, can be controlled from the output of the device.

The sensors for the detection of movement can, for example, be two inductive proximity switches or a rotary encoder connected to inputs I1 - I4. The frequency of the impulses to be monitored is set at the two rotary switches and splitter input T1, and is stored in the device on which the ENTER button is pressed while the voltage is applied to the device.

SNS 4074K

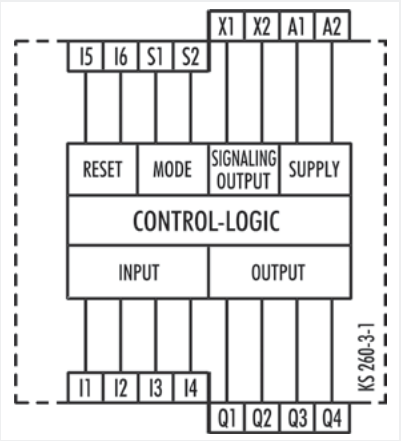
The device features a bypass input, which allows safety-oriented bypassing of the monitoring function, e.g. when a safe position has been reached. In this case, the signal must fulfill at least the safety category of the selected monitoring function.

SNS 4084K

The device features an input for the implementation of a start override, which allows the safe outputs to be switched off even during machine standstill. This means, for example, that a spring-activated protective locking facility can be activated during machine start-up.

CIRCUIT DIAGRAM

SNS 4074K / SNS 4084K

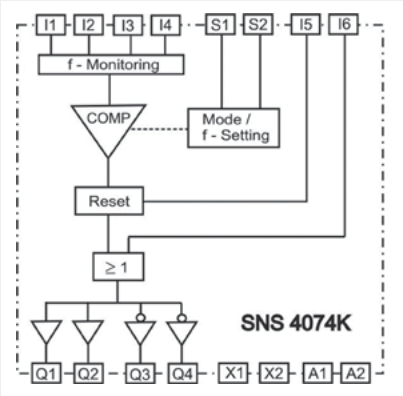


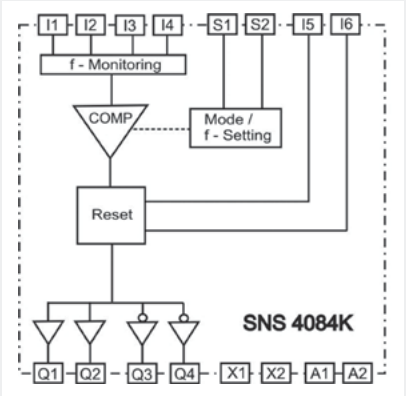
Terminals	Description
A1	+ 24 V
A2	GND
X1 / X2	Signal output, semi-conductor (plus switching)
S1	Configuration input for operating mode group
S2	Configuration input for operating mode group
I1	Sensor input
I2	Sensor / configuration input (depending on the operating mode group)
I3	Sensor / configuration input (depending on the operating mode group)
I4	Sensor / configuration input (depending on the operating mode group)
I5	Reset input
I6	Bypass input (SNS 4074K) / start override input (SNS 4084K)
Q1 / Q2	Safe Output, semi-conductor (plus switching)
Q3 / Q4	Safe Output, semi-conductor (plus switching), inverted

OVERVIEW OF DEVICES | PART NUMBERS

Type	Frequency range	Terminals	Part no.	P.U.
SNS 4074K-A	0.5 - 99 Hz	Screw terminals, pluggable	R1.188.3640.0	1
SNS 4074K-C	0.5 - 99 Hz	Push-in terminals, pluggable	R1.188.3650.0	1
SNS 4074K-A	0.1 - 9.9 Hz	Screw terminals, pluggable	R1.188.3620.0	1
SNS 4074K-C	0.1 - 9.9 Hz	Push-in terminals, pluggable	R1.188.3630.0	1
SNS 4084K-A	0.5 - 99 Hz	Screw terminals, pluggable	R1.188.3480.0	1
SNS 4084K-C	0.5 - 99 Hz	Push-in terminals, pluggable	R1.188.3490.0	1
SNS 4084K-A	0.1 - 9.9 Hz	Screw terminals, pluggable	R1.188.3660.0	1
SNS 4084K-C	0.1 - 9.9 Hz	Push-in terminals, pluggable	R1.188.3670.0	1

FUNCTION DIAGRAM





TECHNICAL DATA		
Function		Standstill monitoring
Function display		12 LEDs, green/red
Function mode / adjustment		Frequency monitoring / 2 x-position switch
Adjustment range	f_{ST}	0,1 - 99 Hz / 0,5 - 99 Hz
Power supply circuit		
Rated voltage U_N	A1, A2	24 V DC
Rated consumption	24 V DC	1.8 W
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		no
Control circuit		
Rated output voltage		24 V DC
Input current / peak current	I1 - I6, S1, S2	3 mA / 3,8 mA
Minimum ON time t_M		100 ms (< 5 s)
Release time t_R		12 ms + 1.6 / f_{ST}
Max. cable length per input		100 m
Output circuit		
Enabling paths	Q1, Q2, Q3, Q4	Semi-conductor (plus switching), safety-related
Signaling paths	X1, X2	Semi-conductor (plus switching), not safety-related
Rated switching voltage	enabling path	30 V DC
Max. thermal current I_{th}	enabling path	2 A
Max. total current I^2 of all current path	(Tu = 55 °C)	4 A
Mechanical life		Must be short-circuit proof
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm² – 2.5 mm² / 2 x 0.2 mm² – 1.0 mm²
	fine-stranded with ferrules	1 x 0.25 mm² – 2.5 mm² / 2 x 0.25 mm² – 1.0 mm²
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		1 x 0.25 mm² – 1.5 mm²
Weight		0.16 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		TÜV, cULus

SVM 4001K

STANDSTILL MONITOR

APPLICATIONS

- Standstill monitoring
- Monitoring of electrical lockout devices
- Control of spring-actuated tumblers
- Monitoring of low rotational speeds in setup operation
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Sensorless monitoring of 1-phase and 3-phase motors
- Safe, configurable voltage monitoring
- Automatic operation

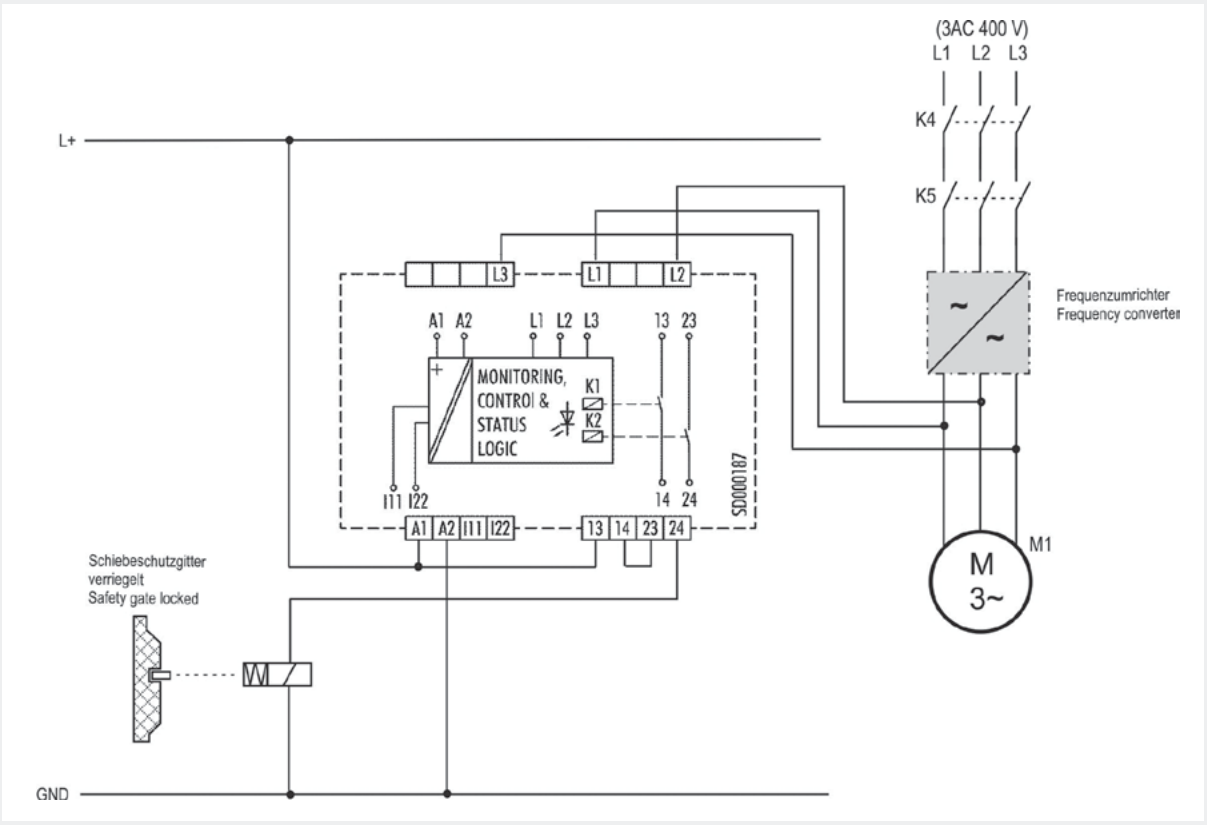
FUNCTION

The SVM 4001K device monitors machines, the 3-phase powered drive units of which have no movement detection sensors.

When the drives are set in motion or if faults are detected, the standstill monitor relay assumes the rest position.

APPLICATION

SVM 4001K

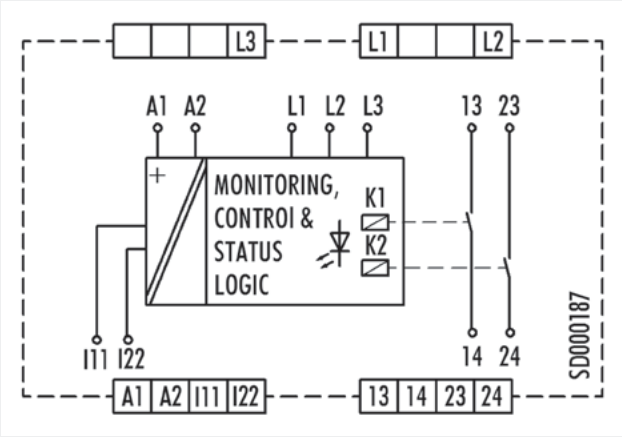


OVERVIEW OF DEVICES | PART NUMBERS

Type	Frequency range	Terminals	Part no.	P.U.
SVM 4001K-A	24 V DC	Screw terminals, pluggable	R1.188.4020.0	1
SVM 4001K-C	24 V DC	Push-in terminals, pluggable	R1.188.4030.0	1

CIRCUIT DIAGRAM

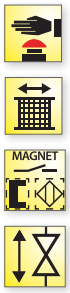
SVM 4001K



TECHNICAL DATA		
Function		Standstill monitoring
Function display		4 LED, green/red
Function mode / adjustment		Voltage measurement
Adjustment range		50 - 500 mV
Power supply circuit		
Rated voltage U_N	A1, A2	24 V DC
Rated consumption	24 V DC	1.8 W
Operating voltage range U_B		0.85 - 1.1 x U_N
Control circuit		
Rated output voltage	U, V, W	690 V AC3
Response time t_A		20 ms
Release time t_R		20 ms
Output circuit		
Enabling paths	13/14, 23/24	normally open contact
Contact assignment		forcebly guided
Contact type		Ag-alloy
Rated switching voltage		230 V AC
Max. thermal current I_{th}		8 A
Application category (NO)	AC-15	U_e 230 V, I_e 3 A
	DC-13	U_e 24 V, I_e 4 A
Short-circuit protection (NO), lead fuse / circuit breaker		5 A class gG
Mechanical life		20 x 10^6 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-20 °C - +55 °C / -40 °C - + 85 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm² – 2.5 mm² / 2 x 0.2 mm² – 1.0 mm²
	fine-stranded with ferrules	1 x 0.25 mm² – 2.5 mm² / 2 x 0.25 mm² – 1.0 mm²
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		1 x 0.25 mm² – 1.5 mm²
Weight		0.180 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		TÜV, cULus

SNT 4M63K

MONITORING OF EMERGENCY STOP AND SAFETY GATES



APPLICATIONS

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Stop Category 0 according to EN 60204-1
- Manual or automatic start
- Cross monitoring
- 3 enabling current paths (NO contact, forcibly guided)
- Feedback loop for monitoring external contactors

FUNCTION

The device is a two-channel switching device with self-monitoring on each ON-OFF cycle. It complies with EN 60204-1 and is equipped with forcibly guided relays. It is intended for monitoring connected switching elements on separating safety devices and generating a safety-oriented signal (enable). Depending on the design, separating safety devices may include sliding safety gates, safety gates, housings, covers, sheetings, screens, etc.

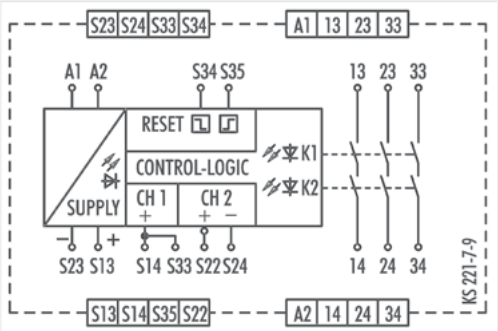
BASIC FUNCTION

With supply voltage applied to terminals A1/A2 and the safety inputs closed, pressing the reset button closes the enabling current paths (manual start). When the safety inputs are opened the enabling paths will open.

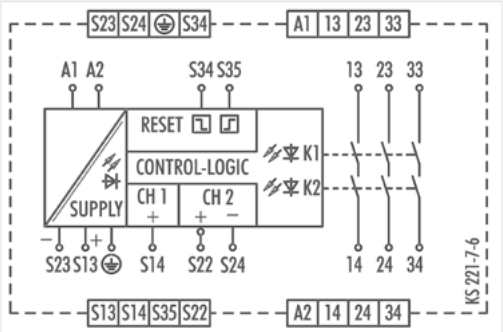
- **Manual start** – When the safety inputs are closed, a button is used to close reset input S34 and open it again (triggering with falling edge) or to close reset input S35 (triggering with rising edge).
- **Automatic Start** – Reset input S35 is connected to S33/S14. The device starts with the rising edge of the signal on safety input S14.

CIRCUIT DIAGRAM

SNT 4M63K **24 V DC**



115-120 V AC / 230 V AC



OVERVIEW OF DEVICES | PART NUMBERS

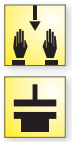
Type	Rated voltage	Terminals	Part no.	P.U.
SNT 4M63K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1050.0	1
	115 – 120 V AC	Screw terminals, pluggable	R1.188.1060.0	1
	230 V AC	Screw terminals, pluggable	R1.188.1070.0	1
SNT 4M63K-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.2390.0	1

TECHNICAL DATA		
Function		Emergency stop relay, valve position and safety gate monitoring
Function display		3 LEDs, green
Power supply circuit		
Rated voltage U_N	A1, A2	24 V AC/DC, 115-120 V AC, 230 V AC
Rated consumption	24 V DC	2.0 W
	115-120 V AC, 230 V AC	2,6 W / 3.2 VA
Rated frequency		50 - 60 Hz
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		yes (at U_N = 115-230 V AC, 230 V AC)
Control circuit		
Rated output voltage	S13/S23	22 V DC
Input current / peak current	S14/S33, S22/S24	40 mA / 100 mA
	S34, S35	5 mA / 50 mA
Response time t_{A1} / t_{A2}		40 ms / 600 ms
Minimum ON time t_M		80 ms
Recovery time t_W		100 ms
Release time t_R		15 ms
Synchronous time t_S		200 ms (CH1 → CH2)
Max. resistivity, per channel [1]	24 V AC/DC	≤ (5 + (1.176 x U_B / U_N - 1) x 100) Ω
	115-120 V AC, 230 V AC	≤ (5 + (1.176 x U_B / U_N - 1) x 100) Ω
Output circuit		
Enabling paths	13/14, 23/24, 33/34	normally open contact
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling path	230 V AC
Max. thermal current I_{th}	enabling path	6 A
Max. total current I^2 of all current path	(Tu = 55 °C)	9 A^2
Application category (NO)	AC-15	U_e 230 V, I_e 3 A
	DC-13	U_e 24 V, I_e 2.5 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		1 x 0.25 mm^2 – 1-5 mm^2
Weight		0-21 kg / 0-25 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		DGUV, cULus, CCC

[1] If two-channel devices are installed as single channel, the value is halved.

SNZ 4052K

TWO-HAND RELAY TYPE IIIC



APPLICATIONS

- Protection of people and machinery
- Monitoring of two-hand applications
- Press
- According to EN ISO 13851 Typ IIIC
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Stop Category 0 according to EN 60204-1
- Two-channel actuation; 1 NO contact and 1 NC contact for each channel
- Cross monitoring
- Monitoring of synchronous activation
- 2 enabling current paths, 1 signaling current path

FUNCTION

The device complies with EN 574 Type III C safety requirements. The safety behavior of the device is designed for applications according to Category 4 (EN 954-1). The device is single-fault safe and self-monitoring. Synchronous activation of both actuators (two-hand momentary contact or safety gate contacts) is monitored. Each of the two actuators is connected to the device with an NO contact and an NC contact. The technical design of the input circuit provides cross connection and ground fault monitoring. The output function is designed with 2 NO contacts as an enabling current path and 1 NC contact as signaling current path (all forcibly guided).

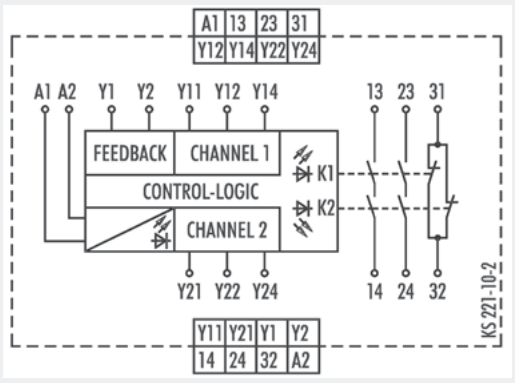
With supply voltage applied to terminals A1/A2 and the feedback loop (terminals Y1/Y2) closed, the enabling current paths are closed by simultaneously activating the actuators (S1+S2).

Both actuators must be activated within 0.5 s for the output contacts to be enabled. If only one of the two actuators is released, the device is immediately de-energized. The enabling current paths open.

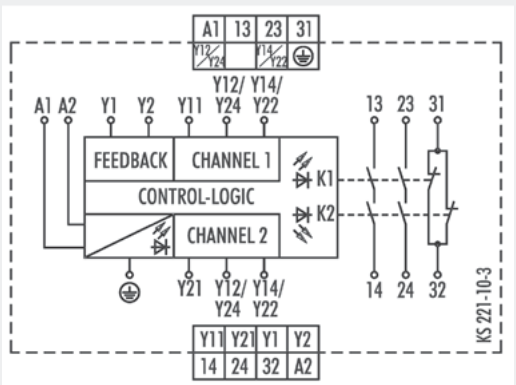
The device can be restarted only after both actuators have returned to their initial position (for example when the two-hand momentary contact switches have been released) and the feedback circuit is closed again. The feedback circuit should only be opened again after both actuators are activated. Otherwise the device will remain in the OFF position. The current status of the device is indicated by 3 LEDs: application of the supply voltage with LED SUPPLY, activation of both actuators with LED K1 and additionally with LED K2 in case of synchronous activation.

CIRCUIT DIAGRAM

SNZ 4052K **24 V DC**



115-120 V AC / 230 V AC



OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SNZ 4052K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.0530.1	1
	115 – 120 V AC	Screw terminals, pluggable	R1.188.0940.1	1
	230 V AC	Screw terminals, pluggable	R1.188.0950.1	1
SNZ 4052K-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.2020.0	1

TECHNICAL DATA		
Function		Two-hand control relay
Function display		3 LEDs, green
Power supply circuit		
Rated voltage U_N	A1, A2	24 V AC/DC, 115-120 V AC, 230 V AC
Rated consumption	24 V DC	2.4 W
	115-120 V AC, 230 V AC	2.2 W / 3.1 VA
Rated frequency		50 - 60 Hz
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		yes (at U_N = 115-230 V AC, 230 V AC)
Control circuit		
Rated output voltage	Y12/Y14, Y22/Y24, Y1	24 V DC
Input current / peak current	Y11, Y21	60 mA / 1000 mA
	Y2	< 100 mA
Response time t_{A1} / t_{A2}		40 ms
Recovery time t_W		250 ms
Release time t_R		50 ms
Synchronous time t_S		≤ 500 ms
Max. resistivity, per channel	24 V AC/DC	≤ (2.5 + (1.176 x U_B / U_N - 1) x 50) Ω
	115-120 V AC, 230 V AC	≤ (2.5 + (1.176 x U_B / U_N - 1) x 50) Ω
Output circuit		
Enabling paths	13/14, 23/24	normally open contact
Signaling paths	31/32	normally closed contact
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling / signaling path	230 V AC
Max. thermal current I_{th}	enabling / signaling path	6 A / 2 A
Max. total current I^2 of all current path	(Tu = 55 °C)	9 A^2
Application category (NO)	AC-15	U_e 230 V, I_e 3 A
	DC-13	U_e 24 V, I_e 2.5 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral / < 100 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges Push-in terminals		1 x 0.25 mm^2 – 1.5 mm^2
Weight		0.20 kg / 0.25 kg
Standards		EN ISO 13849-1, EN 62061, EN ISO 13851
Approvals		TÜV, cULus, CCC

SNZ 1022K

TWO-HAND RELAY TYPE IIIA

APPLICATIONS

- Protection of people and machinery
- Monitoring of two-hand applications
- According to EN ISO 13851 Typ IIIC
- Up to PL c / Category 1 (EN ISO 13849-1)
- Up to SIL_{CL} 1 (EN 62061)

FEATURES

- Stop Category 0 according to EN 60204-1
- Two-channel actuation; 1 NO contact and 1 NC contact for each channel
- Cross monitoring
- Monitoring of synchronous activation
- 1 changeover contact

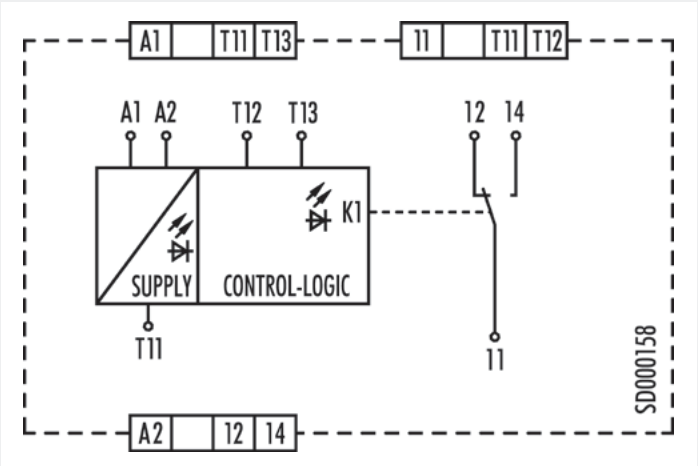
FUNCTION

After the power supply is established at terminals A1/A2 the release current paths are closed when the actuators (S1+S2) are operated at the same time. The two actuators must be operated within 0.5 s to trigger a release. If just one of the two actuators is released, the device is immediately de-energized and the enabling current path is opening.

The device can only be restarted once the two actuators are returned to their initial positions (e.g. the two-hand buttons have been released). The current status of the device is shown by 2 LEDs. The presence of the power supply is indicated with the SUPPLY LED, the operation of the two actuators with the K1 LED, if there is synchronous operation.

CIRCUIT DIAGRAM

SNZ 1022K



OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated Voltage	Synchronous time	Terminals	Part no.	P.U.
SNZ 1022K-A	24 V AC/DC	0.5 s	Screw terminals, pluggable	R1.188.3700.0	1
SNZ 1022K-A	115-230 V AC	0.5 s	Screw terminals, pluggable	R1.188.3710.0	1
SNZ 1022K-C	24 V AC/DC	0.5 s	Push-in terminals, pluggable	R1.188.3720.0	1
SNZ 1022K-C	115-230 V AC	0.5 s	Push-in terminals, pluggable	R1.188.3730.0	1

TECHNICAL DATA		
Function		Two-hand control relay
Function display		2 LEDs, green
Power supply circuit		
Rated voltage U_N	A1, A2	24 V AC/DC / 115-230 V AC
Rated consumption	AC/DC 24 V	0.7 W / 2.0 VA
	AC 115-230 V	3 VA
Rated frequency		50 - 60 Hz
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		yes (at U_N = 115-230 V AC)
Control circuit		
Rated output voltage	T11	24 V DC
Input current / peak current	T12	2.5 mA / 3 mA
	T13	25 mA / 60 mA
Response time t_{A1} / t_{A2}		< 20 ms
Recovery time t_W		> 250 ms
Release time t_R		< 20 ms
Synchronous time t_S		≤ 500 ms
Max. resistivity, per channel		(5 + (1.176 × U_B / U_N – 1) × 100) Ω
Output circuit		
Enabling paths	11/12/14	changeover contact
Contact type		Ag-alloy, gold-plated
Rated switching voltage		230 V AC
Max. thermal current I_{th}	enabling path 10/12	6 A
Application category (NO)	AC-15	U_e 230 V, I_e 3 A
	DC-13	U_e 24 V, I_e 2 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A^2s
Mechanical life		10 x 10^6 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		2 x 0.25 mm^2 – 1.5 mm^2
Weight	24 V AC/DC device / AC device	0.1 kg
Standards		EN ISO 13849-1, EN 62061, EN ISO 13851
Approvals		TÜV, cULus, CCC

SNV 4063KL

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS, OFF-DELAYED

APPLICATIONS

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of light barriers
- Termination of braking operations through OFF-delay time
- Control of solenoid-actuated interlocks
- Up to PL e / Category 4 (EN ISO 13849-1) for undelayed contacts
- Up to PL d / Category 3 (EN ISO 13849-1) for delayed contacts
- Up to SILCL 3 (EN 62061)

FEATURES

- Stop category 0/1 according to EN 60204-1
- Single-channel or two-channel control
- Manual or automatic start
- OFF-delay time adjustable in the range 0.15 to 3 s or 1.5 to 30 s
- Reset button monitoring, cross monitoring, monitoring of synchronous time
- 3 enabling current paths (2 undelayed, 1 OFF-delayed)

FUNCTION

With the supply voltage applied to terminals A1/A2 and the emergency set right and left margins in-line button. This controls relays K1 to K4, which become self-locking (when starting via reset button monitoring after the response time). After this switch-on phase the 3 enabling current paths are closed (terminals 13/14, 23/24 and 37/38). Three LEDs display the state of relays K1/K2, K3/K4 and the supply voltage.

