



PRODUCT CATALOG

INDUSTRIAL **SAFETY**

Safe systems for mechanical engineering and intralogistics

HELLO WIELAND ELECTRIC

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

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

Expanding from a component-only manufacturer, we are now one of the leading suppliers of innovative, future-oriented, and complete electrical solutions.

The focus here is on the “Installation Systems” and “Safety Automation” sectors. The Installation Systems sector focuses on decentralized energy distribution in modular construction, building automation, EV charging and lighting solutions. In the Safety Automation sector, the focus is on systems and services for the functional safety of machines in the mechanical engineering and wind power sectors.

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



1910

Founded in
Bamberg



1700+

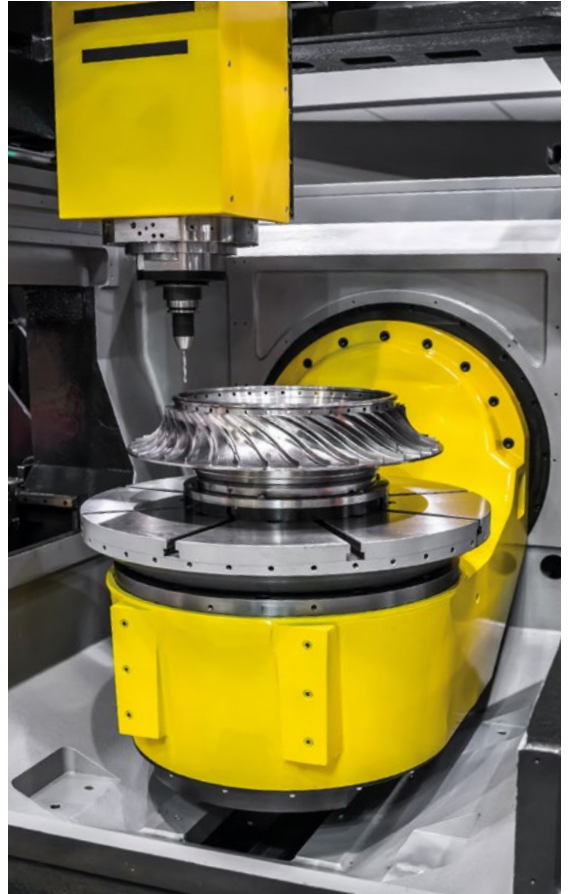
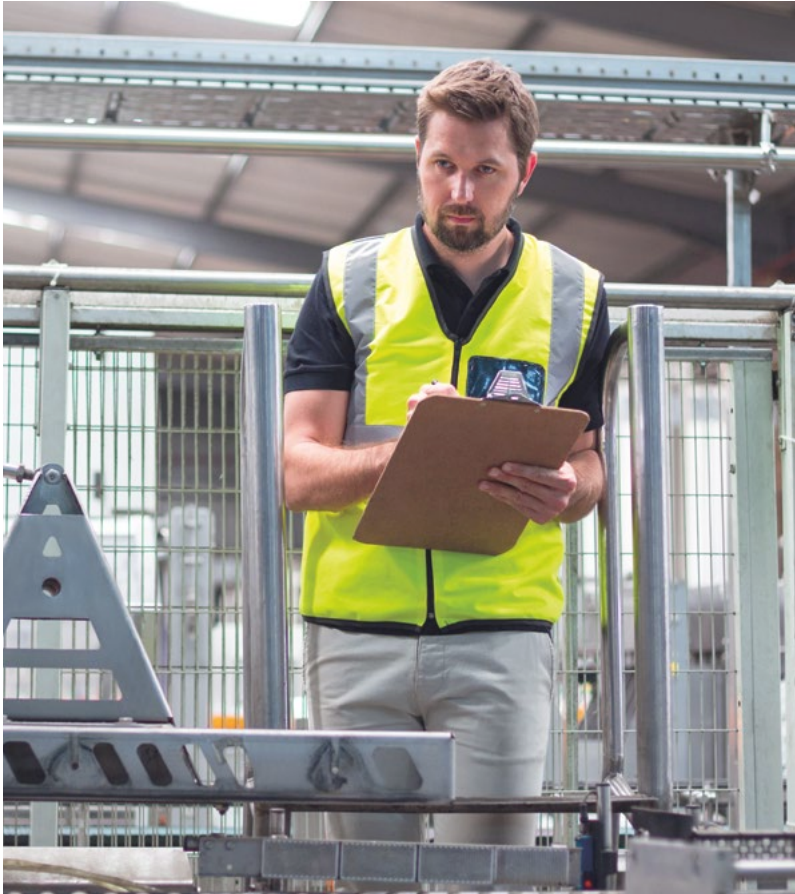
Employees
worldwide



70+

Countries
worldwide

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OVERVIEW

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

Tested technology

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



SAFETY SERVICE TRAINING



SERVICE



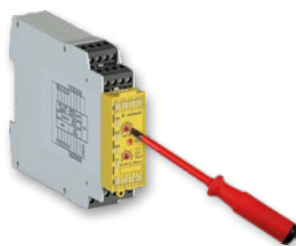
SECURE INDUSTRIAL POWER SUPPLY WIPOS



FUNCTIONAL SAFETY SAMOS® PRO



SAMOS®



SAFE RELAY



SENSOR PRO



WE OFFER YOU:

- + INTUITIVE SOFTWARE
- + MODULAR SAFETY CONTROLLER
- + COMPACT SAFETY CONTROLLER
- + UNIVERSAL SAFETY RELAYS
- + SAFE SIGNAL DETECTION
- + POWER SUPPLIES AND UPS
- + CONSULTING, TÜV-CERTIFIED TRAINING, TRAININGS

FIT FOR SAFETY

From the initial concept to final commissioning, Wieland reliably supports you in the planning and implementation of your machine or production plant. The broad portfolio of safety switching devices covers all important safety functions and meets even complex customer requirements

IMPORTANT STANDARDS FOR GREATER SAFETY

Wieland Electric's safety-related products comply with a number of international standards and regulations in which the aspect of safety of machines and systems plays a key role for a wide variety of applications.

SOLUTIONS FOR MANY INDUSTRIES

The demands on the safety of machine and plant control systems are increasing in all areas. Wieland Electric offers customized, innovative solutions for this, from sensors to safety controllers.

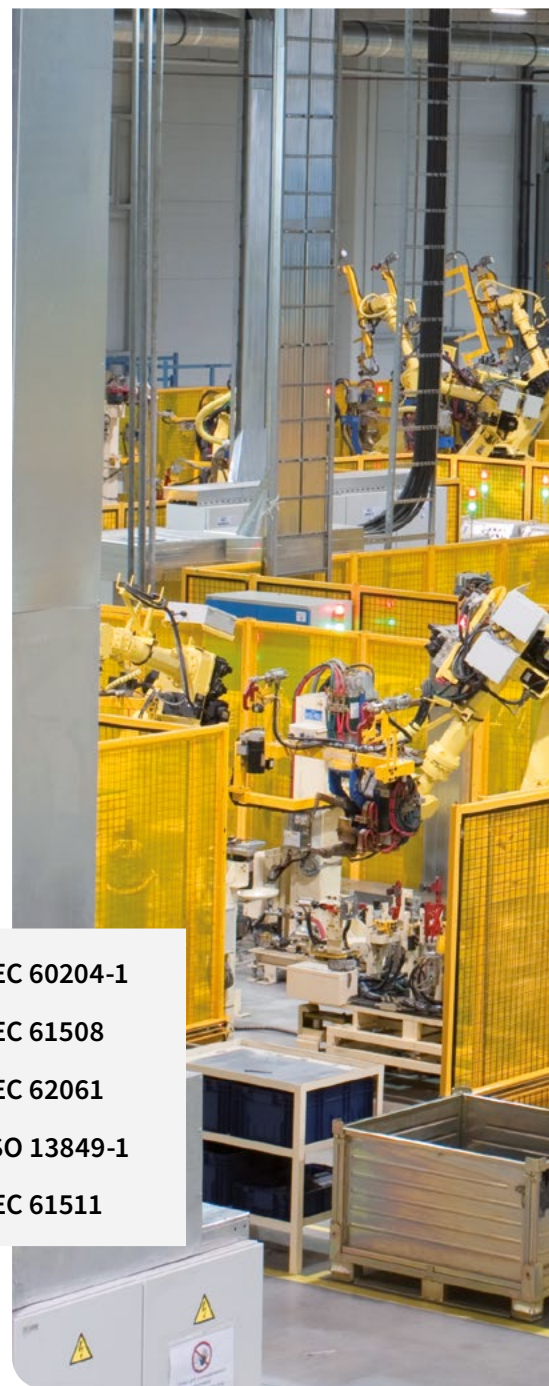
EXPERT KNOWLEDGE CONVEYED IN A PRACTICAL WAY

Wieland Electric offers customer-oriented training programs, useful practical tips, free introductions, comprehensive seminars and sustainable advanced courses.

In addition, our free webinars are available online for a basic introduction to the respective topic.



Further information on training courses and webinars can be found here:
<https://wie.li/trainingen>



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

SOLUTIONS FOR:

- + MACHINE BUILDING
- + MACHINE TOOLS
- + WOODWORKING
- + PLASTICS PROCESSING
- + PRESS
- + PACKAGING MACHINES
- + INTRALOGISTICS



We will accompany you through the individual (partial) steps or the entire CE process.



Create a **risk assessment** (if one does not already exist).

Verification of safety functions according to EN ISO 13849-1.

Validation of the documentation, performance of necessary inspections, tests and measurements, post evaluation.

Check of the existing operating instructions.

CE certification Final report (recommendation/conclusion for the issuance of the EC Declaration of Conformity by the machine manufacturer).

OUR CORE COMPETENCIES ARE **SAFETY, SERVICE, AND TRAINING.**

We support you throughout the entire lifecycle of your machines – from risk assessment to validated safety solutions. With expert advice, standards-compliant concepts, and practical training, we ensure the protection of people and machines. Our experts offer tailored services for functional safety, lockout/tagout, and compliance – efficient, standards-compliant, and precisely according to your requirements.

SERVICES IN THE FIELD OF FUNCTIONAL SAFETY:

- Creation and implementation of safety concepts, hazard and risk analyses, support in conformity assessment and complete documentation
- Support with lockout/tagout programs, modification of existing security solutions, and tailored consulting to meet your specific requirements.

TRAINING COURSES AND SEMINARS:

- Training courses for safety officers, developers, technicians and mechanical engineers – from beginners to experts
- Certified training courses for safety experts such as "Certified Electrical Safety Engineer (CESE)", accredited by SGS-TÜV Saar
- Extended TÜV-certified training courses such as Certified Functional Safety Expert (CFSE), CFSE training for electrical, pneumatic and hydraulic safety systems including standards, risk assessment and practical application
- Flexible formats: in-person, online, in-house and workshops

- ▶ **Learn from highly qualified trainers with many years of practical experience**
- ▶ **Gain up-to-date expertise on laws, guidelines and standards – tailored to your industry and your requirements**
- ▶ **Increase workplace safety, minimize risks, and ensure the global compliance of your machines**

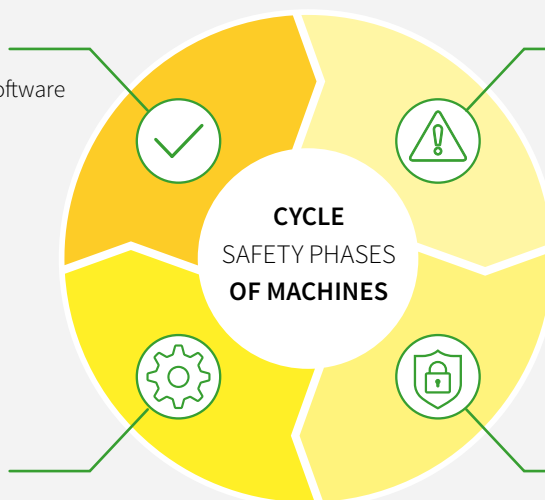




Validation

- Validation of safety-related software according to EN ISO 13849-2
- Validation of the technical documentation
- Verification of components according to specification
- SISTEMA calculation
- Programming of security software samos® PLAN 6

Safety Design



Risk assessment

- Documentation of security risks
- Risk analysis

- Risk reduction concepts
- Determination of PL r / SIL
- Selection of safety components

Safety concept

The safety controller of the next generation



OVERVIEW OF BENEFITS

- License free, intuitive programming with samos® PLAN 6
- All-in-one basic module with gateway
- Compact basic module with up to 16 inputs, 4 outputs and 4 configurable Inputs/outputs
- High scalability up to 12 digital and analog extension modules
- Extreme operation temperature range from -25°C to +65°C
- 4 A switching power at every output pair to save small contactors or relays
- Easy on-site diagnosis thanks LEDs for all inputs and outputs
- Global remote diagnostics via Ethernet

