



**Safe
System Solutions
for Automation Technology
Catalog 2012**

Safety first





▲ Sales and Marketing Center in Bamberg



▲ Wieland Headquarters in Bamberg



▲ STOCKO headquarters in Wuppertal

wieland group

ACTIVE WORLDWIDE

With its staff of almost 2,200 employees, the Wieland Group is at home on all continents.

Subsidiaries in Great Britain, France, Spain, Italy, Poland, Canada, the USA, China and Denmark speak for themselves. With a great number of representatives, Wieland Holding is active in almost all strategically important countries. Just a medium-size global player with a clear commitment to the German location where most of the products are still manufactured.



automation

building

electronics

One company group, a thousand opportunities

The philosophy of the Wieland Group with its headquarters in Bamberg can be summarized that simply. The independent subsidiaries, Wieland Electric and STOCKO Contact, are active beneath Wieland Holding.

Together they cover an extraordinarily wide product portfolio in the field of electrical engineering and electronics. It comprises control cabinet engineering, industrial multipole connectors as well as overvoltage technology and building system technology.

Wieland Electric is active in most areas of automation technology and delivers as the industry's driver for innovation. Safety first – Wieland Electric is ideally positioned with its modular system solutions such as



Series 4000, samos®, **samos®PRO** and the new **sensorPRO** safety sensors.

podis®, the solution-oriented system for remote power distribution, and **ricosTP**, the latest development in the field of automation systems for heavy duty industrial requirements, are only two examples.

In the building installation system sector, Wieland Electric, with its **gesis®** system, is the world market leader in pluggable electrical installation. With good reason do planners and architects of the tallest and most interesting construction projects worldwide, such as the Petronas Towers in Kuala Lumpur, rely on **gesis®** components from Wieland. Wieland is the pioneer on a path toward the intelligent home by consistently developing its

gesis® product range, especially with regards to the demands of electronic networking.

Wieland Electric was founded in 1910 in Bamberg. With 800 staff members it is the largest subsidiary within the company group of Wieland Holding. With its numerous innovations, Wieland Electric has become a major supplier of electrical connection technology. Export share is currently at 60 %.

STOCKO Contact is located in North Rhine-Westphalia's Wuppertal and has been a member of the Wieland Group since 2001. The company can look back at a history of more than 100 years. STOCKO Contact is one of the biggest European manufacturers of connector systems and crimp contacts.

100 years young and full of innovative energy ...

this is the foundation of our company philosophy.

From this statement Wieland Electric will not just maintain, but expand its social responsibility into the future. Eco-friendly high-tech products, manufactured according to state-of-the-art production standards, an audited environmental management system and extensive investments in our facilities with cutting-edge environmental technologies are a matter of fact. A company policy that also commits us to the long term responsibility for the future of our families and children, as well as for the city of Bamberg, in addition to innovative system solutions for our customers. In our opinion, worldwide action and regional responsibility are united.





Safe system solution for
automation technology



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safety

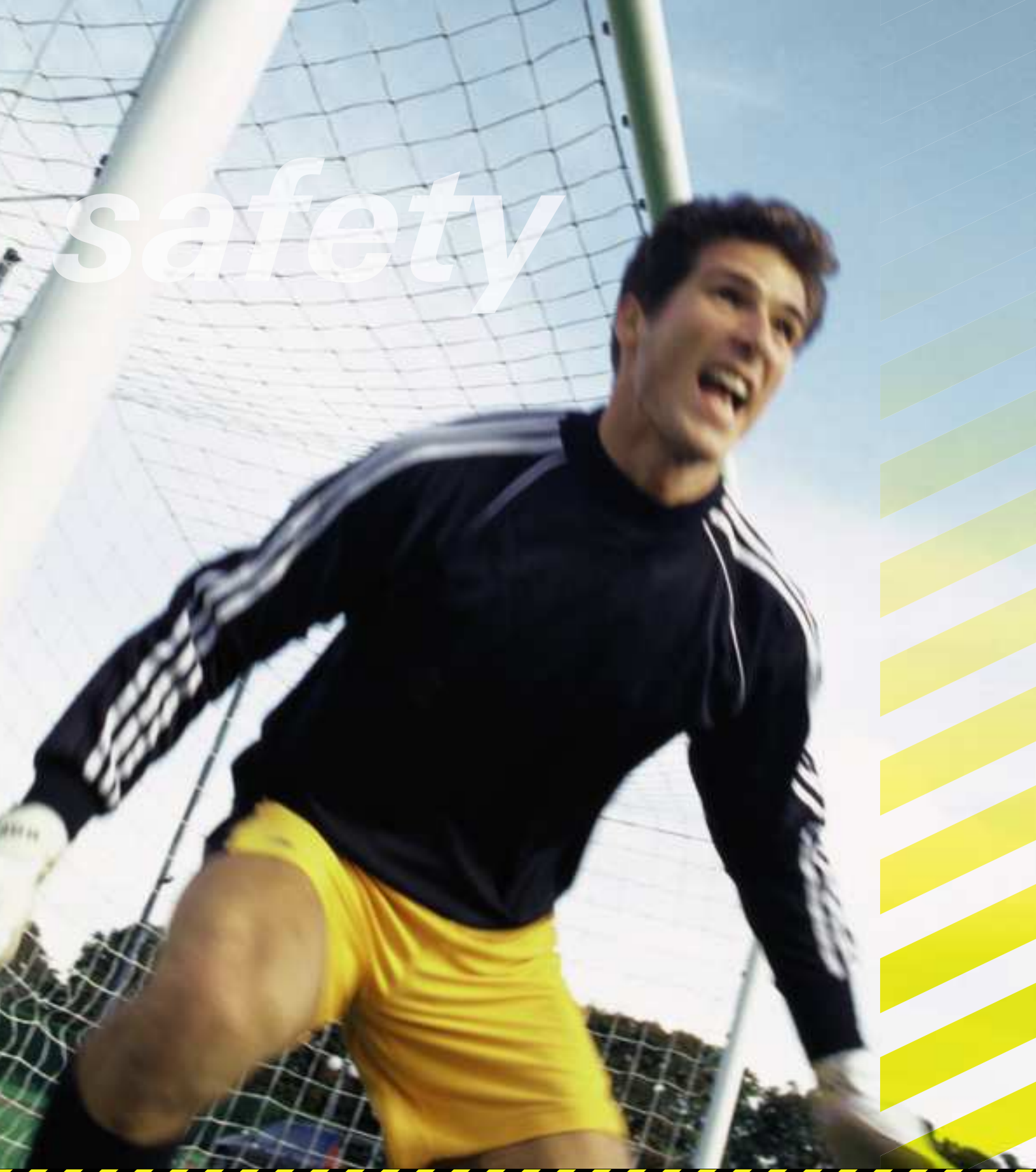
sensor^{PRO}

S4000

samos[®]samos[®] PRO

i





Safety is a matter of trust

Today's demands on systems and machines are high. In addition to the productivity and efficiency of a machine, safety is becoming increasingly important. When modern systems and machines are designed, the safety of the people who will later operate these machines must also be considered.

In demand are reliable and innovative solutions which can help meet this important requirement without compromising productivity and availability of the system. With the technical safety components **sensor^{PRO}**, **S4000**, **samos[®]** and **samos[®] PRO** Wieland Electric offers maximum quality which can make a decisive contribution to occupational safety during the manufacturing and operation of modern systems or machines.

Safety components

sensor^{PRO}, S4000, samos[®], samos[®] PRO



Areas of Application:

- Steel- and metal-processing industry
- Automotive industry
- Plastics-processing industry
- Packaging industry
- Food industry
- Wood-processing industry
- Printing machines
- Industrial processing centers
- Logistics centers
- Power generation



Safety plays an important role in the automotive branch even at very highly automated manufacturing plants.





Be **economical** – but play it safe

Carefully conceived solutions

Solutions for machine safety must be designed for all phases of a machine's lifecycle – in other words, flexible adaptability to specific requirements is the key word. From the design of a system to its commissioning to its maintenance, safety technology from Wieland Electric offers the user important advantages.

Wieland's safety technology saves costs for purchase, operation and later disposal, saves assembly and removal time, saves space in the control cabinet and saves resources during manufacturing – Wieland saves on everything but safety.



Save – but play it safe

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).



Convincing advantages:

- Multi-functionality in the smallest of spaces
- Connection of a wide variety of sensors such as safety end switches, magnetic safety switches, emergency stop buttons, safe inductive sensors and safety light curtains with semi-conductor outputs, and so on.
- Universal usability due to varying power voltages up to 230 V AC



Future-oriented machines and systems also require innovative safety solutions.





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.

The new Machinery Directive

The EU Machinery Directive 2006/42/EC came into effect on December 29, 2009, and applies to manufacturers and distributors of machines and safety components.

The functional safety of a machine can be verified by consulting European norms **EN ISO 13849-1** or **EN 62061**. Both EU norms are harmonized under the new machinery directive, whereby **EN ISO 13849-1** is replacing the old **EN 954-1** permanently.



EN ISO 13849-1

EN 62061

Overview of safety technology

From the **sensor** PRO safety sensors to the **S4000** safety relay family and the modular **samos**® safety modules to the **samos**® PRO

safety controllers, Wieland Electric offers the right product for your needs.





sensor PRO – safe signal acquisition

Safety sensors of the **sensor** PRO series ensure effective protection of the people involved in mechanical engineering and system provision. Implementation of standard safety tasks is easy when you have the evaluation devices of **S4000**, **samos**® or **samos**® PRO Series.

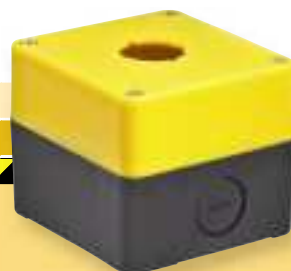
Emergency stop buttons **SNH Series**

The emergency stop buttons of the **SNH series** provide for the safety of man and machine and offer users a practical, robust and reliable design.

The fast and easy installation of the emergency stop buttons saves time and money, and a long durability as well as reliable functionality is guaranteed through the use of high-quality materials.

The emergency stop buttons of the **SNH series** can be used in a wide range of applications across the various sectors.

Emergency stop buttons
SNH Series



Safety switch with guard locking SIN Series

The safety switches in the **SIN series** are used to monitor the position of movable guards and prevent the accidental opening of safety doors or flaps with their integrated guard locking. They are typically used on machines with movements that occur after switching off, where it must be ensured that no person may gain access until the hazardous situation has ended.

Magnetic switches

SMA Series



Safety switch with separated actuator SMS Series

Safety switches in the **SMS series** are used to monitor movable guards.

The safety switches are suitable for the protection of people and processes and are available in three different designs.

Magnetic safety switches SMA Series

Integrated tamper protection

The sensors of the **SMA series** are magnetic safety sensors which are used for the contactless monitoring of protective doors and the detection of safe positions. In addition, they are equipped with integrated manipulation protection and can be used up to IP67.

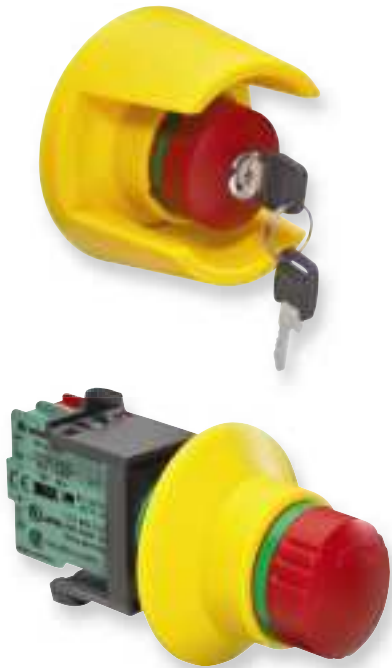
These magnetic safety sensors are an outstanding choice particularly in applications related to position monitoring of mobile protective facilities which have greater tolerances in door guidance or are subjected to the strong vibrations of machine doors.

Safety switches

SIN + SMS Series



Emergency stop buttons – SNH Series



Applications

- Machine and plant manufacturing
- Elevator systems and escalators
- Building machinery and transport technology

Features

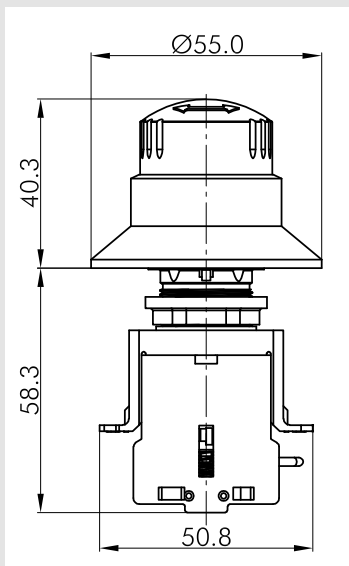
- For applications up to IP69K
- Tamper-proof according to EN 418/EN ISO 13850
- Modular design
- Turn-to-reset
- Integrated illumination
- Optical indication of the switching state
- Up to PL e/Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

Function

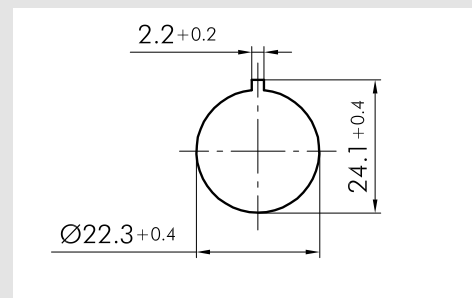
Emergency stop buttons of the SNH series are used on or near machines for the protection of persons. They serve the purpose of switching off / stopping machines and systems to avoid or reduce emerging or existing hazards to persons. Emergency stop buttons of the SNH series are also used to avoid damage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



Emergency stop buttons – SNH Series

Technical data

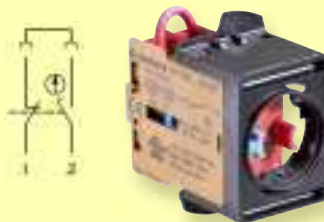
Function	
According to EN 418/EN ISO 13850	Emergency stop button
Actuator	
Housing material	Plastic
Protection degree	IP 65
Operating ambient temperature	-30 – +70 °C (without illumination), -30 – +55 °C (with illumination)
Storage temperature	-50 – +85 °C
Switching cycles	> 50000
Max. torque	2.5 Nm
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 I _{th}	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 

Emergency stop buttons – SNH Series

Contact blocks



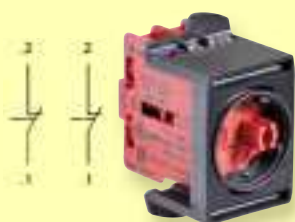
SNH 0001



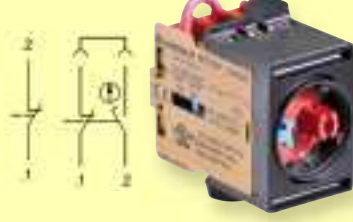
SNH 0002



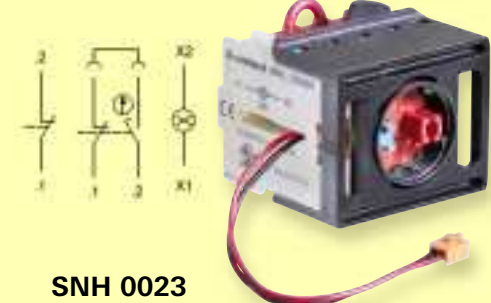
SNH 0003



SNH 0021



SNH 0022



SNH 0023

Actuating elements



SNH 0100



SNH 0200



SNH 0300
(up to IP 69K)



SNH 0500

SNH 0400 (with illumination)

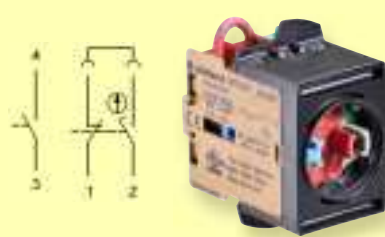


SNH – safe.

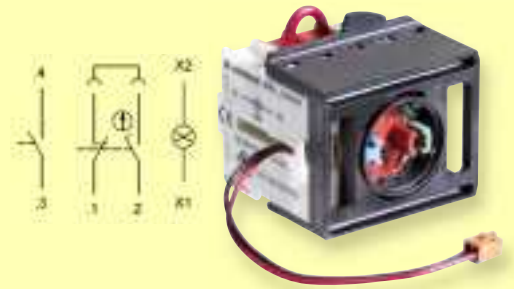
Emergency stop buttons – SNH Series



SNH 0011



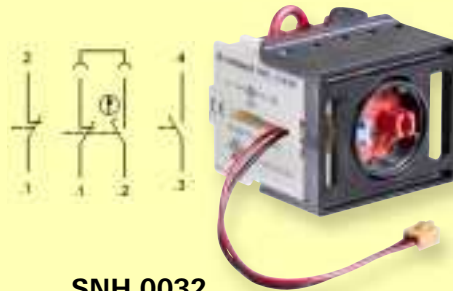
SNH 0012



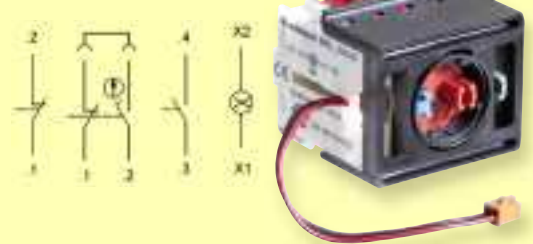
SNH 0013



SNH 0031



SNH 0032



SNH 0033



SNH 0600



SNH 0700

Housing



SNH 6001



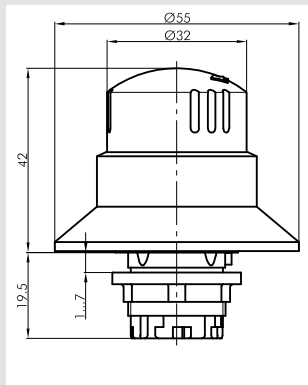
simple. modular.