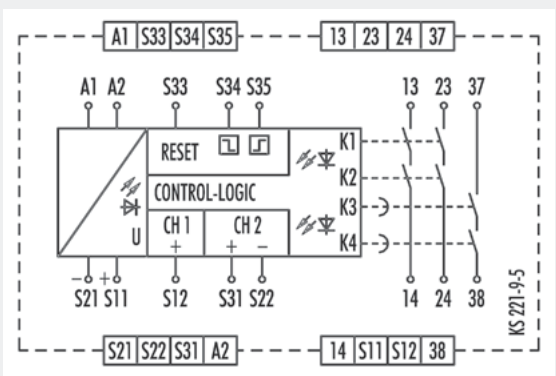
If the emergency stop button is activated, the current supplies for relays K1 to K4 are interrupted. The undelayed enabling current paths (terminals 13/14, 23/24) are opened with release time tR1 while the off-delayed enabling current path (terminals 37/38) is opened after the pre-set OFF-delay time tR2. The OFF-delay time can be adjusted infinitely in the range 0.15 to 3 s or 1.5 to 30 s.

With a two-channel control and cross-monitoring wiring of the sensor circuit, additional errors such as short-circuit or ground fault can be detected. An electronic fuse protects the device against damage. After the cause of the malfunction has been removed, the device is operational again after approx. 3 s.

- **Reset button monitoring** – The device can be started either with the falling edge or with the rising edge (terminals S34 or S35). For emergency stop applications with manual start the button must be connected to terminals S33/S34. The device is enabled only with the falling edge of the reset signal. For starting, the reset button must be pressed and released. For safety gate applications in which an automatic start is performed it is necessary to bridge terminals S33/S35. The device will react at the rising edge of input S12 which is internally connected to S33.
- **Monitoring of synchronous time** – The use of safety limit switches for single-channel or two-channel circuits in safety gate applications depends on the required safety level. The device provides a monitoring of the synchronous time of two connected safety switches. A synchronous time $t_S \approx 0.5$ s requires limit switches positioned in such a way that channel 1, terminals S11/S12, closes before channel 2, terminals S21/S22. If channel 2 closes before channel 1, the synchronous time is $t_S = \infty$.

CIRCUIT DIAGRAM

SNV 4063KL



OVERVIEW OF DEVICES | PART NUMBERS

Type	Time range	Rated voltage	Terminals	Part no.	P.U.
SNV 4063KL-A	3 s	24 V DC	Screw terminals, pluggable	R1.188.0620.0	1
	30 s	24 V DC	Screw terminals, pluggable	R1.188.0640.0	1
	150 s	24 V DC	Screw terminals, pluggable	R1.188.4100.0	1
SNV 4063KL-C	3 s	24 V DC	Push-in terminals, pluggable	R1.188.2010.0	1
	30 s	24 V DC	Push-in terminals, pluggable	R1.188.3900.0	1

TECHNICAL DATA		
Function		Emergency stop relay for controlled stop
Function display		3 LEDs, green
Function mode / adjustment		Time / stepless
Adjustment range		0.15 - 3 s / 1.5 - 30 s / 7.5 - 150 s
Power supply circuit		
Rated voltage U_N	A1, A2	24 V DC
Rated consumption	24 V DC	2.6 W
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		no
Control circuit		
Rated output voltage	S11, S33/S21	22 V DC
Input current / peak current	S12, S31/S22	25 mA / 100 mA
	S34, S35	40 mA / 50 mA
Response time t_{A1} / t_{A2}		30 ms / 700 ms
Minimum ON time t_M		200 ms
Recovery time t_W		500 ms
Release time t_R		25 ms
Release time t_R, delayed contacts (tolerance)		0.15 - 3 s / 1.5 - 30 s (±16 %)
Synchronous time t_S		500 ms
Permissable test pulse time t_{TP}		< 1 ms
Max. resistivity, per channel [1]		≤ (5 + (1.176 x U_B / U_N - 1) x 100) Ω
Output circuit		
Enabling paths	13/14, 23/24	normally open contact
	37/38	normally open contact, OFF-delayed
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling path	230 V AC
Max. thermal current I_{th}	enabling path	6 A
Max. total current I^2 of all current path	(Tu = 55 °C)	5 A^2
Application category (NO)	AC-15	U_e 230 V, I_e 3 A
	DC-13	U_e 24 V, I_e 2 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A Class gG / melting integral < 100 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		1 x 0.25 mm^2 – 1.5 mm^2
Weight		0.20 kg
Standards		EN ISO 13849-1, EN 62061, EN 50156-1
Approvals		TÜV, GL, cULus, CCC

[1] If two-channel devices are installed as single channel, the value is halved.

SNV 4063KP

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS, ON-DELAYED

APPLICATIONS

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of light barriers
- Monitoring of interlocking installation with position switches and integrated locking
- Control of spring-actuated interlocks
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Stop Category 0 according to EN 60204-1
- Single-channel or two-channel control
- Manual or automatic start
- ON-delay time adjustable in the range 0.15 to 3 s or 1.5 to 30 s
- Reset button monitoring, cross monitoring
- 3 enabling current paths (2 undelayed, 1 ON-delayed)

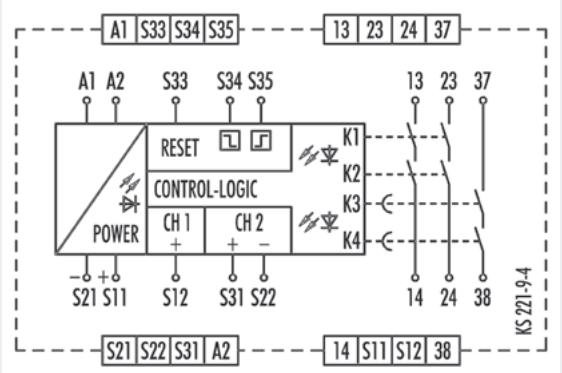
FUNCTION

With supply voltage applied to terminals A1/A2, relays K3 and K4 (terminals 37/38) start with the pre-selected ON-delay time. The ON-delay time t_{A1} can be adjusted infinitely in the range 0.15 to 3 s or 1.5 to 30 s according to the device type. The device is enabled by pressing the reset button. The following operating modes can be selected:

- **Manual start** – The reset button must be connected to S34 through terminal S33. For starting the relay, the reset button must be pressed. Relays K3 and K4 (terminals 37/38) will switch into the OFF position. With the falling edge of the reset signal, the reset is completed and activates relays K1 and K2, which become self-locking after the response time tA3. After this switch-on phase, the 2 enabling current paths defined for the output are closed (terminals 13/14, 23/24). With the emergency stop command, the power supply to relays K1 and K2 is interrupted. The enabling current paths (terminals 13/14, 23/24) are immediately opened with release time tR, and relays K3 and K4 will start after the pre-set ON-delay time tA1, terminals 37/38. Three LEDs display the state of relays K1/K2, K3/K4 and the supply voltage.
- **Automatic start** – For monitoring of interlocking installations with locking mechanism or safety gate applications in which on automatic start shall be performed it is necessary to jumper terminals S33/S35. The device will react at the rising edge of input S12 that is internally connected to S33. Relays K3 and K4 (terminals 37/38) will switch into the OFF position. With the rising edge of input S12 the relay K1 is activated and response time tA2 started. When the time has elapsed, the 2 enabling current paths are closed (terminals 13/14, 23/24). With a stop command the power supply to relays K1 and K2 is interrupted. The enabling current paths (terminals 13/14, 23/24) are immediately opened with release time tR, and relays K3 and K4 will start after the pre-set ON-delay time tA1, terminals 37/38.

CIRCUIT DIAGRAM

SNV 4063KP



OVERVIEW OF DEVICES | PART NUMBERS

Type	Time range	Rated voltage	Terminals	Part no.	P.U.
SNV 4063KP-A	3 s	24 V DC	Screw terminals, pluggable	R1.188.0660.0	1
	30 s	24 V DC	Screw terminals, pluggable	R1.188.0680.0	1

TECHNICAL DATA		
Function		Emergency stop relay for access delay combined with locking mechanism
Function display		3 LEDs, green
Function mode / adjustment		Time / stepless
Adjustment range		0.15 - 3 s / 1.5 - 30 s
Power supply circuit		
Rated voltage U_N	A1, A2	24 V DC
Rated consumption	24 V DC	2.6 W
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		no
Control circuit		
Rated output voltage	S11, S33/S21	22 V DC
Input current / peak current	S12, S31/S22	25 mA / 100 mA
	S34, S35	40 mA / 50 mA
Response time t_{A1} / t_{A2}		30 ms / 700 ms
Minimum ON time t_M		200 ms
Recovery time t_W		500 ms
Release time t_R		25 ms
Release time t_R, delayed contacts (tolerance)		0.15 - 3 s / 1.5 - 30 s (±16 %)
Synchronous time t_S		500 ms
Permissable test pulse time t_{TP}		< 1 ms
Max. resistivity, per channel [1]		≤ (5 + (1.176 x U_B / U_N - 1) x 100) Ω
Output circuit		
Enabling paths	13/14, 23/24	normally open contact
	37/38	normally open contact, ON-delayed
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling path	230 V AC
Max. thermal current I_{th}	enabling path	6 A
Max. total current I^2 of all current path	(Tu = 55 °C)	5 A^2
Application category (NO)	AC-15	U_e 230 V, I_e 3 A
	DC-13	U_e 24 V, I_e 2 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A Class gG / melting integral < 100 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0,5 - 0,6 Nm
Wire ranges push-in terminals		1 x 0.25 mm^2 – 1.5 mm^2
Weight		0.20 kg
Standards		EN ISO 13849-1, EN 62061, EN 50156-1
Approvals		TÜV, GL, cULus, CCC

[1] If two-channel devices are installed as single channel, the value is halved.

SNV 4074SL / SNV 4076SL

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS, OFF-DELAYED

APPLICATIONS

- Controlled stop according to Category 1 (EN 60204-1)
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of interlocks
- Monitoring of light barriers
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Stop Category 0/1 according to EN 60204-1
- Time setting in 10 steps
- Time ranges 3s, 30s or 300s
- Single-channel or two-channel control
- Manual or automatic start
- SafeStart
- Cross monitoring

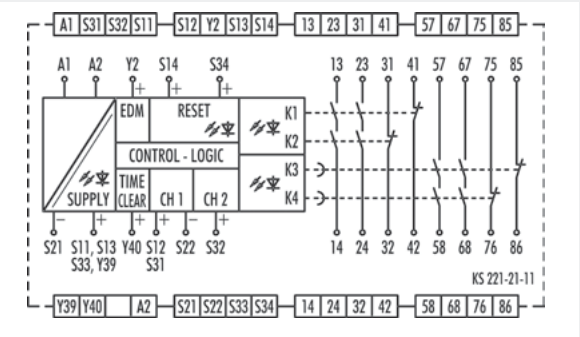
OFF-DELAY FUNCTION

After the supply voltage is applied to terminals A1/A2 and the safety inputs are closed, the enabling current paths (NO contacts) are closed automatically or by pressing the reset button (manual start). When the safety inputs are opened/de-energized the enabling current paths (NO contacts are opened immediately or with a delay).

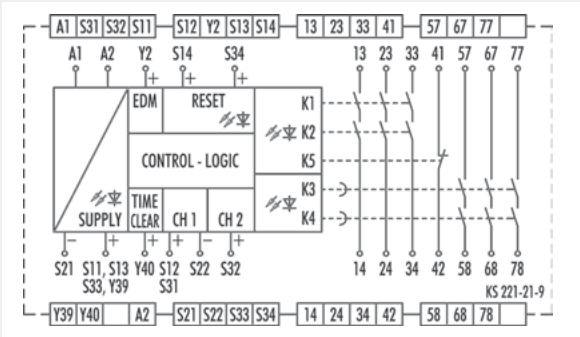
- **Automatic start** – Reset input S14 is connected to safety input S12. To monitor external contact blocks (EDM), their NC contacts must be connected in series between S34 and S12.
- **Manual start without monitoring** – Reset input S14 is connected to safety input S12 via a reset button. To monitor external contact blocks (EDM), their NC contacts must be connected in series to the reset button.
- **Manual start with monitoring** – Reset input S34 is connected to safety input S11 via a reset button. To monitor external contact blocks (EDM), their NC contacts must be connected in series to the reset button.

CIRCUIT DIAGRAMS

SNV 4074SL



SNV 4076SL



OVERVIEW OF DEVICES | PART NUMBERS

Type	Time range	Rated voltage		Terminals	Part no. 24 V DC	Part no. 115 – 230 V AC	P.U.
SNV 4074SL-A	3s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2130.0	R1.188.2310.0	1
SNV 4074SL-A	30s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2160.0	R1.188.2340.0	1
SNV 4074SL-A	300s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2190.0	R1.188.2370.0	1
SNV 4074SL-C	3s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2140.0	R1.188.2320.0	1
SNV 4074SL-C	30s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2170.0	R1.188.2350.0	1
SNV 4074SL-C	300s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2200.0	R1.188.2380.0	1
SNV 4076SL-A	3s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2040.0	R1.188.2220.0	1
SNV 4076SL-A	30s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2070.0	R1.188.2250.0	1
SNV 4076SL-A	300s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2100.0	R1.188.2280.0	1
SNV 4076SL-C	3s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2050.0	R1.188.2230.0	1
SNV 4076SL-C	30s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2080.0	R1.188.2260.0	1
SNV 4076SL-C	300s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2110.0	R1.188.2290.0	1

TECHNICAL DATA		
Function		Emergency stop relay
Function display		5 LEDs, green/red
Function mode / adjustment		Time setting in 10 steps
Adjustment range		0.1 - 3 s / 0 - 30 s / 0 - 300 s
Power supply circuit		
Rated voltage U_N	A1, A2	24 V DC / 115-230 V AC
Rated consumption	24 V DC | 115-230 V AC	2.8 W | 3.2 W / 6,3 VA
Rated frequency		50 - 60 Hz
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		yes (at U_N = AC 115-230 V)
Control circuit		
Rated output voltage	S11, S13, S33, Y39 / S21	22 V DC
Input current / peak current	S12, S31/S22, S32	3 mA / 4.5 mA
	S14, S34, Y2, Y40	4 mA / 4.5 mA
Response time t_{A1} / t_{A2}		200 ms
Minimum ON time t_M		100 ms
Recovery time t_W		50 ms
Release time t_R		20 ms
Release time t^R, delayed contacts (tolerance)		0.1 / 0.2 / 0.3 / 0.4 / 0,5 / 0.8 / 1 / 1.5 / 2 / 3 s (0,1 % ± 15 ms)
		0 / 2 / 4 / 6 / 0.5 / 8 / 10 / 15 / 20 / 30 s (0.1 % ± 15 ms)
		0 / 20 / 40 / 60 / 80 / 100 / 150 / 200 / 250 / 300 s (0.1 % ± 15 ms)
Permissable test pulse time t_{TP}		< 1 ms
Max. resistivity, per channel [1]	24 V DC | 115-230 V AC	< 50 Ω | < 50 Ω
Output circuit		
Enabling paths	13/14, 23/24, 33/34	normally open contact
	57/58, 57/68, 77/78	normally open contact, OFF-delayed
Signaling paths	31/32, 41/42 | 75/76, 85/86	normally closed contact | normally closed contact, OFF-delayed
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling- / signaling path	230 V AC
Max. thermal current I_{th}	enabling- / signaling path	6 A / 2 A
Max. total current I^2 of all current path	(Tu = 55 °C)	40 A^2
Application category (NO)	AC-15 | DC-13	U_e 230 V, I_e 3 A | U_e 24 V, I_e 3 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - +75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		1 x 0.25 mm^2 – 1.5 mm^2
Weight		0.33 kg / 0.35 kg
Standards		EN ISO 13849-1, EN 62061, EN 50156-1
Approvals		TÜV, GL, cULus, CCC

[1] If two-channel devices are installed as single channel, the value is halved.

SNV 4274SL / SNV 4074ST – MONITORING OF EMERGENCY STOP, LIGHT BARRIERS AND SAFETY GATES, OFF-DELAYED/ON-DELAYED

APPLICATIONS

- Monitoring of limit values in the process industry
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of interlocks
- Monitoring of light barriers
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Continuously adjustable, analog time setting
- Time ranges 3s, 30s or 300s
- Retriggering of the time delay possible
- Single-channel or two-channel control
- Manual or automatic start
- SafeStart
- Cross monitoring

OFF-DELAY WITH RETRIGGERING FUNCTION (SNV 4274SL)

After the supply voltage is applied to terminals A1/A2 and the safety inputs are closed, the contacts are switched on immediately, either automatically or by pressing the reset button (manual start). When the safety inputs are opened/de-energized, the contacts are switched off immediately or with a release delay.

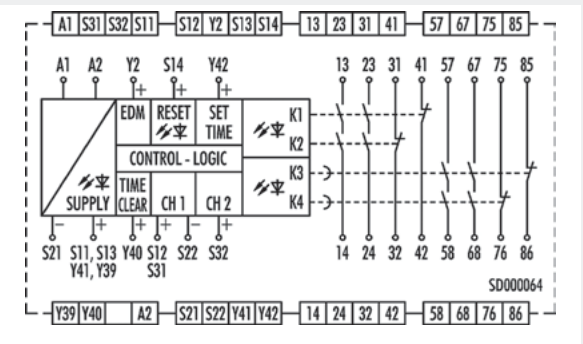
The set release delay only expires if the safety inputs are opened longer than the release delay set on the device. If the safety inputs are closed again before the release delay has expired (retriggering), the delayed contacts will remain closed, too.

ON-DELAY FUNCTION (SNV 4074ST)

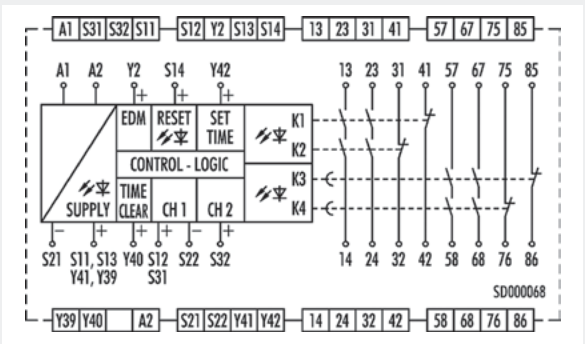
After the supply voltage is applied to terminals A1/A2 and the safety inputs are closed, the contacts are switched on immediately or with a response delay, either automatically or by pressing the reset button (manual start). When the safety inputs are opened/ de-energized the contacts are switched off immediately.

CIRCUIT DIAGRAMS

SNV 4274SL



SNV 4074ST



OVERVIEW OF DEVICES | PART NUMBERS

Type	Time range	Rated voltage		Terminals	Part no. 24 V DC	Part no. 115 – 230 V AC	P.U.
SNV 4274SL-A	3s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2470.0	R1.188.2650.0	1
SNV 4274SL-A	30s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2500.0	R1.188.2680.0	1
SNV 4274SL-A	300s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2530.0	R1.188.2710.0	1
SNV 4274SL-C	3s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2480.0	R1.188.2660.0	1
SNV 4274SL-C	30s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2510.0	R1.188.2690.0	1
SNV 4274SL-C	300s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2540.0	R1.188.2720.0	1
SNV 4074ST-A	3s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2560.0	R1.188.2740.0	1
SNV 4074ST-A	30s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2590.0	R1.188.2770.0	1
SNV 4074ST-A	300s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2620.0	R1.188.2800.0	1
SNV 4074ST-C	3s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2570.0	R1.188.2750.0	1
SNV 4074ST-C	30s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2600.0	R1.188.2780.0	1
SNV 4074ST-C	300s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2630.0	R1.188.2810.0	1

TECHNICAL DATA		
Function		Emergency stop relay
Function display		5 LEDs, green/red
Function mode / adjustment		Time / stepless
Adjustment range		0.15 - 3 s / 1.5 - 30 s / 15 - 300 s
Power supply circuit		
Rated voltage U_N	A1, A2	24 V DC / 115-230 V AC
Rated consumption	24 V DC | 115-230 V AC	2.8 W | 3.2 W / 6.3 VA
Rated frequency		50 - 60 Hz
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		yes (at U_N = 115-230 V AC)
Control circuit		
Rated output voltage	S11, S13, S33, Y39 / S21	22 V DC
Input current / peak current	S12, S31/S22, S32	3 mA / 4,5 mA
	S14, S34, Y2, Y40	4 mA / 4,5 mA
Response time t_{A1} / t_{A2}		200 ms
Minimum ON time t_M		100 ms
Recovery time t_W		50 ms
Release time t_R		20 ms
Release time t_R, delayed contacts (tolerance)		0,15 - 3 s (± 16 % of the setting value)
		1,5 - 30 s (± 16 % of the setting value)
		15 - 300 s (± 16 % of the setting value)
Permissable test pulse time t_{TP}		< 1 ms
Max. resistivity, per channel [1]	24 V DC | 115-230 V AC	< 50 Ω | < 50 Ω
Output circuit		
Enabling paths	13/14, 23/24	normally open contact
	57/58, 57/68	normally open contact, time delayed
Signaling paths	31/32, 41/42 | 75/76, 85/86	normally closed contact | normally closed contact, time delayed
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling- / signaling path	230 V AC
Max. thermal current I_{th}	enabling- / signaling path	6 A / 2 A
Max. total current I^2 of all current path	(Tu = 55 °C)	40 A^2
Application category (NO)	AC-15 | DC-13	U_e 230 V, I_e 3 A | U_e 24 V, I_e 3 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		1 x 0.25 mm^2 – 1.5 mm^2
Weight		0,33 kg / 0,35 kg
Standards		EN ISO 13849-1, EN 62061, EN 50156-1
Approvals		TÜV, GL, cULus, CCC

[1] If two-channel devices are installed as single channel, the value is halved.

SNE 1

CONTACT EXPANSION

TYPE 4/2

APPLICATIONS

- Duplication of the enabling current paths of a basic device
- Contact expansion in safety-oriented systems
- Up to PL e / Category 4 (EN ISO 13849-1)*
- Up to SIL_{CL} 3 (EN 62061)*

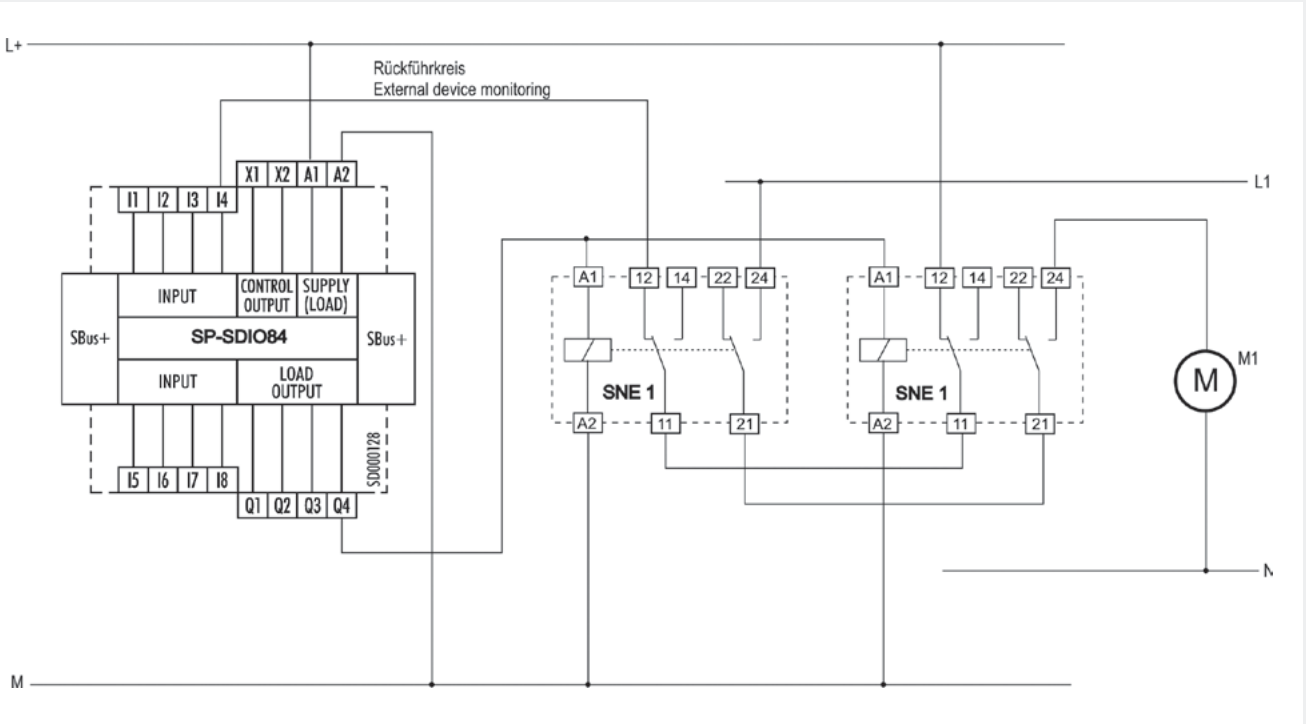
FEATURES

- Stop Category 0 and 1 according to EN 60204-1
- Single-channel operation
- 2 changeover contacts (positively driven)
- Sturdy retaining bracket

* Depends on the category of the basic device or the safety control.