SAMOS[®] PRO COMPACT + MOTION

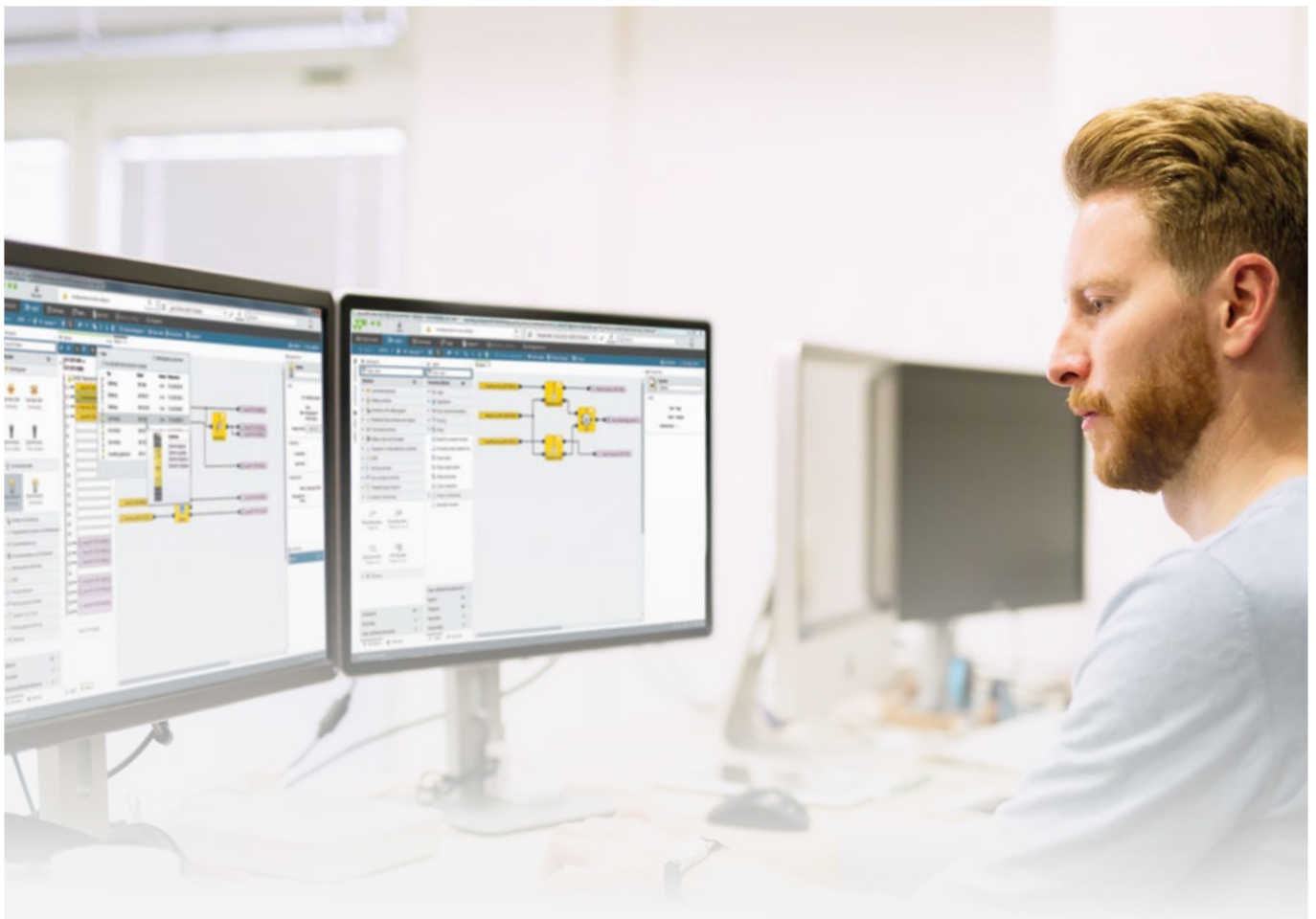
Enhanced functionality

	COMPACT		MOTION	
Type/ Feature	SP-COP2-EN-A SP-COP2-EN-C	SP-COP2-ENI-A SP-COP2-ENI-C	SP-COP2-EN-M-A SP-COP2-EN-M-C	SP-COP2-ENI-M-A SP-COP2-ENI-M-C
Programming via USB Interface	x	x	x	x
Programming via Ethernet Interface	x	x	x	x
PROFIBUS DP, CANopen, EtherCAT (*)	x	x	x	x
PROFINET I/O, Modbus TCP, EtherNet/IP		x		x
Advanced Security	x	x	x	x
Display values/ Communicate	x	x	x	x
Libraries				
Muting	x	x	x	x
Press	x	x	x	x
Analog value processing (*)	x	x	x	x
Combustion technology (*)	x	x	x	x
Motion monitoring			x	x

* These features are available with an additional expansion module

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





SAMOS® PLAN 6 PROGRAMMING SOFTWARE

Intuitive + flexible + license-free

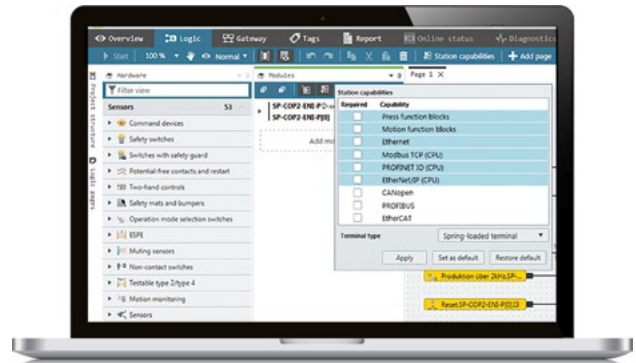
Our samos® PLAN 6 programming software for the samos® PRO range now makes programming even easier. samos® PLAN 6 assists PLC programmers, electrical design engineers and developers with the planning, validation, verification and documentation of the safety application.

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

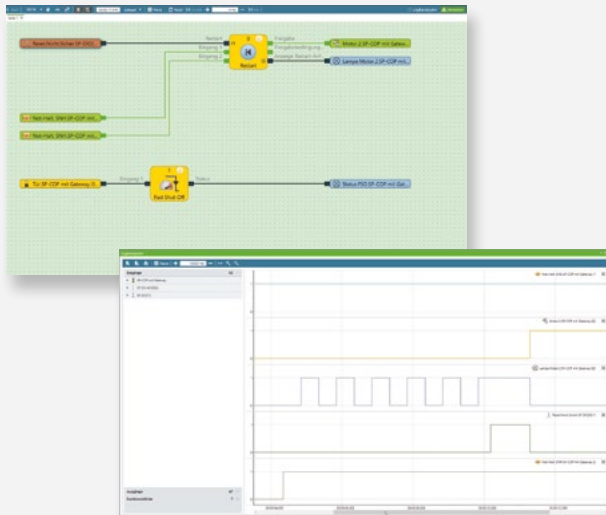
INTUITIVE CONFIGURATION

samos® PLAN 6 offers automatic hardware configuration.

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



samos®PRO



SIMULATION INSTEAD OF TESTING

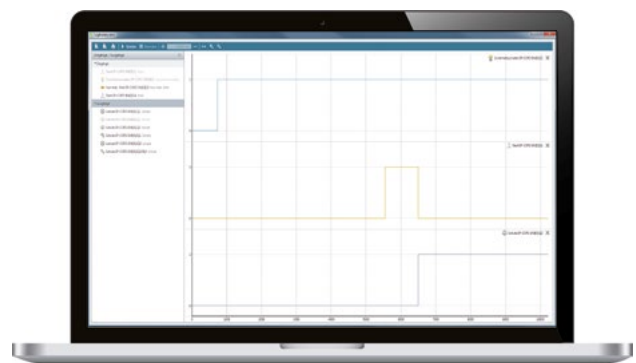
Simulate your programmed logic in real-time on the PC instead of looking for faults on the machine.

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

FASTER VALIDATION

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

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



PARAMETERIZATION INSTEAD OF PROGRAMMING

Error-free parameterization through TÜV-certified application modules.

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



FLEXIBLE SCREENS

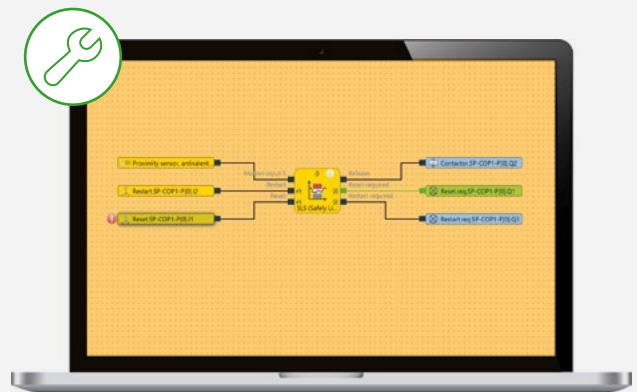
Configure the software to fulfill your requirements by individually adapting your workspace.

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

FAST MACHINE SETUP

Simply emulate missing sensor hardware with the forcing function.

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



GLOBAL REMOTE DIAGNOSTICS

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

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



samos®PLAN6

wieland
www.wieland-electric.com

Wieland Electric GmbH
Brennerstraße 10-14
96052 Bamberg
Deutschland

Nicht Verifiziert

Projekt: New Project
Dateiname: [neu]
Applikationsname:
CRC Control 1: 0x5b9c4364
Erstellung des Berichts: 16.07.2018 08:51:24

Benutzer: DatumZeit: Netz

3.3.1.5 Verteilungsbeispiel

3.1 Software-Version
Programmname: Version: 1.1.0.0
Erzeugt am: 14.03.2018
NET Framework: 4.0.30319
Prozessorientierung: x86

3.2 Allgemeine Informationen
Name: New Project
Dateiname: [neu]
Applikationsname:
CRC Control 1: 0x5b9c4364
Erstellung des Berichts: 16.07.2018 08:51:24
CPU-Adresse: 1.000
CPU-Modell: 62.79
Modellnummer: 1.000