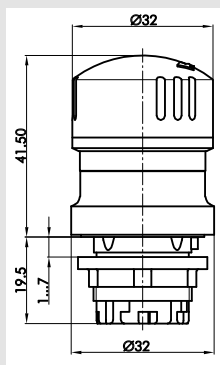
Emergency stop buttons – SNH Series

Dimension diagram

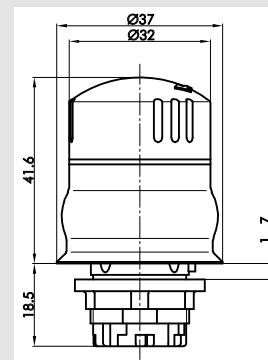
Actuating elements



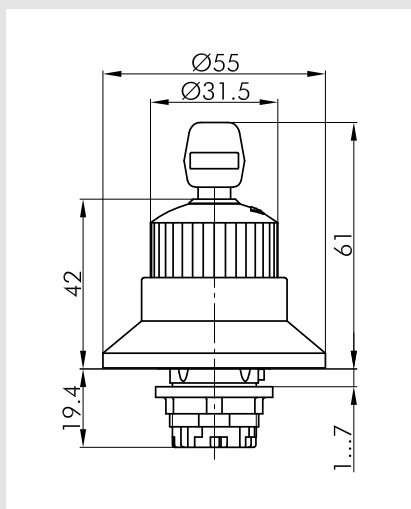
SNH 0100
SNH 0400



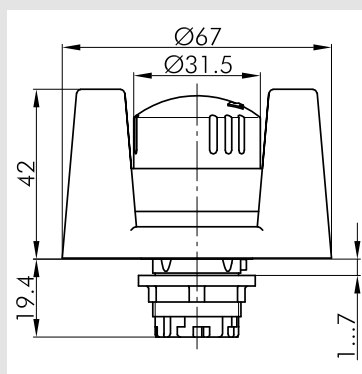
SNH 0200



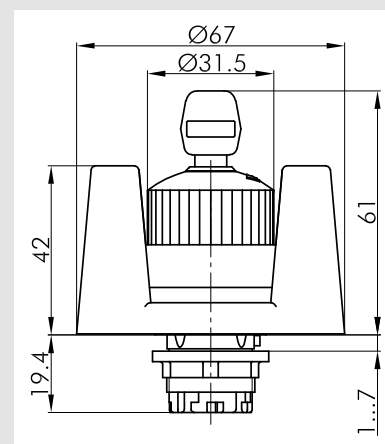
SNH 0300



SNH 0500

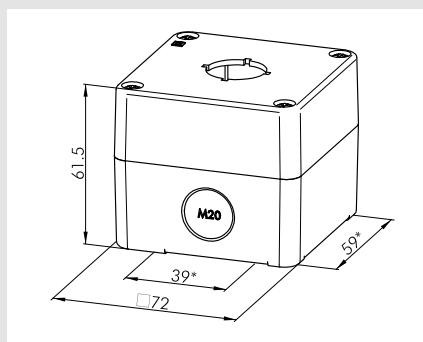


SNH 0600



SNH 0700

Housing

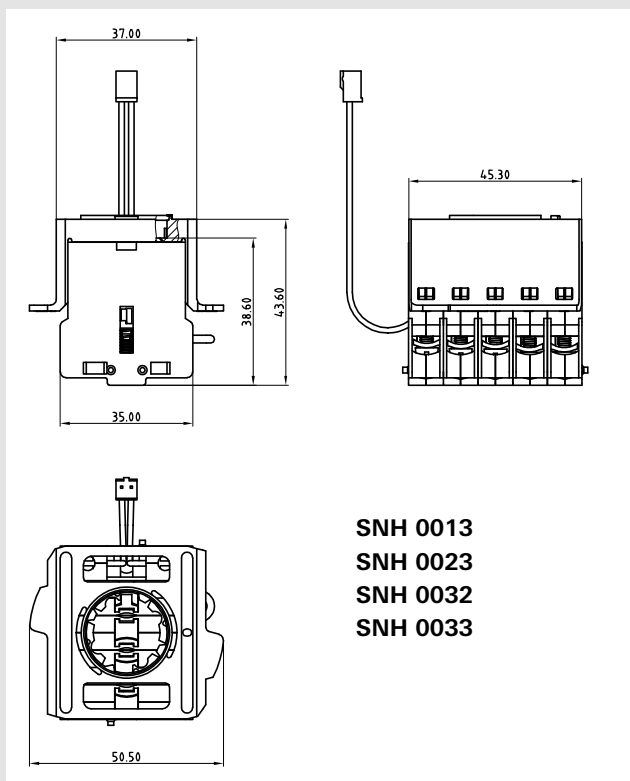


SNH 6001

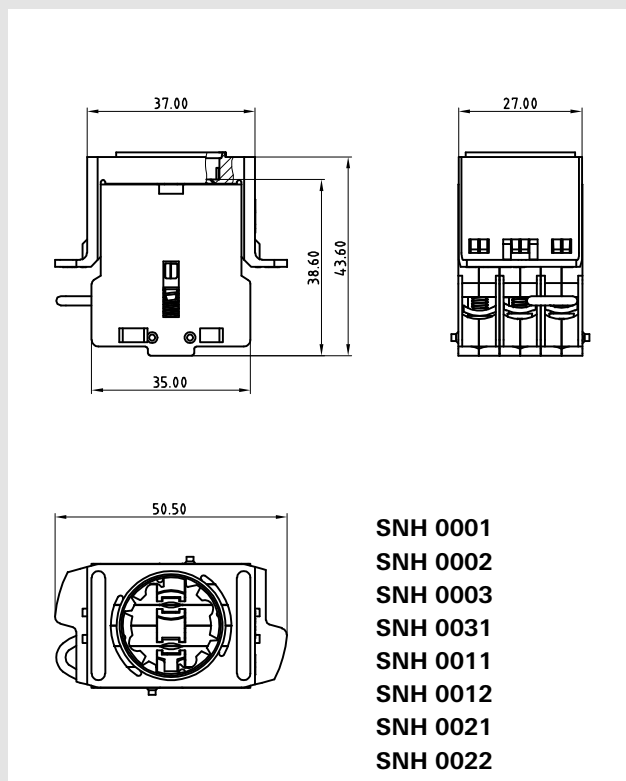
Emergency stop buttons – SNH Series

Dimension diagram

Contact blocks



SNH 0013
SNH 0023
SNH 0032
SNH 0033



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.	Std. pack
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 0200	Actuator (without 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 6001	Housing IP67	R1.200.6001.0	1

Safety switch with separated actuator and guard locking – SIN Series



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 1088
- 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 **Series 4000** or through the **samos** or **samos**PRO safety systems.

Spring-actuated locking (SIN 1xxx)

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 (SIN 2xxx)

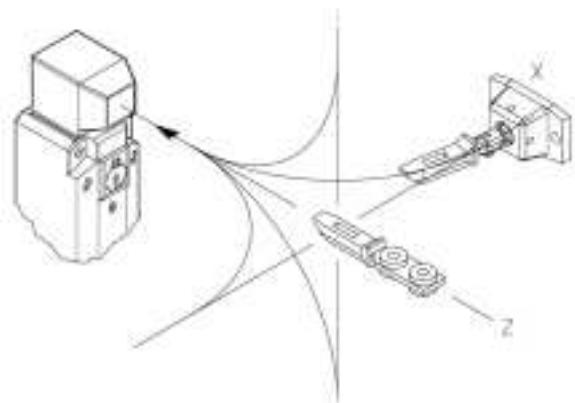
The safety switch on the guard is locked when the actuator reaches its end position by applying a current to the internal electromagnet.

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:



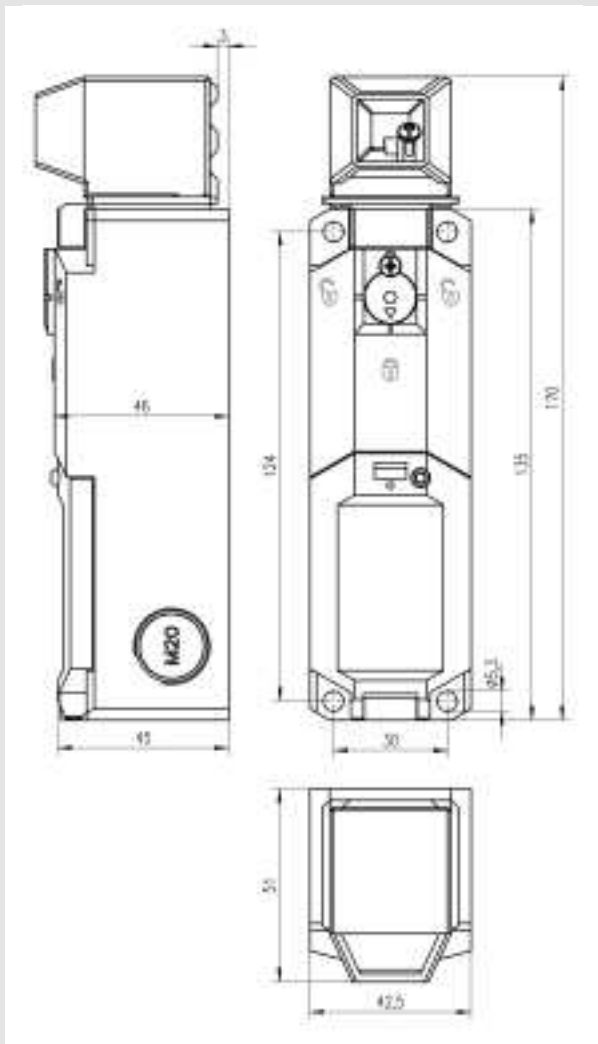
Safety switch with separated actuator and guard locking – SIN Series

Technical data

Function	
according EN 1088	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 cage clamp 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	  

Safety switch with separated actuator and guard locking – SIN Series

Dimensions diagramm



SIN 1xxx

SIN 2xxx

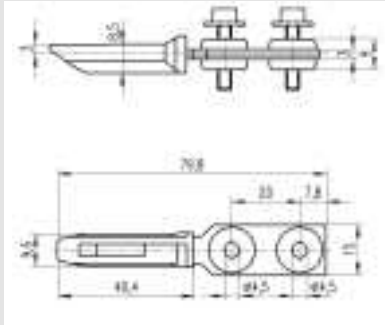
Overview of devices | part numbers safety switch

Type*	Locking principle	Contact assignment (actuator + guard locking)	Rated voltage	Additional features	Part. no.	Std. pack
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

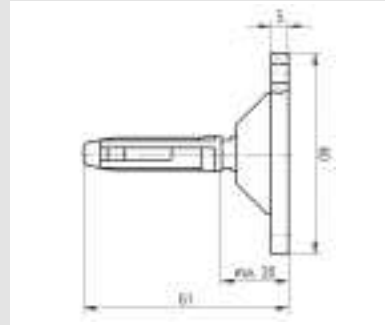
* the associated actuator must be ordered separately

Actuator – SIN Series

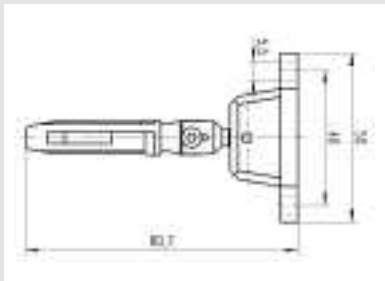
Dimensions diagramm



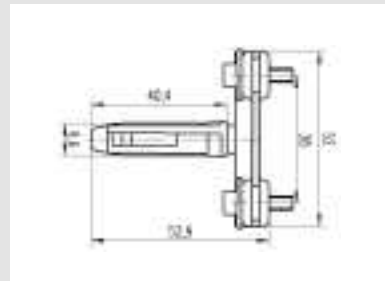
SIN 9001



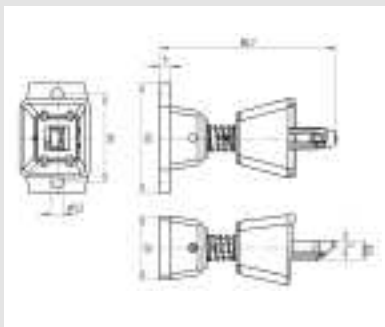
SIN 9004



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.	Std. pack
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

Safety switch with separated actuator – SMS Series



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

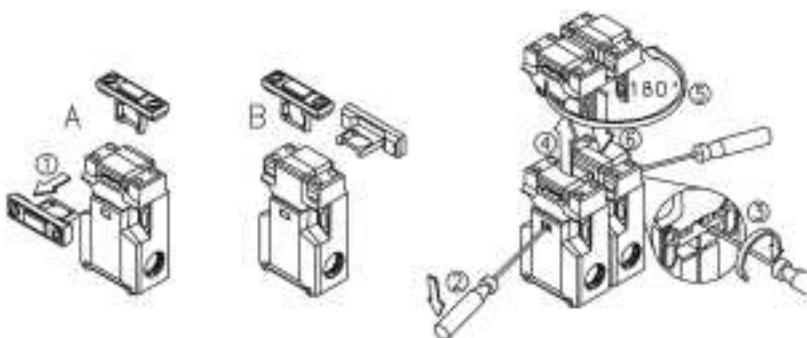
- Flexible use with 2 horizontal or 2 vertical actuating directions
- Protection against simple bypassing in accordance with EN 1088 through multiple coding of the actuator
- Long service life thanks to dust- and water-proof housing and a broad operating temperature range of up to 80 °C.
- Increased extraction force up to 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 **4000 series** or by one of the **samos** or **samosPRO** safety systems.



Simple installation and wiring in each application.

Safety switch with separated actuator – SMS Series



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 1088		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

Safety switch with separated actuator – SMS Series

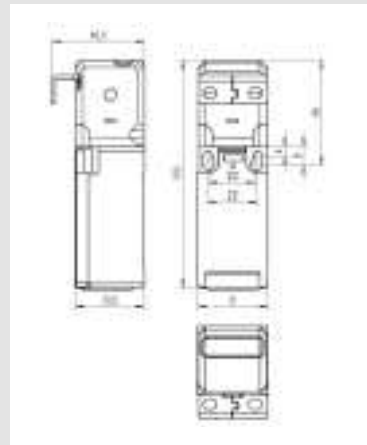
Dimensions diagramm



SMS 4xxx



SMS 3xxx



SMS 2xxx

Overview of devices | part numbers safety switch

Type	Actuator*	Contact assignment	Extraction force	Part no.	Std. pack
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

Actuator – SMS Series



SMS 9001

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



SMS 9002



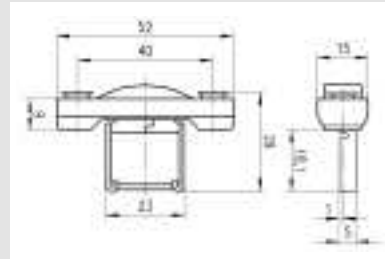
SMS 9003



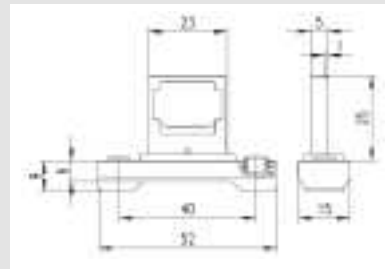
SMS 9004

(SMS 2xxx included in the scope of delivery)

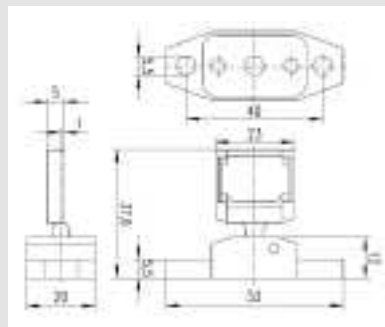
Dimensions diagramm



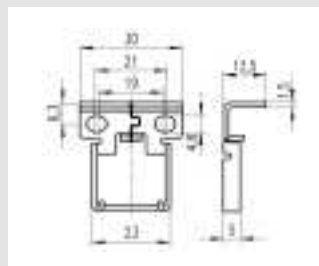
SMS 9001



SMS 9002



SMS 9003



SMS 9004

Overview of devices | part numbers Actuator

Type	Actuator	Part no.	Std. pack
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

Magnetic safety switches – SMA Series



SMA 01xx

Applications

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

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

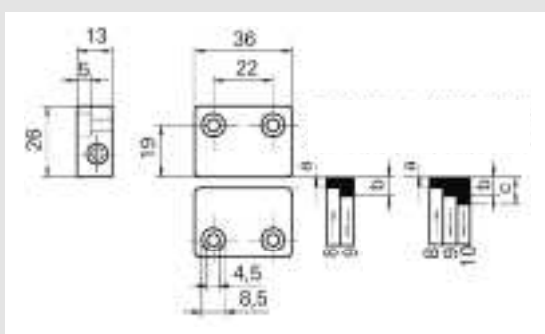
Technical data

Set	SMA 011x	SMA 012x	SMA 0119	SMA 0129
Dimensions / mm (L x W x H)	36 x 26 x 13 mm			
Connection	cable ¹⁾	cable ¹⁾	M8 connection	M8 connection
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	NC / NO	NC / NO
Switching voltage	48 V DC			
Switching current	0.2 A			
Maximum cable length	20 m			

¹⁾ Length, see device overview

Dimension diagram

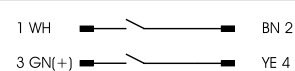
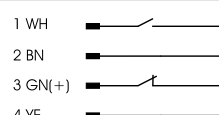
SMA 011x / SMA 0119 / SMA 012x / SMA 0129



Circuit diagram

SMA 011x / SMA 0119

SMA 012x / SMA 0129



Magnetic safety switches – SMA Series



SMA 02xx

Applications

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

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

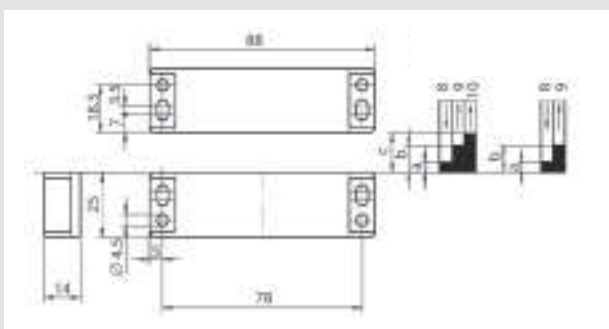
Technical data

Set	SMA 021x	SMA 022x	SMA 023x	SMA 0219	SMA 0229
Dimensions / mm (L x W x H)	88 x 25 x 14 mm				
Connection	cable ¹⁾	cable ¹⁾	cable ¹⁾	M8 connection	M8 connection
Actuating distance / (Sao / Sar)	7 / 20 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				

¹⁾ Length, see device overview

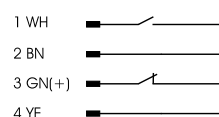
Dimension diagram

SMA 021x/SMA 0219/SMA 022x/SMA 023x/SMA 0229

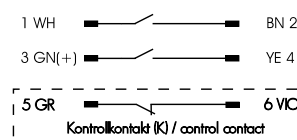
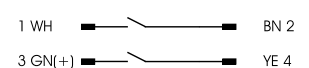


Circuit diagram

SMA 021x / SMA 0219



SMA 022x / SMA 0229



SMA 023x

Magnetic safety switches – SMA Series



SMA 03xx

Applications

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

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

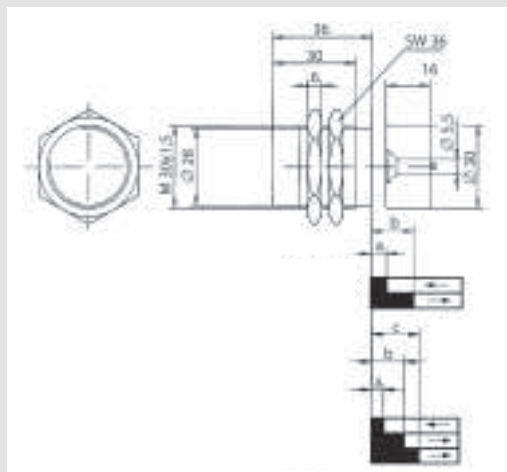
Technical data

Set	SMA 031x	SMA 032x	SMA 0319	SMA 0329
Dimensions / mm (Ø x L)	M30 x 32 mm			
Connection	cable ¹⁾	cable ¹⁾	M8 connection	M8 connection
Actuating distance / (Sao / Sar)	7 / 20 mm			
Directions of actuation	Front - Front			
Protection degree	IP67			
Contact type	Reed			
Contact assignment	NC / NO	NO / NO	NC / NO	NO / NO
Switching voltage	48 V DC			
Switching current	0.2 A			
Maximum cable length	20 m			

¹⁾ Length, see device overview

Dimension diagram

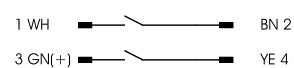
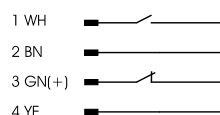
SMA 031x / SMA 0319 / SMA 032x / SMA 0329



Circuit diagram

SMA 031x / SMA 0319

SMA 032x / SMA 0329



Magnetic safety switches – Accessories



Overview of devices | part numbers

Type	Description	Contact	Part no.	Std. pack
SMA 0113	Switch with cable 3 m + magnet	NC / NO	R1.100.0113.0	1
SMA 0123	Switch with cable 3 m + magnet	NO / NO	R1.100.0123.0	1
SMA 0119	Switch mit with M8 connection + magnet	NC / NO	R1.100.0119.0	1
SMA 0129	Switch mit with M8 connection + magnet	NO / NO	R1.100.0129.0	1
SMA 3110	Magnet (NC / NO) for SMA 011x		R1.100.3110.0	5
SMA 3120	Magnet (NC / NO) for SMA 012x		R1.100.3120.0	5
SMA 4100	Washer for SMA 01xx		R1.100.4100.0	10
SMA 0213	Switch with cable 3 m + magnet	NC / NO	R1.100.0213.0	1
SMA 0223	Switch with cable 3 m + magnet	NO / NO	R1.100.0223.0	1
SMA 0224	Switch with cable 5 m + magnet	NO / NO	R1.100.0224.0	1
SMA 0226	Switch with cable 10 m + magnet	NO / NO	R1.100.0226.0	1
SMA 0228	Switch with cable 20 m + magnet	NO / NO	R1.100.0228.0	1
SMA 0233	Switch with cable 5 m + magnet	NO / NO / NC	R1.100.0233.0	1
SMA 0219	Switch with M8 connection	NC / NO	R1.100.0219.0	1
SMA 0229	Switch with M8 connection	NO / NO	R1.100.0229.0	1
SMA 3200	Magnet for SMA 02xx		R1.100.3200.0	5
SMA 4200	Washer for SMA 02xx		R1.100.4200.0	10
SMA 0313	Switch with cable 3 m + magnet	NC / NO	R1.100.0313.0	1
SMA 0323	Switch with cable 3 m + magnet	NO / NO	R1.100.0323.0	1
SMA 0219	Switch with M8 connection	NC / NO	R1.100.0319.0	1
SMA 0329	Switch with M8 connection	NO / NO	R1.100.0329.0	1
SMA 3300	Magnet for SMA 03xx		R1.100.3300.0	5
SMA 5004	Cable, 5 m		R1.100.5004.0	1
SMA 5005	Cable, 10 m		R1.100.5005.0	1

Magnetic switch interface – SMI 1001



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

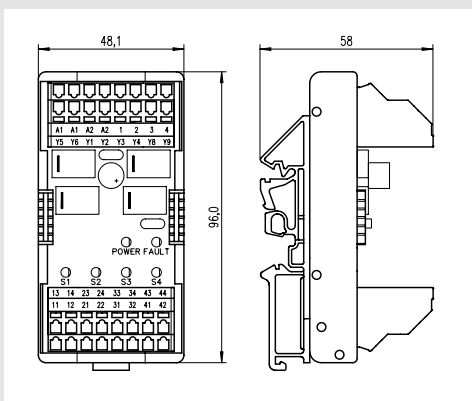
Function

The SMI 1001 connects safety switches / position switches in series. Several safety switches or position switches can be connected to **S4000** safety switching devices or to **samos** and **samosPRO** 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.