CIRCUIT DIAGRAM

SNE 1

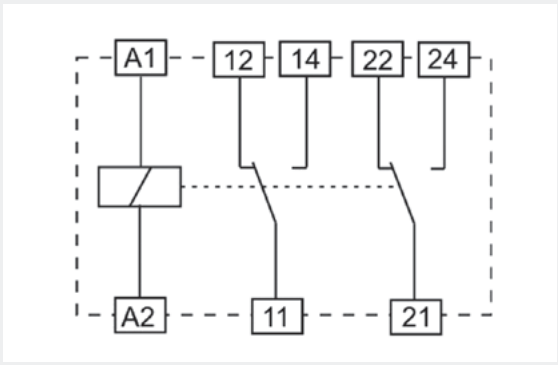


OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SNE 1	24 V DC	Screw terminals	R1.188.3950.0	1

CIRCUIT DIAGRAM

SNE 1



TECHNICAL DATA		
Function		Emergency stop expansion relay
Function display		none
Power supply circuit		
Rated voltage U_N	A1/A2	24 V DC
Rated consumption		0.7 W
Operating voltage range U_B		0.63 - 1.25 x U_N
Electrical isolation supply circuit - control circuit		yes
Control circuit		
Input current / peak current	A1/A2	ca. 29 mA
Response time t_{A1} / t_{A2}		12 ms
Release time t_R		< 20 ms
Output circuit		
Enabling paths	11/12/14, 21/22/24	changeover contact
Contact assignment		forcebly guided
Contact type		Ag-alloy
Rated switching voltage		230 V AC, 24 V DC
Max. thermal current I_{th}		8 A
Max. total current I^2 of all current path	(Tu = 55 °C)	72 A^2
Application category (NO)	AC-15	U_e 230 V, I_e 2 A
	DC-13	U_e 24 V, I_e 3 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gL / melting integral < 100 A^2s
Mechanical life		10 x 10^6 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 61810-5
Protection degree according to EN 60529 (housing / terminals)		IP20 / IP20
Ambient temperature / storage temperature		-40 °C - +70 °C / -40 °C - + 70
Wire range	fine-stranded / solid	0.25 mm^2 – 4.0 mm^2 (AWG 24-12) / 0.25 – 6.0 mm^2 (AWG 24-10)
Permissible torque		0.5 Nm
Weight		0.06 kg
Standards		EN 50205 (Type B)
Approvals		cURus

SNE 4003K

CONTACT EXPANSION

TYPE 4/2

APPLICATIONS

- Duplication of the enabling current paths of a basic device
- Contact expansion in safety-oriented systems
- Contact expansion for light curtains
- Up to PL e / Category 4 (EN ISO 13849-1)*
- Up to SIL_{CL} 3 (EN 62061)*

FEATURES

- Single-channel or two-channel operation
- 3 enabling current paths (NO contact)
- 2 signaling current paths (NC contact)
- Wide input voltage range from 15 to 30 V DC
- Suitable for semiconductor outputs

* Depends on the category of the basic device or the safety control.

FUNCTION

The SNE 4003K is an expansion device for basic devices (such as safety switching devices, light curtains, laser scanners) that are part of the machine's safety equipment and are used for protecting people, materials and machines.

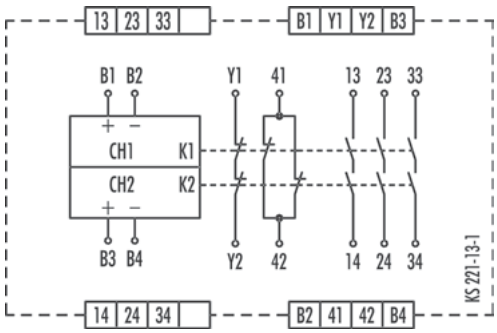
The device is designed with two channels and redundancy. There is basic insulation to separate the enabling current paths from one another and the control circuits from the signaling current paths. The broad input voltage range of 15 V DC to 30 V DC makes the SNE 4003K ideal for single-channel or two-channel control by semiconductors.

Input voltage to the SNE 4003K is connected via one or two enabling current paths of a basic device. When the input voltage is applied relays K1 and K2 switch into the ON position. After this switch-on phase, enabling current paths 13/14, 23/24, 33/34 are closed and feedback current path Y1/Y2 and signaling current path 41/42 are opened.

This is displayed through two LEDs, K1 and K2, which are assigned to relays K1 and K2. If the enabling current paths of the basic device are opened when the emergency stop button is pressed, relays K1 and K2 on the SNE 4003K switch back into the OFF-position. The enabling current paths open and the feedback current path closes. Feedback current path Y1/Y2 prevents the basic device from switching on again before K1 or K2 releases.

CIRCUIT DIAGRAM

SNE 4003K



OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SNE 4003K-A	24 V DC	Screw terminals, pluggable	R1.188.1340.0	1
SNE 4003K-C	24 V DC	Push-in terminals, pluggable	R1.188.4210.0	1

TECHNICAL DATA		
Function		Emergency stop expansion relay
Function display		2 LEDs, green
Power supply circuit		
Rated voltage U_N	B1/B2, B3/B4	24 V DC
Rated consumption	24 V DC	1.2 W
Operating voltage range U_B		0.63 - 1.25 x U_N
Electrical isolation supply circuit - control circuit		no
Control circuit		
Input current / peak current	B1/B2, B3/B4	50 mA / 500 mA
Response time t_{A1} / t_{A2}		< 40 ms
Recovery time t_W		≤ 40 ms
Release time t_R		< 20 ms
Permissable test pulse time t_{TP}		< 1 ms
Max. resistivity, per channel [1]		≤ (5 + (1.6 x U_B / U_N - 1) x 100) Ω
Output circuit		
Enabling paths	13/14, 23/24, 33/34	normally open contact
Signaling paths	41/42	normally closed contact
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling- / signaling path	230 V AC
	Y1/Y2	230 V AC
Max. thermal current I_{th}	enabling- / signaling path	6 A / 2 A
	Y1/Y2	2 A
Max. total current I^2 of all current path	(Tu = 55 °C)	9 A^2
Application category (NO)	AC-15	U_e 230 V, I_e 3 A
	DC-13	U_e 24 V, I_e 2,5 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		1 x 0.25 mm^2 – 1.5 mm^2
Weight		0,21 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		DGUV, cULus, CCC

[1] If two-channel devices are installed as single channel, the value is halved.

SNE 4004K/KV

CONTACT EXPANSION

APPLICATIONS

- Expansion of a basic device's enabling current paths
- Contact expansion in safety equipment
- Up to PL d / Category 3 (EN ISO 13849-1)*
- Up to SIL_{CL} 2 (EN 62061)*

FEATURES

- Stop Category 0 and 1 according to EN 60204-1 (see "Function")
- Single-channel or two-channel control
- SNE 4004K: 4 enabling current paths, undelayed (NO contact)
  3 signaling curent paths, undelayed (NC contact)
- SNE 4004KV: 4 enabling current paths, OFF-delayed (NO contact)
  3 signaling current paths, OFF-delayed (NC contact),
  Time buffering

* Depends on the category of the basic device or the safety control.

FUNCTION

SNE 4004K

Supply voltage to the SNE devices is routed via an enabling current path of a basic device. When the supply voltage is applied relays K1 and K2 switch into the ON position. After this switch-on phase the four enabling current paths 13/14, 23/24, 33/34, 43/44 (of the SNE 4004K) or 17/18, 27/28, 37/38, 47/48 (of the SNE 4004KV) are closed and the feedback current path Y1/Y2 is open. This is displayed through two LEDs that are assigned to relays K1 and K2.

When the enabling current paths of the basic device are opened through the operation of the emergency stop button, relays K1 and K2 on the SNE 4004K switch back into the OFF-position. The enabling current paths open and the feedback current path closes. Feedback current path Y1/Y2 prevents the basic device from switching on again before K1 or K2 releases.

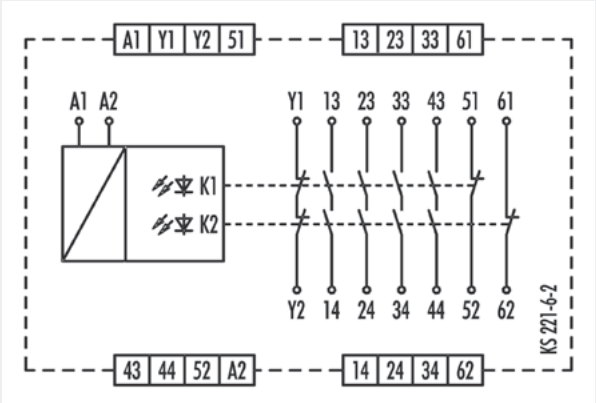
SNE 4004KV

The functions of this device correspond to those of the SNE 4004K. The SNE 4004KV is available with the following four OFF-delay times t_{R1}: 0.5 s; 1 s; 2 s and 3 s. The device has an OFF-delay time that is enabled through capacitors.

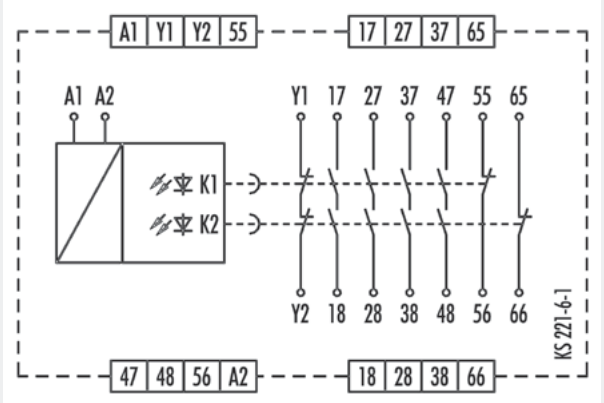
This causes the OFF-delay time t_{R1} to elapse completely even in case of failure of the power supply (A1/A2). It cannot be reset before it has elapsed. Once the delay time has elapsed, relays K1 and K2 switch into the OFF- position. OFF-delay times of > 0 s correspond to stop category 1.

CIRCUIT DIAGRAMS

SNE 4004K



SNE 4004KV



OVERVIEW OF DEVICES | PART NUMBERS

Type	Time range	Rated voltage	Terminals	Part no.	P.U.
SNE 4004K-A	–	24 V AC/DC	Screw terminals, pluggable	R1.188.0590.0	1
SNE 4004K-C	–	24 V AC/DC	Push-in terminals, pluggable	R1.188.1980.0	1
SNE 4004KV-A	0.5 s	24 V DC	Screw terminals, pluggable	R1.188.0460.0	1
	1 s	24 V DC	Screw terminals, pluggable	R1.188.0470.0	1
	2 s	24 V DC	Screw terminals, pluggable	R1.188.0480.0	1
	3 s	24 V DC	Screw terminals, pluggable	R1.188.0490.0	1
SNE 4004KV-C	0.5 s	24 V DC	Push-in terminals, pluggable	R1.188.2410.0	1
	1 s	24 V DC	Push-in terminals, pluggable	R1.188.2420.0	1
	2 s	24 V DC	Push-in terminals, pluggable	R1.188.2430.0	1
	3 s	24 V DC	Push-in terminals, pluggable	R1.188.2440.0	1

TECHNICAL DATA		
Function		Emergency stop expansion relay
Function display		2 LEDs, green
Function mode / adjustment		Time, fixed
Adjustment range		0,5 s / 1 s / 2 s / 3 s
Power supply circuit		
Rated voltage U_N	A1, A2	24 V DC / 24 V AC/DC
Rated consumption	24 V DC | 24 V AC/DC	1.2 W | 1.7 W / 3.1 VA
Rated frequency		50 - 60 Hz
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		non
Control circuit		
Input current / peak current	A1, A2	65 mA / 1800 mA
Response time t_{A1} / t_{A2}		20 ms
Minimum ON time t_M		0,15 x t_R
Recovery time t_W		≤ 200 ms
Release time t_R		40 ms
Release time t_R, delayed contacts (tolerance)		0.5 s / 1 s / 2 s / 3 s (± 35 %)
Max. resistivity, per channel [1]		≤ (2.5 + (1.176 x U_B / U_N - 1) x 50) Ω
Output circuit		
Enabling paths	13/14, 23/24, 33/34, 43/44	normally open contact
	17/17, 27/28, 37/38, 47/48	normally open contact, time delayed
Signaling paths	51/52, 61/62	normally closed contact
	55/56, 65/66	normally closed contact, time delayed
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling / signaling path	230 V AC
	Y1/Y2	230 V AC
Max. thermal current I_{th}	enabling / signaling path	6 A / 2 A
	Y1/Y2	2 A
Max. total current I^2 of all current path	(Tu = 55 °C)	9 A^2
Application category (NO)	AC-15 | DC-13	U_e 230 V, I_e 5 A | U_e 24 V, I_e 5 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0,5 - 0,6 Nm
Wire ranges push-in terminals		1 x 0.25 mm^2 –1.5 mm^2
Weight		0.20 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		DGUV, cULus, CCC

[1] If two-channel devices are installed as single channel, the value is halved.

SNE 4012K / SNE 4024K

CONTACT EXPANSION

APPLICATIONS

- Expansion of a basic device's enabling current paths
- Contact expansion in safety equipment
- Up to PL e / Category 4 (EN ISO 13849-1)*
- Up to SIL_{CL} 3 (EN 62061)*

FEATURES

- Stop Category 0 and 1 according to EN 60204-1 (see "Function")
- Single-channel control
- SNE 4012K: 2 enabling current paths (NO contact)
- SNE 4024K: 2 x 2 enabling current paths (NO contact)

* Depends on the category of the basic device or the safety control.

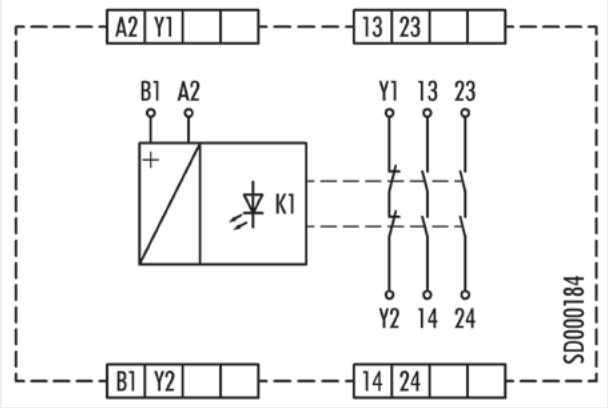
FUNCTION

Once the supply voltage has been applied to terminals B1/A2 (B2/A2), the enabling current paths (NOC) are automatically closed and the signaling current paths (NCC) are opened.

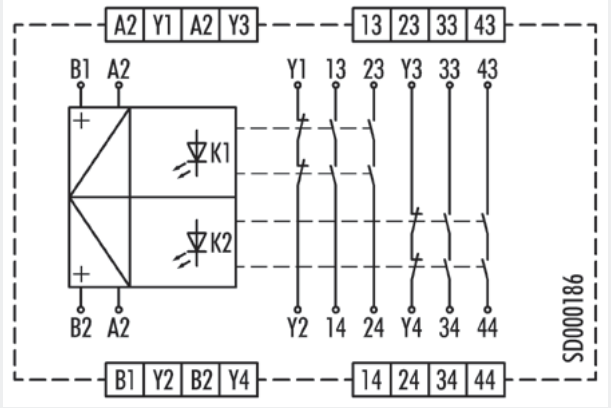
When the supply voltage is ceased, the enabling current paths (NOC) are immediately opened and the signaling current paths (NCC) are immediately closed.

CIRCUIT DIAGRAMS

SNE 4012K



SNE 4024K



OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SNE 4012K-A	24 V DC	Screw terminals, pluggable	R1.188.3910.0	1
SNE 4012K-C	24 V DC	Push-in terminals, pluggable	R1.188.3920.0	1
SNE 4024K-A	24 V DC	Screw terminals, pluggable	R1.188.3930.0	1
SNE 4024K-C	24 V DC	Push-in terminals, pluggable	R1.188.3940.0	1

TECHNICAL DATA		
Function		Emergency stop expansion relay
Function display – SNE 4012K		1 LED, green
Function display – SNE 4024K		2 LED, green
Power supply circuit		
Rated voltage U_N	B1/A2; B2/A2	24 V DC
Rated consumption – SNE 4012K		0.7 W
Rated consumption – SNE 4022K		1.4 W
Operating voltage range U_B		0.75 - 1.25 U_N
Control circuit		
Input current / peak current	B1/A2	ca. 30 mA / 110 mA
	B2/A2	ca. 30 mA / 110 mA
Response time t_{A1} / t_{A2}		< 15 ms
Recovery time t_W		≤ 30 ms
Release time t_R		≤ 15 ms
Max. resistivity, per channel [1]		≤ (5 + (1,333 x U_B / U_N - 1) x 200) Ω
Output circuit		
Enabling paths	13/14, 23/24	normally open contact
	33/34, 43/44	normally open contact
Signaling paths	Y1/Y2	normally closed contact
	Y3/Y4	normally closed contact
Contact assignment		forcebly guided
Contact type		Ag-alloy
Rated switching voltage		230 V AC, 24 V DC
Max. thermal current I_{th}	enabling / signaling path	6 A
Max. total current I^2 of all current path	– SNE 4012K (Tu = 55 °C)	72 A^2
Max. total current I^2 of all current path	– SNE 4024K (Tu = 55 °C)	2 x 72 A^2 / 2 x 8 A^2
Application category (NO)	AC-15 | DC-13	U_e 230 V, I_e 3 A | U_e 24 V, I_e 1 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gL / melting integral < 100 A^2s
Mechanical life		10 x 10^6 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +65 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		1 x 0.25 mm^2 – 1.5 mm^2
Weight		0.180 kg
Standards		EN ISO 13849-1, EN 62061, DIN EN 50156-1, EN 61511
Approvals		TÜV, cULus, CCC

[1] If two-channel devices are installed as single channel, the value is halved.

SNE 4028S

CONTACT EXPANSION

APPLICATIONS

- Duplication of the enabling current paths of a basic device
- Contact expansion in safety-oriented systems
- Amplification of the output performance of light curtains
- Up to PL e / Category 4 (EN ISO 13849-1)*
- Up to SIL_{CL} 3 (EN 62061)*

FEATURES

- Single-channel or two-channel control
- Cross monitoring
- Safe isolation
- 8 enabling current paths, 1 signal current path

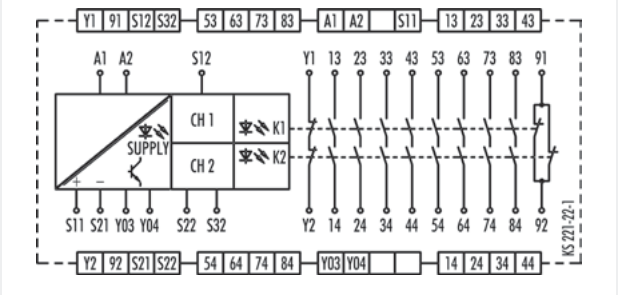
* Depends on the category of the basic device or the safety control.

FUNCTION

After the supply voltage is applied to terminals A1/ A2 and the safety inputs are closed, the enabling current paths (NO contacts) are closed and the signaling current paths (NC contacts) are opened automatically. When the safety inputs are opened/ de-energized the enabling current paths (NO contacts) are opened immediately and the signaling current paths (NC contacts) are closed.

CIRCUIT DIAGRAM

SNE 4028S



OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SNE 4028S-A	24 V DC	Screw terminals, pluggable	R1.188.3120.0	1
SNE 4028S-A	115-230 V AC	Screw terminals, pluggable	R1.188.3510.0	1
SNE 4028S-C	24 V DC	Push-in terminals, pluggable	R1.188.3540.0	1
SNE 4028S-C	115-230 V AC	Push-in terminals, pluggable	R1.188.3550.0	1

TECHNICAL DATA		
Function		Contact expansion relay
Function display		3 LEDs, green
Power supply circuit		
Rated voltage U_N	A1, A2	24 V AC/DC / 115-230 V AC
Rated consumption	24 V AC/DC	3.4 W / 6.1 VA
	115-230 V AC	2.7 W / 6 VA
Rated frequency		50 - 60 Hz
Operating voltage range U_B		0.85 - 1.1 x U_N
Electrical isolation supply circuit - control circuit		yes (at U_N = 115-230 V AC)
Control circuit		
Rated output voltage	S11/S21	24 V DC
Input current / peak current	S12, S32/S22	50 mA / 200 mA
Response time t_{A1} / t_{A2}		25 ms
Recovery time t_w		≤ 40 ms
Release time t_R		10 ms
Permissable test pulse time t_{TP}		< 1 ms
Max. resistivity, per channel [1]	24 V AC/DC	≤ (5 + (1.176 x U_B / U_N - 1) x 100) Ω
	115-230 V AC	≤ 12 Ω
Output circuit		
Enabling paths	13/14, 23/24, 33/34, 43/44	normally open contact
	53/54, 63/64, 73/74, 83/84	normally open contact
Signaling paths	91/92, Y1/Y2	normally closed contact
	Y03/Y04	semiconductor output (PNP), not safety-oriented
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling- / signaling path	230 V AC / 24 V DC
	Y03/Y04	24 V DC
Max. thermal current I_{th}	enabling- / signaling path	6 A / 2 A
	Y03/Y04	20 mA
Max. total current I2 of all current path	(Tu = 55 °C)	2 x 25 A^2
Application category (NO)	AC-15	U_e 230 V, I_e 5 A
	DC-13	U_e 24 V, I_e 5 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 90 A^2s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm^2 – 2.5 mm^2 / 2 x 0.2 mm^2 – 1.0 mm^2
	fine-stranded with ferrules	1 x 0.25 mm^2 – 2.5 mm^2 / 2 x 0.25 mm^2 – 1.0 mm^2
Permissible torque		0.5 - 0,6 Nm
Wire ranges push-in terminals		1 x 0.25 mm^2 – 1.5 mm^2
Weight		0.38 kg
Standards		EN ISO 13849-1, EN 62061, EN 61511
Approvals		TÜV, cULus, CCC

[1] If two-channel devices are installed as single channel, the value is halved.

SENSOR PRO – SAFE **SENSORS**

SLC + SLD SERIES

Safety light curtains

SLC series safety light curtains are ideal for realizing optoelectronic protective devices. The SLC series is used to safeguard hazard points, for area protection or access protection.

Safety light curtains

SLD series safety light grids are opto-electronic personal protective devices for access protection at hazard points on plant and machinery.

STS + SMA SERIES

Non-contact safety switches

STS series contactless safety switches offer maximum manipulation protection and are used for the position monitoring of guards.

Magnetic safety switches

SMA series sensors are magnetic safety sensors and are used for contactless safety door and position monitoring. They have integrated manipulation protection and can be used up to IP67.

SNH SERIES

Emergency stop buttons

SNH series emergency stop buttons ensure the safety of man and machine, and offer the user a practical, rugged and reliable design.

The quick and simple mounting of the emergency stop buttons saves time and money and the use of the highest-quality materials guarantees a long service life and reliable operation.

SNH series emergency stop buttons are suitable for numerous cross-sectoral applications.

SIN + SMS SERIES

Safety switches with guard control

SIN series safety switches are used for the position monitoring of movable guards and prevent the unintentional opening of safety doors and flaps via the integrated guard control.

Typical fields of application are machines with coasting movements, at which access is allowed to be granted only when the hazard has been eliminated.

Safety switches with separate actuator

SMS series safety switches are used for monitoring movable guards. They are suitable for both personal protection and process protection and available in three different versions.

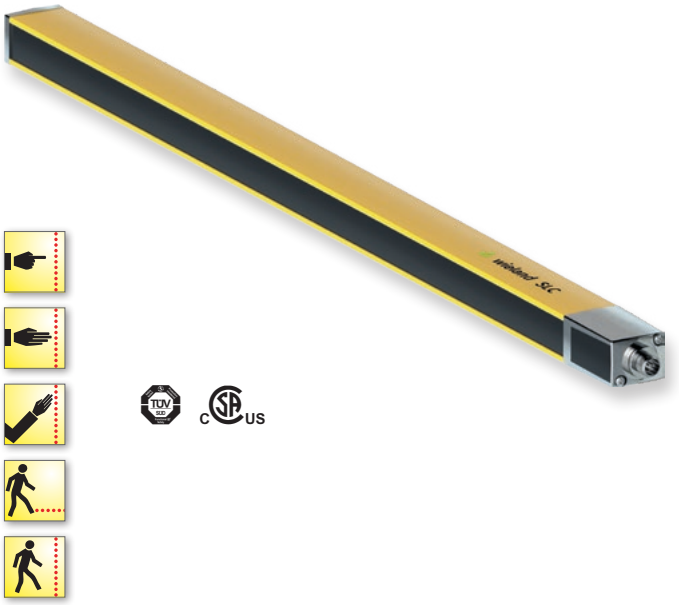
SLS SERIES

Safe position switches

SLS series switches can be used for safe position monitoring. The switches can be actuated either by plunger or plastic roller.

SERIES SLC

SAFETY LIGHT CURTAIN



APPLICATIONS

- Access protection (finger, hand and arm protection)
- Access security (personal protection)
- Horizontal zone protection

FEATURES

- Safety light curtain AOPD type 4 or type 2
- Beam resolution 14, 20, 30 and 40 mm
- Protection field heights 150 – 1800 mm
- Extensive accessories

With 3-Zone alignment indication

FUNCTIONS SUITABLE FOR EVERY PROTECTION TASK

All important contactless safety functions on machines and equipment can be realized by means of the three function versions, Standard, Select and Professional of the SLC series.