3.3 Projekt Beschreibung
3.3.1 Projekt Name
Benutzer: DatumZeit: Netz

3.3.2 Module
Modulname: Typ: Version: Adresse:
SP-COP1-A SP-COP1-A 1.000 0

3.3.3 Sensoren
Sensorenname: Typ: Version: Adresse:
SP-SIO1-A SP-SIO1-A 1.000 0

3.8 Sicherheitskennwerte

Name	Sym	SIL	Kat	PL	PL d	PL e	PL f	PL g	PL h	PL i	PL j	PL k	PL l	PL m	PL n	PL o	PL p	PL q	PL r	PL s	PL t	PL u	PL v	PL w	PL x	PL y	PL z	PL aa	PL ab	PL ac	PL ad	PL ae	PL af	PL ag	PL ah	PL ai	PL aj	PL ak	PL al	PL am	PL an	PL ao	PL ap	PL aqu	PL ar	PL as	PL at	PL au	PL av	PL aw	PL ax	PL ay	PL az	PL ba	PL bb	PL bc	PL bd	PL be	PL bf	PL bg	PL bh	PL bi	PL bj	PL bk	PL bl	PL bm	PL bn	PL bo	PL bp	PL bq	PL br	PL bs	PL bt	PL bu	PL bv	PL bw	PL bx	PL by	PL bz	PL ca	PL cb	PL cc	PL cd	PL ce	PL cf	PL cg	PL ch	PL ci	PL cj	PL ck	PL cl	PL cm	PL cn	PL co	PL cp	PL cq	PL cr	PL cs	PL ct	PL cu	PL cv	PL cw	PL cx	PL cy	PL cz	PL da	PL db	PL dc	PL dd	PL de	PL df	PL dg	PL dh	PL di	PL dj	PL dk	PL dl	PL dm	PL dn	PL do	PL dp	PL dq	PL dr	PL ds	PL dt	PL du	PL dv	PL dw	PL dx	PL dy	PL dz	PL ea	PL eb	PL ec	PL ed	PL ee	PL ef	PL eg	PL eh	PL ei	PL ej	PL ek	PL el	PL em	PL en	PL eo	PL ep	PL eq	PL er	PL es	PL et	PL eu	PL ev	PL ew	PL ex	PL ey	PL ez	PL fa	PL fb	PL fc	PL fd	PL fe	PL ff	PL fg	PL fh	PL fi	PL fj	PL fk	PL fl	PL fm	PL fn	PL fo	PL fp	PL fq	PL fr	PL fs	PL ft	PL fu	PL fv	PL fw	PL fx	PL fy	PL fz	PL ga	PL gb	PL gc	PL gd	PL ge	PL gf	PL gg	PL gh	PL gi	PL gj	PL gk	PL gl	PL gm	PL gn	PL go	PL gp	PL gq	PL gr	PL gs	PL gt	PL gu	PL gv	PL gw	PL gx	PL gy	PL gz	PL ha	PL hb	PL hc	PL hd	PL he	PL hf	PL hg	PL hh	PL hi	PL hj	PL hk	PL hl	PL hm	PL hn	PL ho	PL hp	PL hq	PL hr	PL hs	PL ht	PL hu	PL hv	PL hw	PL hx	PL hy	PL hz	PL ia	PL ib	PL ic	PL id	PL ie	PL if	PL ig	PL ih	PL ii	PL ij	PL ik	PL il	PL im	PL in	PL io	PL ip	PL iq	PL ir	PL is	PL it	PL iu	PL iv	PL iw	PL ix	PL iy	PL iz	PL ja	PL jb	PL jc	PL jd	PL je	PL jf	PL jg	PL jh	PL ji	PL jj	PL jk	PL jl	PL jm	PL jn	PL jo	PL jp	PL jq	PL jr	PL js	PL jt	PL ju	PL jv	PL jw	PL jx	PL jy	PL jz	PL ka	PL kb	PL kc	PL kd	PL ke	PL kf	PL kg	PL kh	PL ki	PL kj	PL kk	PL kl	PL km	PL kn	PL ko	PL kp	PL kq	PL kr	PL ks	PL kt	PL ku	PL kv	PL kw	PL kx	PL ky	PL kz	PL la	PL lb	PL lc	PL ld	PL le	PL lf	PL lg	PL lh	PL li	PL lj	PL lk	PL ll	PL lm	PL ln	PL lo	PL lp	PL lq	PL lr	PL ls	PL lt	PL lu	PL lv	PL lw	PL lx	PL ly	PL lz	PL ma	PL mb	PL mc	PL md	PL me	PL mf	PL mg	PL mh	PL mi	PL mj	PL mk	PL ml	PL mm	PL mn	PL mo	PL mp	PL mq	PL mr	PL ms	PL mt	PL mu	PL mv	PL mw	PL mx	PL my	PL mz	PL na	PL nb	PL nc	PL nd	PL ne	PL nf	PL ng	PL nh	PL ni	PL nj	PL nk	PL nl	PL nm	PL nn	PL no	PL np	PL nq	PL nr	PL ns	PL nt	PL nu	PL nv	PL nw	PL nx	PL ny	PL nz	PL oa	PL ob	PL oc	PL od	PL oe	PL of	PL og	PL oh	PL oi	PL oj	PL ok	PL ol	PL om	PL on	PL oo	PL op	PL oq	PL or	PL os	PL ot	PL ou	PL ov	PL ow	PL ox	PL oy	PL oz	PL pa	PL pb	PL pc	PL pd	PL pe	PL pf	PL pg	PL ph	PL pi	PL pj	PL pk	PL pl	PL pm	PL pn	PL po	PL pp	PL pq	PL pr	PL ps	PL pt	PL pu	PL pv	PL pw	PL px	PL py	PL pz	PL qa	PL qb	PL qc	PL qd	PL qe	PL qf	PL qg	PL qh	PL qi	PL qj	PL qk	PL ql	PL qm	PL qn	PL qo	PL qp	PL qq	PL qr	PL qs	PL qt	PL qu	PL qv	PL qw	PL qx	PL qy	PL qz	PL ra	PL rb	PL rc	PL rd	PL re	PL rf	PL rg	PL rh	PL ri	PL rj	PL rk	PL rl	PL rm	PL rn	PL ro	PL rp	PL rq	PL rr	PL rs	PL rt	PL ru	PL rv	PL rw	PL rx	PL ry	PL rz	PL sa	PL sb	PL sc	PL sd	PL se	PL sf	PL sg	PL sh	PL si	PL sj	PL sk	PL sl	PL sm	PL sn	PL so	PL sp	PL sq	PL sr	PL ss	PL st	PL su	PL sv	PL sw	PL sx	PL sy	PL sz	PL ta	PL tb	PL tc	PL td	PL te	PL tf	PL tg	PL th	PL ti	PL tj	PL tk	PL tl	PL tm	PL tn	PL to	PL tp	PL tq	PL tr	PL ts	PL tt	PL tu	PL tv	PL tw	PL tx	PL ty	PL tz	PL ua	PL ub	PL uc	PL ud	PL ue	PL uf	PL ug	PL uh	PL ui	PL uj	PL uk	PL ul	PL um	PL un	PL uo	PL up	PL uq	PL ur	PL us	PL ut	PL uu	PL uv	PL uw	PL ux	PL uy	PL uz	PL va	PL vb	PL vc	PL vd	PL ve	PL vf	PL vg	PL vh	PL vi	PL vj	PL vk	PL vl	PL vm	PL vn	PL vo	PL vp	PL vq	PL vr	PL vs	PL vt	PL vu	PL vv	PL vw	PL vx	PL vy	PL vz	PL wa	PL wb	PL wc	PL wd	PL we	PL wf	PL wg	PL wh	PL wi	PL wj	PL wk	PL wl	PL wm	PL wn	PL wo	PL wp	PL wq	PL wr	PL ws	PL wt	PL wu	PL wv	PL ww	PL wx	PL wy	PL wz	PL xa	PL xb	PL xc	PL xd	PL xe	PL xf	PL xg	PL xh	PL xi	PL xj	PL xk	PL xl	PL xm	PL xn	PL xo	PL xp	PL xq	PL xr	PL xs	PL xt	PL xu	PL xv	PL xw	PL xx	PL xy	PL xz	PL ya	PL yb	PL yc	PL yd	PL ye	PL yf	PL yg	PL yh	PL yi	PL yj	PL yk	PL yl	PL ym	PL yn	PL yo	PL yp	PL yq	PL yr	PL ys	PL yt	PL yu	PL yv	PL yw	PL yx	PL yy	PL yz	PL za	PL zb	PL zc	PL zd	PL ze	PL zf	PL zg	PL zh	PL zi	PL zj	PL zk	PL zl	PL zm	PL zn	PL zo	PL zp	PL zq	PL zr	PL zs	PL zt	PL zu	PL zv	PL zw	PL zx	PL zy	PL zz
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Die Sicherheitskennwerte gelten ausschließlich für die konfigurierten sicheren Ausgänge der SP-COP und SP-SIO Module (wie im Handbuch Hardware beschrieben) und nicht für angeschlossene Sensoren oder Aktoren.

ONE-CLICK REPORT GENERATION

Document your projects with one click.

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

PROTECTION AGAINST MANIPULATION

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

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



SAMOS® PRO COMPACT

BASIC MODULE



APPLICATIONS

- Machine building industry
- Intra logistics

SAFETY LEVEL

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

FEATURES

- 16 inputs, 4 outputs and 4 configurable inputs/outputs
- 116 safe inputs and 52 outputs with I/O extension modules
- Extension with 2 external gateway modules
- Mini USB programming interface
- Display for data (temperature, counter) in samos® PLAN 6
- Data about gateways for HMI's or SPs
- SD slot for program memory (Order type SD card: SP-COP-CARD)
- Library for analog value processing, combustion technology, muting and press
- Terminals are included in the scope of delivery

OVERVIEW OF DEVICES

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

TECHNICAL DATA

Function	Safety control	
Function display	24 LED green (in-/outputs)	
	3 LED green/red/yellow (module status)	
Supply circuit		
Operating voltage range	16.8 V DC to 30 V DC	
Rated power	3.5 W	
Electrical isolation supply circuit - control circuit	No	
Safe input circuit I _n	SP-COP2-EN	SP-COP2-ENI
Quantity/type	20 (16) / digital	20 (16) / digital
Primary voltage range	15 V DC to 30 V DC	15 V DC to 30 V DC
Nominal current	2 mA	2 mA
Safe output circuit Q _n		
Quantity/type	4 (8) / digital	4 (8) / digital
Rated output voltage	24 V DC	24 V DC
Output current per output	4 A	4 A
Interfaces		
USB Mini interface	Yes	Yes
Ethernet interface	Yes	Yes
Industrial Ethernet protocol (basis module)	No	Modbus TCP, Profinet, Ethernet IP
Industrial Ethernet protocol (with gateway module)	ETHERCAT, PROFIBUS DP, CANopen	ETHERCAT, PROFIBUS DP, CANopen
Program memory	External SD card	External SD card
General data		
Protection class as per DIN EN 60529 (housing/terminals)	IP20	
Air and creepage distances	EN 60664-1	
Ambient temperature / storage temperature	-25 °C – +65 °C / -25 °C – +75 °C	
Standards	EN 61508, EN 60204, EN 62061, EN ISO 13849-1, EN 81-20/50, EN 16092, EN/IEC 61511, EN 50156-1	
Approvals	TÜV, cULus	

SAMOS® PRO MOTION

BASIC MODULE



APPLICATIONS

- Machine building industry
- Intra logistics

SAFETY LEVEL

- SIL_{CL} 3 (EN 62061-1)
- PL e / Kategorie 4 (EN ISO 13849-1)

FEATURES

- Includes all features of the samos®PRO COMPACT
- 4 fast motion inputs, 12 digital inputs, 4 outputs, 4 configurable inputs/outputs
- Motion monitoring of up to 2 axes
- Monitoring of standstill, speed, direction of rotation and position
- Library for motion monitoring, analog value processing, combustion technology, muting and pressing
- Display for data (temperature, counter) in samos®PLAN 6
- Data about gateways for HMIs or SPSn

OVERVIEW OF DEVICES

Type	Rated voltage	Terminals	Features	Part no.	P.U.
SP-COP2-EN-M-A	24 V DC	Screw terminals, pluggable	Ethernet, press, analog, motion monitoring	R1.190.1250.0	1
SP-COP2-EN-M-C	24 V DC	Push-in terminals, pluggable	Ethernet, press, analog, motion monitoring	R1.190.1260.0	1
SP-COP2-ENI-M-A	24 V DC	Screw terminals, pluggable	Industrial Ethernet, press, analog, motion monitoring	R1.190.1350.0	1
SP-COP2-ENI-M-C	24 V DC	Push-in terminals, pluggable	Industrial Ethernet, press, analog, motion monitoring	R1.190.1360.0	1

TECHNICAL DATA		
Function	Safety control	
Function display	24 LED green (in-/outputs)	
	3 LED green/red/yellow (module status)	
Supply circuit		
Operating voltage range	16.8 V DC to 30 V DC	
Rated power	3.5 W	
Electrical isolation supply circuit - control circuit	No	
Safe input circuit I _n	SP-COP2-EN-M	SP-COP2-ENI-M
Quantity/type	16 (12) / digital	16 (12) / digital
Primary voltage range HIGH	13 V DC to 30 V DC	13 V DC to 30 V DC
Nominal current	2.3 mA	2.3 mA
Motion input (I13–I16)		
Quantity/type	4 / fast counter inputs	4 / fast counter inputs
Primary voltage HIGH	15 V DC to 30 V DC	15 V DC to 30 V DC
Nominal current	6 mA	6 mA
Max. Input frequency	70 kHz	70 kHz
Safe output circuit Q _n		
Quantity/type	4 (8) / digital	4 (8) / digital
Rated output voltage	24 V DC	24 V DC
Output current per output	4 A	4 A
Interfaces		
USB Mini interface	Yes	Yes
Ethernet interface	Yes	Yes
Industrial Ethernet protocol (basis module)	No	Modbus TCP, PROFINET, EtherNet/IP
Industrial Ethernet protocol (with gateway module)	ETHERCAT, PROFIBUS DP, CANopen	ETHERCAT, PROFIBUS DP, CANopen
Program memory	External SD card	External SD card
General data		
Protection class as per DIN EN 60529 (housing/terminals)	IP20	
Air and creepage distances	EN 60664-1	
Ambient temperature / storage temperature	-25 °C – +65 °C / -25 °C – +75 °C	
Standards	EN 61508, EN 60204, EN 62061, EN ISO 13849-1, EN 81-20/50, EN 16092, EN/IEC 61511, EN 50156-1	
Approvals	TÜV, cULus Listed	

SP-SDIO

INPUT- / OUTPUT MODULE



APPLICATIONS

- Machine building industry
- Intra logistics

SAFETY LEVEL

- 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

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

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

SP-SDI

INPUT MODULE



APPLICATIONS

- Machine building industry
- Intra logistics

SAFETY LEVEL

- 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

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

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



NOTE:

Safe relay contacts are expanded using the series SNE contact expansion relay (from Page 72).
Type **SNE 4024K** in particular is ideal for contact expansion.