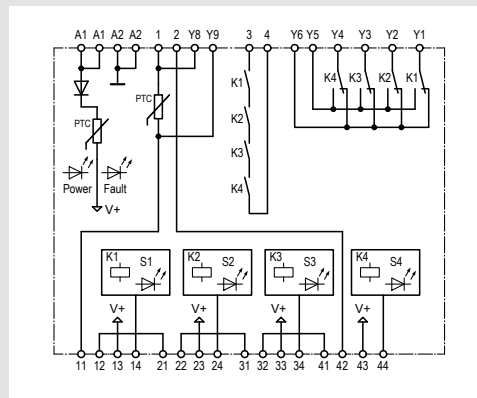
Dimension diagram

SMI 1001



Circuit diagram

SMI 1001



Magnetic switch interface – SMI 1001

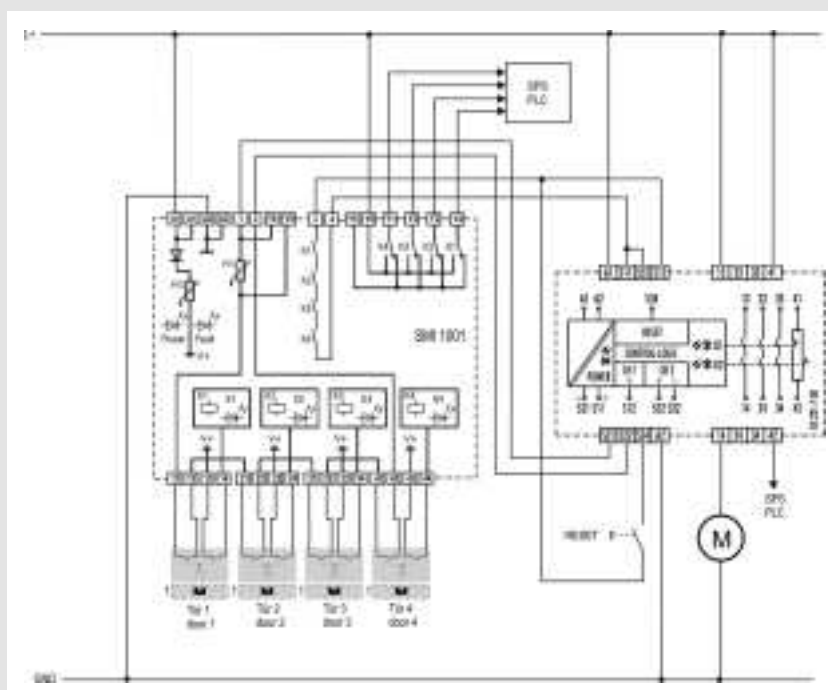
Overview of devices | part numbers

Type	Rated voltage	Terminals	Part no.	Std. pack
SMI 1001	24 V DC	Cage clamp, 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

Application





S4000 – universal safety relays

The **S4000** 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



Safety relays

S4000

The simple and safe
connection for every situation.



Basic devices

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.

Basic devices with time function

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.

Contact expansion relays











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 Safety relays S4000

Applications

		SNO 4083KM	SNO 4062K/KM	SNO 4063K/KM	SNA 4043K/KM	SNA 4044 K/KM	SNA 4063K/KM	SNA 4064K/KM	SNO 4003K	SNO 1012K	
PL	Applications in accordance with EN ISO 13849-1 up to PL	e	e	e	e	e	e	e	d	d	
Cat.	Applications in accordance with EN ISO 13849-1 up to category	4	4	4	4	4	4	4	2	2	
SIL	Applications in accordance with EN 62062 up to SIL _{CL}	3	3	3	3	3	3	3	2	2	
	Emergency stop monitoring	●	●	●	●	●	●	●	●	●	
	Protective gate monitoring	●	●	●	●	●	●	●	●	●	
	Safety light grid in accordance with EN 61496-1 BWS type 4	● ¹⁾	●	●	●	●	●	●			
	Two-hand control according to EN 574										
	Controlled stop according to EN 60204-1 stop Catégorie 1										
	Standstill monitoring										
	Safety shut-off mat monitoring (4-wire principle, short-circuiting)	●	● ¹⁾	● ¹⁾							
	Elevator systems according to EN 81-1	●			●	●	●	●			
	Combustion plants according to EN 50156-1	●			●	●	●	●			
	Contact expansion										

Features

	Single-channel input circuit 1 NC contact or semiconducto	●	●	● ¹⁾	●	●	●	●	●	●	
	Two-channel input circuit 2 NC contacts or semiconductors	●	●	●	●	●	●	●			
	Two-channel input circuit 2 NO/NC contacts or semiconductors	●									
	Synchronous time monitoring (s)	0.5/1.5									
	Automatic Reset	●	●	●	●	●			●	●	
	Manual Reset		●	●	●	●			●	●	
	Reset button monitoring	●	●	●			●	●	●		
	Contacts (NO/NC) *safe semiconductor outputs	3 / 1	2 / 1	3	3 / 1	4	3 / 1	4	3 / 1	2	
	OFF-delayed contacts (NO / NC)										
	ON-delayed contacts (NO / NC)										
	KM device types for fast, tactile applications	●	●	●	●	●	●	●			
	Reset of time lapse for OFF-delayed contacts										
	Rated voltage DC (V)	24	24	12 24	24	24	24	24	24	24	
	Rated voltage AC (V)	24 115-230	24 115-120 230	24 115-120 230	24 42-48 115-120 230	24 42-48 115-120 230	24 42-48 115-120 230	24 42-48 115-120 230	24 115-120 230	24	
	Page	38	40	42	44	44	46	46	48	50	

Basic Devices

¹⁾ 24 V devices only

²⁾ applies to undelayed contacts; the following applies to delayed contacts: PL d / category 3 / SILCL 2

³⁾ depends on the category of the basic device or the safety analysis.

	SNS 4074K SNS 4084K	SNT 4M63K	SNZ 4052K	SNZ 1022K	SNV 4063KL	SNV 4063KP	SNV 4074SL	SNV 4076SL	SNV 4274SL	SNV 4074ST	SNE 4003K	SNE 4004K	SNE 4004KV	SNE 4028S
	e	e	e	c	e ²⁾	e ²⁾	e	e	e	e	d ³⁾	d ³⁾	d ³⁾	e ³⁾
	4	4	4	1	4 ²⁾	4 ²⁾	4	4	4	4	3 ³⁾	3 ³⁾	3 ³⁾	4 ³⁾
	3	3	3	1	3 ²⁾	3 ²⁾	3	3	3	3	2 ³⁾	2 ³⁾	2 ³⁾	3 ³⁾
	●	●			●	●	●	●	●	●				
	●	●	●	●	●	●	●	●	●	●				
					●	●	●	●	●	●				
			IIIC	IIIA										
	●				●	●	●	●	●	●			●	
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S4000

●	●			●	●	●	●	●	●	●	●	●	●	●
●	●			●	●	●	●	●	●	●	●			●
	●	●	●											
		0.5	0.5			1.0	1.0	1.0	1.0					
●	●	●	●	●	●	●	●	●	●					
●	●			●	●	●	●	●	●					
●	●			●	●	●	●	●	●					
4*	3	2 / 1	1/1	2	2	2 / 2	3 / 1	2 / 2	2 / 2	3 / 1	4 / 1		8 / 1	
				1		2 / 2	3	2 / 2				4 / 1		
					1				2 / 2					
						●	●	●	●					
				●				●				●		
24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
	24 115-120 230	24 115-120 230	24 115-230			115-230	115-230	115-230	115-230		24		24 115-230	
52	54	56	58	60	62	64	64	66	66	68	70	70	72	
				Basic Devices with time function						Contact- Expansion Relays				

Basic device – SNO 4083KM



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
- Cross monitoring
- Synchronous time monitoring for two-channel control
- 3 enabling current path / 1 signalling current path

Function

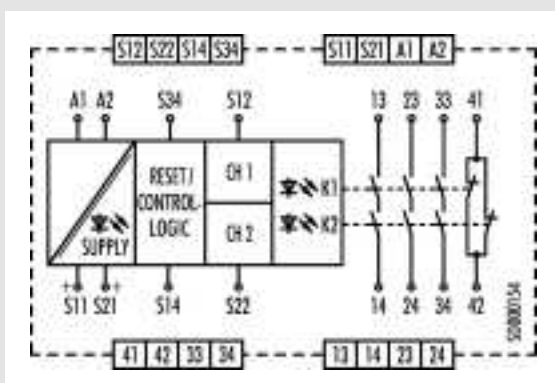
After the supply voltage is applied to terminals A1/A2 and the safety inputs are closed, the enabling current paths (NO contacts) are closed and the signal current path (NC contact) is opened automatically or by pressing the reset button (manual monitored start). When the safety inputs are opened/de-energized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




Basic device – SNO 4083KM

Overview of devices | part numbers

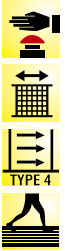
Type	Rated voltage	Synchr. Time	Terminals	Part no.	Std. pack
SNO 4083KM-A	24 V DC	1.5 s	Screw terminals, pluggable	R1.188.3580.0	1
SNO 4083KM-A	115-230 V AC	1.5 s	Screw terminals, pluggable	R1.188.3590.0	1
SNO 4083KM-C	24 V DC	1.5 s	Cage clamp, pluggable	R1.188.3600.0	1
SNO 4083KM-C	115-230 V AC	1.5 s	Cage clamp, 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	Cage clamp, pluggable	R1.188.3850.0	1
SNO 4083KM-C	115-230 V AC	0.5 s	Cage clamp, 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		$0.85 - 1.1 \times U_N$
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		20 ms
Synchronous time t_s		0.5 s / 1.5 s
Permissible test pulse time t_{TP}		< 0,8 ms
Max. resistivity, per channel ¹⁾	24 V DC	$\leq (5 + (1.176 \times U_B / U_N - 1) \times 100) \Omega$
	115-230 V AC	$\leq 12 \Omega$
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	($T_u = 55^\circ\text{C}$) / ($T_u = 65^\circ\text{C}$)	25 A ² / 9 A ²
Application category (NO)	AC-15	U_o 230V, I_o 5 A
	DC-13	U_o 24V, I_o 5A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A ² s
Mechanical life		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp 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 81-1, EN 50156-1
Approvals		TÜV  (pending)

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

Basic device – SNO 4062K/KM



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.

Operating modes / system functions

- **Single or two-channel control** With single-channel control both CH1 and CH2 safety channels are connected in parallel; with two-channel control they are switched separately.
- **Without cross monitoring** Both safety channels are switched to the positive potential (S12 and S31 to S11).
- **With cross monitoring** Safety channel CH1 is switched to positive potential (S11 to S12), and safety channel CH2 to negative potential (S21 to S22).
- **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.
- **Start inhibit** After supply voltage has been applied and the safety inputs closed, the enabling paths will not close. Starting is only possible after the reset button has been operated. For start inhibit the reset inputs have to be controlled with the button, as with manual start mode.
- **Restart inhibit** No restart after the safety inputs have been opened and closed. Restarting is only possible after the reset button has been operated. For restart inhibit the reset inputs have to be activated with the button, as in manual start mode.
- **Semiconductor compatible** OSSD (output signal switching devices) signals from a light curtain or other safety sensors with semiconductor outputs can be processed. Test pulses $< t_{TP}$ do not influence the device functions. Test pulses $> t_{TP}$ can lock the device.

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

SNO 4062KM

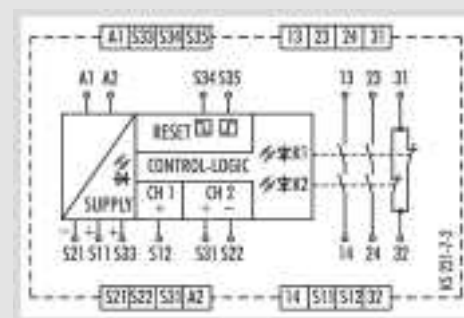
The function of this device corresponds to that of the SNO 4062K without synchrocheck. The device is suitable for connecting to light curtains for Type 4 (EN 61496-1) and connecting to short-circuit forming 4-wire safety mats, switching strips or switching edges (without monitoring resistance).

- **Safety mats** The device must be operated with two channels and cross monitoring. If there is resistance $< 50 \Omega$ / 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







Basic device – SNO 4062K/KM

Overview of devices | part numbers

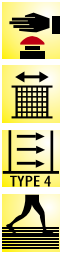
Type	Rated voltage	Terminals	Part no.	Std. pack
SNO 4062K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.0700.2	1
SNO 4062KM-A	24 V AC/DC	Screw terminals, pluggable	R1.188.0720.2	1
SNO 4062K-C	24 V AC/DC	Cage clamp, pluggable	R1.188.2000.0	1

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		15 ms
Synchronous time t_s		200 ms (CH1 → CH2)
Permissible test pulse time t_{TP}		< 1 ms
Max. resistivity, per channel ¹⁾		$\leq (5 + (1.176 \times U_B / U_N - 1) \times 100) \Omega$
Output circuit		
Enabling paths	13/14, 23/24	normally open contact
Signaling paths	31/32	normally closed contact
Contact assignment		forceably 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	($T_u = 55^\circ\text{C}$)	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 ² s
Mechanical life		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 fine-stranded with ferrules	1 x 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
		1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp 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		   

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

Basic device – SNO 4063K/KM



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.

Basic function

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.

Operating modes / system functions

- **Single or two-channel control** With single-channel control both safety channels, CH1 and CH2, are connected in parallel; with two-channel control they are switched separately. For AC devices, only two-channel operation with cross-connection monitoring is possible.
- **Without cross monitoring** Both safety channels are switched to the positive potential (S12 and S31 to S11).
- **With cross monitoring** Safety channel CH1 is switched to positive potential (S11 to S12), and safety channel CH2 to negative potential (S21 to S22).
- **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.
- **Start inhibit** After supply voltage has been applied and the safety inputs closed, the enabling paths will not close. Starting is only possible after the

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

reset button has been pressed. For start inhibit the reset inputs have to be controlled with the button, as with manual start mode.

- **Restart inhibit** No restart after the safety inputs have been opened and closed. Restarting is only possible after the reset button has been pressed. For restart inhibit the reset inputs have to be activated with the button, as in manual start mode.
- **Semiconductor compatible** OSSD (output signal switching devices) signals from a light curtain or other safety sensors with semiconductor outputs can be processed. Test pulses $< t_{TP}$ do not influence the device functions. Test pulses $> t_{TP}$ can lock the device.

SNO 4063KM

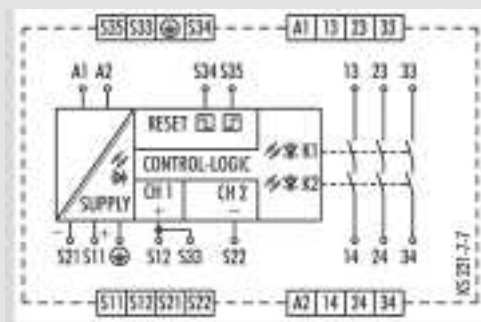
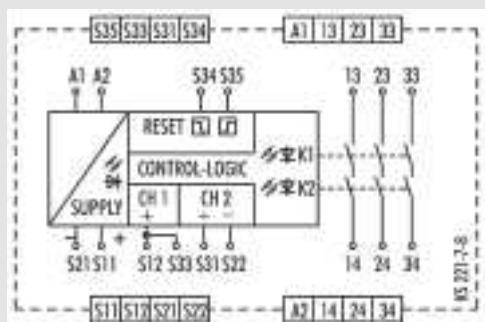
The function of this device corresponds to that of the SNO 4063K. The device is suitable for connecting to light curtains for Type 4 (EN 61496-1) and to short-circuit forming 4-wire safety mats, switching strips or switching edges (without monitoring resistance).

- **Safety mats** The device must be operated with two channels and cross monitoring. If there is resistance $< 50 \Omega$ / 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

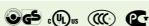


Basic device – SNO 4063K/KM

Overview of devices | part numbers

Type	Rated voltage	Terminals	Part no.	Std. pack
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	Cage clamp, 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		15 ms
Synchronous time t_s		200 ms (CH1 → CH2)
Permissible test pulse time t_{TP}		< 1 ms
Max. resistivity, per channel ¹⁾	24 V AC/DC	$\leq (5 + (1.176 \times U_B / U_N - 1) \times 100) \Omega$
	115-120 V AC, 230 V AC	$\leq (5 + (1.176 \times U_B / U_N - 1) \times 100) \Omega$
Output circuit		
Enabling paths	13/14, 23/24, 33/34	normally open contact
Contact assignment		forcefully 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	(T_u = 55 °C)	9 A ²
Application category (NO)	AC-15	U_o 230 V, I_o 3 A
	DC-13	U_o 24 V, I_o 2.5 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A ² s
Mechanical life		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp 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		

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

Basic device – SNA 4043K/KM, SNA 4043KE, SNA 4044K/KM



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

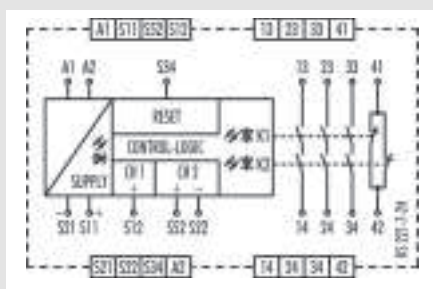
Function

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.