ADVANTAGES

HIGHER EQUIPMENT AVAILABILITY

- Easy adjustment and stable operation through slim and rigid housing
- Parameterization without PC or DIP switch through simple wiring in the control cabinet
- The integrated Double-Scan technology avoids unwanted shutdown even in harsh operating conditions
- Clear diagnostic and status messages in the 7-segment display ensure shorter downtimes
- Cable lengths up to 100 m with unshielded connection cables ensure greater operational flexibility and reduce costs even under difficult EMC conditions

FASTER DURING COMMISSIONING, OPERATION AND SERVICE

- The 3-zone alignment indicator reduces assembly time and simplifies justage
- The wide range of SLC products permits optimal and cost-effective design of protective devices
- Easy to connect via standard M12 connection technology
- Fast installation and removal on the machine through a system configuration in the control cabinet
- Selectable transmission channels and range reduction prevent mutual interference
- Simplified planning of safeguards because every SLC safety light curtain from 0 m to the maximum range can be implemented

Finger, hand and arm protection on machines with the safety light curtain SLC

SERIES SLC

SAFETY LIGHT CURTAIN

TECHNICAL DATA		
Function		safety light curtain
Function display		LED
Power supply circuit		
Rated voltage U_N		24 V DC
Current consumption (transmitter)		50 mA
Current consumption, no load (receiver/transceiver)		150 mA
Operating voltage range U_B		0.8 - 1.2 x U_N
Electrical isolation supply circuit - control circuit		no
Protection field data	Resolution	Range / protective field height
	14 mm (nur SLC-4)	0 - 6 m / 150 - 1800 mm
	20 mm	0 - 15 m / 150 - 1800 mm
	30 mm	0 - 10 m / 150 - 1800 mm
	40 mm	0 - 20 m / 150 - 1800 mm
Output circuit OSSD		
Number		2
Type		Transistor outputs PNP
Short-circuit monitoring		yes
Switching current (max., per output)		380 mA
Leakage current (max.)		200 µA
Switching voltage, high active (UB - 1V)		18.0 - 27.0 V
Switching voltage, low		0 - 2,5 V
Line resistance / line length		< 200 Ω / ≤ 100 m
Response time		device-dependent
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529		IP65
Ambient temperature / storage temperature		-30 °C - +55 °C / -30 °C - + 70 °C
Connection		M12 (5 pole / 8 pole) device-dependent
Weight		0.3 - 1.95 kg, device-dependent
Standards		EN 61496, EN ISO 13849-1, EN 62061
Approvals		TÜV, c-CSA-us

	SLC Standard	SLC Professional
LED display	●	●
Range reduction	●	●
Selectable transmission channels	●	●
7-segment display		●
Automatic start	●	●
Manual start / restart interlock		●
External device monitoring (EDM)		
cascading		
beam blanking		●
Muting function		●
Device linking		●
variable scan modes		●

SERIES SLC 4 | DEVICE OVERVIEW

SAFETY LIGHT CURTAIN

TRANSMITTER

Protective field height hhhh [mm] / Resolution	14 mm	20 mm	30 mm	40 mm
Type	SLC-4TR14-hhhh	SLC-4TR20-hhhh	SLC-4TR30-hhhh	SLC-4TR40-hhhh
0300	R1.541.0300.0	R1.542.0300.0	R1.543.0300.0	R1.544.0300.0
0450	R1.541.0450.0	R1.542.0450.0	R1.543.0450.0	R1.544.0450.0
0600	R1.541.0600.0	R1.542.0600.0	R1.543.0600.0	R1.544.0600.0
0750	R1.541.0750.0	R1.542.0750.0	R1.543.0750.0	R1.544.0750.0
0900	R1.541.0900.0	R1.542.0900.0	R1.543.0900.0	R1.544.0900.0
1050	R1.541.1050.0	R1.542.1050.0	R1.543.1050.0	R1.544.1050.0
1200	R1.541.1200.0	R1.542.1200.0	R1.543.1200.0	R1.544.1200.0
1350	R1.541.1350.0	R1.542.1350.0	R1.543.1350.0	R1.544.1350.0
1500	R1.541.1500.0	R1.542.1500.0	R1.543.1500.0	R1.544.1500.0
1650	R1.541.1650.0	R1.542.1650.0	R1.543.1650.0	R1.544.1650.0
1800	R1.541.1800.0	R1.542.1800.0	R1.543.1800.0	R1.544.1800.0

RECEIVER STANDARD

Protective field height hhhh [mm] / Resolution	14 mm	20 mm	30 mm	40 mm
Type	SLC-4ST14-hhhh	SLC-4ST20-hhhh	SLC-4ST30-hhhh	SLC-4ST40-hhhh
0300	R1.551.0300.0	R1.552.0300.0	R1.553.0300.0	R1.554.0300.0
0450	R1.551.0450.0	R1.552.0450.0	R1.553.0450.0	R1.554.0450.0
0600	R1.551.0600.0	R1.552.0600.0	R1.553.0600.0	R1.554.0600.0
0750	R1.551.0750.0	R1.552.0750.0	R1.553.0750.0	R1.554.0750.0
0900	R1.551.0900.0	R1.552.0900.0	R1.553.0900.0	R1.554.0900.0
1050	R1.551.1050.0	R1.552.1050.0	R1.553.1050.0	R1.554.1050.0
1200	R1.551.1200.0	R1.552.1200.0	R1.553.1200.0	R1.554.1200.0
1350	R1.551.1350.0	R1.552.1350.0	R1.553.1350.0	R1.554.1350.0
1500	R1.551.1500.0	R1.552.1500.0	R1.553.1500.0	R1.554.1500.0
1650	R1.551.1650.0	R1.552.1650.0	R1.553.1650.0	R1.554.1650.0
1800	R1.551.1800.0	R1.552.1800.0	R1.553.1800.0	R1.554.1800.0

RECEIVER PROFESSIONAL

Protective field height hhhh [mm] / Resolution	14 mm	20 mm	30 mm	40 mm
Type	SLC-4PR14-hhhh	SLC-4PR20-hhhh	SLC-4PR30-hhhh	SLC-4PR40-hhhh
0300	R1.571.0300.0	R1.572.0300.0	R1.573.0300.0	R1.574.0300.0
0450	R1.571.0450.0	R1.572.0450.0	R1.573.0450.0	R1.574.0450.0
0600	R1.571.0600.0	R1.572.0600.0	R1.573.0600.0	R1.574.0600.0
0750	R1.571.0750.0	R1.572.0750.0	R1.573.0750.0	R1.574.0750.0
0900	R1.571.0900.0	R1.572.0900.0	R1.573.0900.0	R1.574.0900.0
1050	R1.571.1050.0	R1.572.1050.0	R1.573.1050.0	R1.574.1050.0
1200	R1.571.1200.0	R1.572.1200.0	R1.573.1200.0	R1.574.1200.0
1350	R1.571.1350.0	R1.572.1350.0	R1.573.1350.0	R1.574.1350.0
1500	R1.571.1500.0	R1.572.1500.0	R1.573.1500.0	R1.574.1500.0
1650	R1.571.1650.0	R1.572.1650.0	R1.573.1650.0	R1.574.1650.0
1800	R1.571.1800.0	R1.572.1800.0	R1.573.1800.0	R1.574.1800.0

SERIES SLD

SAFETY LIGHT GRID

APPLICATIONS

- Access security (personal protection)
- Safeguarding of hazardous areas

FEATURES

- Safety light grid AOPD type 4
- 2-, 3- and 4-beam resolutions
- Also available as an universal system, i.e. transmitter/receiver in a single unit
- High ranges up to 70 m can be implemented
- Extensive accessories

PERSONAL PROTECTION FUNCTION

The SLD safety light grids are especially suitable for the contactless safeguarding of hazardous areas and for personal protection on machines and equipment.

ADVANTAGES

FASTER DURING COMMISSIONING, OPERATION AND SERVICE

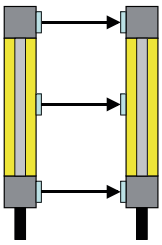
- The integrated laser alignment aid (optional) permits precise mounting and reduces the startup times of the SLD system
- Parameterization without PC or DIP switch through simple wiring in the control cabinet
- Robust device columns with spring-loaded base mounting and integrated alignment aid are available for the free-standing implementation

INCREASED RELIABILITY

- Robust aluminum housing in IP67
- Operating temperature range -30 °C to 55 °C permits implementation even in the harshest environments
- Multi-beam scanning avoids unwanted shutdown
- Mutual interference is avoided through the adjustable range reduction when implementing multiple systems

SERIES SLD

SAFETY LIGHT GRID

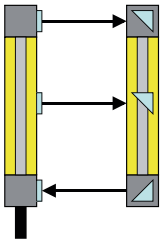


SLD STANDARD

The safety light grid SLD Standard each consist of a transmitter and a receiver unit and are thus suitable for highest ranges

- 1-, 2-, 3- and 4-beam systems
- Ranges up to 100 m

	SLD Standard
LED display	●
Multi-scan technology	●
Range reduction	●
Laser alignment aid (optional)	●
Automatic start	●
Manual start / restart interlock	
External device monitoring (EDM)	
7-segment display	
Muting function (optional)	
Muting lamp integrated (optional)	



SLD UNIVERSAL – LESS CABLING EXPENDITURE

The safety light grids consist of an integrated SLD universal transmitter/receiver unit and a passive reflector unit without electrical connection.

- 2- and 3-beam systems
- Range up to 8 m

	SLD Universal Standard	SLD Universal Professional
Transceiver system	●	●
LED display	●	●
Multi-scan technology	●	●
Automatic start	●	
Manual start / restart interlock		●
External device monitoring (EDM)		●
7-segment display		●
Muting function		●
Muting lamp integrated		●

SERIES SLD

SAFETY LIGHT GRID

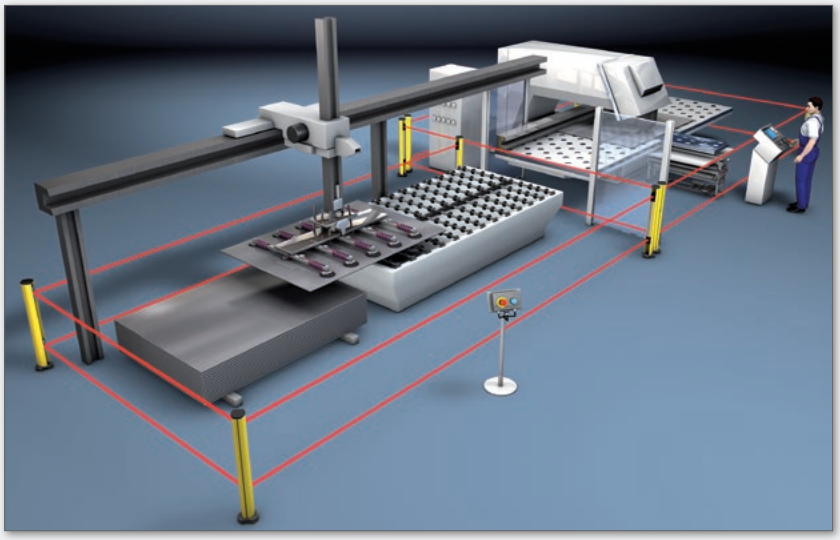
TECHNICAL DATA		
Function		safety light grid
Function display		LED
Power supply circuit		
Rated voltage U_N		24 V DC
Current consumption (transmitter)		50 mA
Current consumption, no load (receiver/transceiver)		150 mA
Operating voltage range U_B		0.8 - 1.2 x U_N
Electrical isolation supply circuit - control circuit		no
Protection field data	Beams	Range
	2	0.5 - 50 m / 20 - 70 m / 0.5 - 8 m
	3	0.5 - 50 m / 20 - 70 m / 0.5 - 6 m
	4	0.5 - 50 m / 20 - 70 m
Output circuit OSSD		
Number		2
Type		Transistor outputs PNP
Short-circuit monitoring		ja
Switching current (max., per output)		380 mA
Leakage current (max.)		200 µA
Switching voltage, high active (UB - 1V)		18.0 - 27.8 V
Switching voltage, low		0 - 2,5 V
Line resistance / line length		< 200 Ω
Response time		25 ms
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529		IP67
Ambient temperature / storage temperature		-30 °C - +55 °C / -40 °C - + 75 °C
Connection		M12 (5 pole / 8 pole) device-dependent
Weight		1.4 - 2.2 kg, device-dependent
Standards		EN 61496, EN ISO 13849-1, EN 62061
Approvals		TÜV, c-CSA-us

Note: For the connection of safety light grids SLD shielded cables are mandatory.

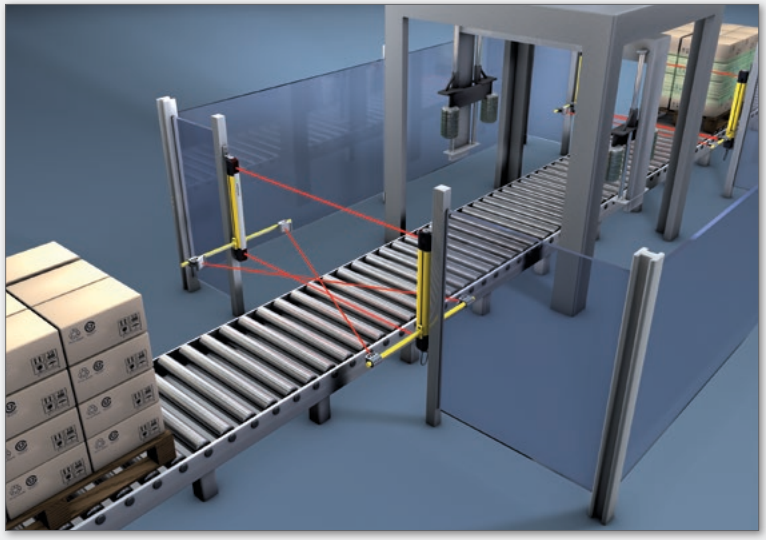
← Integrated muting and status indicator light

INTEGRATED MUTING – DECENTRALIZED SECURITY FUNCTION ON-BOARD

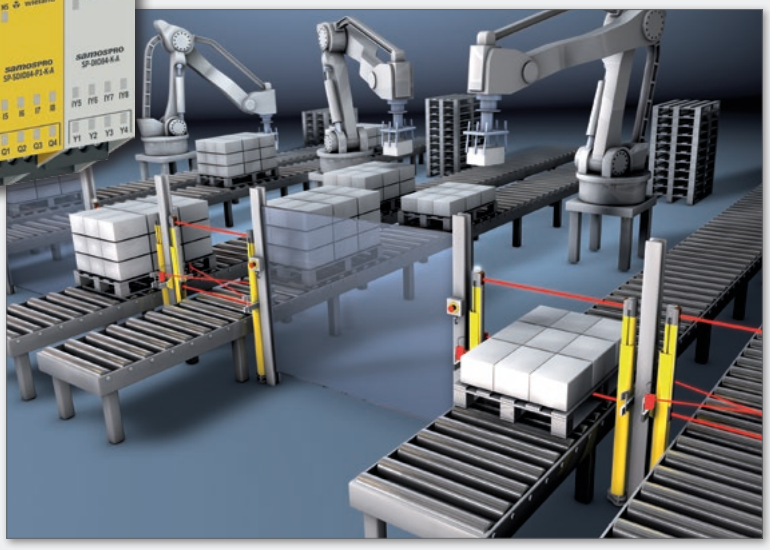
- Optional time- or sequence-controlled 2-sensor-muting
- Partial muting (the highest light beam stays active)
- Integrated muting/status indicator light



Multi-sided safeguarding of a sheet metal processing machine by SLD safety light grids and SLD deflection mirrors.



Safety light grids SLD Universal-Professional with time-controlled 2-sensor-muting at a packaging machine.



SLD – MUTING FUNCTIONS WITH SAMOS®PRO

SLD safety light grids are ideally suited for monitoring material locks, such as in the packaging industry, in combination with the freely configurable muting function blocks of samos®PRO, for example in the packaging industry.

SERIES SLD | DEVICE OVERVIEW

SAFETY LIGHT GRIDS

TRANSMITTER

Type	Description	Part. no.	P.U.
SLD-4TR2-0-50	Transmitter, 2 beams, range 50 m	R1.641.2050.0	1
SLD-4TR2-1-50	Transmitter, 2 beams, range 50 m, laser alignment aid	R1.641.2150.0	1
SLD-4TR2-1-70	Transmitter, 2 beams, range 70 m, laser alignment aid	R1.641.2170.0	1
SLD-4TR3-0-50	Transmitter, 3 beams, range 50 m	R1.641.3050.0	1
SLD-4TR3-1-50	Transmitter, 3 beams, range 50 m, laser alignment aid	R1.641.3150.0	1
SLD-4TR3-1-70	Transmitter, 3 beams, range 70 m, laser alignment aid	R1.641.3170.0	1
SLD-4TR4-0-50	Transmitter, 4 beams, range 50 m	R1.641.4050.0	1
SLD-4TR4-1-50	Transmitter, 4 beams, range 50 m, laser alignment aid	R1.641.4150.0	1
SLD-4TR4-1-70	Transmitter, 4 beams, range 70 m, laser alignment aid	R1.641.4170.0	1

RECEIVER STANDARD

Type	Description	Part. no.	P.U.
SLD-4ST2-0-50	Receiver-Standard, 2 beams, range 50 m	R1.642.2050.0	1
SLD-4ST2-1-50	Receiver-Standard, 2 beams, range 50 m, laser alignment aid	R1.642.2150.0	1
SLD-4ST2-1-70	Receiver-Standard, 2 beams, range 70 m, laser alignment aid	R1.642.2170.0	1
SLD-4ST3-0-50	Receiver-Standard, 3 beams, range 50 m	R1.642.3050.0	1
SLD-4ST3-1-50	Receiver-Standard, 3 beams, range 50 m, laser alignment aid	R1.642.3150.0	1
SLD-4ST3-1-70	Receiver-Standard, 3 beams, range 70 m, laser alignment aid	R1.642.3170.0	1
SLD-4ST4-0-50	Receiver-Standard, 4 beams, range 50 m	R1.642.4050.0	1
SLD-4ST4-1-50	Receiver-Standard, 4 beams, range 50 m, laser alignment aid	R1.642.4150.0	1
SLD-4ST4-1-70	Receiver-Standard, 4 beams, range 70 m, laser alignment aid	R1.642.4170.0	1

UNIVERSAL

Type	Description	Part. no.	P.U.
SLD-4US2-0-00	Universal-Standard, 2 beams	R1.644.2000.0	1
SLD-4US3-0-00	Universal-Standard, 3 beams	R1.644.3000.0	1
SLD-4UP2-0-00	Universal-Professional, 2 beams	R1.648.2000.0	1
SLD-4UP3-0-00	Universal-Professional, 3 beams	R1.648.3000.0	1
SLD-4UP2-2-00	Universal-Professional, 2 beams, muting lamp	R1.648.2200.0	1
SLD-4UP3-2-00	Universal-Professional, 3 beams, muting lamp	R1.648.3200.0	1
SLD-MIR2-0-08	Mirror, 2 beams, range 8 m	R1.606.2008.0	1
SLD-MIR3-0-06	Mirror, 3 beams, range 6 m	R1.606.3006.0	1
SLD-MIR3-0-08	Mirror, 3 beams, range 8 m	R1.606.3008.0	1

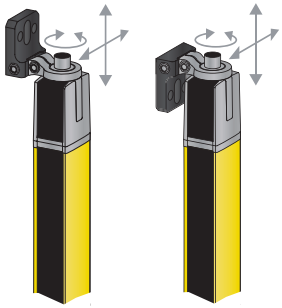
SERIES SLC

MOUNTING ACCESSORIES

SLX-MO-RO2

SLX-MO-RO2S

The swivel mount set **SLX-MO-RO2** is used for wall mounting of series SLC (360° horizontal adjustment possible).



SERIES SLD

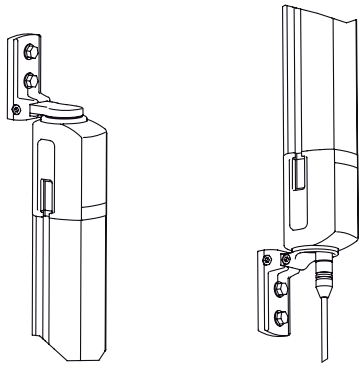
MOUNTING ACCESSORIES

SLX-MO-RO-SET1

SLX-MO-RO-SET2

The swivel mount set **SLX-MO-RO-SET1** (**SLX-MO-RO-SET1S** with shock absorber) is used for wall mounting of Transmitter, Receiver and Transceiver from series SLD (240° horizontal adjustment possible).

The swivel mount set **SLX-MO-RO-SET2** (**SLX-MO-RO-SET2S** with shock absorber) is used for wall mounting of Mirror from series SLD (240° horizontal adjustment possible).



OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Part no.	P.U.
SLX-MO-RO2	Rotative bracket 360°, 2 pcs., inkl. 1 pcs. SLC cylinder	R1.591.0020.0	1
SLX-MO-RO2S	Rotative bracket 360°, vibration damped, 2 pcs., inkl. 1 pcs. SLC cylinder	R1.591.0021.0	1
SLX-MO-RO-SET1	Set with SLX-MO-RO-B + SLX-MO-RO-C + screws	R1.591.0011.0	1
SLX-MO-RO-SET2	Set with 2 x SLX-MO-RO-C + screws	R1.591.0012.0	1
SLX-MO-RO-SET1-S	Set with SLX-MO-RO-B, SLX-MO-RO-C + screws + shockabsorber	R1.591.0013.0	1
SLX-MO-RO-SET2-S	Set with 2 x SLX-MO-RO-C + screws + shockabsorber	R1.591.0014.0	1

SERIES SLC / SLD

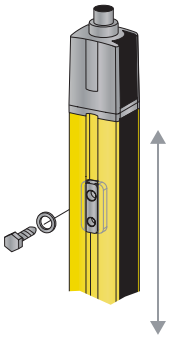
MOUNTING ACCESSORIES

SLX-MO-L

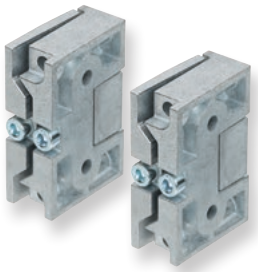
SLX-MO-Z

The **SLX-MO-TNUT** sets including sliding blocks for mounting of series SLC/SLD.

The **SLX-MO-L** and **SLX-MO-Z** sets are used for wall mounting of series SLC/SLD in combination with sliding blocks SLX-MO-TNUT.



SLX-MO-TNUT

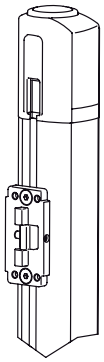


SLX-MO-2RO3

SLX-MO-2RO3S

SLX-MO-RO270-S

SLX-MO-CLIP



The new swiveling mounting brackets **SLX-MO-2RO3** (**SLX-MO-2RO3S** with shock absorber) are used for adjustable wall mounting.

The **SLX-MO-CLIP** is used for fixed mounting of series SLC/SLD in device columns SLX-COL.

The swiveling mounting brackets **SLX-MO-RO-S** and **SLX-MO-RO270-S** are used for mounting series SLC/SLD in device columns SLX-COL. These brackets are adjustable and with vibration damping.

OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Part no.	P.U.
SLX-MO-L	L-Bracket, 2 pcs.	R1.591.0004.0	1
SLX-MO-Z	Z-Bracket, 2 pcs.	R1.591.0005.0	1
SLX-MO-TNUTM6	Set slot nut with M6-screw thread, 10 pcs.	R1.591.0001.0	1
SLX-MO-TNUTM6M4	Set slot nut with M6- and M4-screw thread, 10 pcs.	R1.591.0002.0	1
SLX-MO-TNUTM6M5	Set slot nut with M6- and M5-screw thread, 10 pcs.	R1.591.0003.0	1
SLX-MO-RO-S	Rotative bracket with shockabsorber, 70mm lang, 2 pcs.	R1.591.0007.0	1
SLX-MO-RO270-S	Rotative bracket with shockabsorber, 270mm lang, 2 pcs.	R1.591.0008.0	1
SLX-MO-CLIP	Clamp bracket, for installation in device column	R1.591.0009.0	1
SLX-MO-CLIP2	Set clamp bracket, for installation in device column, 2 pcs.	R1.591.0010.0	1
SLX-MO-RO2	Rotative bracket 360°, 2 pcs., inkl. 1 pcs. SLC cylinder	R1.591.0020.0	1
SLX-MO-RO2S	Rotative bracket 360°, 2 pcs., vibration damped, incl. 1 pc. SLC cylinder	R1.591.0021.0	1
SLX-MO-RO2-G	Rotative bracket 360°, 2 pcs., incl. 2 pcs. SLC cylinder, for guest/middle-guest-systems	R1.591.0022.0	1
SLX-MO-RO2S-G	Rotative bracket 360°, 2 pcs., vibration damped, incl. 2 pcs. SLC cylinder, for guest/middle-guest-systems	R1.591.0023.0	1
SLX-MO-RO3	Swiveling mounting bracket for slot mounting ± 8°	R1.591.0024.0	1
SLX-MO-2RO3	Swiveling mounting bracket for slot mounting ± 8°	R1.591.0025.0	1
SLX-MO-2RO3S	Swiveling mounting bracket for slot mounting, vibration damped ± 8°, 2 pcs.	R1.591.0026.0	1

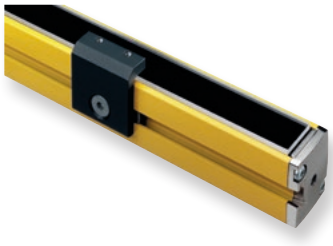
SERIES SLC / SLD

MOUNTING ACCESSORIES

SLX-CAB-M12

CONNECTION CABLES SLC/SLD

The connection cables**SLX-CAB-M12** (shielded and unshielded) are used for the electrical connection of series SLC/SLD by M12-connector (5- or 8-pole). For the connection of safety light grids SLD shielded cables are mandatory.



SLC-PRO

PROTECTIVE SCREEN SLC

The protective screens **SLC-PRO** are used for the protection of the front of series SLC.

OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Part no.	P.U.
SLX-CAB-M12-S0505	Connection cable M12, 5-pole, length 5m, shielded	R1.600.0505.0	1
SLX-CAB-M12-S0510	Connection cable M12, 5-pole, length 10m, shielded	R1.600.0510.0	1
SLX-CAB-M12-S0515	Connection cable M12, 5-pole, length 15m, shielded	R1.600.0515.0	1
SLX-CAB-M12-S0525	Connection cable M12, 5-pole, length 25m, shielded	R1.600.0525.0	1
SLX-CAB-M12-S0550	Connection cable M12, 5-pole, length 50m, shielded	R1.600.0550.0	1
SLX-CAB-M12-S0805	Connection cable M12, 8-pole, length 5m, shielded	R1.600.0805.0	1
SLX-CAB-M12-S0810	Connection cable M12, 8-pole, length 10m, shielded	R1.600.0810.0	1
SLX-CAB-M12-S0815	Connection cable M12, 8-pole, length 15m, shielded	R1.600.0815.0	1
SLX-CAB-M12-S0825	Connection cable M12, 8-pole, length 25m, shielded	R1.600.0825.0	1
SLX-CAB-M12-S0850	Connection cable M12, 8-pole, length 50m, shielded	R1.600.0850.0	1
SLX-CAB-M12-0505	Connection cable M12, 5-pole, length 5m, unshielded	R1.500.0505.0	1
SLX-CAB-M12-0510	Connection cable M12, 5-pole, length 10m, unshielded	R1.500.0510.0	1
SLX-CAB-M12-0515	Connection cable M12, 5-pole, length 15m, unshielded	R1.500.0515.0	1
SLX-CAB-M12-0525	Connection cable M12, 5-pole, length 25m, unshielded	R1.500.0525.0	1
SLX-CAB-M12-0550	Connection cable M12, 5-pole, length 50m, unshielded	R1.500.0550.0	1
SLX-CAB-M12-0805	Connection cable M12, 8-pole, length 5m, unshielded	R1.500.0805.0	1
SLX-CAB-M12-0810	Connection cable M12, 8-pole, length 10m, unshielded	R1.500.0810.0	1
SLX-CAB-M12-0815	Connection cable M12, 8-pole, length 15m, unshielded	R1.500.0815.0	1
SLX-CAB-M12-0825	Connection cable M12, 8-pole, length 25m, unshielded	R1.500.0825.0	1
SLX-CAB-M12-0850	Connection cable M12, 8-pole, length 50m, unshielded	R1.500.0850.0	1
SLC-PRO-0150	SLC protective glass, length: 148 mm	R1.502.0150.0	1
SLC-PRO-0225	SLC protective glass, length: 223 mm	R1.502.0225.0	1
SLC-PRO-0300	SLC protective glass, length: 298 mm	R1.502.0300.0	1
SLC-PRO-0450	SLC protective glass, length: 448 mm	R1.502.0450.0	1
SLC-PRO-0600	SLC protective glass, length: 598 mm	R1.502.0600.0	1
SLC-PRO-0750	SLC protective glass, length: 748 mm	R1.502.0750.0	1
SLC-PRO-0900	SLC protective glass, length: 898 mm	R1.502.0900.0	1
SLC-PRO-1050	SLC protective glass, length: 1048 mm	R1.502.1050.0	1
SLC-PRO-1200	SLC protective glass, length: 1198 mm	R1.502.1200.0	1
SLC-PRO-1350	SLC protective glass, length: 1348 mm	R1.502.1350.0	1
SLC-PRO-1500	SLC protective glass, length: 1498 mm	R1.502.1500.0	1
SLC-PRO-1650	SLC protective glass, length: 1648 mm	R1.502.1650.0	1
SLC-PRO-1800	SLC protective glass, length: 1798 mm	R1.502.1800.0	1
SLC-PRO-FIX2	Mounting bracket for SLC protective glass, 2 pcs.	R1.502.0002.0	1
SLC-PRO-FIX3	Mounting bracket for SLC protective glass, 3 pcs.	R1.502.0003.0	1

SERIES SLC /SLD

REFLECTORS AND REFLECTOR COLUMNS

REFLECTORS AND REFLECTOR COLUMNS SLC

The reflectors **SLX-MIR** are used for the realization of two-side guarding´s in combination with series SLC.

The reflector columns **SLX-COLM** are used for the realization of two-side guarding´s in combination with free-standing columns SLX-COL and series SLC.

REFLECTOR COLUMNS SLD

The reflector columns **SLD-COLM** are used for the realization of two-side guarding‘s in combination with free-standing columns SLX-COL and series SLD.

OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Part no.	P.U.
SLX-COLM-1000	Reflector column, persistant 1000 mm	R1.594.1000.0	1
SLX-COLM-1300	Reflector column, persistant 1300 mm	R1.594.1300.0	1
SLX-COLM-1600	Reflector column, persistant 1600 mm	R1.594.1600.0	1
SLX-COLM-1900	Reflector column, persistant 1900 mm	R1.594.1900.0	1
SLX-MIR-0150	Reflector, length: 210 mm	R1.595.0150.0	1
SLX-MIR-0300	Reflector, length: 360 mm	R1.595.0300.0	1
SLX-MIR-0450	Reflector, length: 510 mm	R1.595.0450.0	1
SLX-MIR-0600	Reflector, length: 660 mm	R1.595.0600.0	1
SLX-MIR-0750	Reflector, length: 810 mm	R1.595.0750.0	1
SLX-MIR-0900	Reflector, length: 960 mm	R1.595.0900.0	1
SLX-MIR-1050	Reflector, length: 1110 mm	R1.595.1050.0	1
SLX-MIR-1200	Reflector, length: 1260 mm	R1.595.1200.0	1
SLX-MIR-1350	Reflector, length: 1410 mm	R1.595.1350.0	1
SLX-MIR-1500	Reflector, length: 1560 mm	R1.595.1500.0	1
SLX-MIR-1650	Reflector, length: 1710 mm	R1.595.1650.0	1
SLX-MIR-1800	Reflector, length: 1860 mm	R1.595.1800.0	1
SLX-MIR-FIX2	Bracket for SLX-MIR-reflector, 2 pcs.	R1.595.0002.0	1
SLD-COLM2-0900	Reflector column, reflector distance: 500 mm; total heigth: 900 mm	R1.604.0900.0	1
SLD-COLM2-1060	Reflector column, reflector distance: 500 mm; total heigth: 1060 mm	R1.604.1060.0	1
SLD-COLM3-1360	Reflector column, reflector distance: 400 mm; total heigth: 1360 mm	R1.604.1363.0	1
SLD-COLM4-1360	Reflector column, reflector distance: 300 mm; total heigth: 1360 mm	R1.604.1364.0	1
SLD-MIR	Replacement reflector for SLD reflector columnn	R1.604.0001.0	1

SERIES SLC / SLD

DEVICE COLUMNS

SLX-COL

The device columns **SLX-COL** are used for a free-standing installation of series SLC/SLD.

OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Part no.	P.U.
SLX-COL-0900	Device column, profile heigth: 820 mm; total heigth: 900 mm	R1.593.0900.0	1
SLX-COL-1000	Device column, profile heigth: 980 mm; total heigth: 1060 mm	R1.593.1000.0	1
SLX-COL-1300	Device column, profile heigth: 1280 mm; total heigth: 1360 mm	R1.593.1300.0	1
SLX-COL-1600	Device column, profile heigth: 1580 mm; total heigth: 1660 mm	R1.593.1600.0	1
SLX-COL-1900	Device column, profile heigth: 1880 mm; total heigth: 1960 mm	R1.593.1900.0	1
SLX-COL-2500	Device column, profile heigth: 2480 mm; total heigth: 2560 mm	R1.593.2500.0	1
SLX-COL-BASE	Replacement pedestal for columns with spring elements	R1.593.0001.0	1
SLX-COLP-0900	2 protective glasses for SLC-COL device column; length: 820 mm	R1.592.0900.0	1
SLX-COLP-1000	2 protective glasses for SLX-COL device column; length: 980 mm	R1.592.1000.0	1
SLX-COLP-1300	2 protective glasses for SLX-COL device column; length: 1280 mm	R1.592.1300.0	1
SLX-COLP-1600	2 protective glasses for SLX-COL device column; length: 1580 mm	R1.592.1600.0	1
SLX-COLP-1900	2 protective glasses for SLX-COL device column; length: 1880 mm	R1.592.1900.0	1

SERIES SLD / SLC

OTHER ACCESSORIES

SLX-ACC-LASER

SLC-ACC-LASERCOL

SLX-ACC-TEST

The external laser-alignment device **SLX-ACC-LASER** (for direct mounting on series SLX/SLD) and **SLX-ACC-LASERCOL** (for mounting on a device column SLX-COL) are used for the adjustment of the optical system of series SLC/SLD.

The test rods **SLX-ACC-TEST** are used for functional testing of protective areas realized by series SLC.

OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Part no.	P.U.
SLX-ACC-LASERCOL	External laser adjustment device, for fixing in device column	R1.596.0003.0	1
SLX-ACC-LASER	External laser adjustment device	R1.596.0002.0	1
SLX-ACC-TEST2040	Test bar, 20/40 mm	R1.596.2040.0	1
SLX-ACC-TEST1430	Test bar, 14/30 mm	R1.596.1430.0	1
SLX-ACC-MKEY	Magnet key for activation of laser adjustment device	R1.596.0001.0	1

SERIES SLC / SLD

MUTING ACCESSORIES

SLX-MUTC-SET2P

The Muting-Set **SLX-MUTC-SET2P** is used for realizing a 2-sensor cross muting e.g. in combination with device columns SLX-COL to be ordered separately or directly onto the SLD safety light grids.

The Muting-Set **SLX-MUTC-SET4** (no figure) is used for realizing a 4-sensor-sequence-muting, e.g. in combination with device columns SLX-COL to be ordered separately or directly onto the SLD safety light grids.

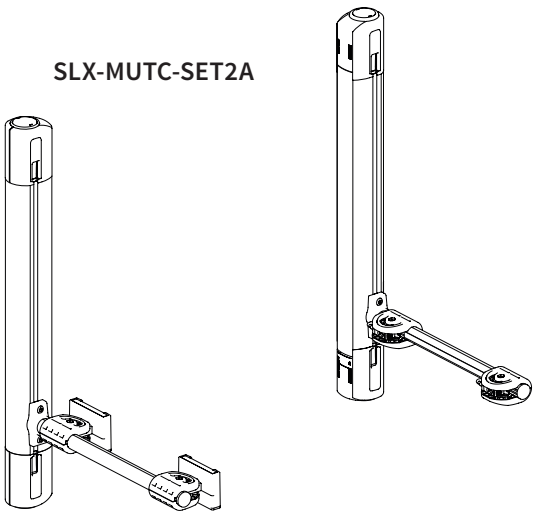
The **SLX-MUTC-SET2A** or **SLX-MUTC-SET2B** muting sets (see figure below) are used to set-up a 2-sensor sequential muting system, e.g. in combination with the SLX-COL device columns to be ordered separately, or directly onto the SLD safety light grids.

OVERVIEW OF DEVICES | PART NUMBERS

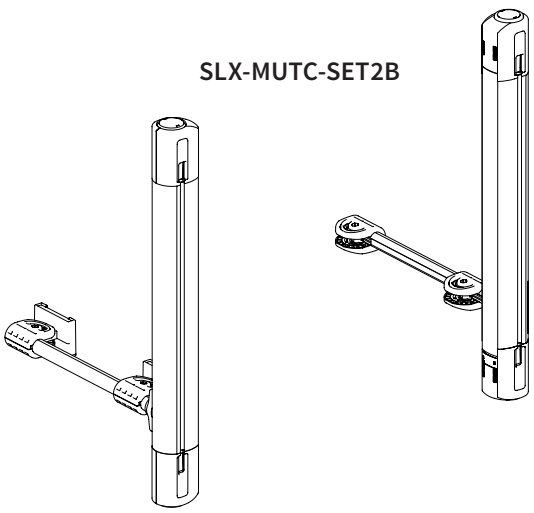
Type	Description	Part no.	P.U.
SLX-MUTC-SET2P	SLX-muting-sensor-set (device column) for 2-sensor-parallel-muting, incl. 2 sensor units, 2 reflector units, pre-assembled, distance 8 m, 2 m cable with plug M12	R1.597.0008.0	1
SLX-MUTC-SET4	SLX-muting-sensor-set for 4-sensor-sequencial-muting, incl. 4 sensor units, 4 reflector units, pre-assembled, distance 8 m, 2 m cable with plug M12	R1.597.0007.0	1
SLX-MUTC-SET2A	SLX-muting-sensor-set for 2-sensor-sequencial-muting, incl. 2 sensor units, 2 reflector units, pre-assembled, distance 8 m, 2 m cable with plug M12	R1.597.0005.0	1
SLX-MUTC-SET2B	SLX-muting-sensor-set for 2-sensor-sequencial-muting, incl. 2 sensor units, 2 reflector units, pre-assembled, distance 8 m, 2 m cable with plug M12	R1.597.0006.0	1
SLX-MUT-SENS20	Sensor element, 2 m cable with plug M12	R1.597.0012.0	1
SLX-MUT-SENS07	Sensor element, 0.7 m cable with plug M12	R1.597.0013.0	1
SLX-MUT-SENS04	Sensor element, 0.4 m cable with plug M12	R1.597.0014.0	1
SLX-MUT-REFLEX	Reflector	R1.597.0015.0	1
SLX-MUT-BOX4	Sensor connector box for 4 muting sensors	R1.597.0020.0	1
SLX-MUT-BOX4-BT	Sensor connector box for 4 muting sensors, with mounting plate	R1.597.0019.0	1
SLX-MUT-BOX4-BT-L	Sensor connector box for 4 muting sensors, with L-mounting bracket	R1.597.0021.0	1

Further muting accessories are available on request.

SLX-MUTC-SET2A



SLX-MUTC-SET2B



SLC PROFESSIONAL SERIES

MUTING ACCESSORIES

Example of a decentralized muting application (time-controlled 2-beam muting) with the SLC Professional series.

SLD PROFESSIONAL SERIES

MUTING ACCESSORIES

Example of a decentralized muting application (time or sequence-controlled 2-beam muting) with the SLD Professional series.

SLC/SLD SERIES
MUTING ACCESSORIES

SLX-ACC-CONF1

SLX-ACC-CONF

OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Part no.	P.U.
SLX-MUT-BOX2	SLD Professional sensor connection box for 2 muting sensors	R1.597.0017.0	1
SLX-MUT-BOX2-BT	SLD Professional sensor connection box for 2 muting sensors, with mounting plate	R1.597.0016.0	1
SLX-SBOX	SLC Professional sensor module for control, display and operating elements with 4 M12x5 bushings and M12x8 connector	R1.596.0006.0	1
SLX-SBOX-MO	SLC Professional sensor module for control, display and operating elements with 4 M12x5 bushings and M12x8 connector, incl. retaining plate and mounting parts	R1.596.0007.0	1
SLX-SBOX-CAB1	SLC Professional cable, M12, straight bushing, straight connector, length 1.5 m	R1.596.0008.0	1
SLX-SBOX-CAB1W	SLC Professional cable, M12, straight bushing, angled connector, length 1.5 m	R1.596.0009.0	1
SLX-SBOX-CAB2	SLC Professional cable, M12, straight bushing, straight connector, length 5 m	R1.596.0010.0	1
SLX-SBOX-CAB2W	SLC Professional cable, M12, straight bushing, angled connector, length 5 m	R1.596.0011.0	1
SLX-SBOX-CAB3	SLC Professional cable, M12, straight bushing, straight connector, length 15 m	R1.596.0012.0	1
SLX-SBOX-CAB3W	SLC Professional cable, M12, straight bushing, angled connector, length 15 m	R1.596.0013.0	1
SLX-ACC-CONF1	Display and acknowledgment unit	R1.596.0005.0	1
SLX-ACC-CONF	Display and acknowledgment unit, 2x connection cable M12	R1.596.0004.0	1

SLC/SLD SERIES
ACCESSORIES FOR CASCADING

The **SLX-CAS-MO1** angle bracket permits a mechanically stable and simple connection between the cascading SLC light curtains (90° connection).

SLX-CAS-MO1

SLX-CASPLUG

If the cascading SLC light curtains are to be used individually (i.e. not cascaded), corresponding **SLX-CASPLUG** terminating plugs must be attached to the connection cables.

OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Part no.	P.U.
SLX-CAS-MO1	L-angle bracket, 1 piece, incl. screws, shims and slot nuts	R1.598.0006.0	1
SLX-CAS-MO2	L-angle bracket, 2 pieces, incl. screws, shims and slot nuts	R1.598.0007.0	1
SLX-CASCAB1	Host/Guest extension cable, length 2 m	R1.598.0001.0	1
SLX-CASCAB2	Host/Guest extension cable, length 5 m	R1.598.0002.0	1
SLX-CASPLUG-T	Terminating plug for SLC transmitter host devices	R1.598.0003.0	1

SERIES SNH

EMERGENCY STOP BUTTONS

APPLICATIONS

- Machine and plant manufacturing
- Building machinery and transport technology

FEATURES

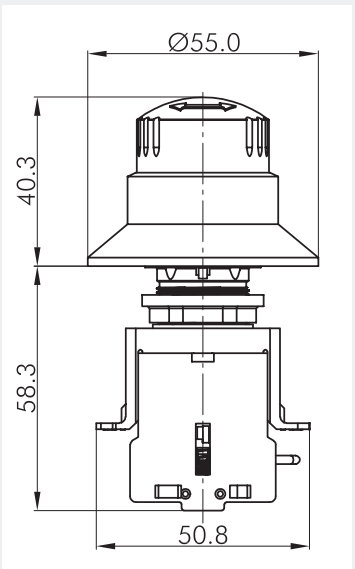
- For applications up to IP69K
- Tamper-proof according to EN 418/EN ISO 13850
- Modular design
- Turn-to-reset
- Integrated illumination
- Optical indication of the switching state
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FUNCTION

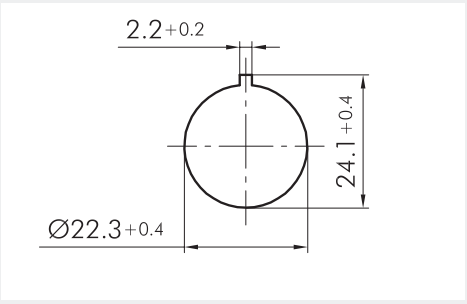
Emergency stop buttons of the SNH series are used on or near machines for the protection of persons. They serve the purpose of switching off / stopping machines and systems to avoid or reduce emerging or existing hazards to persons. Emergency stop buttons of the SNH series are also used to avoid damage to the machine or working material.

- **Modular design** – The emergency stop buttons of the SNH series have a modular design, various actuating elements can be freely combined with the chosen contact design.
- **Failure protection** – The emergency stop buttons of the SNH series have a special failure protection that automatically detects when a contact block is removed from the respective actuating element and then switches off safely.

DIMENSION DIAGRAM



CUT-OUT DIMENSIONS



SERIES SNH

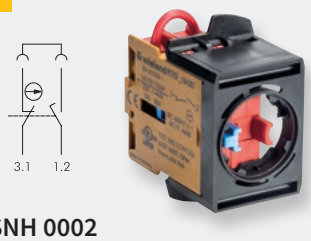
EMERGENCY STOP BUTTONS

TECHNICAL DATA	
Function	
According to EN 418/EN ISO 13850	Emergency stop button
Actuator	
Housing material	Plastic
Protection degree	IP 65
Operating ambient temperature	-30 – +70 °C (without illumination), -30 – +55 °C (with illumination)
Storage temperature	-50 – +85 °C
Switching cycles	> 50000
Max. torque	2.5 Nm
Installation diameter	22.3 mm
Contact blocks	
Contact type	NC contact NC contact with failure protection NO contact
Contact material	AgNi
Switching principle	Slow-action contact
Actuating travel	6 mm
Mechanical service life	1 x 10^7 switching cycles
Electrical service life	1 x 10^6 switching cycles
Application category	AC15 A600: 250 V, 3A DC13 Q600: 24 V, 2A
Protection class	II
Rated insulation voltage	600 V
Min. Switching voltage	5 V
Min. Switching current	1 mA
Thermal continuous current Ith	16 A
Max. through-type thermistor	20 mΩ
Max. bounce time	20 ms
Min. positive opening travel	3 mm
Operating ambient temperature	-30 – +85 °C
Storage temperature	-50 – +85 °C
Connection technology	Screw connection
Conductor cross-section	Max. 2,5 mm^2
Standards	EN 418 /EN ISO 13850
Approvals	TÜV, cULus

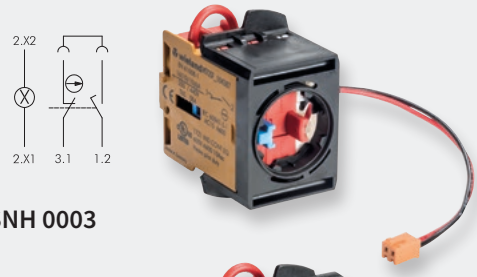
SNH – EMERGENCY STOP BUTTONS

CONTACT BLOCKS

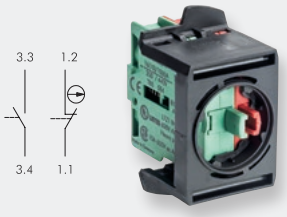
SNH 0001



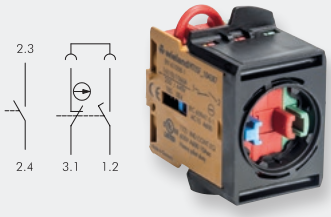
SNH 0002



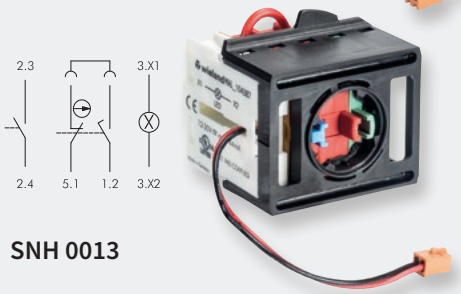
SNH 0003



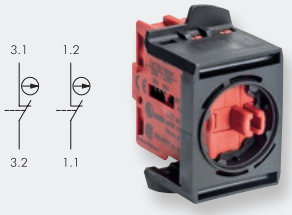
SNH 0011



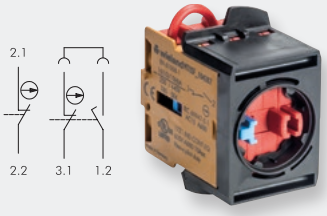
SNH 0012



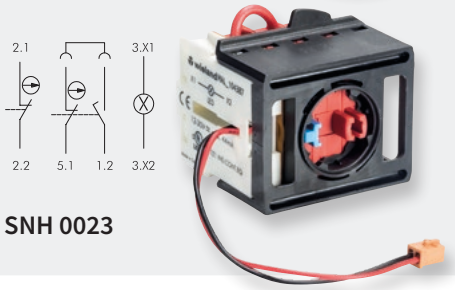
SNH 0013



SNH 0021



SNH 0022



SNH 0023

ACTUATING ELEMENTS

SNH 0100
SNH 0400 (WITH ILLUMINATION)

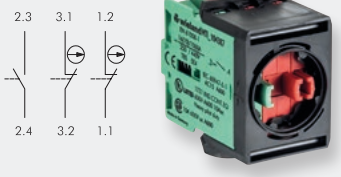
SNH 0200

SNH 0300
(up to IP 69K)

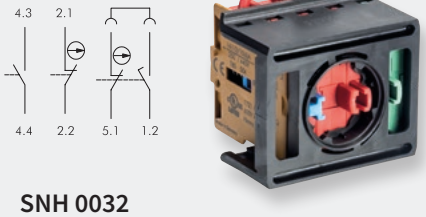
SNH 0500

SNH – SAFE.

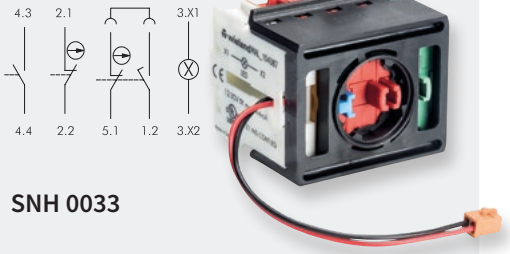
SNH – EMERGENCY STOP BUTTONS



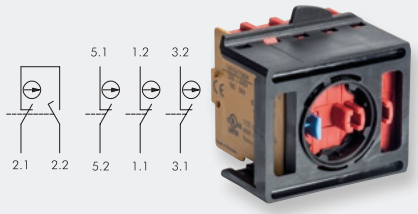
SNH 0031



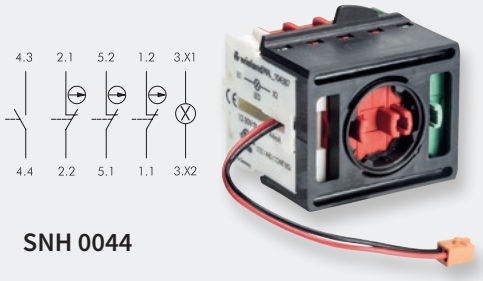
SNH 0032



SNH 0033



SNH 0043



SNH 0044

SNH 0600

SNH 0700

HOUSING

SNH 6001

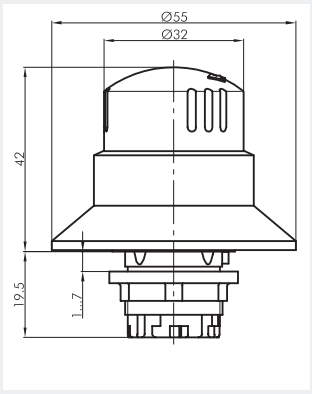
SIMPLE. MODULAR.