SP-SA

ANALOG INPUT MODULE



APPLICATIONS

- Machine building industry
- Intra logistics

SAFETY LEVEL

- up to SIL_{CL} 3 (EN 62061-1)
- up to PL e / Category 4 (EN ISO 13849-1)

FEATURES

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

OVERVIEW OF DEVICES

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

TECHNICAL DATA

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

SP-DIO

STANDARD I/O-MODUL



APPLICATIONS

- Machine building
- Intra logistics

FEATURES

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

OVERVIEW OF DEVICES

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

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

GATEWAY



SP-EN-ETC

FEATURES

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



SP-CANOPEN

FEATURES

- Fieldbus protocol CANopen
- Bidirectional communication with PLC
- Transfer rate up to 1 MBit/s
- Transfer of 50 bytes of data
- Simple configuration with samos® PLAN 6



SP-PROFIBUS-DP

FEATURES

- Fieldbus protocol PROFIBUS-DP
- Bidirectional communication with PLC
- Transfer rate 12 MBaud
- Transfer of 50 bytes of data
- Simple configuration with samos® PLAN 6

OVERVIEW OF DEVICES

Type	Rated voltage	Remark	Part no.	P.U.
SP-CANopen	24 V DC	CANopen (compatible with basic modules as of build status C-xx)	R1.190.0210.1	1
SP-PROFIBUS-DP	24 V DC	PROFIBUS DP (compatible with basic modules as of build status C-xx)	R1.190.0190.1	1
SP-EN-ETC	24 V DC	ETHERCAT	R1.190.0160.0	1

STARTER SET & ACCESSORIES



SAMOS®PRO STARTER SET

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

SP-COP-STARTER-SET:

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



SP-COP-CARD1



SP-CABLE-USB1



SP-CABLE-ETH1

SAMOS®PRO ACCESSORIES

Contents of the starter set

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



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

STARTER SET & ACCESSORIES

FURTHER SAMOS®PRO ACCESSORIES



**SAFETY
SCHRAUBKL. SET**

- Screw terminal set with 4 different codings for 5 devices



**SAFETY
PUSH-IN SET**

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

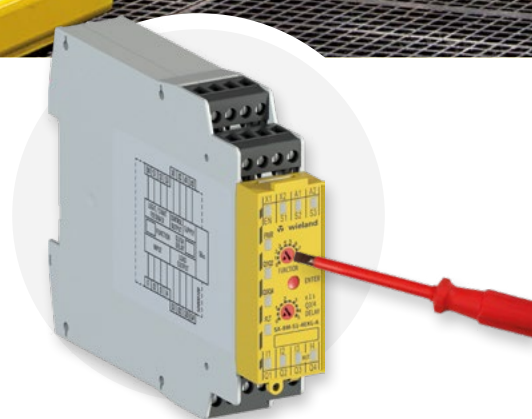
OVERVIEW OF DEVICES

Type	Description	Part no.	P.U.
SP-COP-CARD1	Memory-card for SP-COP	R1.190.1000.0	1
SP-CABLE-USB1	USB cable for SP-COP, 1.8 m	R1.190.1010.0	1
SP-CABLE-ETH1	Ethernet cable for SP-COP, 2 m	R1.190.1020.0	1
SP-FILTER1	samos® PRO-Output-Filter, 680nF	R1.190.0260.0	1
SP-FILTER2	samos® PRO-Output-Filter, 2,2uF	R1.190.0270.0	1
SP-COP-STARTER-SET	Content: SP-COP2-EN-A, SP-COP-CARD1, SP-PLAN6, SP-CABLE-USB1, SP-CABLE-ETH1	R1.190.1100.0	1
SP-COVER	SD card slot cover for SP-COP modules	R1.190.1040.0	1
SAFETY SCHRAUBKL.SET	Screw terminal set with 4 different codings for 5 devices	99.208.9999.9	1
SAFETY PUSH-IN SET	Push-in terminal set with 4 different codings for 5 devices	99.209.9999.9	1

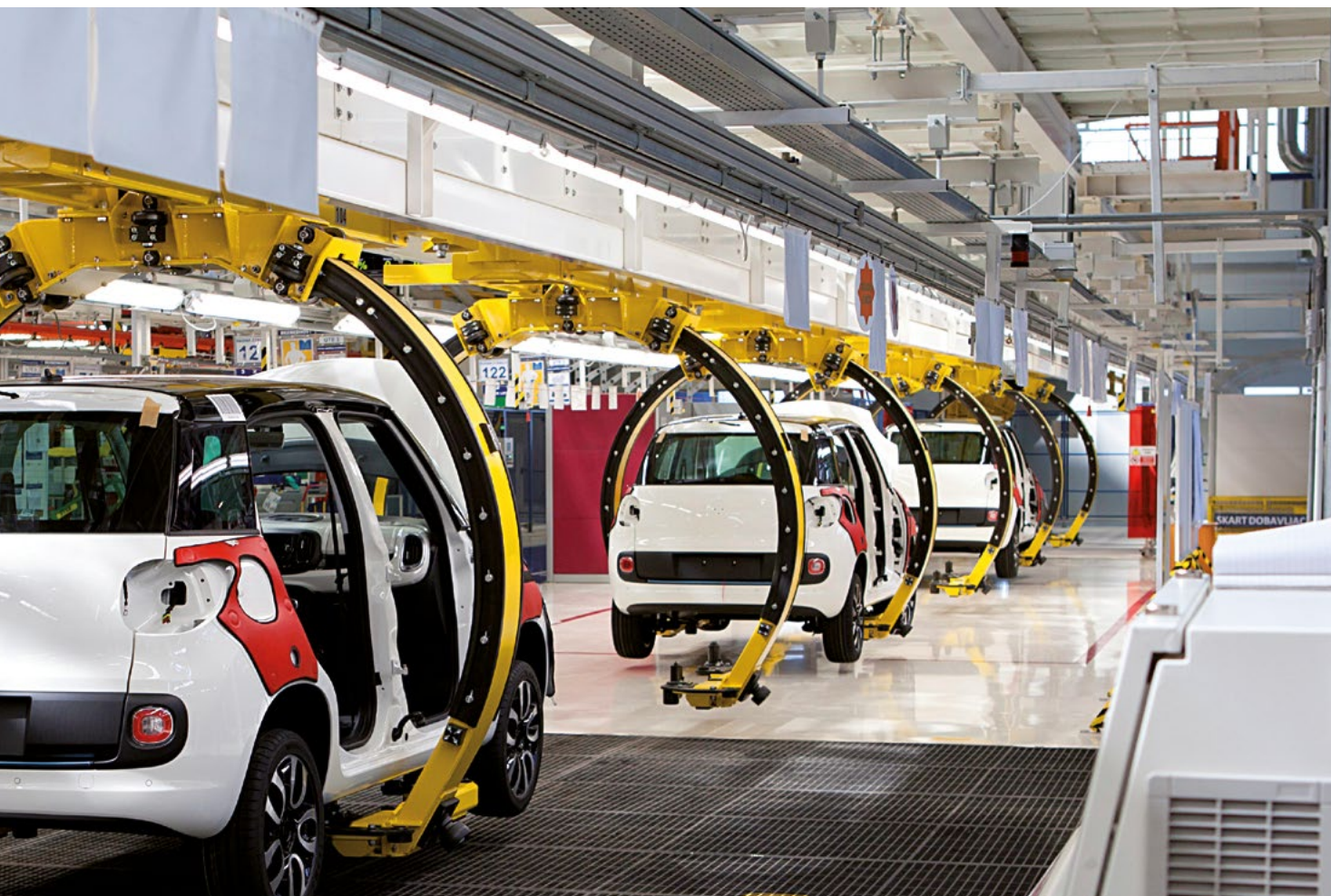
SAMOS® — SAFETY MADE SIMPLE

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

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



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



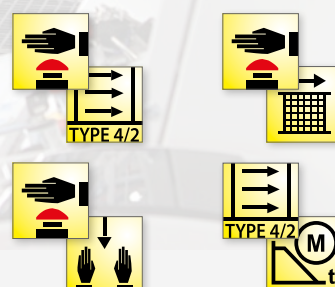
EXAMPLE: SINGLE FUNCTIONS

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

-  MAX. 5 s Jog mode
-  SETUP Setup mode
-  MUTING and BYPASS

SAMOS® — MAXIMUM FLEXIBILITY

INTELLIGENTLY CONNECTED MODULES

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

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

FUNCTIONS WITH ADDED VALUE

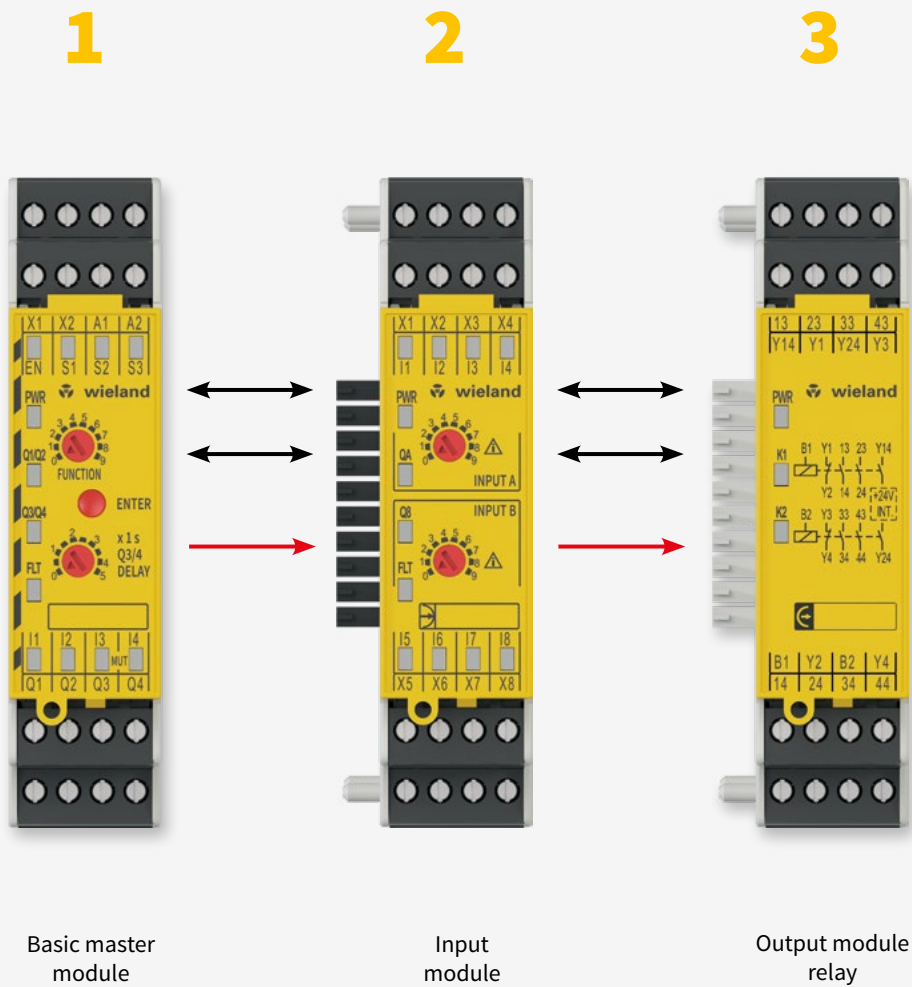
The functions of the basic module and the input modules are set either individually or in combination on the front with 10-position rotary switches (e.g. emergency stop and protective door monitoring with controlled shutdown). Additional functions such as automatic reset, startup and re-startup blocking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



samos® MODULES

Clear handling – maximum flexibility

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



MODULAR DESIGN

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

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

1

Basic master module

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

2

Input module

Expansion module with 10 function blocks and 8 safe inputs

3

Output module relay

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

SA-BM

BASIC MODULE



APPLICATIONS

- Machine building industry
- Intra logistics

SAFETY LEVEL

- 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 outputs
- Adjustable OFF- delay

OVERVIEW OF DEVICES

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

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

SA-IN

INPUT MODULE



- APPLICATIONS**
 - Machine building industry
 - Intra logistics
- SAFETY LEVEL**
 - 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

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

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

SA-OR

OUTPUT MODULE



APPLICATIONS

- Machine building industry
- Intra logistics

SAFETY LEVEL

- 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

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

TECHNICAL DATA

Function display 3 or 2 LEDs, green

Input circuit B1, B2

Input voltage range 18 V DC to 30 V DC

Electrical isolation power supply circuit – input circuit no

Electrical isolation input circuit - output circuit yes

Electrical isolation power supply circuit - output circuit yes

Rated consumption 2.2 W to 1.1 W

Release delay 30 ms

Output circuits (relays)

Switching voltage 230 V AC

Output current I_n per exit 6 A

Output circuits (Y14, Y24)

Switching voltage 30 V DC

Output current I_n per exit 75 mA

General technical data

Protection degree according to DIN 60529 (housing / terminals) IP40 / IP20

Creepage distances and clearances EN 60664-1

Ambient temperature / storage temperature -25°C – +55°C / -25°C – +75°C

Standards EN 62061, EN ISO 13849-1, EN 50156-1

Approvals TÜV, cULus



SAFE RELAY – UNIVERSAL SAFETY RELAYS

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

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

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

VERSATILE APPLICATION OPTIONS

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



Further informations about the screw terminal set and the push-in terminal set see page 24.



SNA, SNO, SNZ

Basic devices

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



SNS, SVM

Safe motion relays

Motion relays SNS and SVM are used for the safe monitoring of dynamic input signals and sensorless 1- and 3-phase motors.