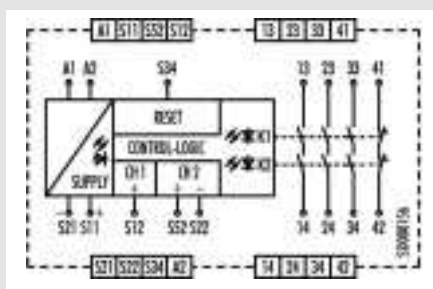
- **Automatic start** – Reset input S34 is connected to safety input S11. To monitor external contact blocks (EDM), their NC contacts must be connected in series between S34 and S11.
- **Manual start without monitoring** – Reset input S34 is connected to safety input S11 via a RESET button. To monitor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

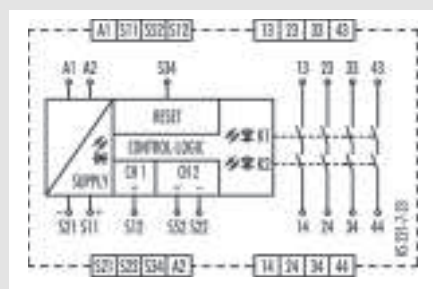
SNA 4043K/KM



SNA 4043KE



SNA 4044K/KM






Basic device – SNA 4043K/KM, SNA 4043KE, SNA 4044K/KM

Overview of devices | part numbers

Type	Rated voltage	Terminals	Part no.	Std. pack
SNA 4043K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1810.0	1
SNA 4043K-A	42-48 V AC	Screw terminals, pluggable	R1.188.1820.0	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	Cage clamp, 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	Cage clamp, 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	Cage clamp, pluggable	R1.188.3820.0	1
SNA 4044K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1860.0	1
SNA 4044K-A	42-48 V AC	Screw terminals, pluggable	R1.188.1870.0	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	Cage clamp, 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	Cage clamp, pluggable	R1.188.3410.0	1

S4000

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
Permissible test pulse time t_{TP}		< 1 ms
Max. resistivity, per channel ¹⁾	24V AC/DC	$\leq (5 + (1.176 \times U_B / U_N - 1) \times 100) \Omega$
	42-48V AC / 115-120 V AC, 230 V AC	$\leq (5 + (1.176 \times U_B / U_N - 1) \times 100) \Omega$
Output circuit		
Enabling paths	SNA 4043K/KM 13/14, 23/24, 33/34	SNA 4044K/KM 13/14, 23/24, 33/34, 43/44
Signaling paths	41/42	---
Contact assignment		normally open contact
Contact type		normally closed contact
Rated switching voltage	enabling / signaling path	forcefully guided
Max. thermal current I_{th}	enabling / signaling path	Ag-alloy, gold-plated
Max. total current I^2 of all current path	($T_u = 55^\circ\text{C}$) / ($T_u = 65^\circ\text{C}$)	230 V AC
Application category (NO)	AC-15 DC-13	8 A / 5 A
Short-circuit protection (NO), lead fuse / circuit breaker		25 A ² / 9 A ²
Mechanical life		U_o 230 V, I_o 3 A U_o 24 V, I_o 3 A
		6 A class gG / melting integral < 100 A ² s
		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp 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 81-1, EN 50156-1
Approvals		TÜV   

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

Basic device – SNA 4063K/KM, SNA 4064K/KM



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

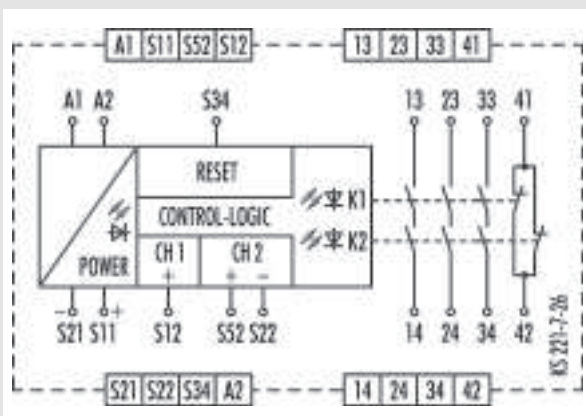
Function

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.

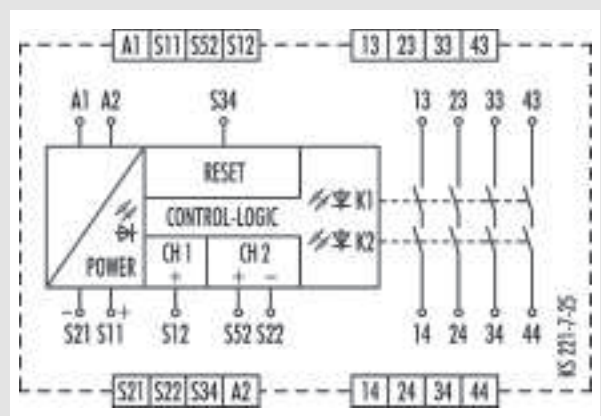
- **Manual start with monitoring** – Reset input S34 is connected to safety input S11 via a RESET button. To monitor external contact blocks (EDM), their NC contacts must be connected in series to the RESET button.
- **Monitoring of light curtains** – The KM device types are especially suitable for the 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






Basic device – SNA 4063K/KM, SNA 4064K/KM

Overview of devices | part numbers

Type	Rated voltage	Terminals	Part no.	Std. pack
SNA 4063K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1440.0	1
SNA 4063K-A	42-48 V AC	Screw terminals, pluggable	R1.188.1850.0	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	Cage clamp, pluggable	R1.188.1950.0	1
SNA 4063KM-A	24 V AC/DC	Screw terminals, pluggable	R1.188.3290.0	1
SNA 4063KM-C	24 V AC/DC	Cage clamp, pluggable	R1.188.3420.0	1
SNA 4064K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1900.0	1
SNA 4064K-A	42-48 V AC	Screw terminals, pluggable	R1.188.1910.0	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	Cage clamp, 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	Cage clamp, pluggable	R1.188.3430.0	1

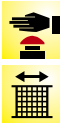
S4000

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	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 = 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}		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
Permissible test pulse time t_{TP}		< 1 ms
Max. resistivity, per channel ¹⁾	24V AC/DC	$\leq (5 + (1,176 \times U_B / U_N - 1) \times 100) \Omega$
	42-48V AC / 115-120 V AC, 230 V AC	$\leq (5 + (1,176 \times U_B / U_N - 1) \times 100) \Omega$
Output circuit		
	SNA 4063K/KM	SNA 4064K/KM
Enabling paths	13/14, 23/24, 33/34	13/14, 23/24, 33/34, 43/44
Signaling paths	41/42	---
Contact assignment		normally open contact
Contact type		normally closed contact
Rated switching voltage	enabling / signaling path	forcebly guided
Max. thermal current I_{th}	enabling / signaling path	Ag-alloy, gold-plated
Max. total current I^2 of all current path	($T_u = 55^\circ\text{C}$) / ($T_u = 65^\circ\text{C}$)	230 V AC
Application category (NO)	AC-15 DC-13	8 A / 5 A
Short-circuit protection (NO), lead fuse / circuit breaker		25 A ² / 9 A ²
Mechanical life		U_o 230 V, I_o 3 A U_o 24 V, I_o 3 A
		6 A class gG / melting integral < 100 A ² s
		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp 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 81-1, EN 50156-1
Approvals		TÜV   

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

Basic device – SNO 4003K



Applications

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

Features

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

* Specific applications may also require higher categories/levels

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 either automatically (bridge Y1 Y2) or after the reset button (on Y1 Y3) has been pressed.

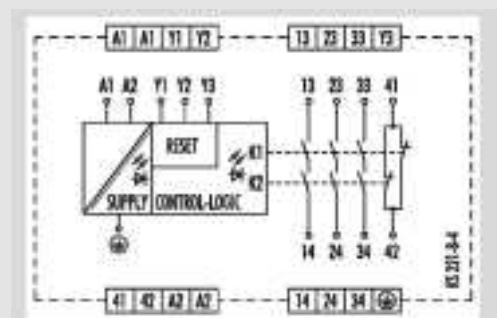
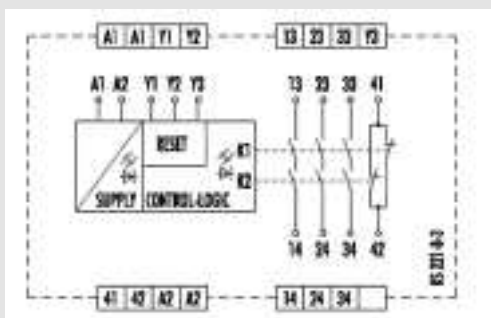
They become self-locking through their own contacts, if there is an electrical connection between terminal A1 and the supply voltage (emergency stop button, position switches).

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




Basic device – SNO 4003K

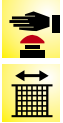
Overview of devices | part numbers

Type	Rated voltage	Terminals	Part no.	Std. pack
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	Cage clamp, pluggable	R1.188.1990.0	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		$0.85 - 1.1 \times U_N$
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	$\leq (2.5 + (1.176 \times U_B / U_N - 1) \times 50) \Omega$
	115-120 V AC, 230 V AC	$\leq (7.5 + (1.176 \times U_B / U_N - 1) \times 150) \Omega$
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	($T_u = 55^\circ\text{C}$)	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 ² s
Mechanical life		10^7 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		$-25^\circ\text{C} - +55^\circ\text{C} / -25^\circ\text{C} - +75^\circ\text{C}$
Wire ranges screw terminals,	fine-stranded / solid	$1 \times 0.14 \text{ mm}^2 - 2.5 \text{ mm}^2 / 2 \times 0.14 \text{ mm}^2 - 0.75 \text{ mm}^2$
	fine-stranded with ferrules	$1 \times 0.25 \text{ mm}^2 - 2.5 \text{ mm}^2 / 2 \times 0.25 \text{ mm}^2 - 0.5 \text{ mm}^2$
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp terminals		$1 \times 0.25 \text{ mm}^2 - 1.5 \text{ mm}^2$
Weight	24 V AC/DC device / AC device	0.20 kg / 0.25 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		

Basic device – SNO 1012K



Applications

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

Features

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

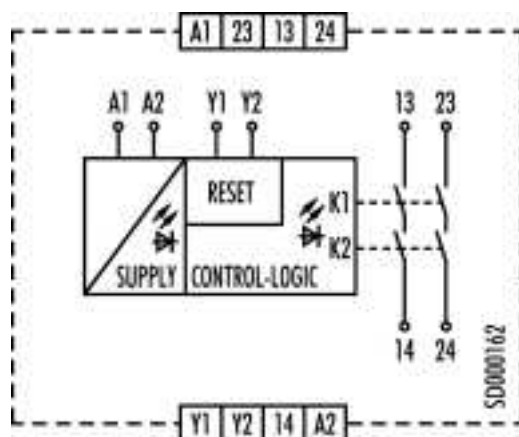
* Specific applications may also require higher categories/levels

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




Basic device – SNO 1012K

Overview of devices | part numbers

Type	Rated voltage	Terminals	Part no.	Std. pack
SNO 1012K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.3740.0	1
SNO 1012K-C	24 V AC/DC	Cage clamps, 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		$\leq (2.5 + (1.176 \times U_B / U_N - 1) \times 50) \Omega$
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	($T_u = 55^\circ\text{C}$)	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 ² s
Mechanical life		10 x 10 ⁶ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp terminals		2 x 0.25 mm ² – 1.5 mm ²
Weight		0.12 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		

Basic device – SNS 4074K / SNS 4084K



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

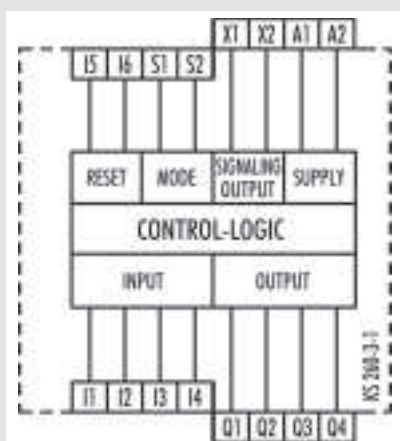
The device features a bypass input, which allows safety-oriented bypassing of the monitoring function, e.g. when a safe position has been reached. In this case, the signal must fulfill at least the safety category of the selected monitoring function.

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



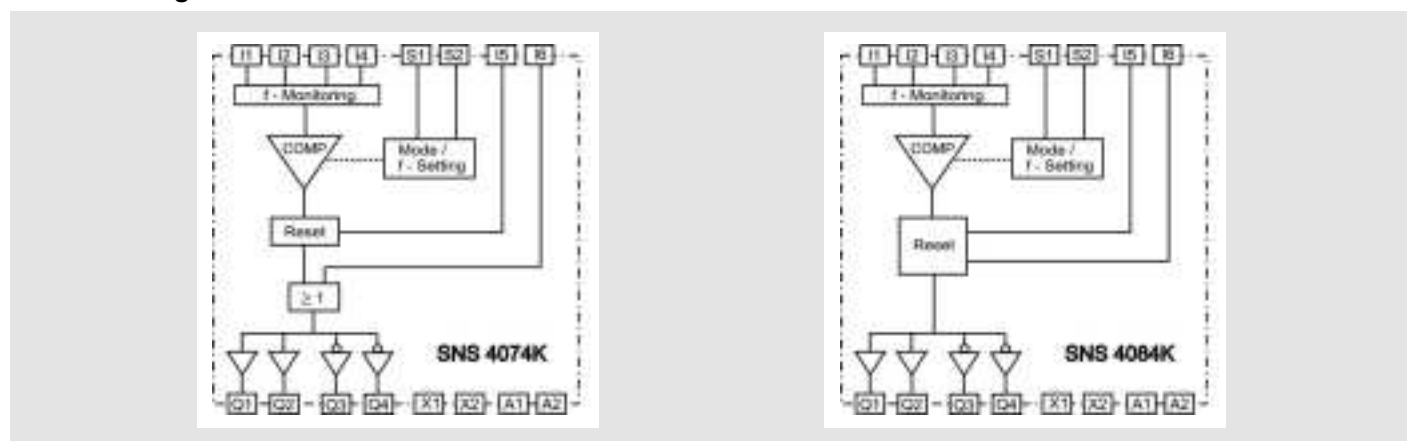
Terminals	Description
A1	+ 24 V
A2	GND
X1 / X2	Signal output, semi-conductor (plus switching)
S1	Configuration input for operating mode group
S2	Configuration input for operating mode group
I1	Sensor input
I2	Sensor / configuration input (depending on the operating mode group)
I3	Sensor / configuration 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

Basic device – SNS 4074K / SNS 4084K

Overview of devices | part numbers

Type	Frequency range	Terminals	Part no.	Std. pack
SNS 4074K-A	0.5 - 99 Hz	Screw terminals, pluggable	R1.188.3640.0	1
SNS 4074K-C	0.5 - 99 Hz	Cage clamp, 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	Cage clamp, 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	Cage clamp, 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	Cage clamp, 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	($T_u = 55^\circ\text{C}$)	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 DIN 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 0.14 mm ² - 2.5 mm ² / 2 x 0.14 mm ² - 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² - 2.5 mm ² / 2 x 0.25 mm ² - 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp terminals		1 x 0.25 mm ² - 1.5 mm ²
Weight		0.16 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		TÜV

Basic device – SNT 4M63K



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.

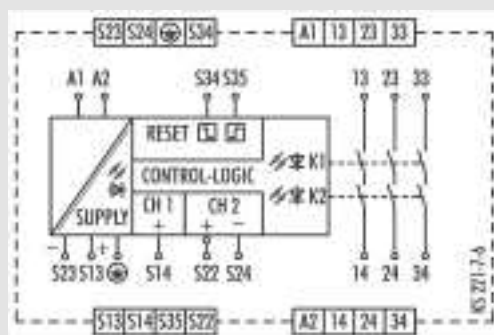
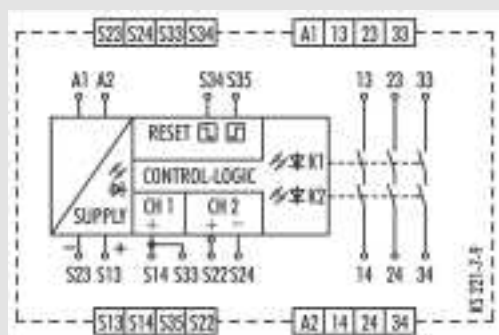
Operating modes / system functions

- **Two-channel control** – The device uses two-channel control. With equivalent control safety channel CH1 is connected via positive potential, safety channel CH2 via negative potential. With non-equivalent control both safety channels are connected to the positive potential.
- **Cross monitoring** – With equivalent control, cross monitoring is achieved by means of the short-circuit principle; with non-equivalent control it is achieved through function diversity.

- **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.
- **Start inhibit** – After supply voltage has been applied and the safety inputs closed, the enabling paths will not close. Starting is only possible after the reset button has been operated. For start inhibit the reset inputs have to be activated with the button, as during manual start mode.
- **Restart inhibit** – No restart after the safety inputs have been opened and closed. Restarting is only possible after the reset button has been operated. For restart inhibit, the reset inputs have to be activated with the button, as in manual start mode.

Circuit diagram

SNT 4M63K







Basic device – SNT 4M63K

Overview of devices | part numbers

Type	Rated voltage	Terminals	Part no.	Std. pack
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	Cage clamp, 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	$\leq (5 + (1.176 \times U_B / U_N - 1) \times 100) \Omega$
	115-120 V AC, 230 V AC	$\leq (5 + (1.176 \times U_B / U_N - 1) \times 100) \Omega$
Ausgangskreise		
Enabling paths	13/14, 23/24, 33/34	normally open contact
Contact assignment		forceably 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	($T_u = 55^\circ\text{C}$)	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 ² s
Mechanical life		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp 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		   

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

Basic device – SNZ 4052K



Applications

- Protection of people and machinery
- Monitoring of two-hand applications
- Monitoring of safety gates
- According to EN 574 Type 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

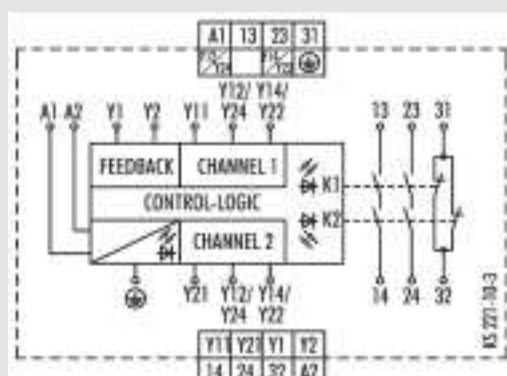
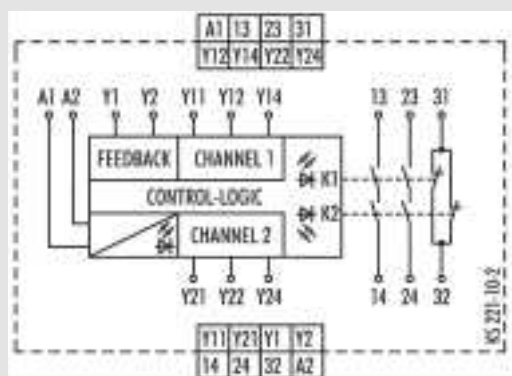
The device complies with EN 574 Type III C safety requirements. The safety behavior of the device is designed for applications according to Category 4 (EN 954-1). The device is single-fault safe and self-monitoring. Synchronous activation of both actuators (two-hand momentary contact or safety gate contacts) 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







Basic device – SNZ 4052K

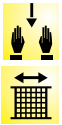
Overview of devices | part numbers

Type	Rated voltage	Terminals	Part no.	Std. pack
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	Cage clamp, 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		forcefully 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	($T_u = 55$ °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 ² s
Mechanical life		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp 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 574
Approvals		   

Basic device – SNZ 1022K



Applications

- Protection of people and machinery
- Monitoring of two-hand applications
- Monitoring of safety gates
- According to EN 574 Type IIIA
- 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

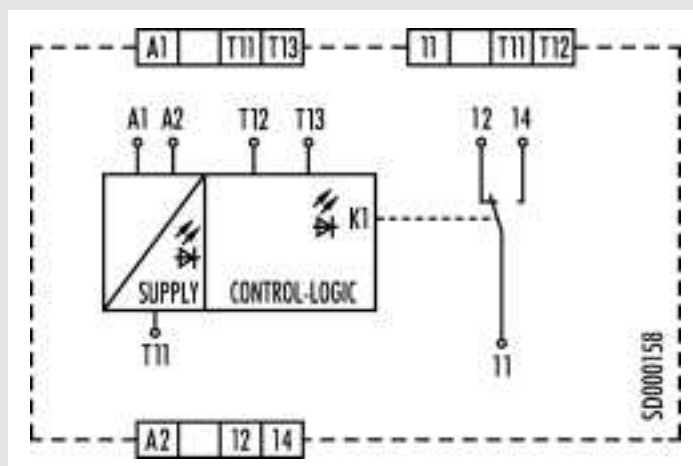
Function

After the power supply is established at terminals A1/A2 and the feedback loop is closed (terminals Y1/Y2), 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




Basic device – SNZ 1022K

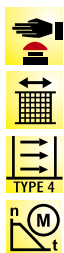
Overview of devices | part numbers

Type	Rated Voltage	Synchronous time	Terminals	Part no.	Std. pack
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	Cage clamps, pluggable	R1.188.3720.0	1
SNZ 1022K-C	115-230 V AC	0.5 s	Cage clamps, 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		$(5 + (1.176 \times U_B / U_N - 1) \times 100) \Omega$
Output circuit		
Enabling paths	10/12/14	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_o 230 V, I_o 3 A
	DC-13	U_o 24 V, I_o 2 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A ² s
Mechanical life		10 x 10 ⁶ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp 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 574
Approvals		TÜV 