SERIES SNH

EMERGENCY STOP BUTTONS

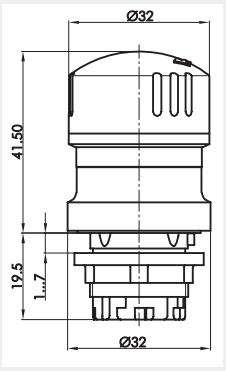
DIMENSION DIAGRAM

ACTUATING ELEMENTS

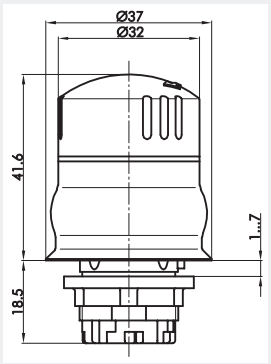


SNH 0100

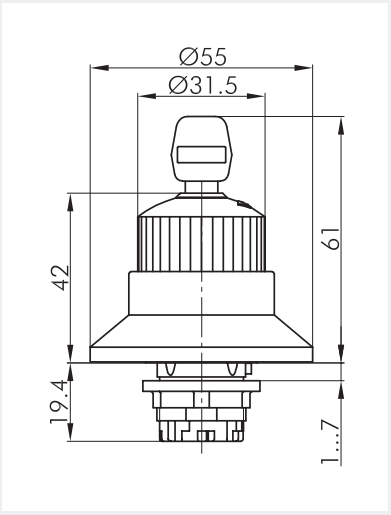
SNH 0400



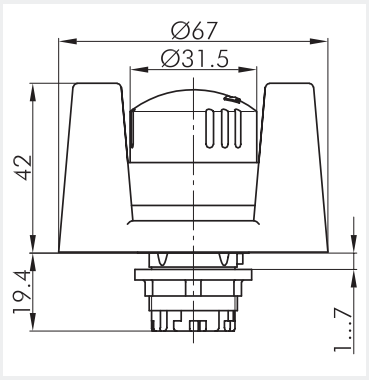
SNH 0200



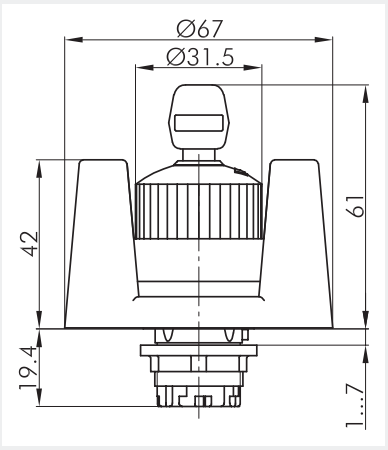
SNH 0300



SNH 0500

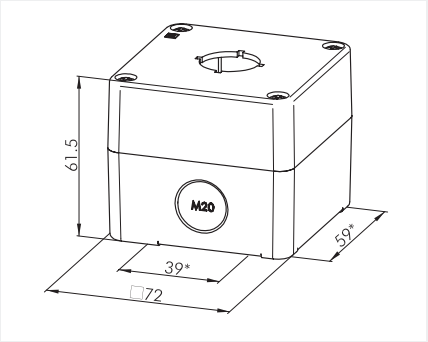


SNH 0600



SNH 0700

HOUSING



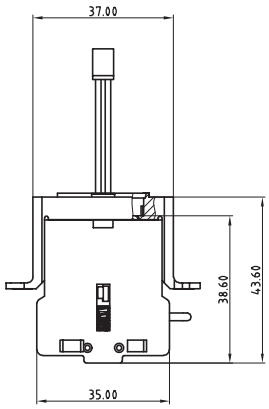
SNH 6001

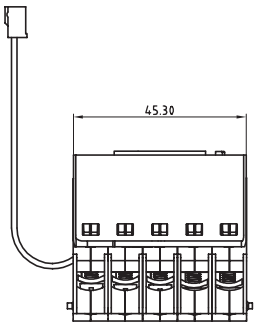
SERIES SNH

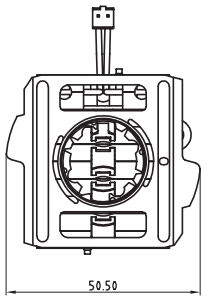
EMERGENCY STOP BUTTONS

DIMENSION DIAGRAM

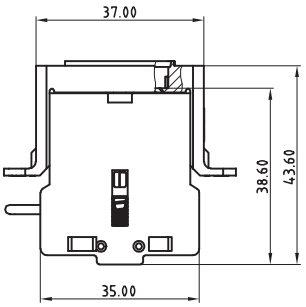
CONTACT BLOCKS

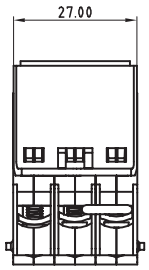


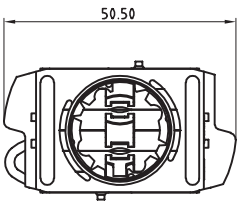




SNH 0013
SNH 0023
SNH 0032
SNH 0033
SNH 0043
SNH 0044







SNH 0001
SNH 0002
SNH 0003
SNH 0031
SNH 0011
SNH 0012
SNH 0021
SNH 0022

OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Part no.	P.U.
SNH 0001	Contact block, 1 NC	R1.200.0001.0	1
SNH 0002	Contact block, 1 NC (failure protection)	R1.200.0002.0	1
SNH 0003	Contact block, 1 NC (failure protection) / illumination	R1.200.0003.0	1
SNH 0011	Contact block, 1 NC / 1 NO	R1.200.0011.0	1
SNH 0012	Contact block, 1 NC (failure protection / 1 NO)	R1.200.0012.0	1
SNH 0013	Contact block, 1 NC (failure protection) / 1 NO / illumination	R1.200.0013.0	1
SNH 0021	Contact block, 2 NC	R1.200.0021.0	1
SNH 0022	Contact block, 2 NC (failure protection)	R1.200.0022.0	1
SNH 0023	Contact block, 2 NC (failure protection) / illumination	R1.200.0023.0	1
SNH 0031	Contact block, 2 NC / 1 NO	R1.200.0031.0	1
SNH 0032	Contact block, 2 NC (failure protection / 1 NO)	R1.200.0032.0	1
SNH 0033	Contact block, 2 NC (failure protection) / 1 NO / illumination	R1.200.0033.0	1
SNH 0043	Contact block, 4 NC (failure protection)	R1.200.0043.0	1
SNH 0044	Contact block, 3 NC / 1 NO / illumination	R1.200.0044.0	1
SNH 0200	Actuator (with actuation indication)	R1.200.0200.0	1
SNH 0300	Actuator IP69 (without actuation indication)	R1.200.0300.0	1
SNH 0100	Actuator (with actuation indication)	R1.200.0100.0	1
SNH 0400	Actuator (with actuation indication + illumination)	R1.200.0400.0	1
SNH 0500	Actuator (with actuation indication + key release)	R1.200.0500.0	1
SNH 0600	Actuator (with actuation indication + protective collar)	R1.200.0600.0	1
SNH 0700	Actuator (with actuation indication, protective collar and key release)	R1.200.0700.0	1
SNH 1101	Emergency stop button (SNH 0100, 1 NC)	R1.200.1101.0	1
SNH 1102	Emergency stop button (SNH 0100, 1 NC (failure protection))	R1.200.1102.0	1
SNH 1111	Emergency stop button (SNH 0100, 1 NC / 1 NO)	R1.200.1111.0	1
SNH 1112	Emergency stop button (SNH 0100, 1 NC (failure protection) / 1 NO)	R1.200.1112.0	1
SNH 1121	Emergency stop button (SNH 0100, 2 NC)	R1.200.1121.0	1
SNH 1122	Emergency stop button (SNH 0100, 2 NC (failure protection))	R1.200.1122.0	1
SNH 1131	Emergency stop button (SNH 0100, 2 NC / 1 NO)	R1.200.1131.0	1
SNH 1132	Emergency stop button (SNH 0100, 2 NC (failure protection) / 1 NO)	R1.200.1132.0	1
SNH 1143	Emergency stop button (SNH 0100, 4 NC (failure protection))	R1.200.1143.0	1
SNH 6001	Housing IP67	R1.200.6001.0	1
SNH 6010	Emergency stop adhesive plate	R1.200.6010.0	10

SERIES SIN

SAFETY SWITCH WITH SEPARATED ACTUATOR AND GUARD LOCKING

APPLICATIONS

- Personnel protection on machines with dangerous machine parts which move after switching off
- Locking of a machine or an automatic process when the guard is open
- Position monitoring of guard and guard locking

FEATURES

- Suitable for locking devices in accordance with EN 14119
- Flexible use with 4 horizontal or 4 vertical actuating directions
- Integrated protection against simple bypassing
- Long service life thanks to dust- and water-proof housing and a broad operating temperature range of up to 70 °C
- Locking force 1,500 N

FUNCTION

The mechanical safety switches in the SIN series are suitable for the secure locking (guard locking) of safety doors until a hazardous machine process has ended.

The safety switches have two independent contact blocks which reflect the position of the actuator on the one hand and the position of the guard locking on the other.

The release of the entry or a shutdown of the machine in case of danger is done by evaluating the contact blocks by a suitable basic device safe RELAY or through the samos® or samos®PRO safety systems.

SPRING-ACTUATED LOCKING

The safety switch on the guard is locked automatically when the actuator reaches its end position.

The guard is unlocked by applying a current to the internal electromagnets in the safety switch.

MAGNET-ACTUATED LOCKING

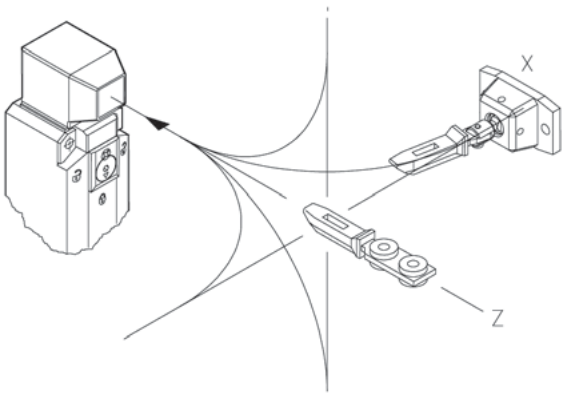
The safety switch on the guard is locked when the actuator reaches its end position by applying a current to the internal electromagnet.

When the current to the internal electromagnet is switched off, the guard locking is released and the guard can be opened.

VERSATILE INSTALLATION

Thanks to the adjustable actuator head and the large selection of actuators, the safety switch can be used to implement guard locking devices for all applications in machine construction.

Universal use through 8 different actuating directions and 5 different actuators:



SERIES SIN

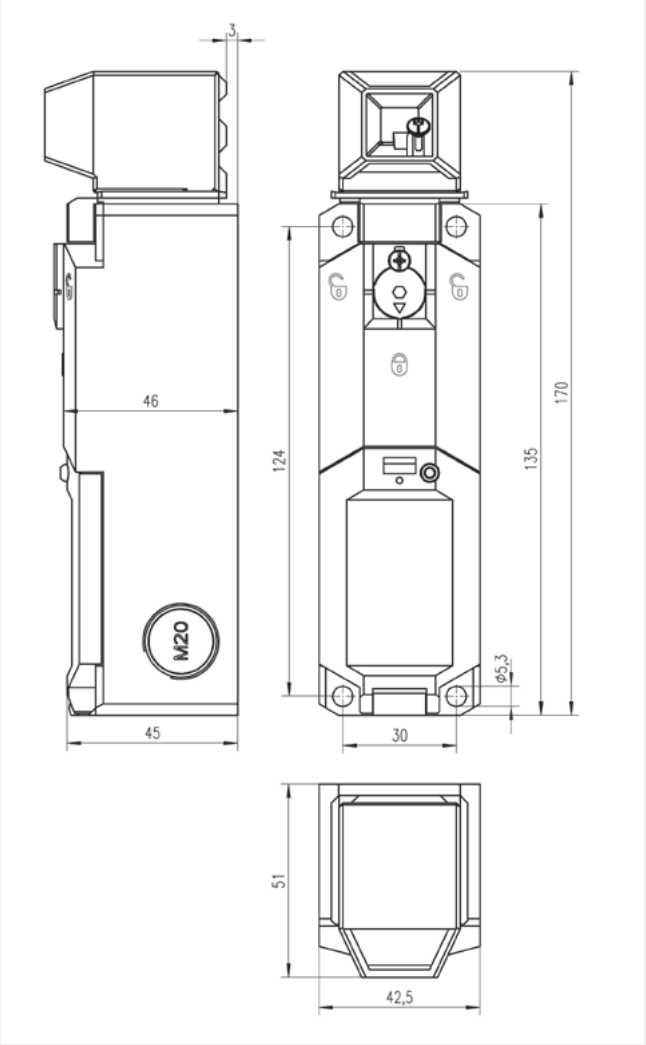
SAFETY SWITCH WITH SEPARATED ACTUATOR AND GUARD LOCKING

TECHNICAL DATA	
Function	
according EN 14119	Safety switch with separated actuator and guard locking
Power supply circuit	
Rated voltage	24 V AC/DC, 110/230 V AC
Continuous output	4.4 VA (SIN 12xx: 8 VA)
Output circuit	
Contact load of conv. thermal current I_{th}	5 A
Application category	AC-15: U_e 230V, I_e 2,5 A
Mechanical life	1 x 10^6 switching cycles (max. 600 switching cyclesh)
Short-circuit protection	lead fuse 4 A class gL
Mechanical data	
Guard locking force	1500 Nm
Extraction force	> 27 Nm
Approach speed	max. 0,5 m/s
Dimensions (L x W x H)	170 x 42.5 x 51 mm
Mounting	4 x M5
Cable entry point	3 x M20 x 1,5
General data	
Ambient temperature	-25 - +70 °C
Wire ranges push-in terminals	1 x 0.5 -1.5 mm^2
Protection degree according to EN 60529	IP 67
Weight	0,35 kg
Standards	EN 60947-1, EN 60947-5-1, EN ISO 13849-1, EN 62061
Approvals	DEGUV, c-CSA-us, CCC

SERIES SIN

SAFETY SWITCH WITH SEPARATED ACTUATOR AND GUARD LOCKING

DIMENSIONS DIAGRAMM



SIN 1XXX

SIN 2XXX

OVERVIEW OF DEVICES | PART NUMBERS SAFETY SWITCH

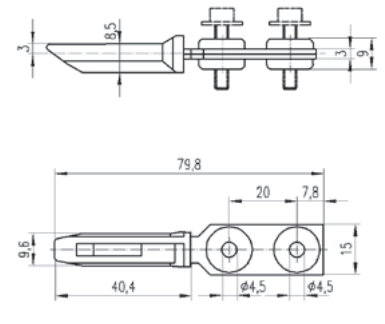
Type *	Locking principle	Contact assignment (actuator + guard locking)	Rated voltage	Additional features	Part. no.	P.U.
SIN 1120	Spring-actuated	2NC + 2NC	24 V AC/DC	Auxiliary release	R1.310.1120.0	1
SIN 1150	Spring-actuated	1NC/1NO + 1NC/1NO	24 V AC/DC	Auxiliary release	R1.310.1150.0	1
SIN 1130	Spring-actuated	2NC + 1NC/1NO	24 V AC/DC	Auxiliary release	R1.310.1130.0	1
SIN 1330	Spring-actuated	2NC + 1NC/1NO	24 V AC/DC	Auxiliary release, LED	R1.310.1330.0	1
SIN 1350	Spring-actuated	1NC/1NO + 1NC/1NO	24 V AC/DC	Auxiliary release, LED	R1.310.1350.0	1
SIN 1220	Spring-actuated	2NC + 2NC	110/230 V AC	Auxiliary release	R1.310.1220.0	1
SIN 1250	Spring-actuated	1NC/1NO + 1NC/1NO	110/230 V AC	Auxiliary release	R1.310.1250.0	1
SIN 1230	Spring-actuated	2NC + 1NC/1NO	110/230 V AC	Auxiliary release	R1.310.1230.0	1
SIN 2120	Magnet-actuated	2NC + 2NC	24 V AC/DC		R1.310.2120.0	1
SIN 2150	Magnet-actuated	1NC/1NO + 1NC/1NO	24 V AC/DC		R1.310.2150.0	1
SIN 2130	Magnet-actuated	2NC + 1NC/1NO	24 V AC/DC		R1.310.2130.0	1
SIN 2220	Magnet-actuated	2NC + 2NC	110/230 V AC		R1.310.2220.0	1
SIN 2250	Magnet-actuated	1NC/1NO + 1NC/1NO	110/230 V AC		R1.310.2250.0	1
SIN 2230	Magnet-actuated	2NC + 1NC/1NO	110/230 V AC		R1.310.2230.0	1

* the associated actuator must be ordered separately

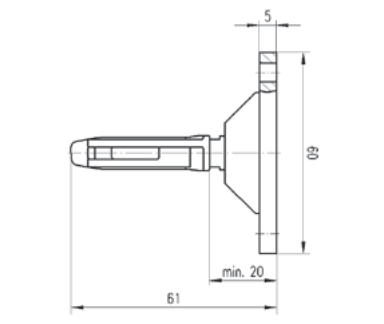
SERIES SIN

ACTUATOR

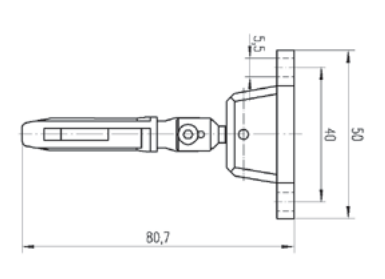
DIMENSIONS DIAGRAMM



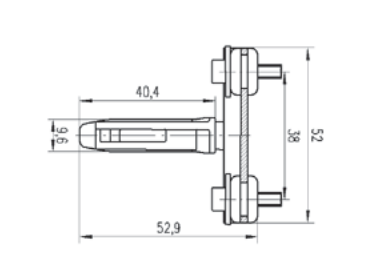
SIN 9001



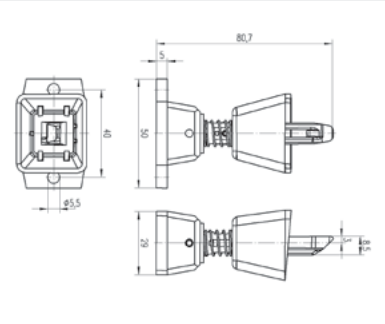
SIN 9004



SIN 9002



SIN 9005



SIN 9003

APPROACH RADII

SIN 9001, 9003, 9005: R min > 400mm

SIN 9004 R min > 350mm

SIN 9002 R min > 150mm

OVERVIEW OF DEVICES | PART NUMBERS ACTUATOR

Type	Actuator	Part. no.	P.U.
SIN 9001	Standard actuator	R1.310.9001.0	1
SIN 9002	Radius actuator	R1.310.9002.0	1
SIN 9003	Radius actuator with dust protection	R1.310.9003.0	1
SIN 9004	Actuator, flexible	R1.310.9004.0	1
SIN 9005	Actuator, transverse	R1.310.9005.0	1

SERIES SMS

SAFETY SWITCH WITH SEPARATED ACTUATOR

SMS 4XXX

SMS 3XXX

APPLICATIONS

- Access protection for operators of machines with dangerous machine parts which move after switching off
- Locking of a machine or an automatic process when the guard is open
- Position monitoring of movable guards in accordance with EN 60947-5-3

FEATURES

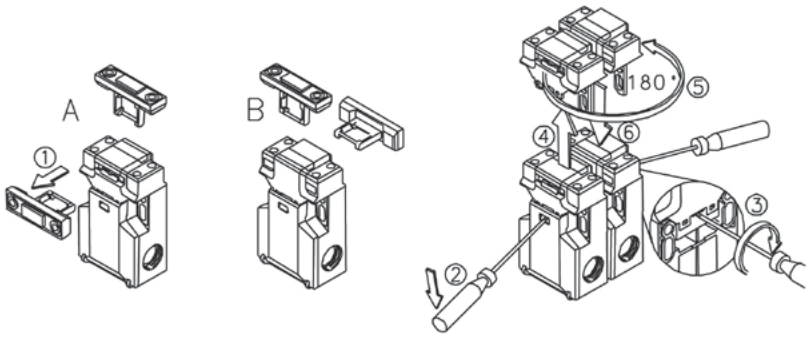
- Flexible use with 2 horizontal or 2 vertical actuating directions
- Protection against simple bypassing in accordance with EN 14119 through multiple coding of the actuator
- Long service life thanks to dust- and water-proof housing and a broad operating temperature range of up to 80 °C.
- Increased extraction force up to 30 N
- Easy installation with adjustment via slots and final fixing via round holes

FUNCTION

The mechanical safety switches in the SMS 2000, SMS 3000 and SMS 4000 series are suitable for the reliable position monitoring of movable guards (EN 60947-5-3).

If the associated guard on the machine is opened, the hazardous machine movement is switched off.

The machine is shut down in a hazardous situation by an analysis of the contacts carried out by a suitable basic device in the safe RELAY or by one of the samos® or samos®PRO safety systems.



Simple installation and wiring in each application.

SERIES SMS

SAFETY SWITCH WITH SEPARATED ACTUATOR

SMS 2XXX

APPLICATIONS

- Access protection for operators of machines with dangerous machine parts which move after switching off
- Locking of a machine or an automatic process when the guard is open
- Position monitoring of guard and guard locking

FEATURES

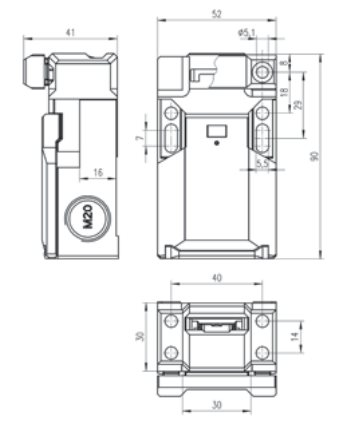
- Flexible use with 4 horizontal or 4 vertical actuating directions
- Slim design for installation on profile systems and where there are difficult space constraints
- Protection against simple bypassing in accordance with EN 1088 through multiple coding of the actuator
- Long service life thanks to dust- and water-proof housing and a broad operating temperature range of up to 80 °C
- Increased extraction force up to 50 N

TECHNICAL DATA		
Function		
according EN 14119		Safety switch with separated actuator
Power supply circuit		
Max. continuous thermal current I_{th}		5 A (contact assignment 1 NC or 2 NC/1 NO)
		10 A (contact assignment 1 NC/1 NO or 2 NC)
Application category		AC-15: 230 V, 1.5 A (contact assignment 1 NC or 2 NC/1 NO)
		AC-15: 230 V, 3 A (contact assignment 1 NC/1 NO or 2 NC)
Mechanical life		1 x 10^6
Short-circuit protection	SMS 2xxx / SMS 3xxx	lead fuse 6 A class gL/gG
	SMS 4xxx	lead fuse 10 A class gL/gG
Mechanical data		
Approach speed		≤ 0,2 m/s
Extraction force	SMS 2xxx	10 N (increased extraction force 50 N)
	SMS 3xxx / SMS 4xxx	10 N (increased extraction force 30 N)
Dimensions (L x W x H)	SMS 2xxx	100 x 31 x 30,5 mm
	SMS 3xxx	75 x 52 x 33 mm
	SMS 4xxx	90 x 52 x 33.5 mm
Mounting		2 x M5
Cable entry point	SMS 2xxx	1 x M20 x 1.5
	SMS 3xxx	3 x M16 x 1.5
	SMS 4xxx	3 x M20 x 1.5
General data		
Ambient temperature		-30 - +80 °C
Wire ranges screw terminals		1 x 0.5 - 1.5 mm^2
Protection degree according to EN 60529		IP 65
Weight		0,15 kg
Standards		EN 60947-1, EN 60947-5-1, EN ISO 13849-1, EN 62061
Approvals		TÜV, UL, c-CSA-us

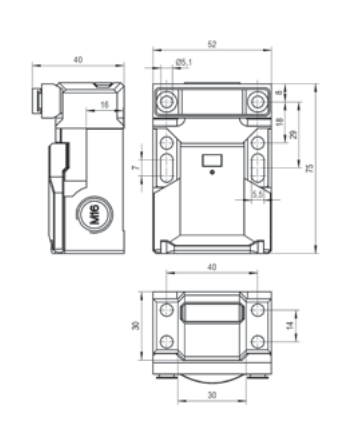
SERIES SMS

SAFETY SWITCH WITH SEPARATED ACTUATOR

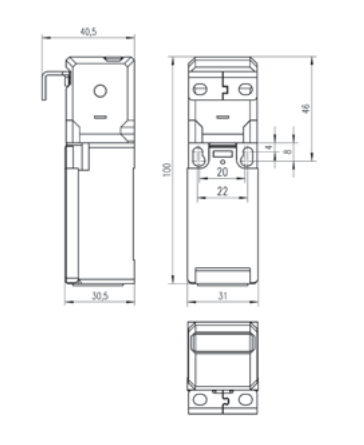
DIMENSIONS DIAGRAMM



SMS 4XXX



SMS 3XXX



SMS 2XXX

OVERVIEW OF DEVICES | PART NUMBERS SAFETY SWITCH

Type	Actuator*	Contact assignment	Extraction force	Part no.	P.U.
SMS 3010	Standard actuator	1NC	10 N	R1.320.3010.0	1
SMS 3210	Actuator for increased force	1NC	30 N	R1.320.3210.0	1
SMS 3110	Radius actuator	1NC	10 N	R1.320.3110.0	1
SMS 4040	Standard actuator	1NC/1NO	10 N	R1.320.4040.0	1
SMS 4240	Actuator for increased force	1NC/1NO	30 N	R1.320.4240.0	1
SMS 4140	Radius actuator	1NC/1NO	10 N	R1.320.4140.0	1
SMS 4020	Standard actuator	2NC	10 N	R1.320.4020.0	1
SMS 4220	Actuator for increased force	2NC	30 N	R1.320.4220.0	1
SMS 4120	Radius actuator	2NC	10 N	R1.320.4120.0	1
SMS 4070	Standard actuator	2NC/1NO	10 N	R1.320.4070.0	1
SMS 4270	Actuator for increased force	2NC/1NO	30 N	R1.320.4270.0	1
SMS 4170	Radius actuator	2NC/1NO	10 N	R1.320.4170.0	1
SMS 2040	Standard actuator 2	1NC/1NO	10 N	R1.320.2040.0	1
SMS 2240	Actuator for increased force	1NC/1NO	50 N	R1.320.2240.0	1
SMS 2020	Standard actuator 2	2NC	10 N	R1.320.2020.0	1
SMS 2220	Actuator for increased force	2NC	50 N	R1.320.2220.0	1
SMS 2070	Standard actuator 2	2NC/1NO	10 N	R1.320.2070.0	1
SMS 2270	Actuator for increased force	2NC/1NO	50 N	R1.320.2270.0	1

* The relevant actuator is included in the scope of delivery

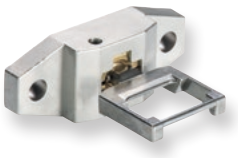
SERIES SMS

ACTUATOR

SMS 9001

(SMS 3xxx / SMS 4xxx included in the scope of delivery)

SMS 9002

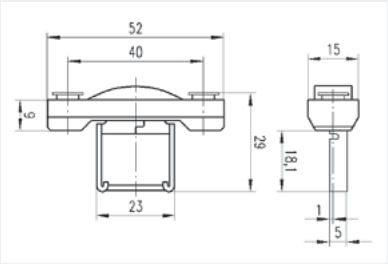


SMS 9003

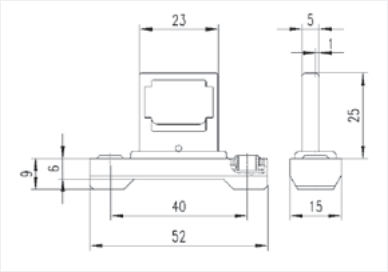
SMS 9004

(SMS 2xxx included in the scope of delivery)

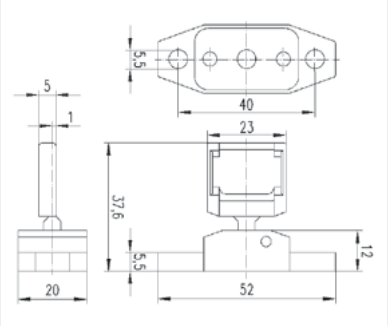
DIMENSIONS DIAGRAMM



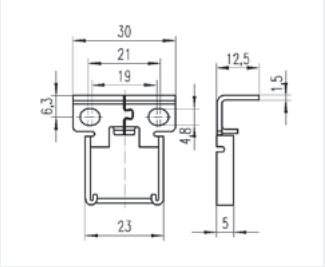
SMS 9001



SMS 9002



SMS 9003



SMS 9004

OVERVIEW OF DEVICES | PART NUMBERS ACTUATOR

Type	Actuator	Part no.	P.U.
SMS 9001	Standard actuator	R1.320.9001.0	1
SMS 9002	Actuator for increased force	R1.320.9002.0	1
SMS 9003	Radius actuator	R1.320.9003.0	1
SMS 9004	Standard actuator 2	R1.320.9004.0	1

SERIES SLS

POSITION SWITCH

APPLICATIONS

- Monitoring of doors, hoods or flaps
- Position detection of moving machine parts
- Object detection in conveying systems
- End position monitoring of components
- Position detection of roller doors
- Monitoring of sliding doors

FEATURES

- Position switch to EN 50047
- Optimized contact safety: 1 mA at 24 V DC
- Tool-free rotation and replacement of actuating device
- Actuating device from metal
- Protection rating IP66 and IP67
- Self-cleaning contacts
- Mechanical service life: up to 30 million switching cycles

FUNCTION

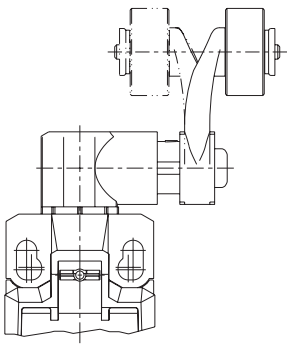
SLS series mechanical safety switches are suitable for the safe position monitoring of movable guards (EN 60947-5-3).