SNV

Basic devices with time function

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

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



SNE

Contact expansion relays

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

OVERVIEW – BASIC DEVICES

Type	SNO 4083KM	SNO 4062K/KM	SNO 4063K/KM	SNA 4043K/KM	SNA 4044K/KM	SNA 4063K/KM	SNO 4003K	
Page	40	42	44	46	46	48	50	
Application								
Input Circuits								
Start								
Contacts								
Characteristics								
Rated voltage DC (V)	24	24	12 24	24	24	24	24	
Rated voltage AC (V)	115-230		24 115-120 230	24 115-120 230	24 115-120 230	24 115-120 230	24 115-120 230	

¹⁾ PL e contact expansion

²⁾ 24 V devices only

³⁾ possible only in isolated cases and according to the risk assessment of the machine functions

MOTION RELAYS

	SNO 1012K	SNZ 4052K
	52	54
		
		
	 	
		
		
		
		
		 0,5
		
		
		
		
		
	24	24
	24	24 115-120 230

Type	SNS 4074K/4084K	SVM 4001K
Page	56	58
Application		
		
		
		
Input Circuits		
		
		
Start		
		
Contacts		
		
Characteristics		
Rated voltage DC (V)	24	24
Rated voltage AC (V)		

For glossary, see cover page

OVERVIEW – BASIC DEVICES WITH TIME FUNCTION

Type	SNV 4063KL	SNV 4063KP	SNV 4074SL	SNV 4076SL	SNV 4274SL	SNV 4074ST
Page	60	62	64	64	66	66
Application						
Input Circuits						
Start						
Contacts						
Characteristics						
Rated voltage DC (V)	24	24	24	24	24	24
Rated voltage AC (V)			115-230	115-230	115-230	115-230

¹⁾ applies to undelayed contacts; the following applies to delayed contacts: PL d / category 3 / SILCL 2

²⁾ depends on the category of the basic device or the safety analysis

CONTACT EXPANSION RELAYS

Type	SNE 1	SNE 4004K	SNE 4024K
Page	68	70	72
Application			
Input Circuits			
Start			
Contacts			
Characteristics			
Rated voltage DC (V)	24	24	24
Rated voltage AC (V)		24	

For glossary, see cover page

SNO 4083KM

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS



APPLICATIONS

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

SAFETY LEVEL

- 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
- Two-channel control with NC/NC or NC/NO
- Manual or automatic start
- SafeStart
- Cross monitoring
- Synchronous time monitoring for two-channel control
- 3 enabling current path / 1 signalling current path

FUNCTION

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

- **Reduced installation work** – The SNO 4083KM requires fewer connection cables, irrespective of whether operation with or without cross monitoring is desired. This saves time and money when it comes to wiring.

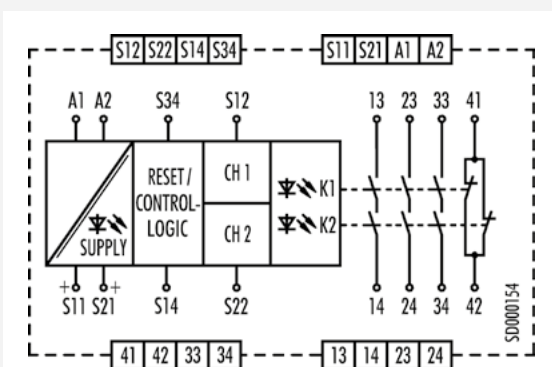
- **Universal application** – The two-channel control of the device is carried out by either an NC/NC or an NC/NO combination of the safety sensor.

In the case of two-channel control of the device, a synchronous time is automatically monitored between the two channels.

- **SafeStart function** – When the device is used with a manual start, the reset input is automatically monitored for a rising and falling signal edge. A manual reset signal is only accepted if the control inputs of the device are activated by the safe transducer (e.g. emergency stop button) during the entire activation procedure.
- **Monoflop function** – This function is integrated into the device and prevents device interlocking under all circumstances. This is a decisive advantage in applications where very short interruptions of the safety-related signals can occur, or in the case of transducers with bouncing contacts or safe optical sensors (BWS), for example.
- **Simple diagnosis** – The device features an intelligent display system that shows the user the different operating modes of the device in its different applications. This means, for example, that when the control inputs are closed and manual start has been selected, a reset signal is displayed, which has not yet been given. Fault states in the control (e.g. synchronous time exceeded or a short-circuit in two-channel control) are also signaled to the user via a blinking code.

CIRCUIT DIAGRAM

SNO 4083KM



OVERVIEW OF DEVICES

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

TECHNICAL DATA

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

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

SNO 4062K/KM

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS



APPLICATIONS

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

SAFETY LEVEL

- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

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

FUNCTION

SNO 4062K

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

BASIC FUNCTION:

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

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

SNO 4062KM

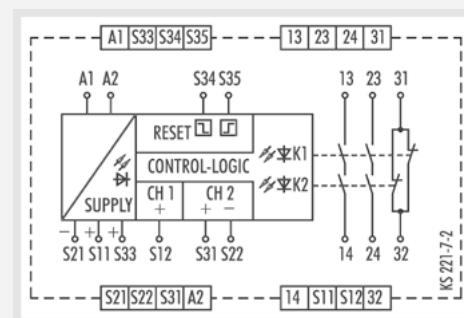
The function of this device corresponds to that of the SNO 4062K without synchrocheck. The device is suitable for connecting to light curtains for Type 4 (EN 61496-1) and connecting to short-circuit forming 4-wire safety mats, switching strips or switching edges (without monitoring resistance).

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



OVERVIEW OF DEVICES

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

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

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

SNO 4063K/KM

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS



APPLICATIONS

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

SAFETY LEVEL

- Up to PL e/Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

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

FUNCTION

SNO 4063K

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

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

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

SNO 4063KM

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

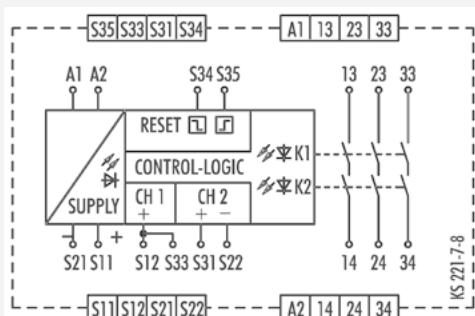
- **Safety mats** The device must be operated with two channels and cross monitoring. If there is resistance $< 50 \Omega$ / channel and a short circuit between the channels (S11/S12 and S21/S22) the enabling paths open and the SUPPLY LEDs flash.
- **Light curtain for Type 4 (EN 61496-1)** The device 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.

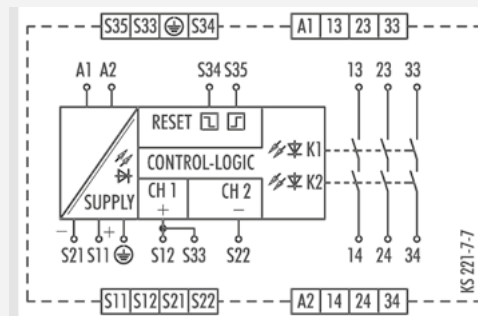
CIRCUIT DIAGRAM

SNO 4063K/KM

24 V AC/DC



115-120 V AC / 230 V AC



OVERVIEW OF DEVICES

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

TECHNICAL DATA

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

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

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

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS



APPLICATIONS

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

SAFETY LEVEL

- 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

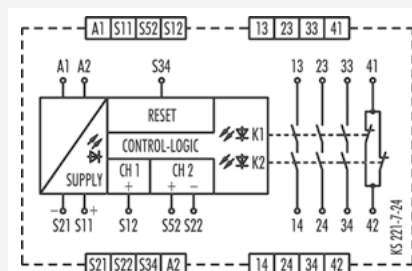
Emergency stop and safety gate monitor The safety switching devices of our SNA product line are used to monitor safety sensors (emergency stop buttons, safety gate switches, etc.), feature a large number of safety switching contacts (3 NO contacts/1 NC contact or 4 NO contacts) with a total width of 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** – Outputs will switch on right after the input circuit is closed. 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.

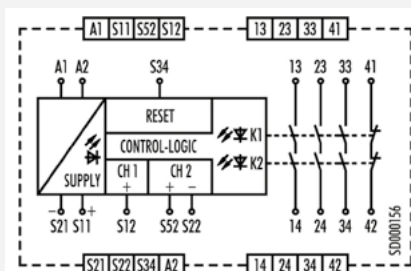
- **Manual start without monitoring** – To start the machinery a rising edge is expected in the start circuit. Reset input S34 is connected to safety input S11 via a RESET button. To monitor external contact blocks (EDM), their NC contacts must be connected to the RESET button in series.
- **Monitoring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

CIRCUIT DIAGRAM

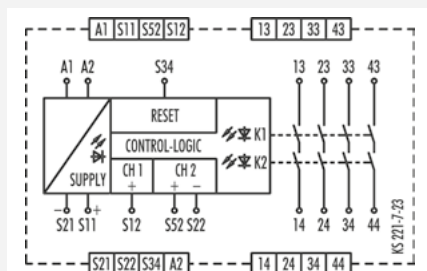
SNA 4043K/KM



SNA 4043KE



SNA 4044K/KM



OVERVIEW OF DEVICES

Type	Rated voltage	Terminals	Part no.	P.U.
SNA 4043K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1810.0	1
SNA 4043K-A	115-120 V AC	Screw terminals, pluggable	R1.188.1830.0	1
SNA 4043K-A	230 V AC	Screw terminals, pluggable	R1.188.1840.0	1
SNA 4043K-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.1940.0	1
SNA 4043K-C	230 V AC	Push-in terminals, pluggable	R1.188.5000.0	1
SNA 4043KM-A	24 V AC/DC	Screw terminals, pluggable	R1.188.3250.0	1
SNA 4043KE-A	AC/DC 24 V	Screw terminals, pluggable	R1.188.3810.0	1
SNA 4043KE-C	AC/DC 24 V	Push-in terminals, pluggable	R1.188.3820.0	1
SNA 4044K-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1860.0	1
SNA 4044K-A	230 V AC	Screw terminals, pluggable	R1.188.1890.0	1
SNA 4044K-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.1960.0	1
SNA 4044KM-A	24 V AC/DC	Screw terminals, pluggable	R1.188.1480.0	1
SNA 4044KM-C	24 V AC/DC	Push-in terminals, pluggable	R1.188.3410.0	1

TECHNICAL DATA

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

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

SNA 4063K/KM

MONITORING OF EMERGENCY STOP, SAFETY GATES AND LIGHT BARRIERS



APPLICATIONS

- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of light barriers

SAFETY LEVEL

- 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

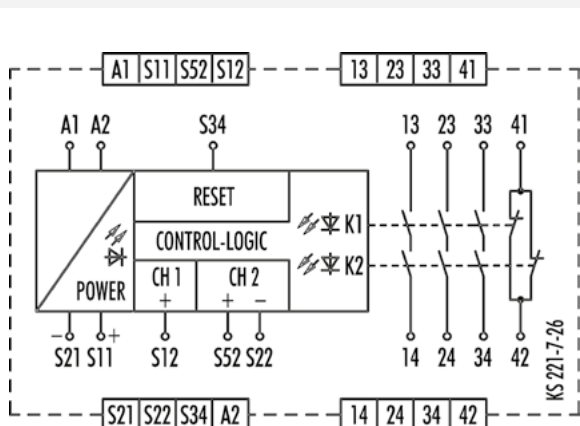
After the supply voltage is applied to terminals A1/A2 and the safety inputs are closed, the enabling current paths (NO contacts) are closed and the signal current path (NC contact) is opened by pressing the reset button (manual start with monitoring). When the safety inputs are opened/de-energized,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

- **Manual start with monitoring** – To start the machinery a rising edge is expected in the start circuit. In addition, the reset may only be activated when both safety circuits are closed and the standby time for the reset must be observed. If the reset circuit is closed before or when the safety circuits are closed, no reset is triggered.

- **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



OVERVIEW OF DEVICES

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

TECHNICAL DATA

Function	Emergency stop relay		
Function display	3 LEDs, green		
Power supply circuit			
Rated voltage U _N	A1, A2	24 V AC/DC / 115-120 V AC / 230 V AC	
Rated consumption	24V DC / 24 V AC	1.6 W / 2.9 VA	
	42-48V AC / 115-120V AC / 230 V AC	2.3 W / 2.6 VA	
Rated frequency	50 - 60 Hz		
Operating voltage range U _B	0.85 - 1.1 x U _N		
Electrical isolation supply circuit - control circuit	yes (at U _N = 115-230 V AC, 230 V AC)		
Control circuit			
Rated output voltage	S11/S21	24 V DC	
Input current / peak current	S12, S52/S22 S34	25 mA / 100 mA 5 mA / 50 mA	
Response time t _{A1} / t _{A2}	100 ms / ---		
Minimum ON time t _M	100 ms		
Recovery time t _W	750 ms		
Release time t _R	10 ms		
Synchronous time t _S	no		
Permissible test pulse time t _{TP}	< 1 ms		
Max. resistivity, per channel ¹⁾	24V AC/DC	≤ (5 + (1,176 x U _B / U _N - 1) x 100) Ω	
	42-48V AC/ 115-120 V AC, 230 V AC	≤ (5 + (1,176 x U _B / U _N - 1) x 100) Ω	
Output circuit			
Enabling paths	SNA 4063K/KM	SNA 4064K/KM	
Signaling paths	13/14, 23/24, 33/34	13/14, 23/24, 33/34, 43/44	normally open contact
Contact assignment	41/42	---	normally closed contact
Contact type	forcebly guided		
Rated switching voltage	enabling / signaling path	230 V AC	
Max. thermal current I _{th}	enabling / signaling path	8 A / 5 A	
Max. total current I ² of all current path	(Tu = 55 °C) / (Tu = 65 °C)	25 A ² / 9 A ²	
Application category (NO)	AC-15 DC-13	U _e 230 V, I _e 3 A U _e 24 V, I _e 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 EN 60529 (housing / terminals)	IP40 / IP20		
Ambient temperature / storage temperature	-25 °C - +65 °C / -25 °C - + 75 °C		
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm ² – 2.5 mm ² / 2 x 0.2 mm ² – 1.0 mm ²	
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 1.0 mm ²	
Permissible torque	0-5 - 0-6 Nm		
Wire ranges push-in terminals	2 x 0-25 mm ² bis 1-5 mm ²		
Weight	24 V AC/DC device / AC device	0-21 kg / 0-25 kg	
Standards	EN ISO 13849-1, EN 62061, EN 81-20/50, EN 50156-1, EN 61511		
Approvals	TÜV, cULus Listed, CCC		

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

SNO 4003K

MONITORING OF EMERGENCY STOP AND SAFETY GATES



APPLICATIONS

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

SAFETY LEVEL

- Up to PL d / Category 3 (EN ISO 13849-1)*
- Up to SIL_{CL} 2 (EN 62061)*

FEATURES

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

* PLd contact expansion

FUNCTION

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

The device has either two Y2 reset inputs (without reset monitoring) or two Y3 reset inputs (with reset monitoring). The K1 and K2 relays are actuated 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).