Basic device with time function – SNV 4063KL



Applications

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Termination of braking operations through OFF-delay time
- Control of solenoid-actuated interlocks
- 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
- 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

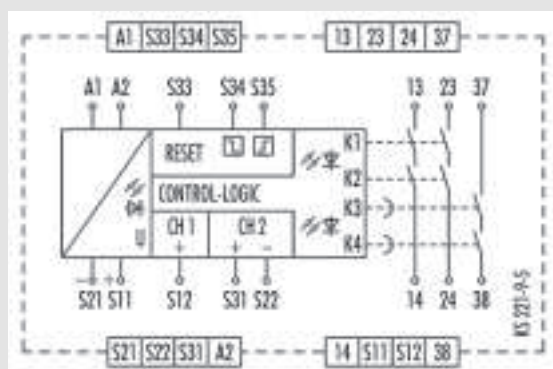
With the supply voltage applied to terminals A1/A2 and the emergency set right and left margins in-line button. This controls relays K1 to K4, which become self-locking (when starting via reset button monitoring after the response time). After this switch-on phase the 3 enabling current paths are closed (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 t_{R1} while the off-delayed enabling current path (terminals 37/38) is opened after the pre-set OFF-delay time t_{R2} . 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







Basic device with time function – SNV 4063KL

Overview of devices | part numbers

Type	Time range	Rated voltage	Terminals	Part no.	Std. pack
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
SNV 4063KL-C	3 s	24 V DC	Cage clamp, pluggable	R1.188.2010.0	1
	30 s	24 V DC	Cage clamp, 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	
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 / 2500 mA
	S34, S35	40 mA / 2500 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 $t_{R, \text{delayed contacts (tolerance)}}$	0.15 - 3 s / 1.5 - 30 s ($\pm 16\%$)	
Synchronous time t_s	500 ms	
Permissible test pulse time t_{TP}	< 1 ms	
Max. resistivity, per channel ¹⁾	$\leq (5 + (1.176 \times U_B / U_N - 1) \times 100) \Omega$	
Output circuit		
Enabling paths	13/14, 23/24	normally open contact
	37/38	normally open contact, OFF-delayed
Contact assignment	forcibly 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	($T_u = 55^\circ\text{C}$)	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 ² s	
Mechanical life	10 ⁷ switching cycles	
General data		
Creepage distances and clearances between the circuits	EN 60664-1	
Protection degree according to DIN 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 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque	0.5 - 0.6 Nm	
Wire ranges cage clamp terminals	1 x 0.25 mm ² – 1.5 mm ²	
Weight	0.20 kg	
Standards	EN ISO 13849-1, EN 62061	
Approvals	   	

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

Basic device with time function – SNV 4063KP



Applications

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- 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)

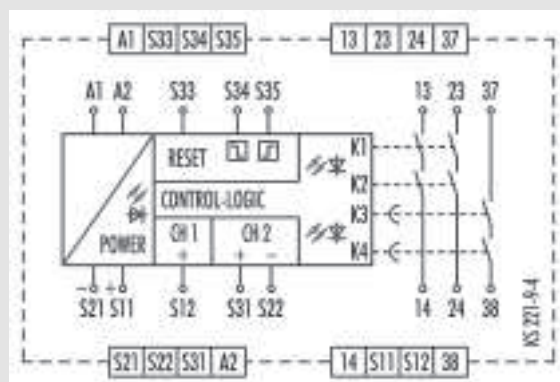
Function

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:

- **Operating mode with reset button monitoring (evaluation of the falling edge; 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 t_{A3} . 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 t_{R1} , and relays K3 and K4 will start after the pre-set ON-delay time t_{A1} , terminals 37/38. Three LEDs display the state of relays K1/K2, K3/K4 and the supply voltage.
- **Operating mode without reset button monitoring (evaluation of the rising edge; 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 t_{A2} 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 t_{R1} , and relays K3 and K4 will start after the pre-set ON-delay time t_{A1} , terminals 37/38. With a two-channel control and cross-monitoring wiring of the sensor circuit, additional errors such as shunt fault or ground fault can be detected. An electronic fuse protects the device from damage. After the cause of the malfunction has been removed, the device is operational again after approx. 3 s.

Circuit diagram

SNV 4063KP







Basic device with time function – SNV 4063KP

Overview of devices | part numbers

Type	Time range	Rated voltage	Terminals	Part no.	Std. pack
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 / 2500 mA
	S34, S35	40 mA / 2500 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 $t_{R, \text{delayed contacts (tolerance)}}$	0.15 - 3 s / 1.5 - 30 s ($\pm 16\%$)	
Synchronous time t_s	500 ms	
Permissible test pulse time t_{TP}	< 1 ms	
Max. resistivity, per channel ¹⁾	$\leq (5 + (1.176 \times U_B / U_N - 1) \times 100) \Omega$	
Output circuit		
Enabling paths	13/14, 23/24	normally open contact
	37/38	normally open contact, ON-delayed
Contact assignment	forcibly 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	($T_u = 55^\circ\text{C}$)	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 ² s	
Mechanical life	10 ⁷ switching cycles	
General data		
Creepage distances and clearances between the circuits	EN 60664-1	
Protection degree according to DIN 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 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
		1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque	0.5 - 0.6 Nm	
Wire ranges cage clamp terminals	1 x 0.25 mm ² – 1.5 mm ²	
Weight	0.20 kg	
Standards	EN ISO 13849-1, EN 62061	
Approvals	   	

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

Basic device with time function – SNV 4074SL / SNV 4076SL



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
- Cross monitoring

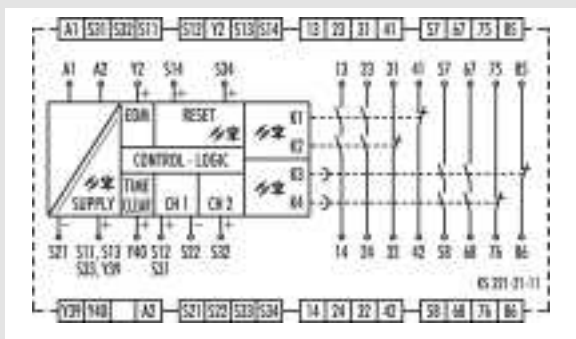
OFF-delay function

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.

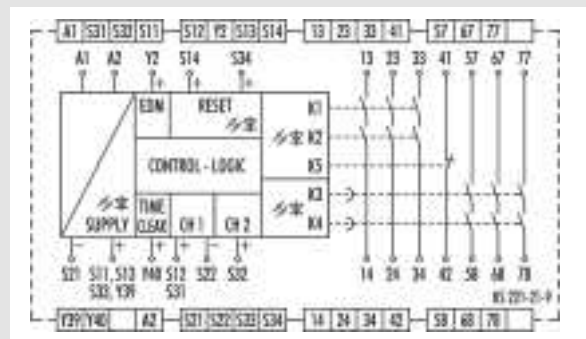
- **Automatic start** – Reset input S14 is connected to safety input S12. To monitor external contact blocks (EDM), their NC contacts must be connected in series between S34 and S12.
- **Manual start without monitoring** – Reset input S14 is connected to safety input S12 via a reset button. To monitor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






Basic device with time function – SNV 4074SL / SNV 4076SL

Overview of devices | part numbers

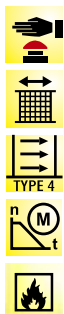
Type	Time range	Rated voltage		Terminals	Part no.		Std. pack
					24 V DC	115 – 230 V AC	
SNV 4074SL-A	3s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2130.0	R1.188.2310.0	1
SNV 4074SL-A	30s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2160.0	R1.188.2340.0	1
SNV 4074SL-A	300s	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	Cage clamp, pluggable	R1.188.2140.0	R1.188.2320.0	1
SNV 4074SL-C	30s	24 V DC	115 – 230 V AC	Cage clamp, pluggable	R1.188.2170.0	R1.188.2350.0	1
SNV 4074SL-C	300s	24 V DC	115 – 230 V AC	Cage clamp, 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	Cage clamp, pluggable	R1.188.2050.0	R1.188.2230.0	1
SNV 4076SL-C	30s	24 V DC	115 – 230 V AC	Cage clamp, pluggable	R1.188.2080.0	R1.188.2260.0	1
SNV 4076SL-C	300s	24 V DC	115 – 230 V AC	Cage clamp, 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 $t_{R, \text{delayed contacts (tolerance)}}$		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)
Permissible 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		forcefully 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 ($T_u = 55^\circ\text{C}$)		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 ² s
Mechanical life		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp 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   

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

Basic device with time function – SNV 4274SL / SNV 4074ST



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
- 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.

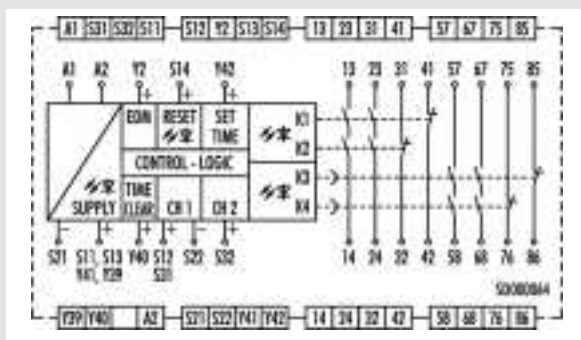
The set release delay only expires if the safety inputs are opened longer than the release delay set on the device. If the safety inputs are closed again before the release delay has expired (retriggering), the delayed contacts will remain closed, too.

ON-delay function (SNV 4074ST)

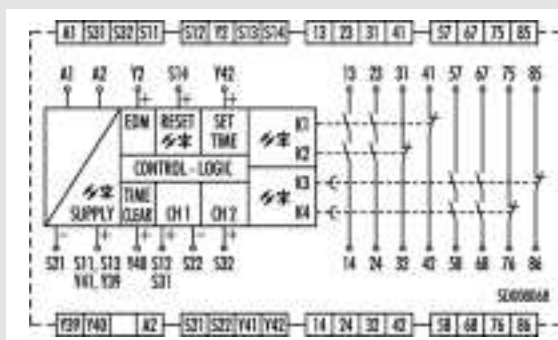
After the supply voltage is applied to terminals A1/A2 and the safety inputs are closed, the contacts are switched on immediately or with a response delay, either automatically or by pressing the reset button (manual start). When the safety inputs are opened/de-energized the contacts are switched off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

Circuit diagrams

SNV 4274SL



SNV 4074ST






Basic device with time function – SNV 4274SL / SNV 4074ST

Overview of devices | Part numbers

Type	Time range	Rated voltage		Terminals	Part no.		Std. Pack
					24V DC	115 – 230V AC	
SNV 4274SL-A	3s	24V DC	115 – 230V AC	Screw terminals, pluggable	R1.188.2470.0	R1.188.2650.0	1
SNV 4274SL-A	30s	24V DC	115 – 230V AC	Screw terminals, pluggable	R1.188.2500.0	R1.188.2680.0	1
SNV 4274SL-A	300s	24V DC	115 – 230V AC	Screw terminals, pluggable	R1.188.2530.0	R1.188.2710.0	1
SNV 4274SL-C	3s	24V DC	115 – 230V AC	Cage clamp, pluggable	R1.188.2480.0	R1.188.2660.0	1
SNV 4274SL-C	30s	24V DC	115 – 230V AC	Cage clamp, pluggable	R1.188.2510.0	R1.188.2690.0	1
SNV 4274SL-C	300s	24V DC	115 – 230V AC	Cage clamp, pluggable	R1.188.2540.0	R1.188.2720.0	1
SNV 4074ST-A	3s	24V DC	115 – 230V AC	Screw terminals, pluggable	R1.188.2560.0	R1.188.2740.0	1
SNV 4074ST-A	30s	24V DC	115 – 230V AC	Screw terminals, pluggable	R1.188.2590.0	R1.188.2770.0	1
SNV 4074ST-A	300s	24V DC	115 – 230V AC	Screw terminals, pluggable	R1.188.2620.0	R1.188.2800.0	1
SNV 4074ST-C	3s	24V DC	115 – 230V AC	Cage clamp, pluggable	R1.188.2570.0	R1.188.2750.0	1
SNV 4074ST-C	30s	24V DC	115 – 230V AC	Cage clamp, pluggable	R1.188.2600.0	R1.188.2780.0	1
SNV 4074ST-C	300s	24V DC	115 – 230V AC	Cage clamp, 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)
Permissible 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 ² s
Mechanical life		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp 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   

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

Contact expansion relay – SNE 4003K



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

- Safe isolation according to EN 50178
- 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.

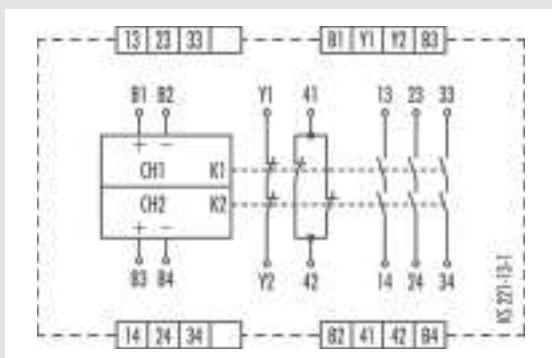
Function

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. The enabling current paths are separated from the control circuits and signaling circuits with creep-age distances and clearances > 5.5 mm (safe isolation). 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







Contact expansion relay – SNE 4003K

Overview of devices | Part numbers

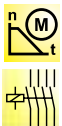
Type	Rated voltage	Terminals	Part no.	Std. Pack
SNE 4003K-A	24 V DC	Screw terminals, pluggable	R1.188.1340.0	1

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		$0.63 - 1.25 \times U_N$
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
Permissible test pulse time t_{TP}		< 1 ms
Max. resistivity, per channel ¹⁾		≤ (5 + (1.6 × U_B / U_N - 1) × 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 ($T_u = 55^\circ\text{C}$)		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 ² s
Mechanical life		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 × 0.14 mm ² – 2.5 mm ² / 2 × 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 × 0.25 mm ² – 2.5 mm ² / 2 × 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges cage clamp terminals		1 × 0.25 mm ² – 1.5 mm ²
Weight		0,21 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		   

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

Contact expansion relay – SNE 4004K / SNE 4004KV



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 current 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.

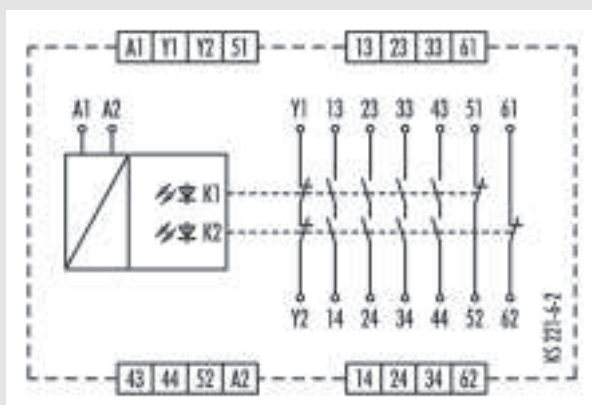
When the enabling current paths of the basic device are opened through the operation of the emergency stop button, relays K1 and K2 on the SNE 4004K switch back into the OFF-position. The enabling current paths open and the feedback current path closes. Feedback current path Y1/Y2 prevents the basic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

SNE 4004KV

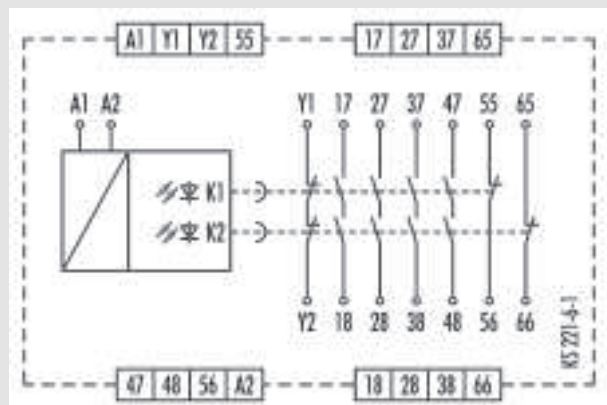
The functions of this device correspond to those of the SNE 4004K. The SNE 4004KV is available with the following four OFF-delay times t_{R1} : 0.5 s; 1 s; 2 s and 3 s. The device has an OFF-delay time that is enabled through capacitors. This causes the OFF-delay time t_{R1} to elapse completely even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







Contact expansion relay – SNE 4004K / SNE 4004KV

Overview of devices | part numbers

Type	Time range	Rated voltage	Terminals	Part no.	Std. Pack
SNE 4004K-A	–	24 V AC/DC	Screw terminals, pluggable	R1.188.0590.0	1
SNE 4004K-C	–	24 V AC/DC	Cage clamp, 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	Cage clamp, pluggable	R1.188.2410.0	1
	1 s	24 V DC	Cage clamp, pluggable	R1.188.2420.0	1
	2 s	24 V DC	Cage clamp, pluggable	R1.188.2430.0	1
	3 s	24 V DC	Cage clamp, 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		forcefully 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 A²
Application category (NO)		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 A²s
Mechanical life		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 0.14 mm² – 2.5 mm² / 2 x 0.14 mm² – 0.75 mm²
	fine-stranded with ferrules	1 x 0.25 mm² – 2.5 mm² / 2 x 0.25 mm² – 0.5 mm²
Permissible torque		0,5 - 0,6 Nm
Wire ranges cage clamp terminals		1 x 0.25 mm² – 1.5 mm²
Weight		0.20 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		   

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

Contact expansion relay – SNE 4028S



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

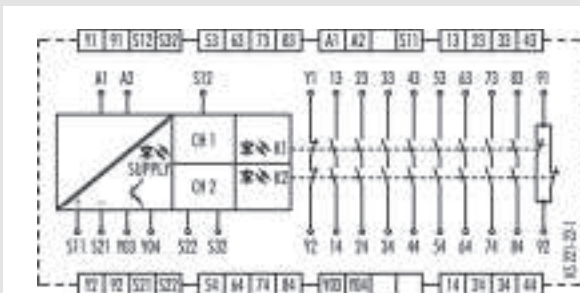
* Depends on the category of the basic device or the safety control.

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




Contact expansion relay – SNE 4028S

Overview of devices | part numbers

Type	Rated voltage	Terminals	Part no.	Std. pack
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	Cage clamp, pluggable	R1.188.3540.0	1
SNE 4028S-C	115-230 V AC	Cage clamp, 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 × 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
Permissible test pulse time t_{TP}		< 1 ms
Max. resistivity, per channel ¹⁾	24 V AC/DC	≤ (5 + (1.176 × U_B / U_N - 1) × 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		forcefully 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 I_2 of all current path (T_u = 55 °C)		2 × 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 ² s
Mechanical life		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to DIN 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 × 0.14 mm ² – 2.5 mm ² / 2 × 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 × 0.25 mm ² – 2.5 mm ² / 2 × 0.25 mm ² – 0.5 mm ²
Permissible torque		0.5 - 0,6 Nm
Wire ranges cage clamp terminals		1 × 0.25 mm ² – 1.5 mm ²
Weight		0.38 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		TÜV 

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



samos® – safety made simple











samos® stands for **SA**afety **MO**dular **S**ystem. 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.