If the corresponding guard on a machine is opened, the hazardous machine movement is stopped.

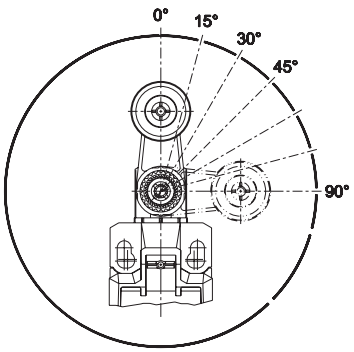
In a hazardous situation, the machine is shut down when the contacts are evaluated by a suitable safe RELAY basic device or by either the samos® or samos®PRO safety system.

Simple adjustment and wiring for any application.

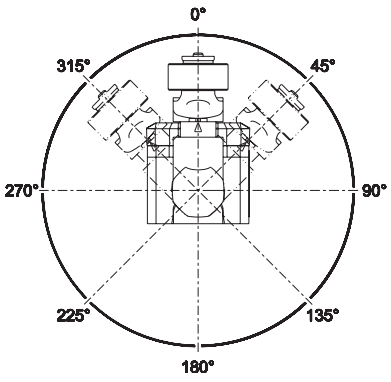
ROTATING LEVER



ADJUSTABLE LEVER



ADJUSTABLE ACTUATING DEVICE



SERIES SLS

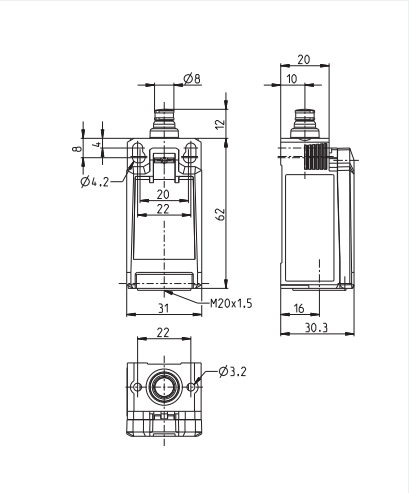
POSITION SWITCH

TECHNICAL DATA	
Function	
to EN 14119	Position switch
Output circuit	
Rated operating voltage	240 V AC / 24 V DC
Max. thermal continuous current I_{th}	5 A
Min. continuous current (24 VDC)	1 mA
Utility category	AC-15: 230 V, 3 A
	DC-13: 24 V, 4 A
Mechanical life	10 x 10^6
Short-circuit protective device	4 A class gG fuse
Mechanical data	
Housing	Thermoplastic GV (UL94-V0)
Actuation speed	0.06 m/min ≤ V ≤ 30 m/min
Operating cycles	≤ 60 / min
Mounting	2 x M5
Cable entry	1 x M20 x 1.5
Ambient operating temperature	-30°C - +70°C
General data	
Operating ambient temperature	-30 - +80 °C
Connection cross sections of screw terminal	1 x 0.34 - 1.5 mm^2
Protection class as per EN 60529	IP66, IP67 / Type 4X
Weight	≈ 0.06 kg
Standards	EN 60947-1, EN 60947-5-1
Approvals	

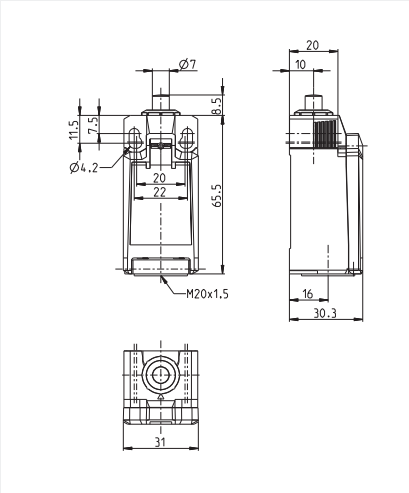
SERIES SLS

POSITION SWITCH

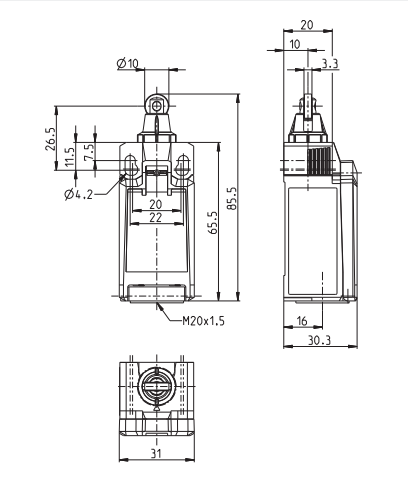
DIMENSIONS



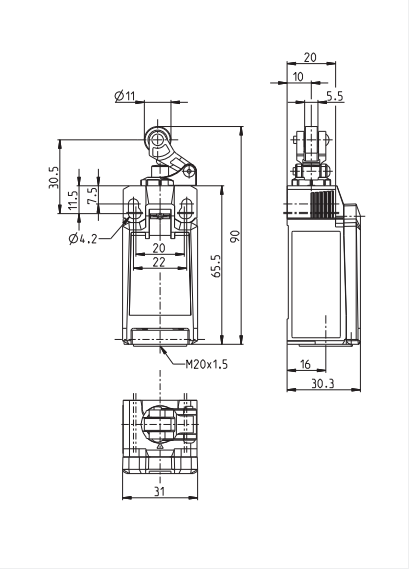
SLS 51XX



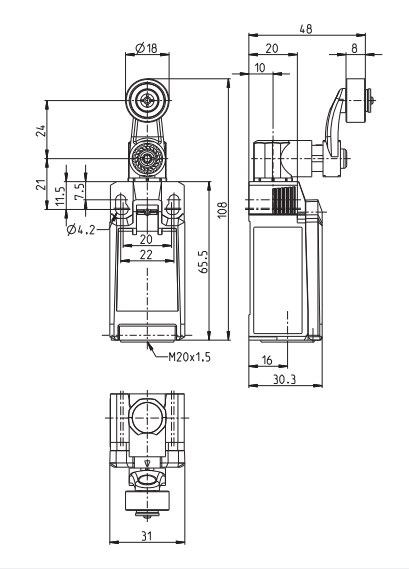
SLS 62XX



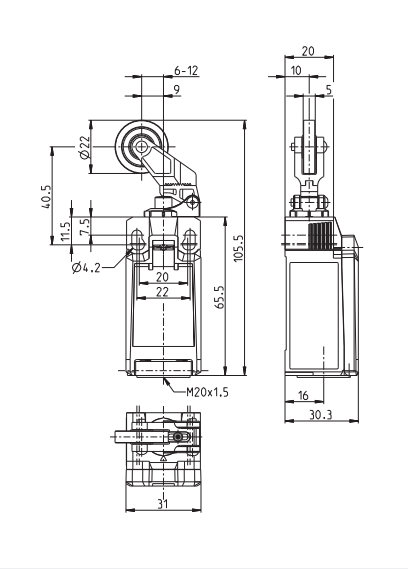
SLS 63XX



SLS 64XX



SLS 65XX

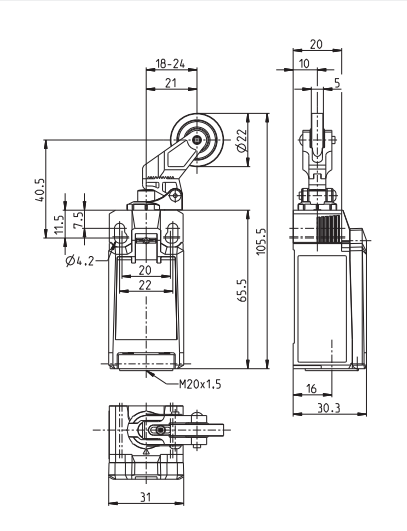


SLS 66XX

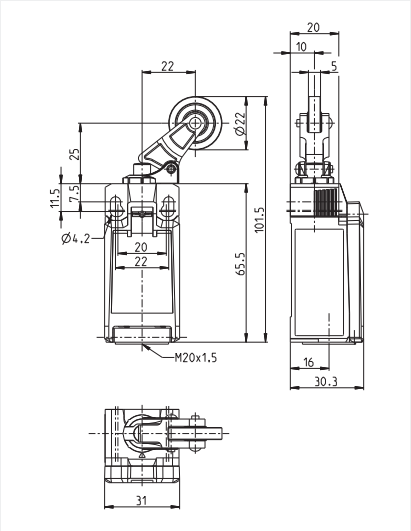
SERIES SLS

POSITION SWITCH

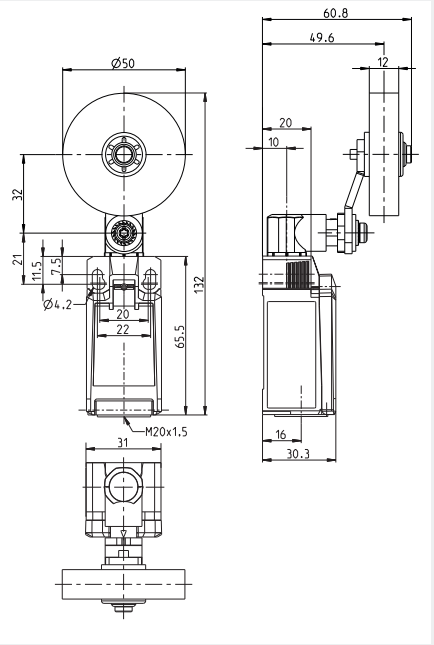
DIMENSIONS



SLS 67XX



SLS 68XX



SLS 69XX

OVERVIEW OF DEVICES | PART NUMBERS

Type	Function	Actuator	Contacts	Part number	P.U.
SLS 5150	Position switch	Plunger, plastic	Snap-action contact, 1 NC / 1 NO	R1.340.5150.0	1
SLS 5130	Position switch	Plunger, plastic	Snap-action contact, 2 NC	R1.340.5130.0	1
SLS 6250	Position switch	Plunger, metal	Snap-action contact, 1 NC / 1 NO	R1.340.6250.0	1
SLS 6230	Position switch	Plunger, metal	Snap-action contact, 2 NC	R1.340.6230.0	1
SLS 6350	Roller switch	Roller, plastic	Snap-action contact, 1 NC / 1 NO	R1.340.6350.0	1
SLS 6330	Roller switch	Roller, plastic	Snap-action contact, 2 NC	R1.340.6330.0	1
SLS 6450	Roller switch	Roller, plastic	Snap-action contact, 1 NC / 1 NO	R1.340.6450.0	1
SLS 6430	Roller switch	Roller, plastic	Snap-action contact, 2 NC	R1.340.6430.0	1
SLS 6550	Roller switch	Roller, plastic	Snap-action contact, 1 NC / 1 NO	R1.340.6550.0	1
SLS 6530	Roller switch	Roller, plastic	Snap-action contact, 2 NC	R1.340.6530.0	1
SLS 6650	Roller switch	Roller, plastic	Snap-action contact, 1 NC / 1 NO	R1.340.6650.0	1
SLS 6630	Roller switch	Roller, plastic	Snap-action contact, 2 NC	R1.340.6630.0	1
SLS 6750	Roller switch	Roller, plastic	Snap-action contact, 1 NC / 1 NO	R1.340.6750.0	1
SLS 6730	Roller switch	Roller, plastic	Snap-action contact, 2 NC	R1.340.6730.0	1
SLS 6850	Roller switch	Roller, plastic	Snap-action contact, 1 NC / 1 NO	R1.340.6850.0	1
SLS 6830	Roller switch	Roller, plastic	Snap-action contact, 2 NC	R1.340.6830.0	1
SLS 6950	Roller switch	Roller, rubber	Snap-action contact, 1 NC / 1 NO	R1.340.6950.0	1
SLS 6930	Roller switch	Roller, rubber	Snap-action contact, 2 NC	R1.340.6930.0	1

SERIES STS

NON-CONTACT SAFETY SWITCHES WITH CODING

APPLICATIONS

- Protection of people or machines
- Position monitoring of machine parts
- Position monitoring of doors and switches of isolating protective devices

FEATURES

- Individual coding for maximum manipulation protection
- Up to PL e / category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)
- Up to 30 sensors can be cascaded
- Automatic or manual start
- LED and semiconductor output for diagnostics
- Switching distance of 8 mm / 10 mm
- Protection class IP67 / IP69K

FUNCTION

The non-contact safety switches from the STS series are used for monitoring the position of machine parts and the position of doors and switches of isolating protective devices.

The STS series features integrated evaluation and built-in manipulation protection.

In the event of a hazard, access is approved or the machine is shut down, for example, by a device from the **safe** RELAY series or the **samos**® / **samos**®PRO safety system or by the safety switch directly.

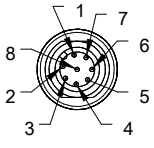
Safety switches from the STS series are also able to switch larger loads without wear via safe outputs (OSSDs).

CONNECTION ASSIGNMENT STS WITH CABLE CONNECTION

Function	Colour
UB	BN
Safety input 1	WH
GND	BU
Safety output 1	BK
Diagnostic output	GY
Safety input 2	PK
Safety output 2	VT
EDM-start input	OG

CONNECTION ASSIGNMENT STS WITH CONNECTION M12

Function	PIN
UB	1
Safety input 1	2
GND	3
Safety output 1	4
Diagnostic output	5
Safety input 2	6
Safety output 2	7
EDM-start input	8



M12x1 8-polig

SERIES STS

NON-CONTACT SAFETY SWITCHES WITH CODING

TAILOR-MADE MANIPULATION PROTECTION

Different applications require different solutions when it comes to existing manipulation protection.

Safety switches from the STS series have 3 different coding variations, which means that they can always offer the right solution.

Coded:
The safety switch accepts every STS actuator.

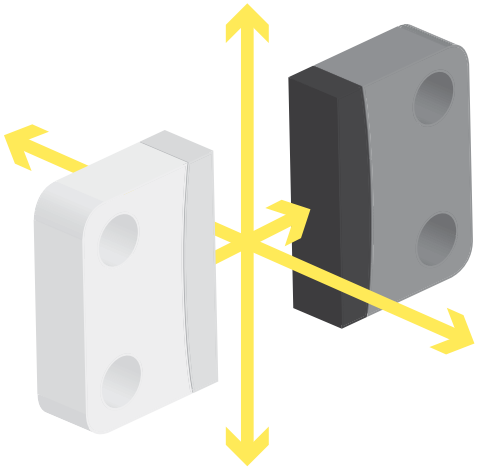
Fully coded:
The safety switch only accepts the programmed-in STS actuator.

Unique:
The safety switch only accepts STS actuator delivered with it. An STS actuator cannot be programmed in.

DIVERSE INSTALLATION

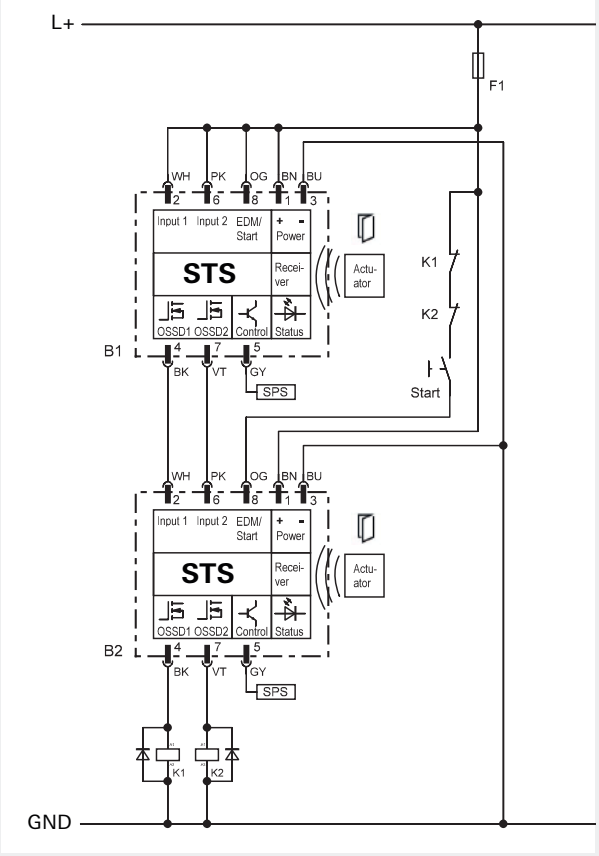
The 5 actuation directions of the STS series and the maximum displacement between the actuator and switch element of 8 mm make installation easy even when the protective device to be monitored has large mechanical tolerances.

The resulting advantage is that it can be used universally on removable, rotatable, or sideways-moving protective devices.

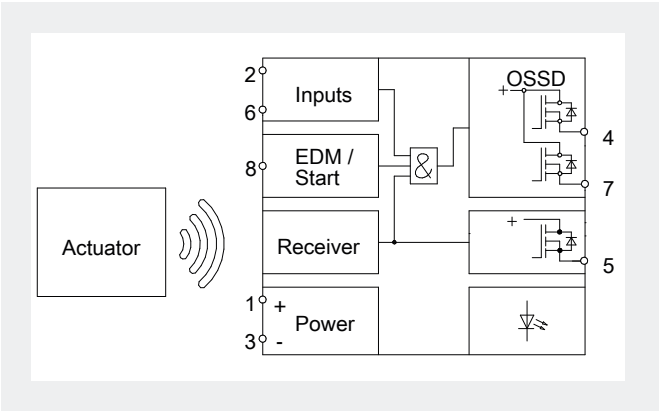


5 different actuation directions for universal use

APPLICATION



CIRCUIT DIAGRAM

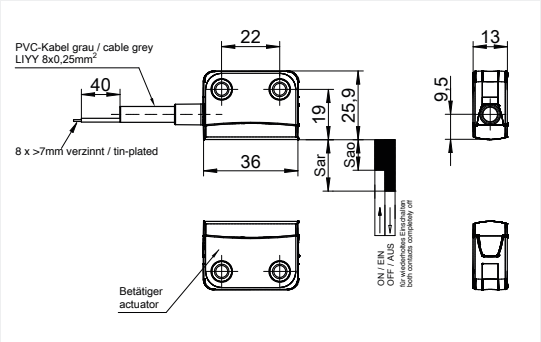


Serial wiring of 2 safety switches STS with manual start and EDM

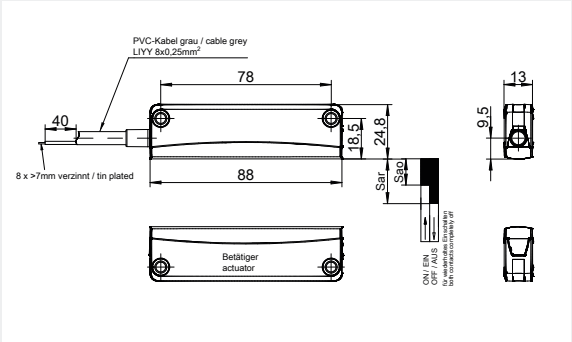
SERIES STS

NON-CONTACT SAFETY SWITCHES WITH CODING

CIRCUIT DIAGRAM



STS 01XX



STS 02XX

TECHNICAL DATA		
Function		Non-contact safety switch
Function display		LED, three-colored
Supply circuit		
Nominal voltage U_N		24 V DC
Operating voltage range U_B		0.9 - 1.1 x U_N
Galvanic isolation supply circuit - output circuit		no
Control circuits		
Number of safety inputs		2
EDM/start input		1
Input current, max.		2 mA
Output circuits		
Number	OSSD	2
	Diagnostics	1
Short-circuit monitoring		yes
Switching current, max.	OSSD	400 mA
	Diagnostics	50 mA
Switching voltage, max.		UB - 0.2 V
Series connection		max. 30 sensors
Switching behavior		
Switching distance / (Sao / Sar)		8 mm / 18 mm
Hysteresis		2 mm
Actuator displacement, max.		8 mm
Actuation directions		Operator definable
Switching frequency		3 Hz
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection class as per EN 60529		IP67
Operating ambient temperature		-25 °C - +70 °C
Connection		M12 (8 pole) / cable (8 pole)
Standards		EN ISO 13849-1, EN 62061
Certificates / Approvals		TÜV, cULus

SERIES STS

NON-CONTACT SAFETY SWITCHES WITH CODING

OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Coding	Part no.	P.U.
STS 0110	Switch-set, automatic start, connection M12-8	coded	R1.400.0110.0	1
STS 0113	Switch-set, automatic start, connection cable 3m	coded	R1.400.0113.0	1
STS 0114	Switch-set, automatic start, connection cable 5m	coded	R1.400.0114.0	1
STS 0116	Switch-set, automatic start, connection cable 10m	coded	R1.400.0116.0	1
STS 0130	Switch-set, automatic start, connection M12-8	fully-coded	R1.400.0130.0	1
STS 0133	Switch-set, automatic start, connection cable 3m	fully-coded	R1.400.0133.0	1
STS 0134	Switch-set, automatic start, connection cable 5m	fully-coded	R1.400.0134.0	1
STS 0136	Switch-set, automatic start, connection cable 10m	fully-coded	R1.400.0136.0	1
STS 0150	Switch-set, automatic start, connection M12-8	unique	R1.400.0150.0	1
STS 0153	Switch-set, automatic start, connection cable 3m	unique	R1.400.0153.0	1
STS 0154	Switch-set, automatic start, connection cable 5m	unique	R1.400.0154.0	1
STS 0156	Switch-set, automatic start, connection cable 10m	unique	R1.400.0156.0	1
STS 0120	Switch-set, manual start, connection M12-8	coded	R1.400.0120.0	1
STS 0123	Switch-set, manual start, connection cable 3m	coded	R1.400.0123.0	1
STS 0124	Switch-set, manual start, connection cable 5m	coded	R1.400.0124.0	1
STS 0126	Switch-set, manual start, connection cable 10m	coded	R1.400.0126.0	1
STS 0140	Switch-set, manual start, connection M12-8	fully-coded	R1.400.0140.0	1
STS 0143	Switch-set, manual start, connection cable 3m	fully-coded	R1.400.0143.0	1
STS 0144	Switch-set, manual start, connection cable 5m	fully-coded	R1.400.0144.0	1
STS 0146	Switch-set, manual start, connection cable 10m	fully-coded	R1.400.0146.0	1
STS 0160	Switch-set, manual start, connection M12-8	unique	R1.400.0160.0	1
STS 0163	Switch-set, manual start, connection cable 3m	unique	R1.400.0163.0	1
STS 0164	Switch-set, manual start, connection cable 5m	unique	R1.400.0164.0	1
STS 0166	Switch-set, manual start, connection cable 10m	unique	R1.400.0166.0	1
STS 0210	Switch-set, automatic start, connection M12-8	coded	R1.400.0210.0	1
STS 0213	Switch-set, automatic start, connection cable 3m	coded	R1.400.0213.0	1
STS 0214	Switch-set, automatic start, connection cable 5m	coded	R1.400.0214.0	1
STS 0216	Switch-set, automatic start, connection cable 10m	coded	R1.400.0216.0	1
STS 0230	Switch-set, automatic start, connection M12-8	fully-coded	R1.400.0230.0	1
STS 0233	Switch-set, automatic start, connection cable 3m	fully-coded	R1.400.0233.0	1
STS 0234	Switch-set, automatic start, connection cable 5m	fully-coded	R1.400.0234.0	1
STS 0236	Switch-set, automatic start, connection cable 10m	fully-coded	R1.400.0236.0	1
STS 0250	Switch-set, automatic start, connection M12-8	unique	R1.400.0250.0	1
STS 0253	Switch-set, automatic start, connection cable 3m	unique	R1.400.0253.0	1
STS 0254	Switch-set, automatic start, connection cable 5m	unique	R1.400.0254.0	1
STS 0256	Switch-set, automatic start, connection cable 10m	unique	R1.400.0256.0	1
STS 0220	Switch-set, manual start, connection M12-8	coded	R1.400.0220.0	1
STS 0223	Switch-set, manual start, connection cable 3m	coded	R1.400.0223.0	1
STS 0224	Switch-set, manual start, connection cable 5m	coded	R1.400.0224.0	1
STS 0226	Switch-set, manual start, connection cable 10m	coded	R1.400.0226.0	1
STS 0240	Switch-set, manual start, connection M12-8	fully-coded	R1.400.0240.0	1
STS 0243	Switch-set, manual start, connection cable 3m	fully-coded	R1.400.0243.0	1
STS 0244	Switch-set, manual start, connection cable 5m	fully-coded	R1.400.0244.0	1
STS 0246	Switch-set, manual start, connection cable 10m	fully-coded	R1.400.0246.0	1
STS 0260	Switch-set, manual start, connection M12-8	unique	R1.400.0260.0	1
STS 0263	Switch-set, manual start, connection cable 3m	unique	R1.400.0263.0	1
STS 0264	Switch-set, manual start, connection cable 5m	unique	R1.400.0264.0	1
STS 0266	Switch-set, manual start, connection cable 10m	unique	R1.400.0266.0	1
STS 3110	Actuator for STS 011x, 012x, 013x, 014x		R1.400.3110.0	1
STS 3210	Actuator for STS 021x, 022x, 023x, 024x		R1.400.3210.0	1