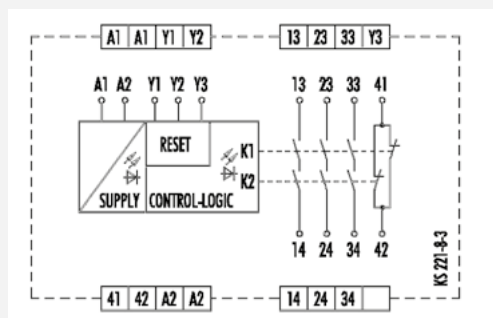
After this switch-on phase the enabling current paths are closed and the signaling current path is open.

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.

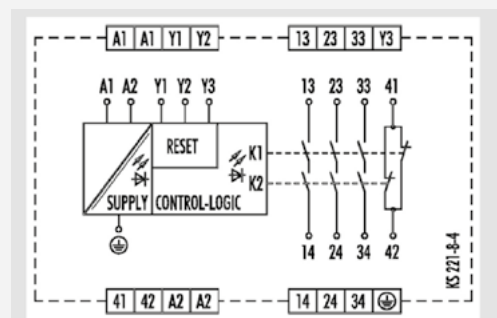
CIRCUIT DIAGRAM

SNO 4003K

24 V AC/DC



115-120 V AC / 230 V AC



OVERVIEW OF DEVICES

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

TECHNICAL DATA

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

SNO 1012K

MONITORING OF EMERGENCY STOP AND SAFETY GATES



APPLICATIONS

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

SAFETY LEVEL

- Up to PL d / Category 3 (EN ISO 13849-1)
- Up to SIL_{CL} 2 (EN 62061)

FEATURES

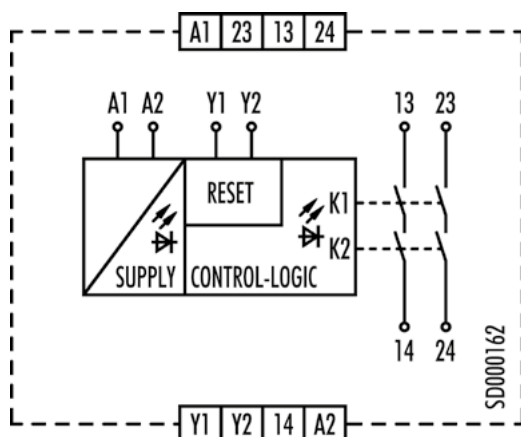
- Stop Category 0 according to EN 60204-1
- Single-channel or two-channel control
- Manual or automatic start
- 2 enabling current paths
- Check of external contactors (EDM)
- Compact design

FUNCTION

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

CIRCUIT DIAGRAM

SNO 1012K



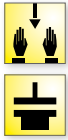
OVERVIEW OF DEVICES

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

TECHNICAL DATA		
Function		Emergency stop relay
Function display		2 LEDs, green
Power supply circuit		
Rated voltage U_N	A1, A2	24 V AC/DC
Rated consumption	24 V DC	1 W / 2 VA
Rated frequency		50 - 60 Hz
Operating voltage range U_B		$0.85 - 1.1 \times U_N$
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	($T_u = 55^\circ\text{C}$)	$72 \text{ A}^2 / 9 \text{ A}^2$
Application category (NO)	AC-15	$U_e 230 \text{ V}, I_e 3 \text{ A}$
	DC-13	$U_e 24 \text{ V}, I_e 3 \text{ A}$
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A ² s
Mechanical life		10×10^6 switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	$1 \times 0.2 \text{ mm}^2 - 2.5 \text{ mm}^2 / 2 \times 0.2 \text{ mm}^2 - 1.0 \text{ mm}^2$
	fine-stranded with ferrules	$1 \times 0.25 \text{ mm}^2 - 2.5 \text{ mm}^2 / 2 \times 0.25 \text{ mm}^2 - 1.0 \text{ mm}^2$
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		$2 \times 0.25 \text{ mm}^2 - 1.5 \text{ mm}^2$
Weight		0.12 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		TÜV, cULus Listed, CCC

SNZ 4052K

TWO-HAND RELAY TYPE IIIC



APPLICATIONS

- Protection of people and machinery
- Monitoring of two-hand applications
- Press
- According to EN ISO 13851 Typ IIIC

SAFETY LEVEL

- Up to PL e/Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

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

FUNCTION

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

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

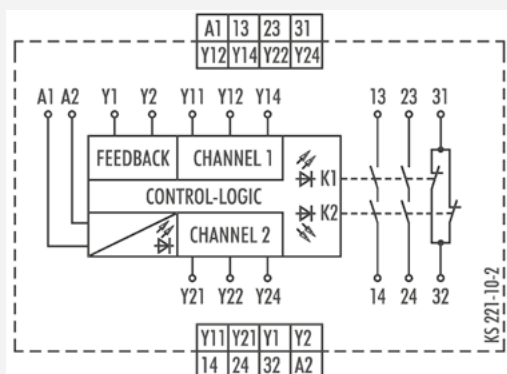
Both actuators must be activated within 0.5 s for the output contacts to be enabled. If only one of the two actuators is released, the device is immediately de-energized. The enabling current paths open.

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

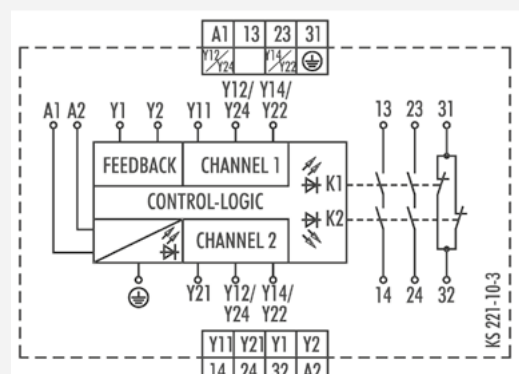
CIRCUIT DIAGRAM

SNZ 4052K

24 V DC



115-120 V AC / 230 V AC



OVERVIEW OF DEVICES

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

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

SNS 4074K / 4084K - MOTION RELAY

SPEED MONITOR WITH SENSORS



APPLICATIONS

- Standstill monitoring
- Monitoring of electrical lockout devices
- Control of spring-actuated tumblers
- Monitoring of low rotational speeds in setup operation

SAFETY LEVEL

- 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.

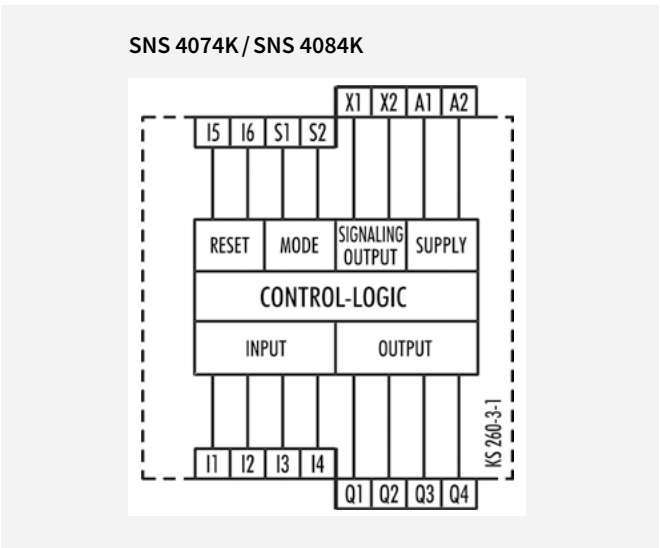
SNS 4074K

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

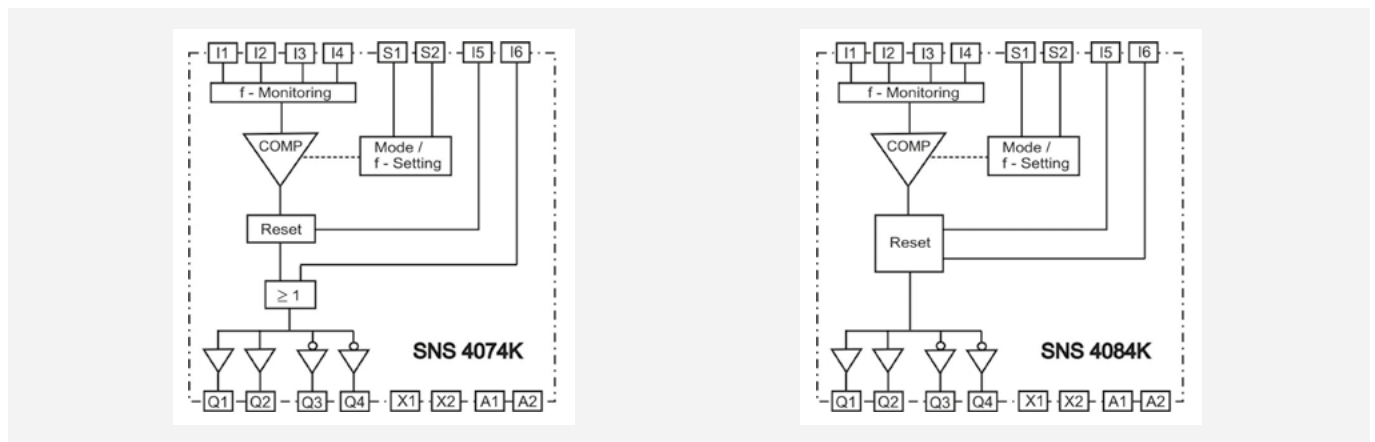


Terminals	Description
A1	+ 24 V
A2	GND
X1 / X2	Signal output, semi-conductor (plus switching)
S1	Configuration input for operating mode group
S2	Configuration input for operating mode group
I1	Sensor input
I2	Sensor / configuration input (depending on the operating mode group)
I3	Sensor / configuration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

OVERVIEW OF DEVICES

Type	Frequency range	Terminals	Part no.	P.U.
SNS 4074K-A	0.5 - 99 Hz	Screw terminals, pluggable	R1.188.3640.0	1
SNS 4074K-A	0.1 - 9.9 Hz	Screw terminals, pluggable	R1.188.3620.0	1
SNS 4084K-A	0.5 - 99 Hz	Screw terminals, pluggable	R1.188.3480.0	1
SNS 4084K-A	0.1 - 9.9 Hz	Screw terminals, pluggable	R1.188.3660.0	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 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	$1 \times 0.2 \text{ mm}^2 - 2.5 \text{ mm}^2 / 2 \times 0.2 \text{ mm}^2 - 1.0 \text{ mm}^2$
		$1 \times 0.25 \text{ mm}^2 - 2.5 \text{ mm}^2 / 2 \times 0.25 \text{ mm}^2 - 1.0 \text{ mm}^2$
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		$2 \times 0.25 \text{ mm}^2 - 1.5 \text{ mm}^2$
Weight		0.16 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		TÜV, cULus Listed

SVM - MOTION RELAY

SENSORLESS STANDSTILL MONITOR



APPLICATIONS

- Standstill monitoring
- Monitoring of electrical lockout devices
- Control of spring-actuated tumblers
- Monitoring of low rotational speeds in setup operation