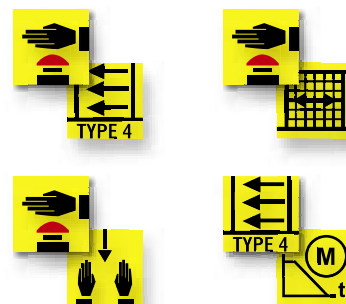
Example: Single Functions

-  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 IIA and IIC
-  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

SA-BM-S1	SA-IN-S1	SA-BS-S2	SA-IN-S2	SA-BS-S3	SA-IN-S3
System Group 1		System Group 2		System Group 3	

Permanently coded safety

Permanently coded system groups with different codings and independent logic functions can be assembled in a **samos** overall system in accordance with the applications. Each system group in the overall system consists of a clearly coded basic module that can be expanded with input modules of the same coding if necessary.



samos® – easy diagnosis to go

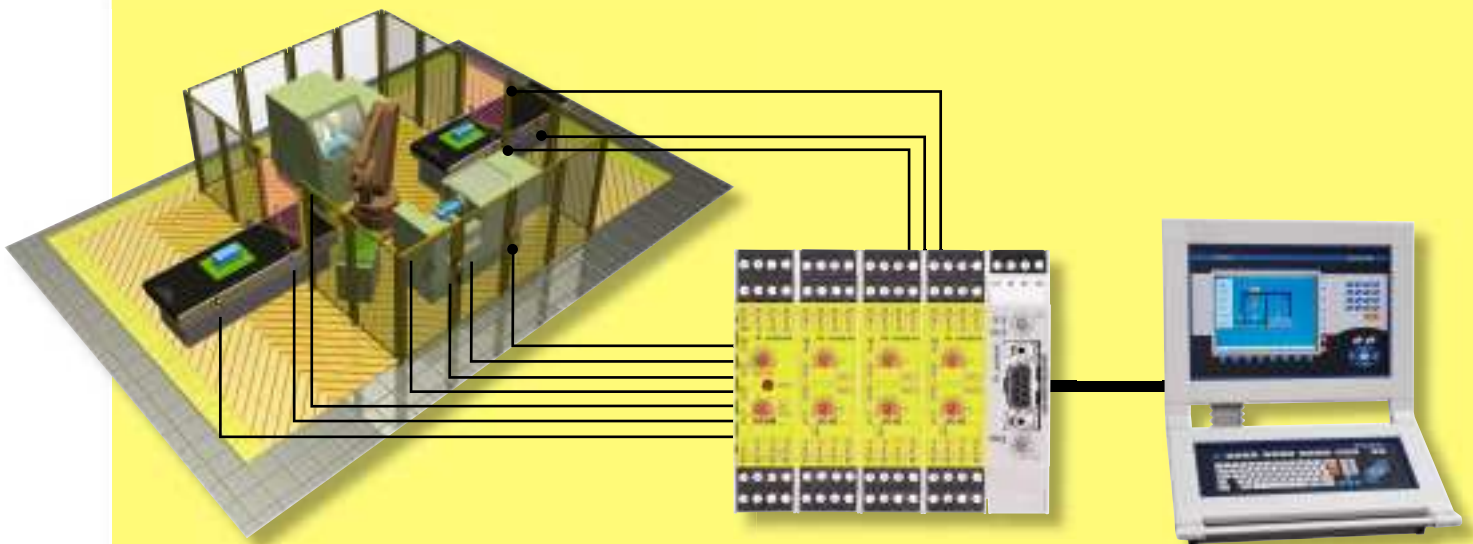
Central Diagnosis via Field Bus or Industrial Ethernet

If you integrate a gateway the higher-order controller will always be kept informed of the system status. The modules for Profibus- DP, CANopen and DeviceNet provide the user with system information for diagnosis purposes. It can be sent to other bus stations (e.g. PLC) via the field bus.

Conversely, four addressable outputs on the gateway allow you, for example, to trigger a safety function reset via the field bus or Industrial Ethernet without influencing the safety modules of the **samos®** system.

Application in industrial manufacturing

samos®





samos® – Safety bus with coding

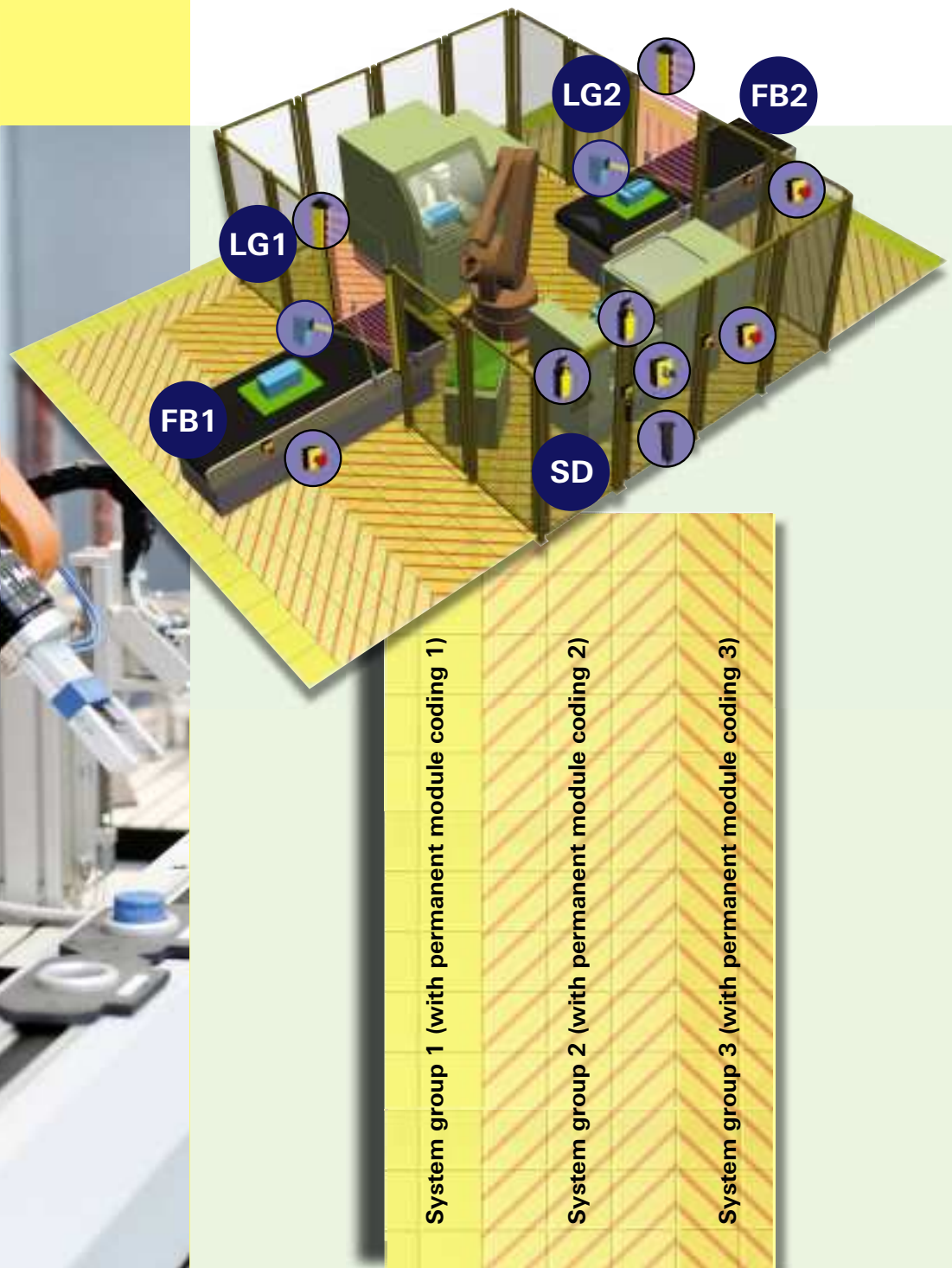
Internal Safety Bus

The power voltage is fed to the basic master module and all other basic modules. The powering of the other modules and the communication are handled via the internal safety bus with stable side contact strips – no more extra “lost part” plug connectors needed.

More safety through coding

In our improved **samos** system, each basic module (SA-BM; SA-BS) and each input module (SA-IN) is permanently coded according to its system group (1-3) and cannot be used in other system groups. Basic modules with the same coding cannot be put together. The modules SA-BM, SA-BS and/or SA-IN may not be used in combination with modules of the **samos** system that were delivered before 17 April.2012 (up to construction level E-01) in Germany in an overall system with two or more basic modules of the same coding and at least one input module without the agreement of the patent owner of the German patent 100 20 075 (for more information, see <http://register.dpma.de/DPMAregister/pat/einsteiger>).





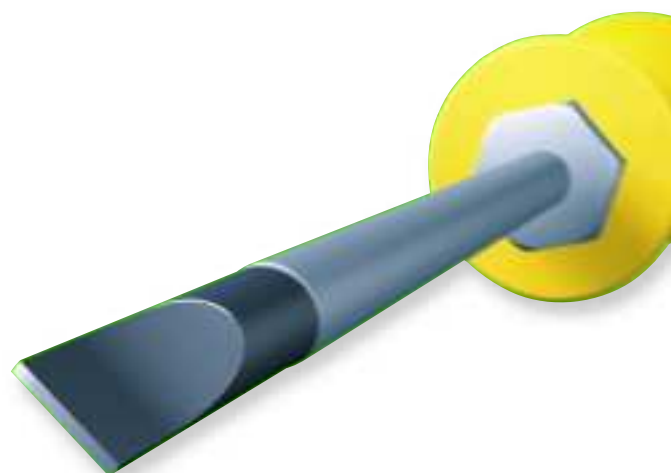
Easy practicality

A machining center with two machines, a robot for handling the parts, feed belts – a standard setup in industrial manufacturing. Comprehensive safety monitoring is obligatory. What you need is flexibility, so that not every malfunction leads to total shutdown, and, for example, setup mode is still possible.

samos® – safety Zones

samos® offers the flexible solution for this safety task, through its modular design and the possibility of setting up input group hierarchies. This means you can create zones where different safety responses are triggered according to place and type.

- Operating one of the three emergency stop switches in system group 1 shuts the machining center down completely in zones 0, 1 and 2. If light curtain LG1 is interrupted by a person, the machines, the robot and feed belt FB1 are shut down.
- If light curtain LG2 is interrupted by a person, all dangerous movements and feed belt FB2 are shut down.
- Muting sensors bridge the light curtain function briefly to allow normal material transport through the light curtain.
samos® also monitors the muting sensors.
- When the safety door SD is opened only system group 3 is shut down. Feed belt FB2 can still transport material to the next machining station.
- However, personnel can enter the shut-down system group 3 for setup operation after the lockswitch and the enabling button have been operated. Jog mode is used, for example, for movements during setup. Emergency stop and light curtain monitoring remain active.
- The adjustable release delay on the **samos®** outputs means that in all robot and machine shutdowns, stop Category 1 is used for controlled stopping.
- The optional field bus connection sends the input/output status, for example to a higher-order PLC. The PLC, in turn, can reset individual zones via the field bus.





samos® – diversity of function

samos® offers input circuit functions for a wide range of typical machinery and plant engineering functions through to special functions for special sensors. Even a stand-alone base module offers numerous application options and covers the functionality of many types of conventional single safety switching device.

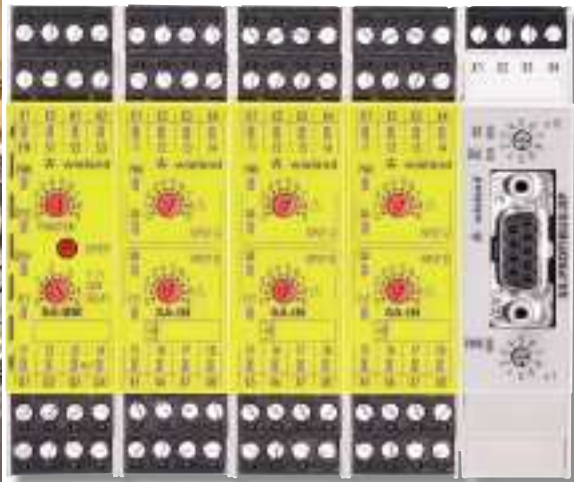



Illustration example: **samos** overall system consisting of a system group (coding 1) and a Profibus-DP gateway

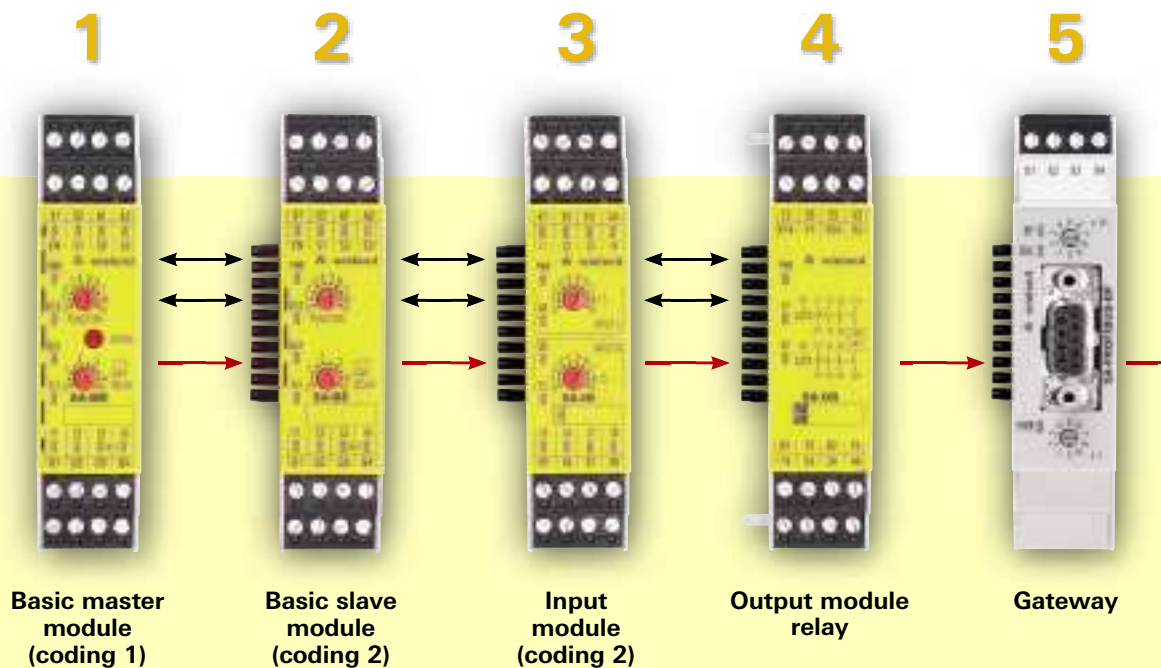




samos® – economical safety

With all its advantages, **samos®** is more cost-effective than the normal safety switching devices, even with just a few safety channels. Just two **samos®** modules in 45 mm housing width can replace up to 6 two-channel safety switching devices – at the same cost. And for larger configurations the **samos®** system is the clear winner. Another advantage: modular flexibility makes investment mistakes almost impossible.





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 (basic slave 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

Basic slave module

Safety module with 9 pre-programmed function blocks, 8 safe inputs and 4 safe outputs

3

Input module

Expansion module with 10 function blocks and 8 safe inputs

4

Output module relay

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

5

Gateway

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

samos® – maximum flexibility

Intelligently connected modules

The modules are connected to a standard DIN rail and pressed together. The obligatory basic module Master (with coding 1) is connected on the left side of the rail, and any necessary additional basic slave modules (with coding 2 or higher), input modules (coding for the basic module shown on the left) and output module relays are connected in between. 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.

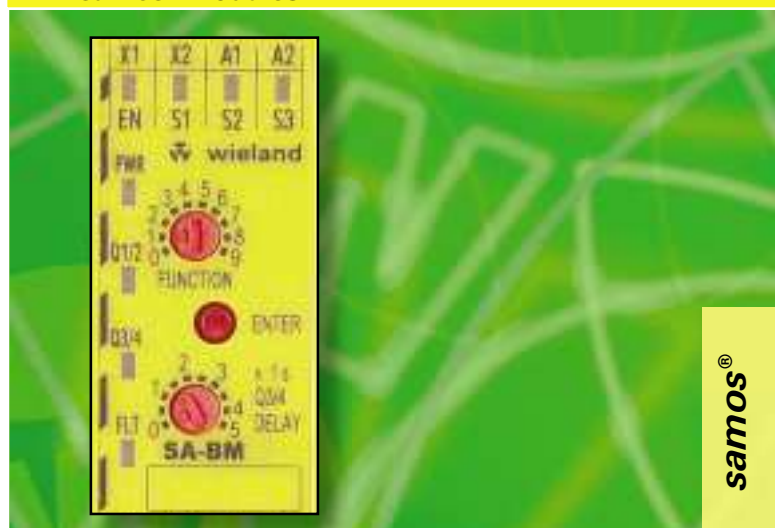
The relay modules are integrated in the function via external wiring. If necessary such system group are made up of basic modules, input modules and relay output modules can be wired together. This allows the implementation of a wide variety of input/output functions with separate or combined effects.

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).

Clear handling – maximum flexibility

samos® modules



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

Additional functions such as automatic reset, startup and re-startup blocking or retriggering of the off-delay are implemented with terminal configuration.



Basic module – SA-BM / SA-BS



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.	Std. pack
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-BS-S2-4EKL-A, 5s	24 V DC	Screw terminals, pluggable	2	R1.180.0040.0	1
SA-BS-S2-4EKL-A, 50s	24 V DC	Screw terminals, pluggable	2	R1.180.0050.0	1
SA-BS-S3-4EKL-A, 5s	24 V DC	Screw terminals, pluggable	3	R1.180.0900.0	1
SA-BS-S3-4EKL-A, 50s	24 V DC	Screw terminals, pluggable	3	R1.180.0910.0	1
SA-BM-S1-4EKL-C, 5s	24 V DC	Cage clamp, pluggable	1	R1.180.0360.0	1
SA-BM-S1-4EKL-C, 50s	24 V DC	Cage clamp, pluggable	1	R1.180.0370.0	1
SA-BS-S2-4EKL-C, 5s	24 V DC	Cage clamp, pluggable	2	R1.180.0390.0	1
SA-BS-S2-4EKL-C, 50s	24 V DC	Cage clamp, pluggable	2	R1.180.0400.0	1
SA-BS-S3-4EKL-C, 5s	24 V DC	Cage clamp, pluggable	3	R1.180.0930.0	1
SA-BS-S3-4EKL-C, 50s	24 V DC	Cage clamp, pluggable	3	R1.180.0940.0	1

*) When ordering, please observe the required coding of the modules and the information in "More Safety through Coding" on p. 77.

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		
Wire ranges		
Terminal block	fine-stranded / fine-stranded (solid)	2 x 0.14 to 0.75 mm ² / 1 x 0.14 to 2.5 mm ²
	fine-stranded with ferrules	2 x 0.14 to 0.75 mm ² / 1 x 0.14 to 2.5 mm ²
Spring clamp terminal	fine-stranded / fine-stranded (solid)	2 x 0.14 to 1.5 mm ²
	fine-stranded with ferrules	2 x 0.25 to 1.5 mm ²
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  

Input module – SA-IN



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.	Std. pack
SA-IN-S1-K-A	24 V DC	Screw terminals, pluggable	1	R1.180.0070.0	1
SA-IN-S2-K-A	24 V DC	Screw terminals, pluggable	2	R1.180.0790.0	1
SA-IN-S3-K-A	24 V DC	Screw terminals, pluggable	3	R1.180.0800.0	1
SA-IN-S1-K-C	24 V DC	Cage clamp, pluggable	1	R1.180.0420.0	1
SA-IN-S2-K-C	24 V DC	Cage clamp, pluggable	2	R1.180.0840.0	1
SA-IN-S3-K-C	24 V DC	Cage clamp, pluggable	3	R1.180.0850.0	1

*1) When ordering, please observe the required coding of the modules and the information in "More Safety through Coding" on p. 77.

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		
Wire ranges		
Terminal block	fine-stranded / fine-stranded (solid)	2 x 0.14 to 0.75 mm ² / 1 x 0.14 to 2.5 mm ²
	fine-stranded with ferrules	2 x 0.14 to 0.75 mm ² / 1 x 0.14 to 2.5 mm ²
Spring clamp terminal	fine-stranded / fine-stranded (solid)	2 x 0.14 to 1.5 mm ²
	fine-stranded with ferrules	2 x 0.25 to 1.5 mm ²
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  	

Output module – SA-OR



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)

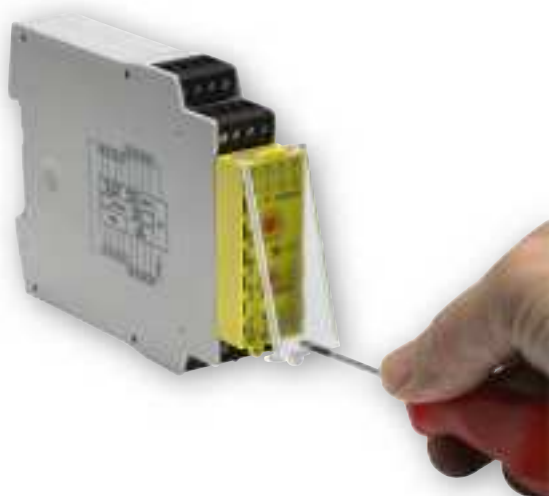
Overview of devices | part numbers

Type	Rated voltage	Terminals	Part no.	Std. pack
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	Cage clamp, pluggable	R1.180.0430.0	1
SA-OR-S2-2RK-C	24 V DC	Cage clamp, 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		
Wire ranges		
Terminal block	fine-stranded / fine-stranded (solid)	2 x 0.14 to 0.75 mm ² / 1 x 0.14 to 2.5 mm ²
	fine-stranded with ferrules	2 x 0.14 to 0.75 mm ² / 1 x 0.14 to 2.5 mm ²
Spring clamp terminal	fine-stranded / fine-stranded (solid)	2 x 0.14 to 1.5 mm ²
	fine-stranded with ferrules	2 x 0.25 to 1.5 mm ²
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  

Cover – SA-COVER



Features

- The optional **SA-COVER** faceplate can be snapped onto the front of the unit to prevent access to the adjustable controls. A lock-out accessory can also be applied.
- The cover can only be opened with a screwdriver.