SERIES STS
ACCESSORIES

STS-CON-448

T-Connector for serial wiring of STS-switches

STS-CON-TER

Terminal-connector of the serial wiring

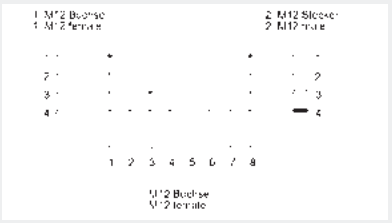
STS-CON-488

T-Connector for the extraction of the diagnostic output or coupling a restart signal into the switch (optional)

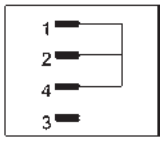
STS-CON-444

T-Connector for coupling an additional power supply into the serial wiring (optional)

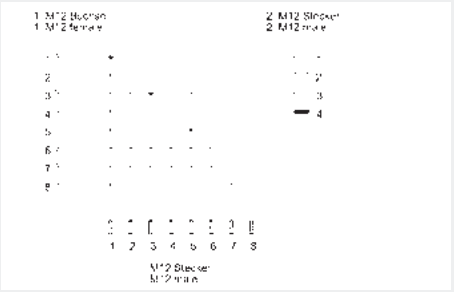
DIMENSIONS DIAGRAMM



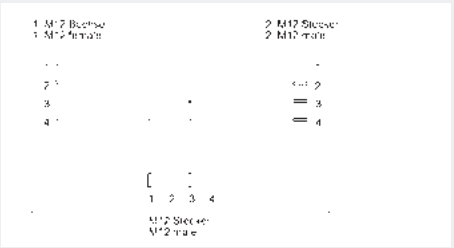
STS-CON-448



STS-CON-TER



STS-CON-488



STS-CON-444

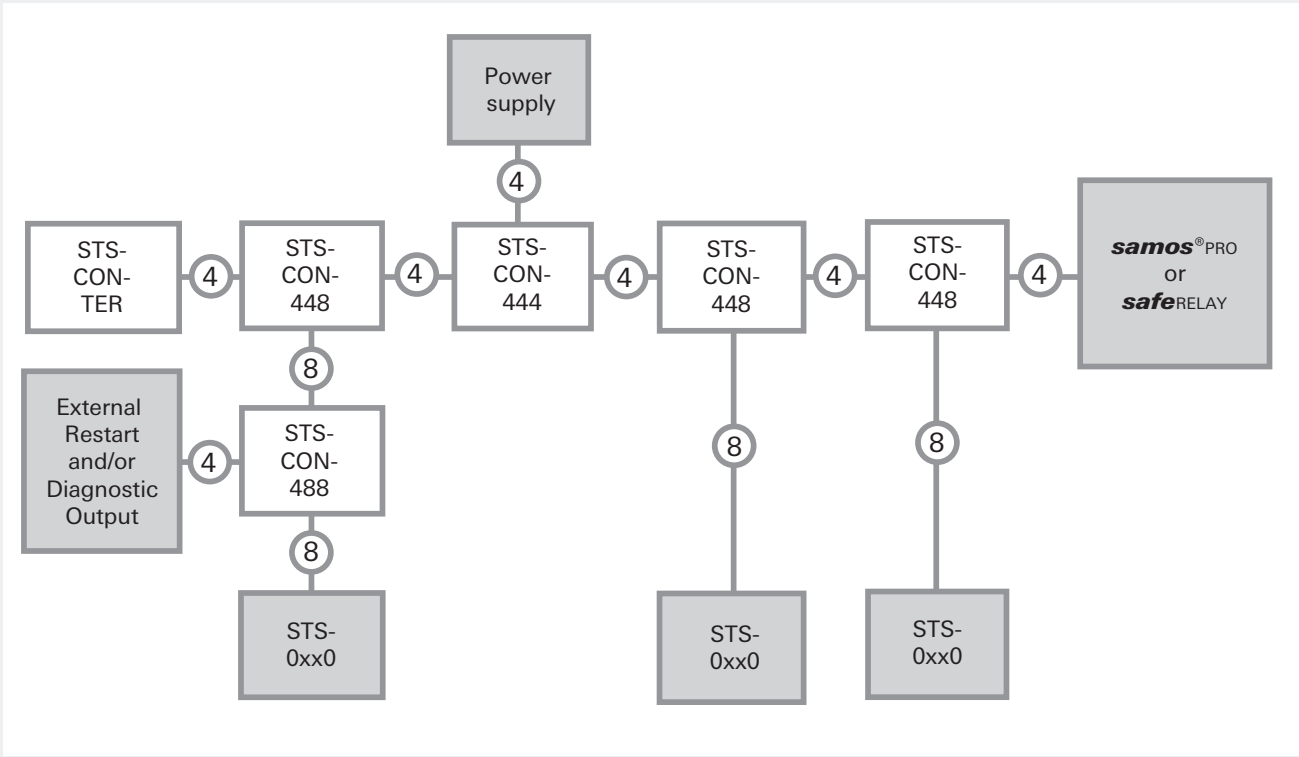
OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Part no.	P.U.
STS-CON-444	STS connector, M12-4-4-4	R1.400.9444.0	1
STS-CON-448	STS connector, M12-4-4-8	R1.400.9448.0	1
STS-CON-488	STS connector, M12-4-8-8	R1.400.9488.0	1
STS-CON-TER	STS connector, M12 terminal	R1.400.9000.0	1

SERIES STS

ACCESSORIES

APPLICATION



CONNECTION ASSIGNMENT WITH SARIS® CABLE M12 (FEMALE – FREE END)

Function	PIN	Color
UB	1	WH
Safety input 1	2	BN
GND	3	GN
Safety output 1	4	YE
Diagnostic output	5	GY
Safety input 2	6	PK
Safety output 2	7	BU
EDM-start input	8	RD

OVERVIEW OF DEVICES | PART NUMBERS SARIS® M12 CABLE

	Cable M12, 4-pole, straight		Cable M12, 8-pole, straight	
Length	Female – male	Female – free end	Female – male	Female – free end
0.3 m	M2.K42.0344.0	–	M2.K81.0344.0	–
0.6 m	M2.K42.0644.0	–	M2.K81.0644.0	–
1 m	M2.K42.1044.0	M2.K42.1004.0	M2.K81.1044.0	M2.K81.1004.0
1.5 m	M2.K42.1544.0	M2.K42.1504.0	M2.K81.1544.0	M2.K81.1504.0
2 m	M2.K42.2044.0	M2.K42.2004.0	M2.K81.2044.0	M2.K81.2004.0
3 m	M2.K42.3044.0	M2.K42.3004.0	M2.K81.3044.0	M2.K81.3004.0
5 m	M2.K42.5044.0	M2.K42.5004.0	M2.K81.5044.0	M2.K81.5004.0
10 m	M2.K42.X044.0	M2.K42.X004.0	M2.K81.X044.0	M2.K81.X004.0

SERIES SMA

MAGNETIC SAFETY SWITCHES

SMA 01XX

APPLICATIONS

- Machine and plant manufacturing
- Packing machines
- Wood-processing machines

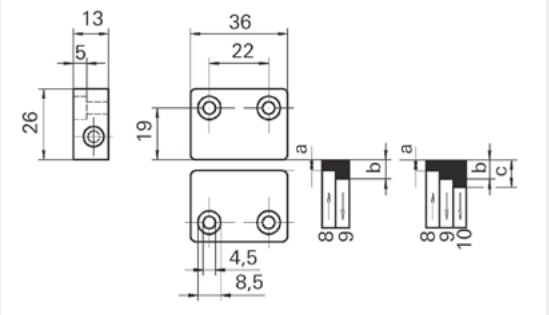
FEATURES

- Block-shaped design
- For harsh operating conditions
- Tamper proof
- Can be used up to PL e / Category 4 (EN ISO 13849-1)
- Degree of Protection IP67

TECHNICAL DATA		
Set	**SMA 011x**	**SMA 012x**
Dimensions / mm (L x W x H)	36 x 26 x 13 mm	
Actuating distance / (Sao / Sar)	8 / 17 mm	
Directions of actuation	Front - Front / Front - Side / Side - Side	
Protection degree	IP67	
Contact type	Reed	
Contact assignment	NC / NO	NO / NO
Switching voltage	48 V DC	
Switching current	0.2 A	
Maximum cable length	20 m	

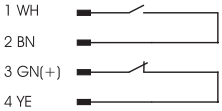
DIMENSION DIAGRAM

SMA 011X / SMA 012X

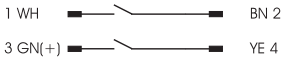


CIRCUIT DIAGRAM

SMA 011X



SMA 012X



Contacts are shown in non-operated state
(magnet is out of actuating distance Sar)

SERIES SMA

MAGNETIC SAFETY SWITCHES

SMA 02XX
SMA 06XX

APPLICATIONS

- Machine and plant manufacturing
- Packing machines
- Wood-processing machines

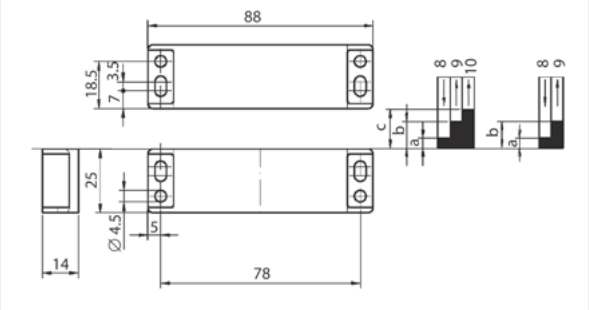
FEATURES

- Rectangle-shaped design
- For harsh operating conditions
- Tamper proof
- Can be used up to PL e / Category 4 (EN ISO 13849-1)
- Degree of Protection IP67

TECHNICAL DATA					
Set	**SMA 021x**	**SMA 022x**	**SMA 023x/024x**	**SMA 061x**	**SMA 062x**
Dimensions / mm (L x W x H)	88 x 25 x 14 mm				
Actuating distance / (Sao / Sar)	7 / 17 mm	7 / 18 mm	7 / 22 mm	4 / 16 mm	4 / 17 mm
Directions of actuation	Front - Front / Front - Side / Side - Side				
Protection degree	IP67				
Contact type	Reed				
Contact assignment	NC / NO	NO / NO	NO / NO / NC	NC / NO	NO / NO
Switching voltage	48 V DC				
Switching current	0.2 A				
Maximum cable length	20 m				

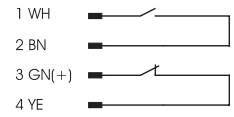
DIMENSION DIAGRAM

SMA 021X / SMA 022X / SMA 023X / SMA 024X

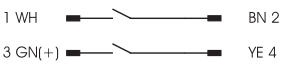


CIRCUIT DIAGRAM

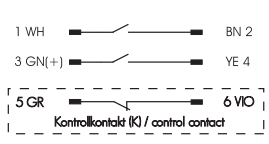
SMA 021X / SMA 0219



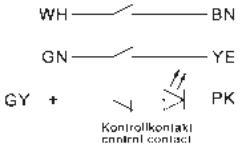
SMA 022X / SMA 0229



SMA 023X



SMA 024X (WITH LED)



Contacts are shown in non-operated state
(magnet is out of actuating distance Sar)

SERIES SMA

MAGNETIC SAFETY SWITCHES

SMA 03XX

APPLICATIONS

- Machine and plant manufacturing
- Packing machines
- Wood-processing machines

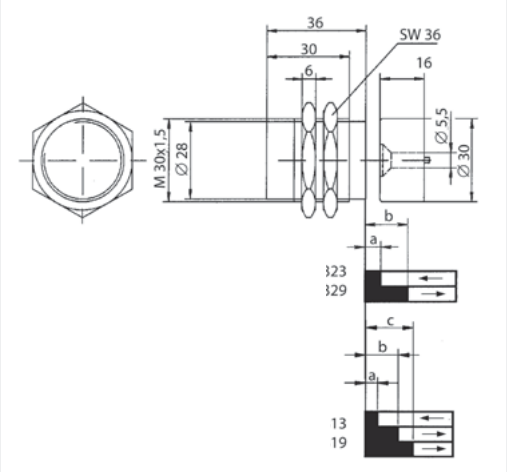
FEATURES

- Round-shaped design
- For harsh operating conditions
- Tamper proof
- Can be used up to PL e / Category 4 (EN ISO 13849-1)
- Degree of Protection IP67

TECHNICAL DATA		
Set	**SMA 031x**	**SMA 032x**
Dimensions / mm (Ø x L)	M30 x 32 mm	
Actuating distance / (Sao / Sar)	7 / 20 mm	
Directions of actuation	Front - Front	
Protection degree	IP67	
Contact type	Reed	
Contact assignment	NC / NO	NO / NO
Switching voltage	48 V DC	
Switching current	0.2 A	
Maximum cable length	20 m	

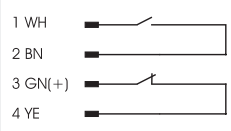
DIMENSION DIAGRAM

SMA 031X / SMA 032X

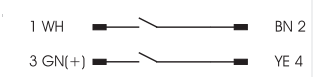


CIRCUIT DIAGRAM

SMA 031X



SMA 032X



Contacts are shown in non-operated state
(magnet is out of actuating distance Sar)

OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Contact	Part no.	P.U.
SMA 0113	Switch-set with cable 3 m + magnet	NC / NO	R1.100.0113.0	1
SMA 0114	Switch-set with cable 5 m + magnet	NC / NO	R1.100.0114.0	1
SMA 0116	Switch-set with cable 10 m + magnet	NC / NO	R1.100.0116.0	1
SMA 0123	Switch-set with cable 3 m + magnet	NO / NO	R1.100.0123.0	1
SMA 0124	Switch-set with cable 5 m + magnet	NO / NO	R1.100.0124.0	1
SMA 0126	Switch-set with cable 10 m + magnet	NO / NO	R1.100.0126.0	1
SMA 0119	Switch-set mit with M8 connection + magnet	NC / NO	R1.100.0119.0	1
SMA 0129	Switch-set mit with M8 connection + magnet	NO / NO	R1.100.0129.0	1
SMA 0213	Switch-set with cable 3 m + magnet	NC / NO	R1.100.0213.0	1
SMA 0214	Switch-set with cable 5 m + magnet	NC / NO	R1.100.0214.0	1
SMA 0216	Switch-set with cable 10 m + magnet	NC / NO	R1.100.0216.0	1
SMA 0223	Switch-set with cable 3 m + magnet	NO / NO	R1.100.0223.0	1
SMA 0224	Switch-set with cable 5 m + magnet	NO / NO	R1.100.0224.0	1
SMA 0226	Switch-set with cable 10 m + magnet	NO / NO	R1.100.0226.0	1
SMA 0228	Switch-set with cable 20 m + magnet	NO / NO	R1.100.0228.0	1
SMA 0233	Switch-set with cable 3 m + magnet	NO / NO / NC	R1.100.0233.0	1
SMA 0243	Switch-set with cable 3 m, LED + magnet	NO / NO / NC	R1.100.0243.0	1
SMA 0249	Switch-set with M12 connection, LED + magnet	NO / NO / NC	R1.100.0249.0	1
SMA 0219	Switch-set with M8 connection + magnet	NC / NO	R1.100.0219.0	1
SMA 0229	Switch-set with M8 connection + magnet	NO / NO	R1.100.0229.0	1
SMA 0313	Switch-set with cable 3 m + magnet	NC / NO	R1.100.0313.0	1
SMA 0323	Switch-set with cable 3 m + magnet	NO / NO	R1.100.0323.0	1
SMA 0319	Switch-set with M8 connection + magnet	NC / NO	R1.100.0319.0	1
SMA 0329	Switch-set with M8 connection + magnet	NO / NO	R1.100.0329.0	1
SMA 0613	Switch-set with cable 3 m + magnet	NC / NO	R1.100.0613.0	1
SMA 0623	Switch-set with cable 3 m + magnet	NO / NO	R1.100.0623.0	1
SMA 0626	Switch-set with cable 10 m + magnet	NO / NO	R1.100.0626.0	1
SMA 0619	Switch-set with M8 + magnet	NC / NO	R1.100.0619.0	1
SMA 0629	Switch-set with M8 + magnet	NO / NO	R1.100.0629.0	1

ACCESSORIES FOR SMA

SMA 4200

SMA 4100

SMA 5004
SMA 5005

SMA 3300

SMA 3110
SMA 3120

SMA 3200
SMA 3600

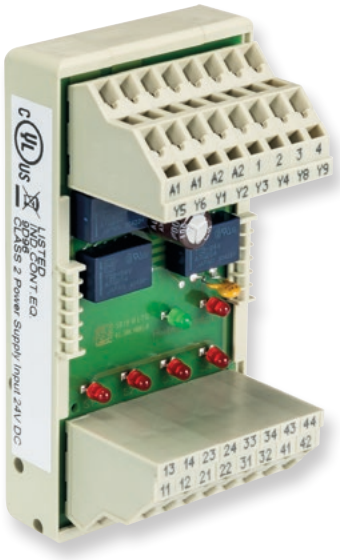
OVERVIEW OF DEVICES | PART NUMBERS

Type	Description	Contact	Part no.	P.U.
SMA 3110	Magnet (NC / NO) for SMA 011x		R1.100.3110.0	5
SMA 3120	Magnet (NO / NO) for SMA 012x		R1.100.3120.0	5
SMA 3200	Magnet for SMA 02xx		R1.100.3200.0	5
SMA 3300	Magnet for SMA 03xx		R1.100.3300.0	5
SMA 3600	Magnet for SMA 06xx		R1.100.3600.0	5
SMA 4100	Washer for SMA 01xx		R1.100.4100.0	10
SMA 4200	Washer for SMA 02xx / SMA 06xx		R1.100.4200.0	10
SMA 5004	Cable, 5 m		R1.100.5004.0	1
SMA 5005	Cable, 10 m		R1.100.5005.0	1

Note: Suitable M12 cables (SLX-CAB) can be selected on P. 94

SMI 1001

MAGNETIC SWITCH INTERFACE



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APPLICATIONS

- Connecting in series of two-channel sensors with contact assignment NO/NO up to PL d / Categorie 3 (EN ISO 13849-1)

FEATURES

- Control via a maximum of 4 two-channel sensors
- Signal output for each sensor
- Optical indication of the switching state of each sensor

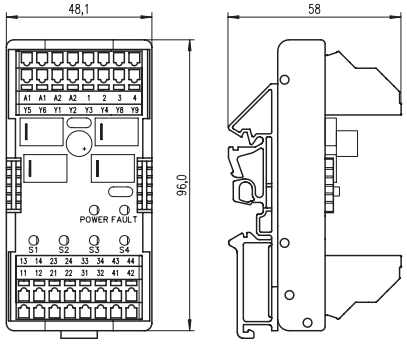
FUNCTION

The SMI 1001 connects safety switches / position switches in series. Several safety switches or position switches can be connected to safe RELAY safety switching devices or to samos® and samos®PRO safety systems and evaluated.

The SMI 1001 features status displays for the switching state of the NO circuits of the connected sensors as well as four diagnostics outputs for the display of the switching state of the NO circuits via external LEDs or a control.

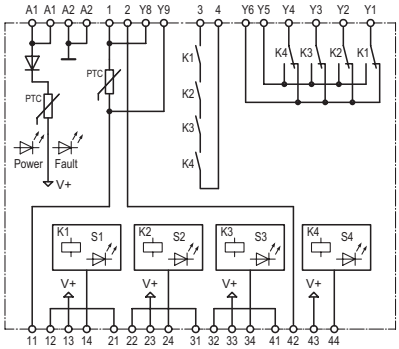
DIMENSION DIAGRAM

SMI 1001



CIRCUIT DIAGRAM

SMI 1001



SMI 1001

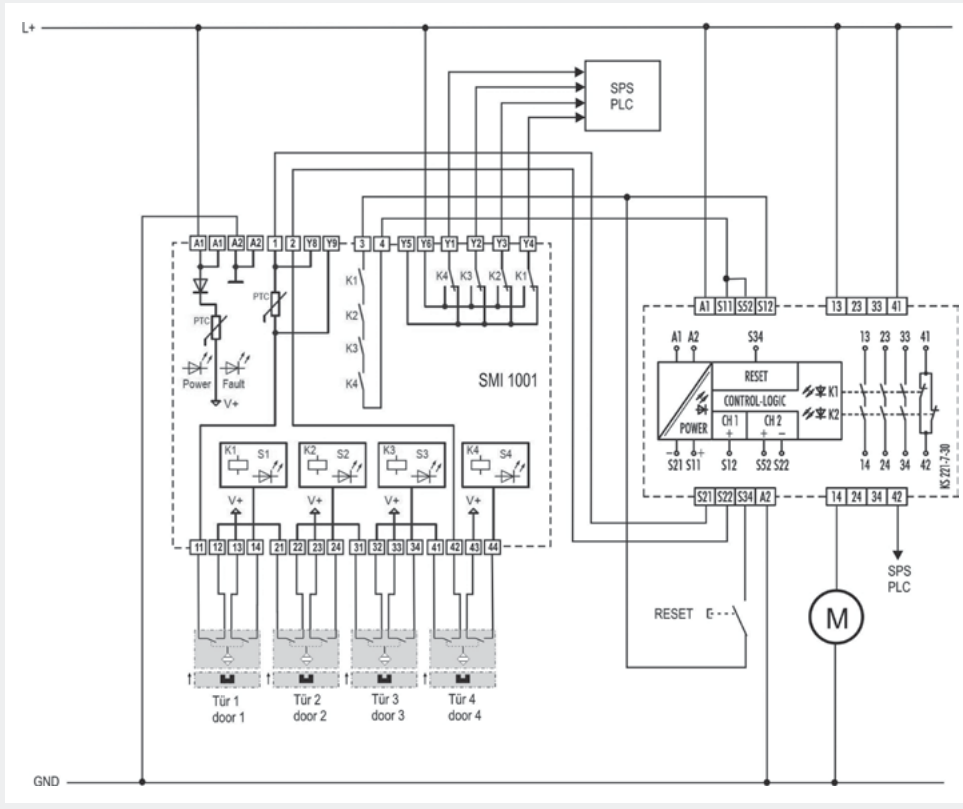
MAGNETIC SWITCH INTERFACE

OVERVIEW OF DEVICES | PART NUMBERS

Type	Rated voltage	Terminals	Part no.	P.U.
SMI 1001	24 V DC	Push-in terminals, fixed	R1.100.4001.0	1

TECHNICAL DATA	
Function	
Function display	1 x LEDs green, 5 x LEDs red
Power supply circuit	
Rated voltage	24 V DC
Rated consumption	1.5 W
Control circuit 11 – 44	
Max. cable length	30 m
Output circuit signal outputs Y1 – Y6	
Contact type	NO
Rated switching voltage	24 V DC
Max. switching current	0.5 A
Output circuit 1, 2, 3, 4	
Contact type	NO
Rated switching voltage	24 V DC
Max. switching current	150 mA
General data	
Creepage distances and clearances	according to EN 60664-1
Ambient temperature/ storage temperature	-25 – +55 °C / -25 – +70 °C
Wire ranges fine-stranded/ solid	0.08 – 2.5 mm^2
or fine-stranded with ferrules	0.08 – 1 mm^2
or fine-stranded with TWIN-ferrule	0.08 – 1.5 mm^2
Weight	0.1 kg
Approvals	cULus

APPLICATION



GLOSSARY

Emergency stop monitoring
Floating contacts

Protective gate monitoring
Floating contacts

Position monitoring
Magnetic switch

Safety light grid / -light curtain
acc. to EN 61496 BWS Type 4 / Type 2

Two-hand control
according to EN 574

Controlled Stop
according to EN 60204-1 stop category 1

Standstill and motion monitoring

Safety shut-off mat monitoring
(4-wire principle, short-circuiting)

Valve position monitoring

Contact expansion

Machine building industry

Press

Elevator systems
in accord. with EN 81-1

Combustion plants
according to EN 50156-1

Process technology
according to IEC 61511

Finger protection

Hand protection

Arm protection

Access protection

Personal protection

Single-channel input circuit
1 NC contact or semiconducto

Two-channel input circuit
2 NC contacts or semiconductors

Two-channel input circuit, antivalent
1 NO / 1 NC contacts or semiconductors

Cross monitoring
between two input circuits

Synchro-check
between two input circuits

Safe Start
Start command is accepted only when
the input circuits are closed

Combi-reset
Automatic start possible after voltage failure,
based on the risk analysis

Automatic Reset
after application of the voltage and/or after safety
request

Manual Reset
in the case of a rising edge at the reset input

Reset button monitoring
in the case of a falling edge at the reset input

Contacts (NO/NC)
safe semiconductor outputs

Alarm contacts

Safe changeover contacts

Safe semi conductor outputs

Safe OFF-delay

Safe ON-delay

Monoflop
for rapid tactile applications

Reset of time lapse
for OFF-delayed contacts

Expanded diagnostics

INFO **TO GO**

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are available for download on our website.

https://www.wieland-electric.com/en/support/downloads

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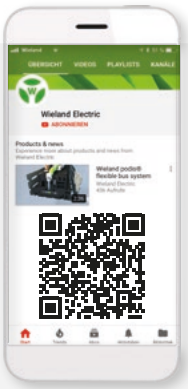

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