SAFETY LEVEL

- Up to PL e/Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

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

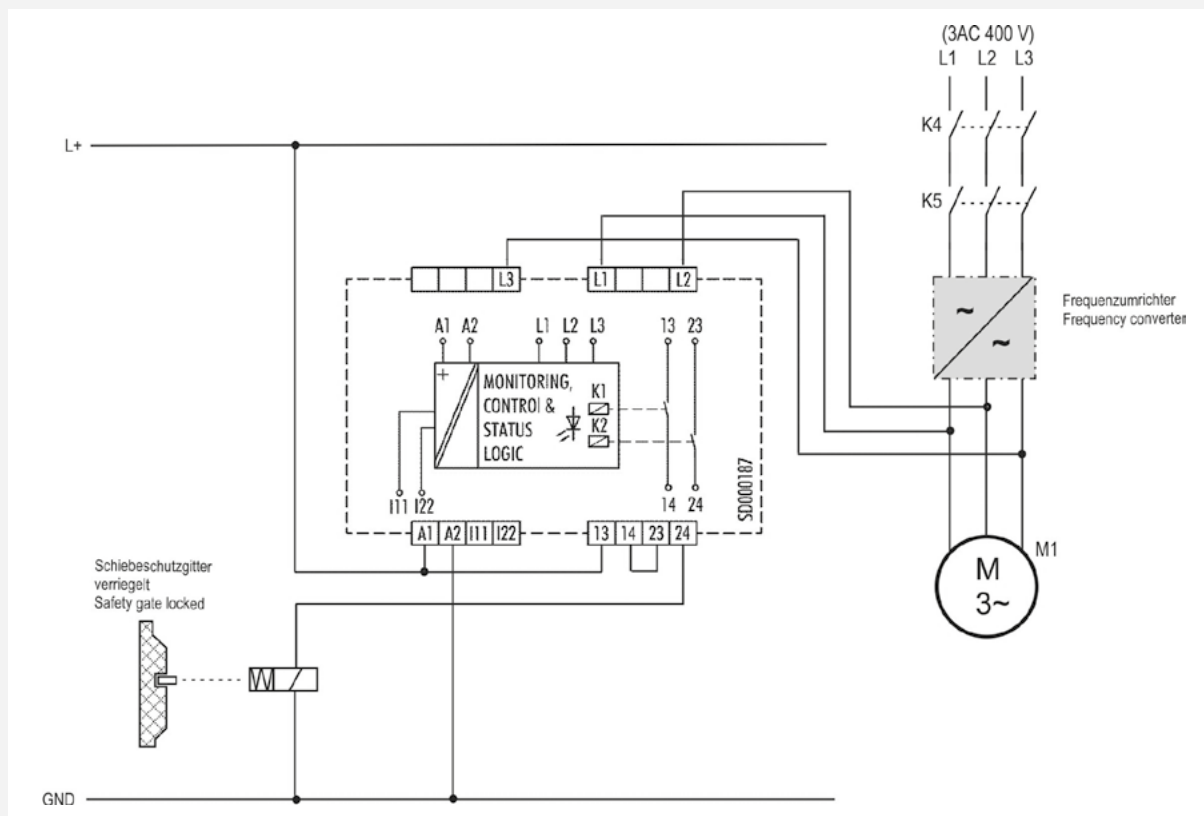
FUNCTION

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

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

APPLICATION

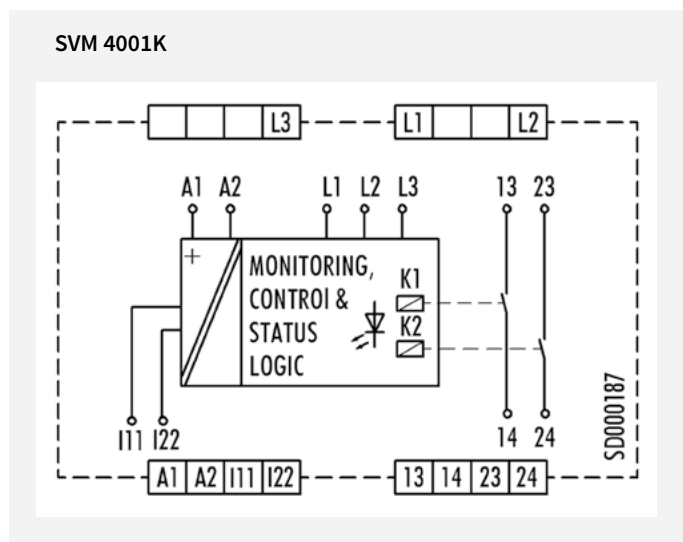
SVM 4001K



OVERVIEW OF DEVICES

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

CIRCUIT DIAGRAM



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

SNV 4063KL

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



APPLICATIONS

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

SAFETY LEVEL

- Up to PL e / Category 4 (EN ISO 13849-1) for undelayed contacts
- Up to PL d / Category 3 (EN ISO 13849-1) for delayed contacts
- Up to SILCL 3 (EN 62061)

FEATURES

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

FUNCTION

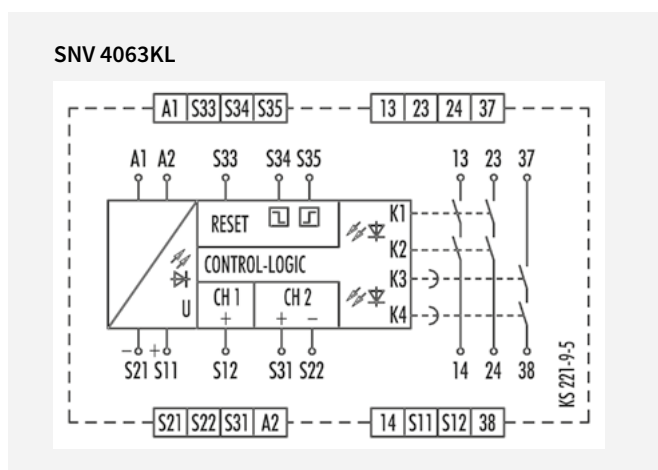
With the supply voltage applied to terminals A1/A2 and the emergency set right and left margins in-line button. This controls relays K1 to K4, which become self-locking (when starting via reset button monitoring after the response time). After this switch-on phase the 3 enabling current paths are closed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

If the emergency stop button is activated, the current supplies for relays K1 to K4 are interrupted. The undelayed enabling current paths (terminals 13/14, 23/24) are opened with release time 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



OVERVIEW OF DEVICES

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

TECHNICAL DATA

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

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

SNV 4063KP

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



APPLICATIONS

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of light barriers
- Monitoring of interlocking installation with position switches and integrated locking
- Control of spring-actuated interlocks

SAFETY LEVEL

- Up to PL e/ Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

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

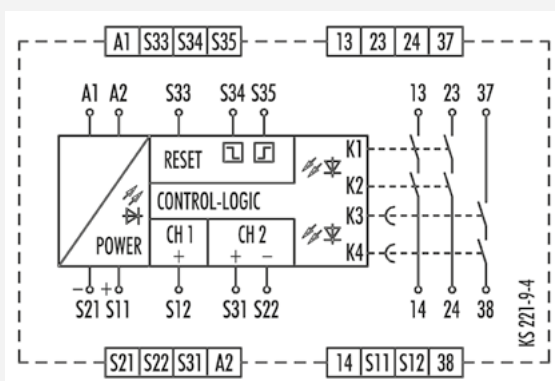
FUNCTION

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

- **Manual start** – The reset button must be connected to S34 through terminal S33. For starting the relay, the reset button must be pressed. Relays K3 and K4 (terminals 37/38) will switch into the OFF position. With the falling edge of the reset signal, the reset is completed and activates relays K1 and K2, which become self-locking after the response time 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_R , 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.
- **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_R , and relays K3 and K4 will start after the pre-set ON-delay time t_{A1} , terminals 37/38.

CIRCUIT DIAGRAM

SNV 4063KP



OVERVIEW OF DEVICES

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

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

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

SNV 4074SL / SNV 4076SL

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



APPLICATIONS

- Controlled stop according to Category 1 (EN 60204-1)
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of interlocks
- Monitoring of light barriers

SAFETY LEVEL

- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

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

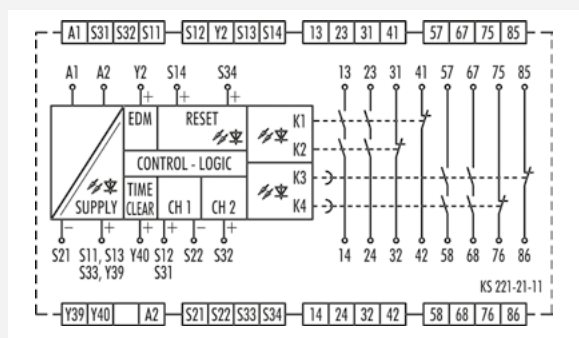
OFF-DELAY FUNCTION

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

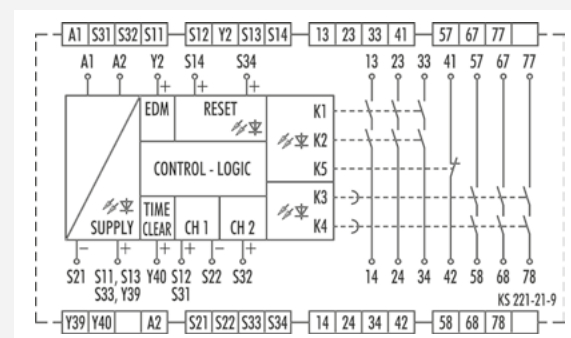
- **Automatic start** – Reset input S14 is connected to safety input S12. To monitor external contact blocks (EDM), their NC contacts must be connected in series between S34 and S12.
- **Manual start without monitoring** – Reset input S14 is connected to safety input S12 via a reset button. To monitor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

CIRCUIT DIAGRAMS

SNV 4074SL



SNV 4076SL



OVERVIEW OF DEVICES

Type	Time range	Rated voltage		Terminals	Part no. 24 V DC	Part no. 115 – 230 V AC	P.U.
SNV 4074SL-A	3s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2130.0	R1.188.2310.0	1
SNV 4074SL-A	30s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2160.0	R1.188.2340.0	1
SNV 4074SL-A	300s	24 V DC	115 – 230 V AC	Screw terminals, pluggable	R1.188.2190.0	R1.188.2370.0	1
SNV 4074SL-C	3s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2140.0	R1.188.2320.0	1
SNV 4074SL-C	30s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2170.0	-	1
SNV 4074SL-C	300s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	-	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	-	1
SNV 4076SL-C	3s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2050.0	-	1
SNV 4076SL-C	30s	24 V DC	115 – 230 V AC	Push-in terminals, pluggable	R1.188.2080.0	-	1

TECHNICAL DATA

Function			Emergency stop relay
Function display			5 LEDs, green/red
Function mode / adjustment			Time setting in 10 steps
Adjustment range			0.1 - 3 s / 0 - 30 s / 0 - 300 s
Power supply circuit			
Rated voltage U _N	A1, A2	24 V DC / 115-230 V AC	
Rated consumption	24 V DC 115-230 V AC	2.8 W 3.2 W / 6,3 VA	
Rated frequency			50 - 60 Hz
Operating voltage range U _B			0.85 - 1.1 x U _N
Electrical isolation supply circuit - control circuit			yes (at U _N = AC 115-230 V)
Control circuit			
Rated output voltage	S11, S13, S33, Y39 / S21	22 V DC	
Input current / peak current	S12, S31/S22, S32	3 mA / 4.5 mA	
	S14, S34, Y2, Y40	4 mA / 4.5 mA	
Response time t _{A1} / t _{A2}			200 ms
Minimum ON time t _M			100 ms
Recovery time t _W			50 ms
Release time t _R			20 ms
Release time t ^R , delayed contacts (tolerance)			0.1 / 0.2 / 0.3 / 0.4 / 0.5 / 0.8 / 1 / 1.5 / 2 / 3 s (0.1 % ± 15 ms)
			0 / 2 / 4 / 6 / 0.5 / 8 / 10 / 15 / 20 / 30 s (0.1 % ± 15 ms)
			0 / 20 / 40 / 60 / 80 / 100 / 150 / 200 / 250 / 300 s (0.1 % ± 15 ms)
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			forcibly 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)	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 EN 60529 (housing / terminals)			IP40 / IP20
Ambient temperature / storage temperature			-25 °C - +55 °C / -25 °C - +75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm ² – 2.5 mm ² / 2 x 0.2 mm ² – 1.0 mm ²	
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 1.0 mm ²	
Permissible torque			0.5 - 0.6 Nm
Wire ranges push-in terminals			2 x 0.25 mm ² – 1.5 mm ²
Weight			0.33 kg / 0.35 kg
Standards			EN ISO 13849-1, EN 62061, EN 50156-1
Approvals			TÜV, cULus Listed, CCC

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

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



APPLICATIONS

- Monitoring of limit values in the process industry
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of interlocks
- Monitoring of light barriers

SAFETY LEVEL

- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

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

OFF-DELAY WITH RETRIGGERING FUNCTION (SNV 4274SL)

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

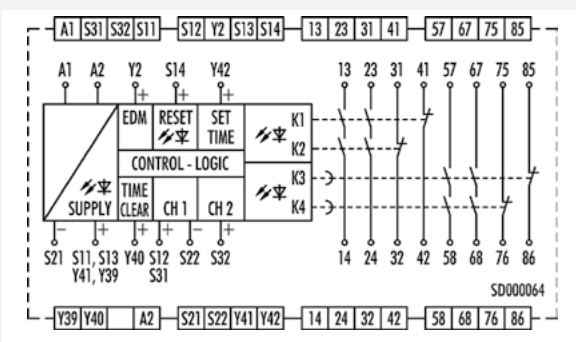
The set release delay only expires if the safety inputs are opened longer than the release delay set on the device. If the safety inputs are closed again before the release delay has expired (retriggering), the delayed contacts will remain closed, too.