Overview of devices | part numbers

Type	Terminals /Remarks	Part no.	Std. pack
SA-COVER	Switch cover	R9.211.0430.0	1



Fieldbus Gateways

With the **samos®** gateways, system information can be transferred from the configurable **samos®** safety system to an industrial control or a visualization system, for example



Application examples:

- Input and Output states
- Configuration data
- Fault data (e.g., configuration faults, faults during operation)

SA-PROFIBUS-DP

Features

- Fieldbus protocol PROFIBUS-DP
- Communication with PLC
- Transfer rate up to 12 MBaud
- 4 semi-conductor outputs on board

SA-DeviceNet

Features

- Fieldbus protocol DeviceNet
- Communication with PLC
- Transfer rate up to 500 KBit/s
- 4 semi-conductor outputs on board

SA-CANopen

Features

- Fieldbus protocol CANopen
- Communication with PLC
- Transfer rate up to 1 MBit/s
- 4 semi-conductor outputs on board

Overview of devices | part numbers

Type	Rated voltage	Terminals	Part no.	Std. pack
SA-CANopen-A	24 V DC	Screw terminals, pluggable	R1.180.0100.0	1
SA-DeviceNet-A	24 V DC	Screw terminals, pluggable	R1.180.0350.0	1
SA-PROFIBUS-DP-A	24 V DC	Screw terminals, pluggable	R1.180.0090.0	1
SA-CANopen-C	24 V DC	Cage clamp, pluggable	R1.180.0460.0	1
SA-DeviceNet-C	24 V DC	Cage clamp, pluggable	R1.180.0470.0	1
SA-PROFIBUS-DP-C	24 V DC	Cage clamp, pluggable	R1.180.0450.0	1

Ethernet Gateways



SA-EN-PN

Features

- Industrial Ethernet protocol PROFINET IO
- Communication with PLC
- Transfer rate up to 100 MBit/s (100Base-T)
- 4 semi-conductor outputs on board



SA-EN-MOD

Features

- Industrial Ethernet protocol MODBUS/TCP
- Communication with PLC
- Transfer rate up to 100 MBit/s (100Base-T)
- 4 semi-conductor outputs on board



SA-EN-IP

Features

- Industrial Ethernet protocol Ethernet/IP
- Communication with PLC
- Transfer rate up to 100 MBit/s (100Base-T)
- 4 semi-conductor outputs on board

Overview of devices | part numbers

Type	Terminals	Terminals/Remark	Part no.	Std. pack
SA-EN-PN-A	24 V DC	Profinet IO	R1.180.0760.0	1
SA-EN-MOD-A	24 V DC	MODBUS/TCP	R1.180.0750.0	1
SA-EN-IP-A	24 V DC	ETHERNET/IP	R1.180.0770.0	1





samos® PRO – Modular safety control

samos® PRO is a powerful and compact safety controller for machine and plant manufacturing applications. Using modules which are only 22.5 mm in width, programmable safety solutions can be assembled with total widths starting at 45 mm.

samos® PRO – overview of advantages

- High degree of flexibility due to extreme compact and modular design
- Operator control is child's play with the graphic **samos®** PLAN programming system
- Almost no downtime due to simple diagnostics, simulation and exchangeable program memory
- Inexpensive due to almost no wiring work and fast commissioning
- Simple integration into fieldbus systems and Industrial Ethernet networks

You can get the free programming tool **samos®** PLAN – via our Download Center at www.wieland-electric.com
Support / Download Center / Safety technology

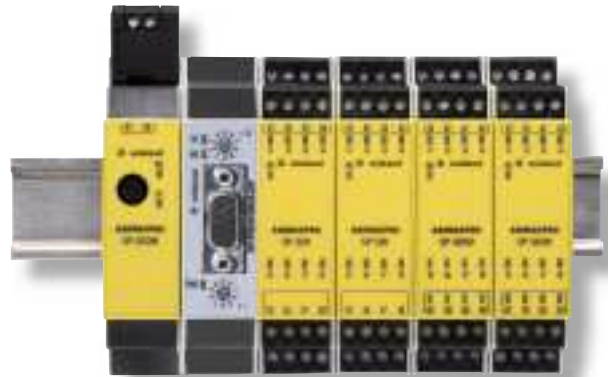
Implementation of complex functions is simple and safe.



samos® PRO – the modules

samos® PRO – professional safety

samos® PRO can simultaneously process up to 96 safe inputs and 48 safe outputs and monitors all types of safety sensors. The system enables extremely short switchoff times of 8 milliseconds. Safety devices can therefore be installed near the danger zones of a machine, for example.

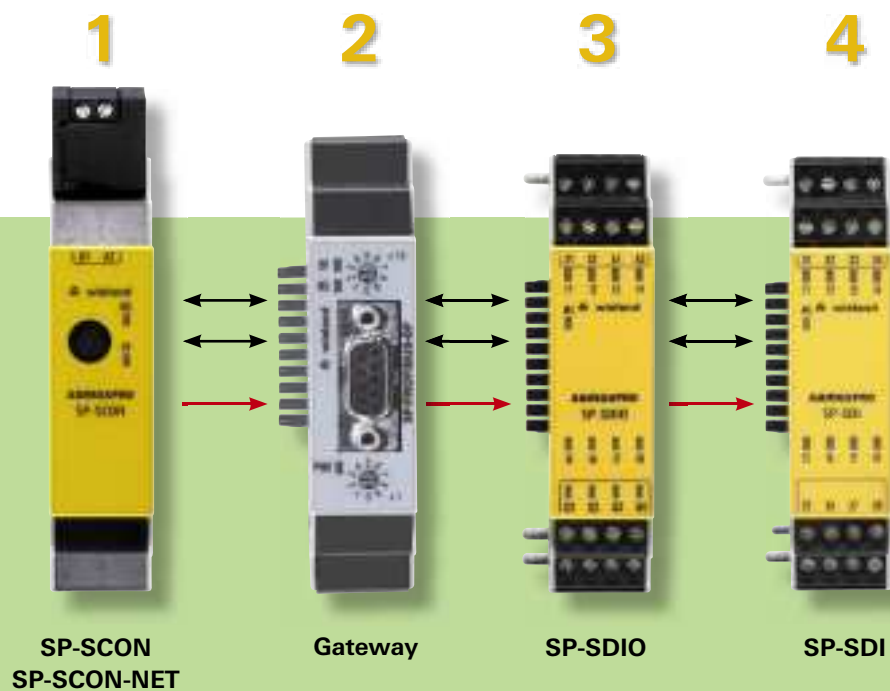


Always available

The application program is stored in the exchangeable program memory which also contains the power supply connection of the system. This means that the application program always remains available in the control cabinet, even when even when memory is being exchanged.

Materials must be moved and stored safely in high-shelf storage systems.





1 SP-SCON/SP-SCON-NET
Safe controller module with serial interface and exchangeable program memory

2 Gateway
Gateways for bi-directional data communication

3 SP-SDIO
I/O-modules with 8 safe digital inputs and 4 safe digital outputs

4 SP-SDI
Input-module with 8 safe digital inputs

samos® PRO – system characteristics

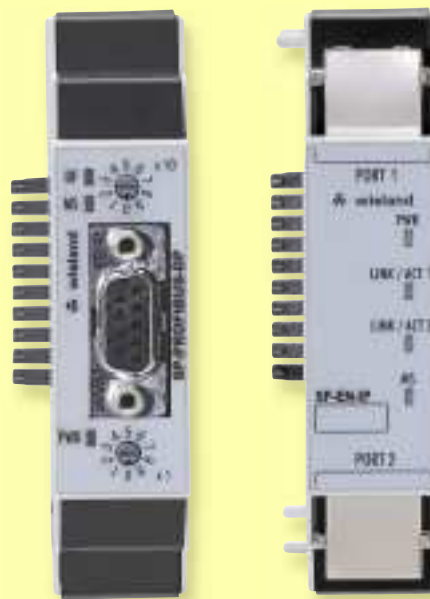
samos® PRO consists of the safe **SP-SCON/**
SP-SCON-NET controller with integrated pro-
gramming/diagnostic interface and a series of
safe SP-SDIO or SP-SDI I/O modules. Appropriate
gateways permit communication with fieldbuses
or Ethernet networks.

Programming is simple and intuitive with
the graphic programming user interface
samos® PLAN, which uses a wide variety of
safe function blocks. An exchangeable
program memory (**samos® MEMORY**) is also
part of the system.

samos® PRO fulfills PL e/category 4 (EN ISO
13849-1) and SIL 3 (EN 62061).

The gateways

samos® PRO



samos® PRO



Flexible and safe from loss –
the safe program memory.







samos®NET – safe interconnection

samos®NET is a network which allows machines and systems to be interconnected easily and safely.

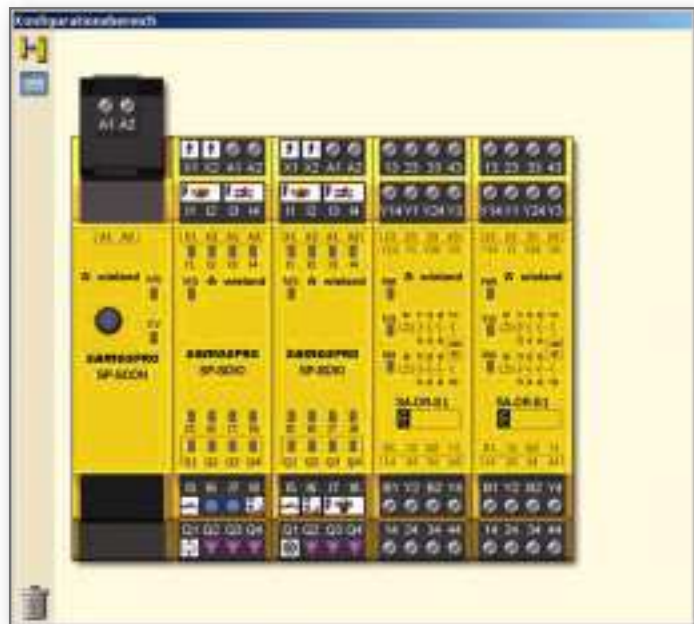
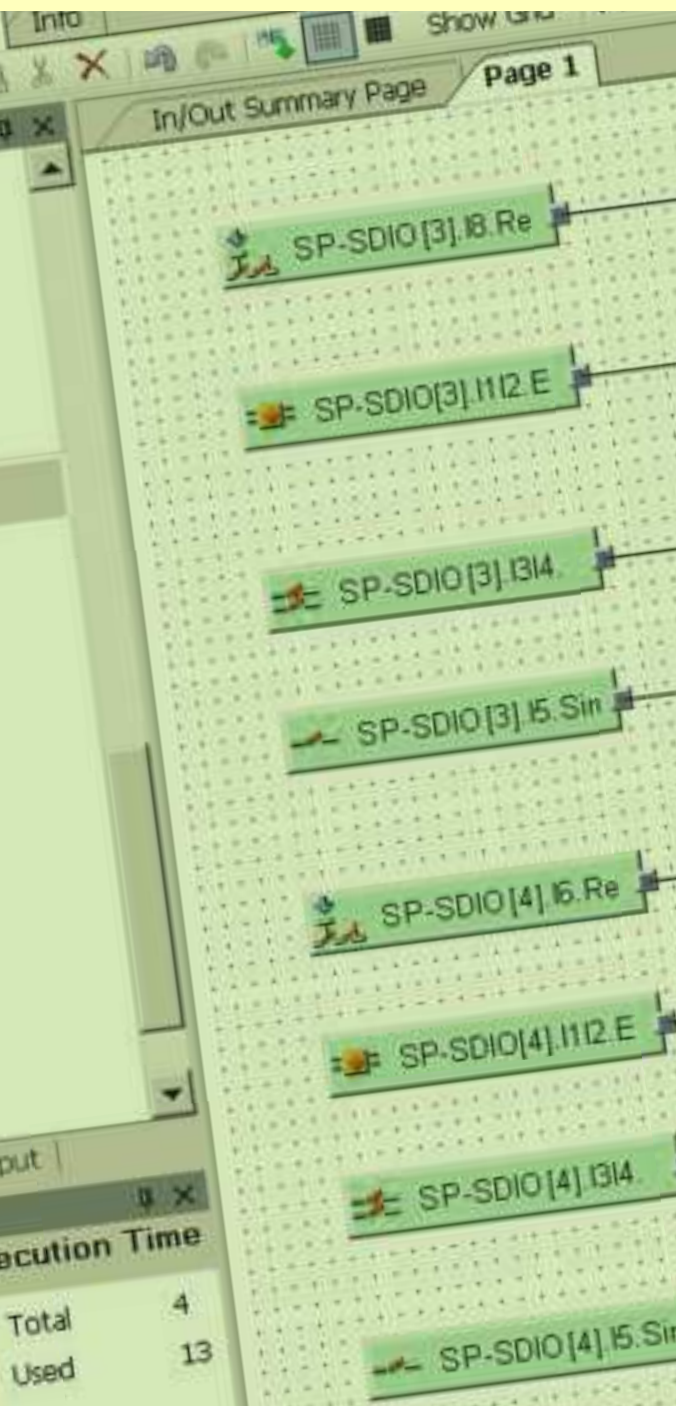
Up to four complete **samos®**PRO systems can be safely interconnected with **samos®**NET, i.e. a total of 384 safe inputs and 192 safe outputs is available to the user.

Configuration and diagnosis of **samos®**NET projects is carried out centrally using the programming tool **samos®**PLAN via one of the interconnected **samos®**PRO systems.

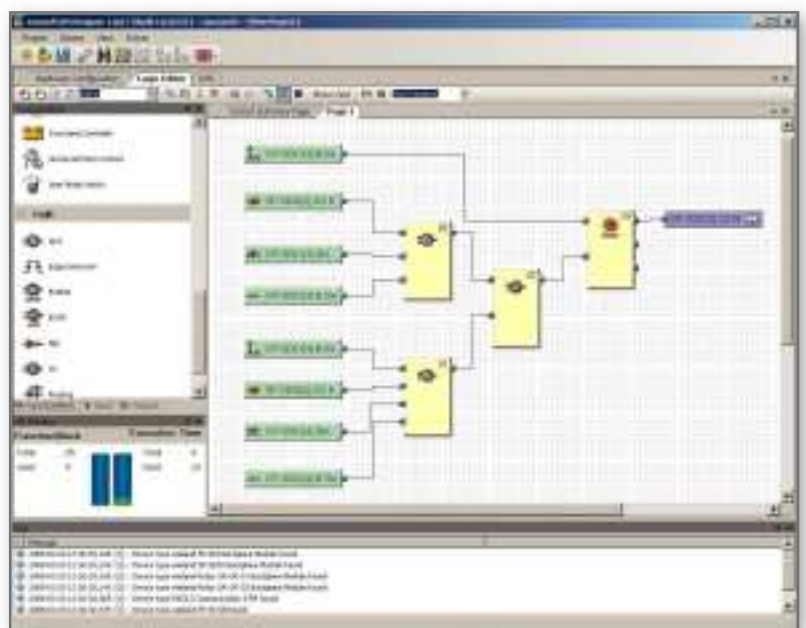
samos®PLAN – the programming tool for **samos®**PRO

- Intuitive, graphic user interface
- Safe interconnection with **samos®**NET
- Convenient network integration
- Diagnosis and programming even via standard Ethernet
- Safe, certified function blocks
- Simple I/O configuration and parameterization
- Simulation and online diagnostics
- Runs under Windows XP, ...





samos®PLAN – Programming, simulation and visualization of complex safety tasks



samos® PLAN – the programming tool for samos® PRO

You don't need to master a programming language to be able to solve technical safety tasks with **samos® PLAN**. The graphic programming user interface is intuitive and supports the user with its many automated functions.

samos® PLAN offers the user many safe, practice-oriented function blocks. For example:

- Emergency stop functions
- Protective door and locking functions
- Light barrier and light curtain functions
- Muting functions
- Two-hand and press functions
- Logic functions
- Timer and counter functions
- Operating mode switch
- Application-specific function blocks



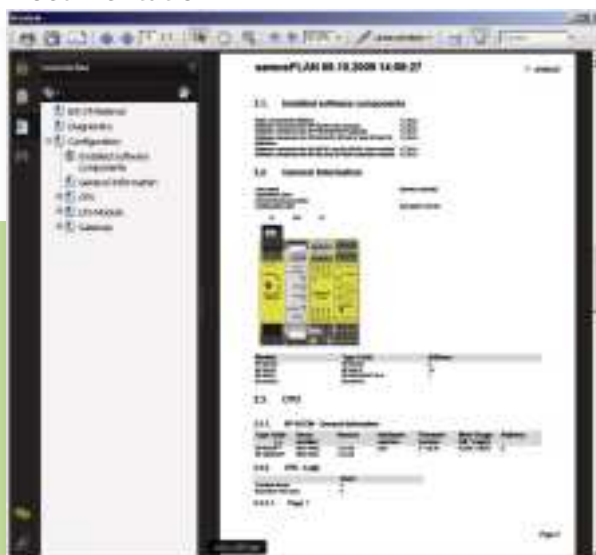
Clearly organized and functional – the practice-oriented function blocks.



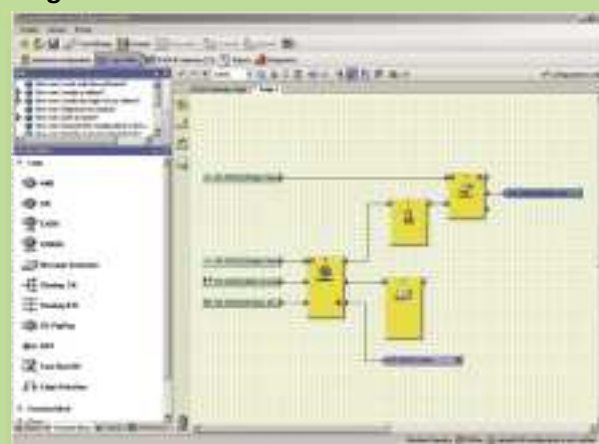
samos® PRO



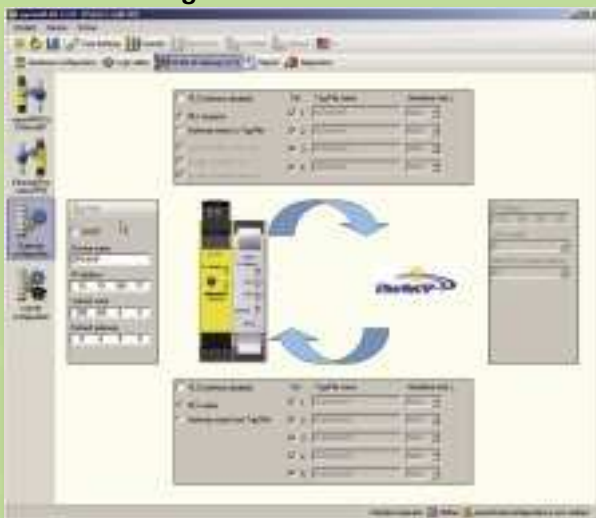
Documentation



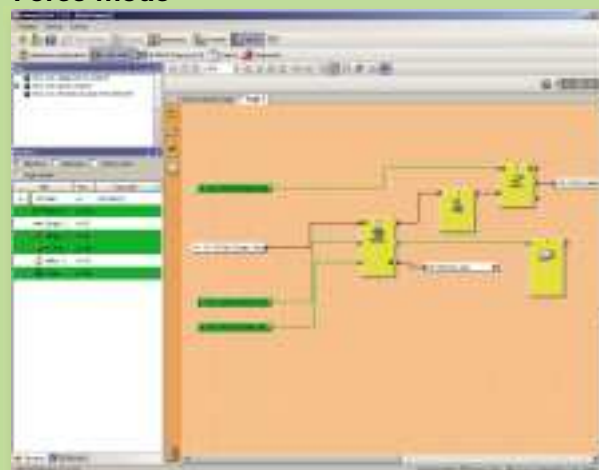
Logic editor



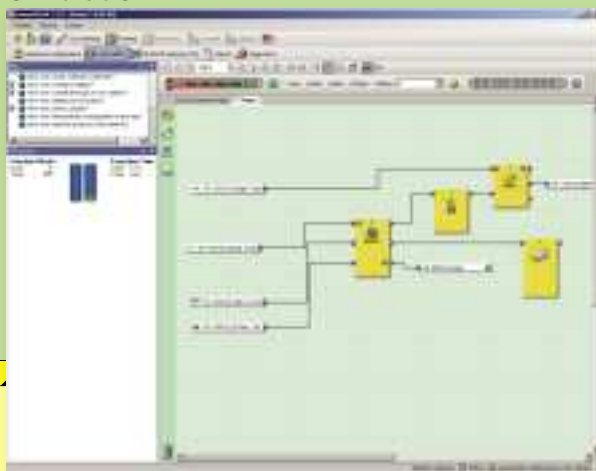
Network integration



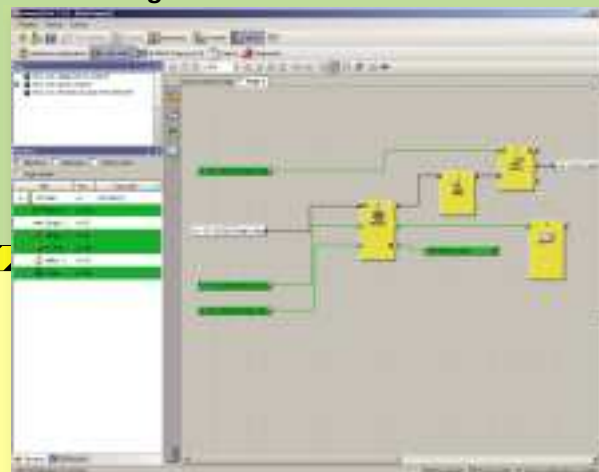
Force mode



Simulation



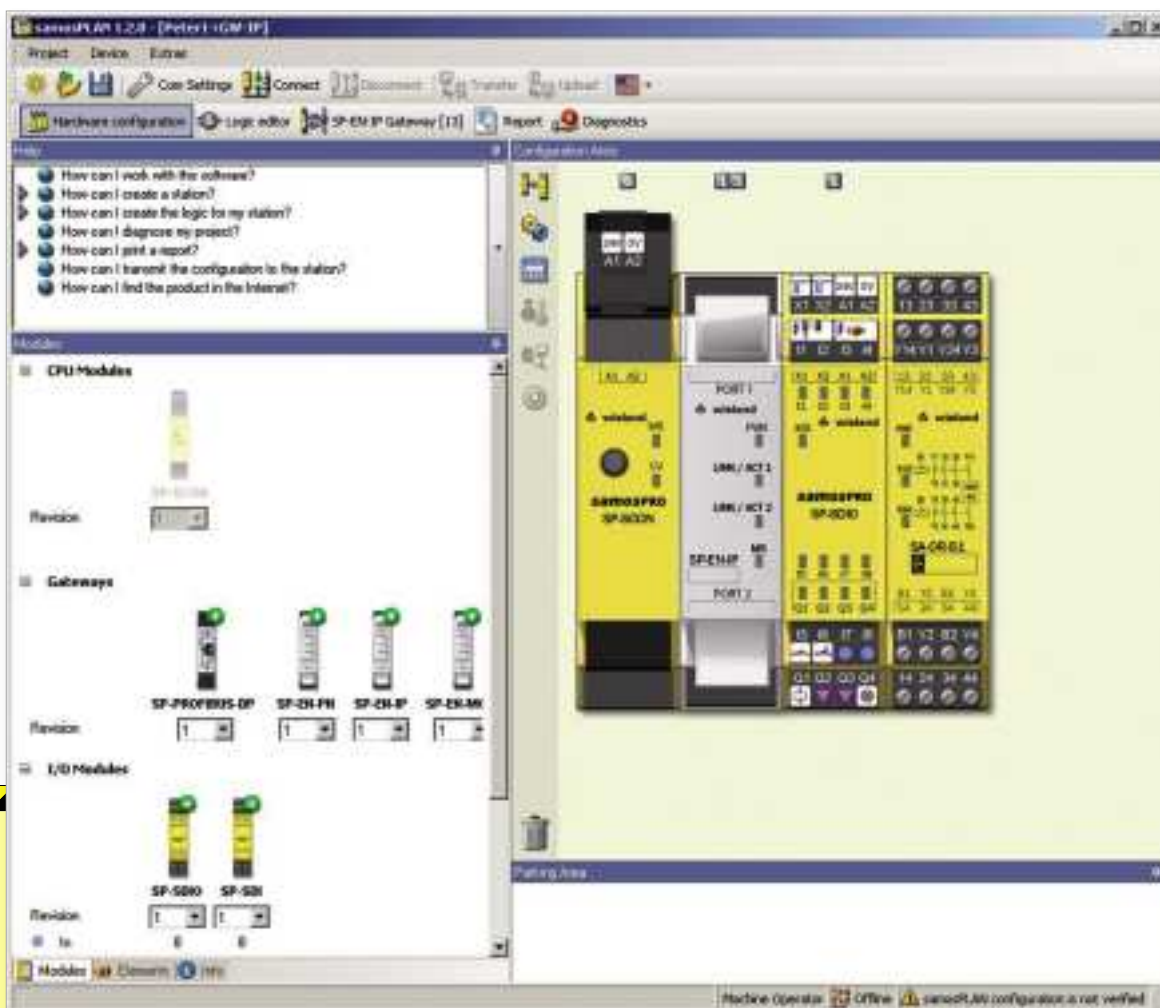
Online diagnosis



samos® PLAN – the programming tool

**A programming tool for all aspects
of safe automation**

- Logic editor
- Network integration
- Simulation
- Documentation
- Force mode
- Online diagnosis



Controller module – SP-SCON/SP-SCON -NET Program memory – SP-MEMORY



Applications

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

Features

- Plug for removable program memory (to be ordered separately)
- Serial interface RS-232

Overview of devices | part numbers

Type	Rated voltage	Remarks	Part no.	Std. pack
SP-SCON-P1-K	24 V DC	Controller modules (without prog. memory)	R1.190.0010.0	1
SP-SCON-NET-P1-K	24 V DC	Controller modules, interconnectable (without prog. memory)	R1.190.0020.0	1
SP-MEMORY		Program memory	R1.190.0080.0	1

Technical data

Function display	2 LEDs, green/red
Power supply circuit	
Operating voltage range	16.8 V DC to 30 V DC
Rated consumption	3 W
Electrical isolation power supply circuit - control circuit	no
Input circuits	
Quantity / type	-
Output circuits	
SP-SCON	-
SP-SCON-NET	EFI interface
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 – +55°C / -25°C – +75°C
Standards	EN 61508, EN 62061, EN ISO 13849-1, EN 50156-1
Approvals	TÜV

Input-/ output module – SP-SDIO



Applications

- Machine building industry
- Combustion plants
- 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.	Std. Pack
SP-SDIO84-P1-K-A	24 V DC	Screw terminals, pluggable	with output test-pulses	R1.190.0030.0	1
SP-SDIO84-P1-K-C	24 V DC	Cage clamp, pluggable	with output test-pulses	R1.190.0040.0	1
SP-SDIO84-P2-K-C	24 V DC	Cage clamp, pluggable	without output test-pulses	R1.190.0240.0	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	2 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 – +55°C / -25°C – +75°C
Standards	EN 61508, EN 62061, EN ISO 13849-1, EN 50156-1
Approvals	TÜV  

Input module – SP-SDI



Applications

- Machine building industry
- Combustion plants
- 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.	Std. pack
SP-SDI8-P1-K-A	24 V DC	Screw terminals, pluggable	R1.190.0050.0	1
SP-SDI8-P1-K-C	24 V DC	Cage clamp, 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 – +55°C / -25°C – +75°C
Standards	EN 61508, EN 62061, EN ISO 13849-1, EN 50156-1
Approvals	TÜV  

samos[®] PRO – Starter set & accessories



samos[®] PRO starter set

- A safe way to get started
- Contains all required components
- With programming tool **samos[®] PLAN**
- With USB-RS232 converter

You can get the free programming tool **samos[®] PLAN** via our Download Center at www.wieland-electric.com Support / Download Center / Safety technology



samos[®] PRO accessories

- SP-CABLE1 PC connection cable
- SP-CABLE3 CAN cable
- SP-CONVERTER USB-RS232 converter
- WKFN 2,5 E/35 GO-URL **fasis**-multi-tier block with diodes
- **samos[®] PRO** output filter, 24 V DC, 680 nF
- **samos[®] PRO** output filter, 24 V DC, 2,2 µF
- **samos[®] PRO** visualization set (touch panel 3.5" color, SP-CABLE4, software driver)

Overview of devices | part numbers

Type	Description	Part no.	Std. pack
SP-CABLE1	Connecting cable, M8	R1.190.0090.0	1
SP-CABLE3	CAN cable 2 x 2 x 0.34 mm ² , shielded	00.102.5202.0	1
SP-PRO-STARTER-SET	Content: SP-SCON, SP-SDIO, SP-PLAN, SP-MEMORY, SP-CABLE1, SP-CONVERTER	R1.190.0100.0	1
SP-CONVERTER	USB-RS232-converter	R1.190.0250.0	1
WKFN 2,5 E/35 GO-URL	fasis - Multi-tier block with diodes	56.703.8755.9	100
APFN 2,5 E/35	End plate	07.312.7355.0	10
SP-FILTER1	samos[®] PRO output filter, 24 V DC, 680 nF	R1.190.0260.0	1
SP-FILTER2	samos[®] PRO output filter, 24 V DC, 2,2 µF	R1.190.0270.0	1
SP-VISUAL-SET	samos[®] PRO visualization set (touch panel 3.5" color, SP-CABLE4, software driver)	R1.190.0280.0	1

samos[®]PRO - Fieldbus gateways

With the **samos[®]PRO** gateways, system information can be transferred between the **samos[®]PRO** safe control and an industrial control, a visualization system or a PC.



Application examples:

- Direct HMI connection
- Remote diagnosis and programming
- Read and write 25 byte
- Input and output states
- Configuration data
- Process data from the PLC
- Fault data (e.g. fault data of the connected sensor technology)

SP-CANopen

Features

- Fieldbus protocol CANopen
- Bidirectional communication with PLC
- Transfer rate up to 1 MBit/s
- Transfer of at least 50 bytes of data
- Simple configuration with **samos[®]PLAN**

SP-PROFIBUS-DP

Features

- Fieldbus protocol PROFIBUS-DP
- Bidirectional communication with PLC
- Transfer rate 12 MBaud
- Transfer of at least 50 bytes of data
- Simple configuration with **samos[®]PLAN**

Overview of devices | part numbers

Type	Rated voltage	Remark	Part no.	Std. pack
SP-CANopen	24 V DC	CANopen	R1.190.0210.0	1
SP-PROFIBUS-DP	24 V DC	PROFIBUS-DP	R1.190.0190.0	1
SP-EN-PN	24 V DC	PROFINET IO	R1.190.0140.0	1
SP-EN-MOD	24 V DC	MODBUS/TCP	R1.190.0130.0	1
SP-EN-IP	24 V DC	ETHERNET/IP	R1.190.0150.0	1

samos® PRO - Ethernet gateways



SP-EN-PN

Features

- Industrial Ethernet protocol PROFINET IO
- Bidirectional communication with PLC
- Transfer rate 100 Mbit/s (100Base-T)
- Transfer of at least 50 bytes of data
- Simple configuration with **samosPLAN**



SP-EN-MOD

Features

- Industrial Ethernet protocol MODBUS/TCP
- Bidirectional communication with PLC
- Transfer rate 100 Mbit/s (100Base-T)
- Transfer of at least 50 bytes of data
- Simple configuration with **samosPLAN**



SP-EN-IP

Features

- Industrial Ethernet protocol Ethernet/IP
- Bidirectional communication with PLC
- Transfer rate 100 Mbit/s (100Base-T)
- Transfer of at least 50 bytes of data
- Simple configuration with **samosPLAN**



Hotline – one call is all it takes

Our safety hotline **+49 951 9324-999** and our e-mail-service **safety@wieland-electric.com** is available to answer all your questions on the subject of safety.



Wieland e-Catalog

For further technical information and the latest news on safety technology, go to:

<http://eshop.wieland-electric.com>

Help and support

Application manual – ideas on the subject of safety

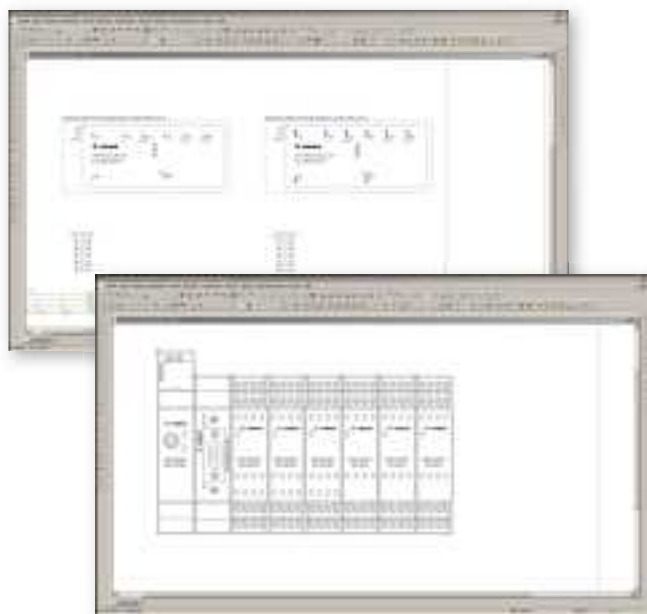
Wieland Electric supports you during the selection and utilization of safety components, and provides users with the safety application manual which contains realistic suggested solutions for many safety tasks.

The application manual safety can be downloaded for free from the Wieland homepage at www.wieland-electric.com



EPLAN – support during configuration

Support of automation projects naturally also includes EPLAN data and macros which can be very easily downloaded from the Wieland homepage at www.wieland-electric.com





Training



Wieland Electric offers a range of workshops about the topic of machine safety.

The training covers hazard and risk analysis, definition of the necessary safety functions using the SISTEMA tool and support for selecting and implementing the necessary technical safety measures.

We provide our safety workshops and product training sessions both as in-house training and as a workshop at our modern Sales and Marketing Center in Bamberg.

- **Risk assessment in accordance with EN ISO 14121**
- **Risk reduction in accordance with EN 12100-1,-2**
- **Definition of technical safety measures**
- **Assessment of safety functions (SISTEMA)**
- **Product training**
- **Training for *samos* PLAN**

Simply contact us at **+49 951 9324 999**
or via e-mail at **safety@wieland-electric.com**

**Sales and Marketing Center
in Bamberg**

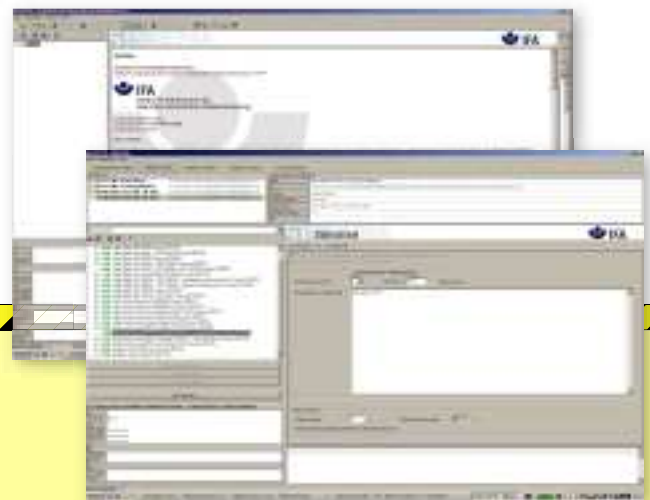




SISTEMA

SISTEMA – safety of machine controls

The SISTEMA software provides developers and testers of safety-related machine controls with comprehensive support when assessing safety within the scope of **DIN EN ISO 13849-1**. The name **SISTEMA** comes from the German "**Si**cherheit von **ST**eueringen an **MA**schinen" (safety of machine controls). The tool allows you to reproduce the structure of the safety-related control elements on the basis of the intended architectures and then enables an automated calculation of the reliability values at various levels of detail, including the performance level (PL) attained.



Hotline • Advice

Additional information

Technical Support

Automation technology:

■ Safety technology **safety**

Phone: +49 951 9324-999

e-mail: safety@wieland-electric.com

■ Remote power distribution **podis**®

Phone: +49 951 9324-998

■ **interface**: Power supply, industrial Ethernet switches, timer relays, measuring and monitoring relays, coupling relays, analog modules, remote I/O, surge protection, passive interfaces

Phone: +49 951 9324-995

■ DIN rail terminal blocks **fasis**, **selos**

Phone: +49 951 9324-991

■ Industrial multipole connectors **revos**

Phone: +49 951 9324-992

■ PCB terminals and connectors **wiecon**

Appliance terminals, european terminal strips, housings for electronic components

Phone: +49 951 9324-993

Fax: +49 951 9326-991

e-mail: AT.TS@wieland-electric.com

Technical Support

Building services engineering:

■ System connectors for building installation

gesis CON, **gesis** RAN, **gesis** ELECTRONIC

Phone: +49 951 9324-996

■ DIN rail terminal blocks **fasis** BIT, **selos** BIT

Phone: +49 951 9324-991

Fax: +49 951 9326-996

e-mail: BIT.TS@wieland-electric.com

Technical Support

Photovoltaics/solar technology:

■ Photovoltaics **gesis** SOLAR

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General information and news:

www.wieland-electric.com

Visit our e-catalog at

<http://eshop.wieland-electric.com>

Sales Service:

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◀ **Informational material for
ordering and for downloading
from our websites**



Subject to technical modifications!

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safety@wieland-electric.com

Industrial technology

Solutions for the control cabinet

- DIN rail terminal blocks
 - Screw, tension spring or push-in connection technology
 - Wire cross sections up to 240 mm²
 - Numerous special functions
 - Software solutions interfacing to CAE systems
- Safety
 - Safe signal acquisition
 - Safety switching devices
 - Modular safety modules
 - Compact safety controllers
 - Applicative consultancy and training
- Network engineering and fieldbus systems
 - Remote maintenance via VPN industrial router and VPN service portal
 - Industrial Ethernet switches
 - PLC and I/O systems, standard and increased environmental conditions
- Interface
 - Power supply units
 - Overvoltage protection
 - Coupling relays, semiconductor switches
 - Timer relays, measuring and monitoring relays
 - Analog coupling and converter modules
 - Passive interfaces

Solutions for field applications

- Decentralized installation and automation technology
 - Electrical installation for wind tower
 - Fieldbus interfaces and motor starters
- Connectors for industrial applications
 - Rectangular and round connectors
 - Aluminum or plastic housings
 - Degree of protection up to IP68
 - Current-carrying capacity up to 100 A
 - Connectors for hazardous areas
 - Modular, application-specific technology

PC board terminals and connectors

- Screw or spring clamp connection technology
- Spacings: 3.5mm to 10.16mm
- Reflow or wave soldering process

Building and installation technology

- Building installation systems
 - Main power supply connectors IP20/IP65...IP68
 - Bus connectors
 - Low-voltage connectors
 - Power distribution system with flat cables
 - Distribution systems
 - Bus systems in KNX, LON and radio technology
 - DIN rail terminal blocks for electrical installations
 - Overvoltage protection

contacts
are
green.