ON-DELAY FUNCTION (SNV 4074ST)

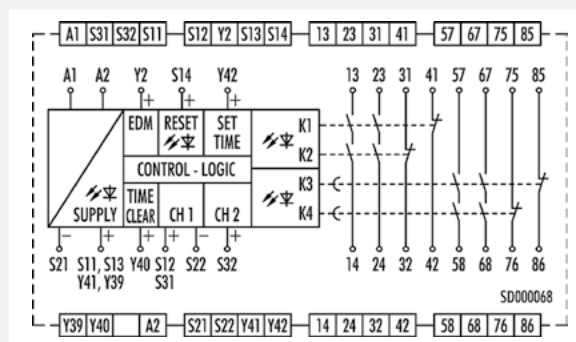
After the supply voltage is applied to terminals A1/A2 and the safety inputs are closed, the contacts are switched on immediately or with a response delay, either automatically or by pressing the reset button (manual start). When the safety inputs are opened/de-energized the contacts are switched off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

CIRCUIT DIAGRAMS

SNV 4274SL



SNV 4074ST



OVERVIEW OF DEVICES

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

TECHNICAL DATA

Function	Emergency stop relay	
Function display	5 LEDs, green/red	
Function mode / adjustment	Time / stepless	
Adjustment range	0.15 - 3 s / 1.5 - 30 s / 15 - 300 s	
Power supply circuit		
Rated voltage U _N	A1, A2	24 V DC / 115-230 V AC
Rated consumption	24 V DC 115-230 V AC	2.8 W 3.2 W / 6.3 VA
Rated frequency	50 - 60 Hz	
Operating voltage range U _B	0.85 - 1.1 x U _N	
Electrical isolation supply circuit - control circuit	yes (at U _N = 115-230 V AC)	
Control circuit		
Rated output voltage	S11, S13, S33, Y39 / S21	22 V DC
Input current / peak current	S12, S31/S22, S32	3 mA / 4,5 mA
	S14, S34, Y2, Y40	4 mA / 4,5 mA
Response time t _{A1} / t _{A2}	200 ms	
Minimum ON time t _M	100 ms	
Recovery time t _w	50 ms	
Release time t _R	20 ms	
Release time t _R , delayed contacts (tolerance)	0,15 - 3 s (± 16 % of the setting value)	
	1,5 - 30 s (± 16 % of the setting value)	
	15 - 300 s (± 16 % of the setting value)	
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	forcibly 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 EN 60529 (housing / terminals)	IP40 / IP20	
Ambient temperature / storage temperature	-25 °C - +55 °C / -25 °C - + 75 °C	
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm ² – 2.5 mm ² / 2 x 0.2 mm ² – 1.0 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 1.0 mm ²
Permissible torque	0.5 - 0.6 Nm	
Wire ranges push-in terminals	2 x 0.25 mm ² – 1.5 mm ²	
Weight	0,33 kg / 0,35 kg	
Standards	EN ISO 13849-1, EN 62061, EN 50156-1	
Approvals	TÜV, cULus Listed, CCC	

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

SNE 1

CONTACT EXPANSION



APPLICATIONS

- Duplication of the enabling current paths of a basic device
- Contact expansion in safety-oriented systems

SAFETY LEVEL

- Up to PL c / Category 2 (EN ISO 13849-1)*
- Up to SIL_{CL} 1 (EN 62061)*

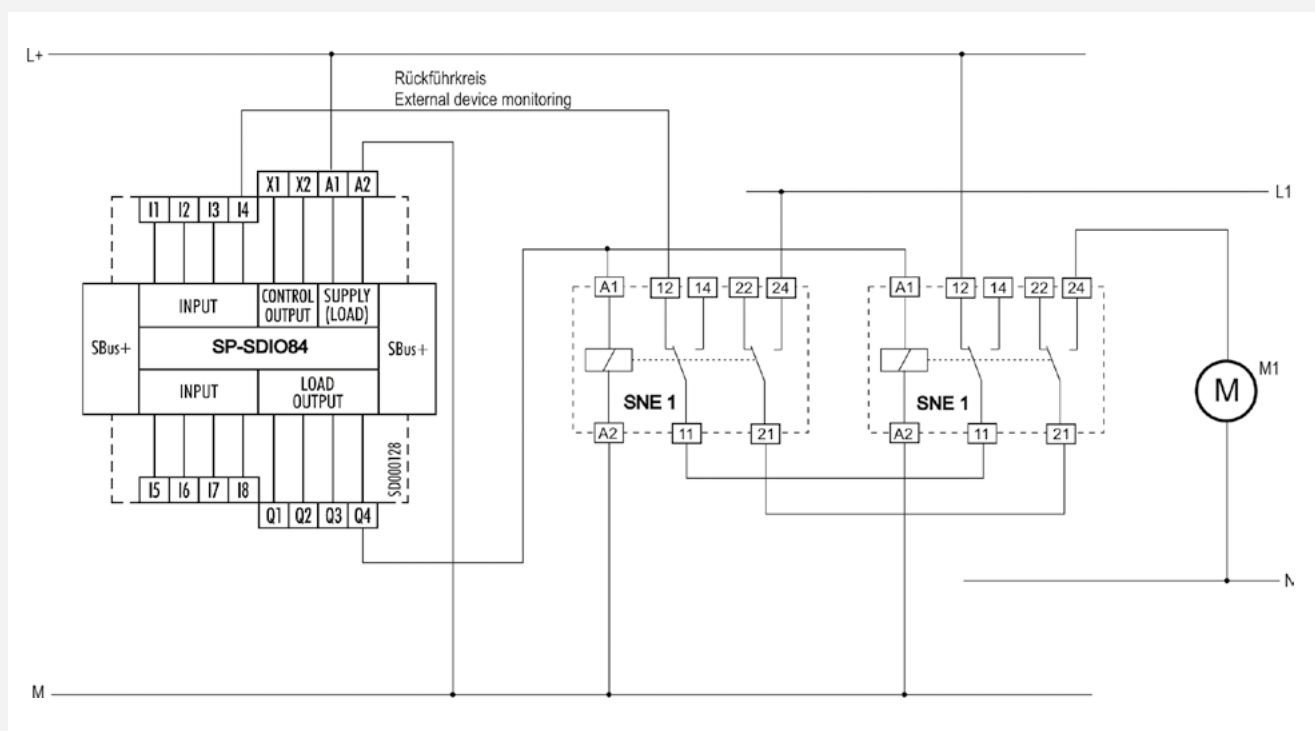
FEATURES

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

* Use up to PL e / category 4 possible (depending on the application and the category of the basic device or the safety control).

CIRCUIT DIAGRAM

SNE 1

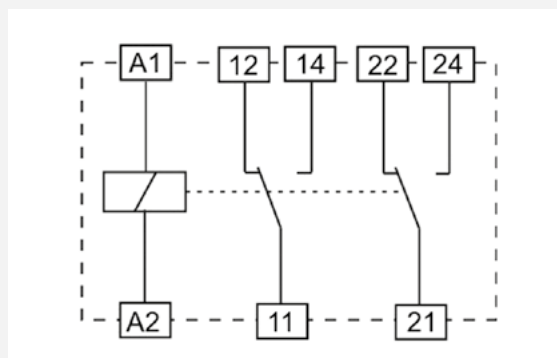


OVERVIEW OF DEVICES

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

CIRCUIT DIAGRAM

SNE 1



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

SNE 4004K

CONTACT EXPANSION



APPLICATIONS

- Expansion of a basic device's enabling current paths
- Contact expansion in safety equipment

SAFETY LEVEL

- 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)

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

FUNCTION

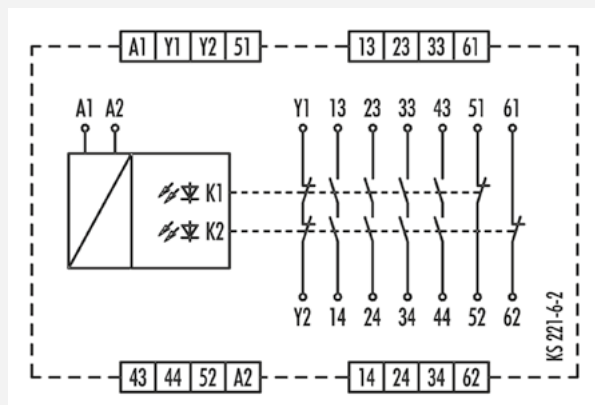
SNE 4004K

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 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.

CIRCUIT DIAGRAM

SNE 4004K



OVERVIEW OF DEVICES

Type	Time range	Rated voltage	Terminals	Part no.	P.U.
SNE 4004K-A	–	24 V AC/DC	Screw terminals, pluggable	R1.188.0590.0	1
SNE 4004K-C	–	24 V AC/DC	Push-in terminals, pluggable	R1.188.1980.0	1

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
Signaling paths	51/52, 61/62	normally closed contact
Contact assignment		forcebly guided
Contact type		Ag-alloy, gold-plated
Rated switching voltage	enabling / signaling path	230 V AC
	Y1/Y2	230 V AC
Max. thermal current I _{th}	enabling / signaling path	6 A / 2 A
	Y1/Y2	2 A
Max. total current I ² of all current path	(Tu = 55 °C)	9 A ²
Application category (NO)	AC-15 DC-13	U _e 230 V, I _e 5 A U _e 24 V, I _e 5 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gG / melting integral < 100 A ² s
Mechanical life		10 ⁷ switching cycles
General data		
Creepage distances and clearances between the circuits		EN 60664-1
Protection degree according to EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +55 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm ² – 2.5 mm ² / 2 x 0.2 mm ² – 1.0 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 1.0 mm ²
Permissible torque		0,5 - 0,6 Nm
Wire ranges push-in terminals		2 x 0.25 mm ² –1.5 mm ²
Weight		0.20 kg
Standards		EN ISO 13849-1, EN 62061
Approvals		DGUV, cULus Listed, CCC

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

SNE 4024K

CONTACT EXPANSION



APPLICATIONS

- Expansion of a basic device's enabling current paths
- Contact expansion in safety equipment

SAFETY LEVEL

- Up to PL e / Category 4 (EN ISO 13849-1)*
- Up to SIL_{CL} 3 (EN 62061)*

FEATURES

- Stop Category 0 and 1 according to EN 60204-1 (see "Function")
- Single-channel control
- 2x2 enabling current paths (NO contact)

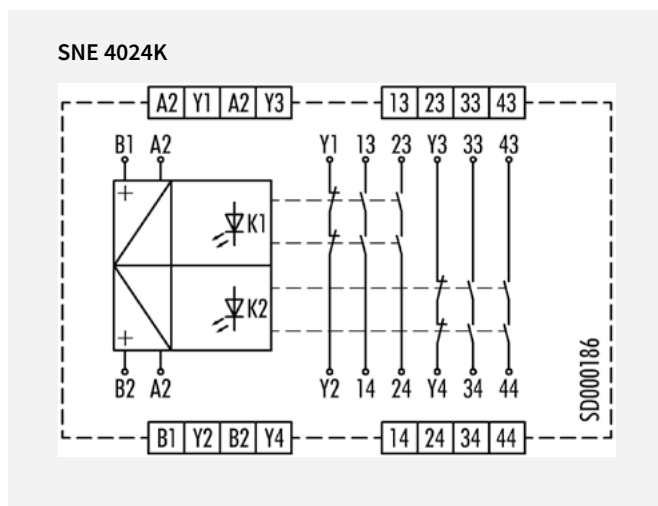
* Depends on the category of the basic device or the safety control.

FUNCTION

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

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

CIRCUIT DIAGRAM



OVERVIEW OF DEVICES

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

TECHNICAL DATA

Function	Emergency stop expansion relay
Function display	2 LED, green

Power supply circuit

Rated voltage U_N	B1/A2; B2/A2	24 V DC
Rated consumption		1.4 W
Operating voltage range U_B		0.75 - 1.25 U_N

Control circuit

Input current / peak current	B1/A2	ca. 30 mA / 110 mA
	B2/A2	ca. 30 mA / 110 mA
Response time t_{A1} / t_{A2}		< 15 ms
Recovery time t_W		≤ 30 ms
Release time t_R		≤ 15 ms
Max. resistivity, per channel ¹⁾		≤ (5 + (1,333 x U_B / U_N - 1) x 200) Ω

Output circuit

Enabling paths	13/14, 23/24	normally open contact
	33/34, 43/44	normally open contact
Signaling paths	Y1/Y2	normally closed contact
	Y3/Y4	normally closed contact
Contact assignment		forcebly guided
Contact type		Ag-alloy
Rated switching voltage		230 V AC, 24 V DC
Max. thermal current I_{th}	enabling / signaling path	6 A
Max. total current I^2 of all current path	($T_u = 55^\circ\text{C}$)	2 x 72 A ² / 2 x 8 A ²
Application category (NO)	AC-15 DC-13	U_e 230 V, I_e 3 A U_e 24 V, I_e 1 A
Short-circuit protection (NO), lead fuse / circuit breaker		6 A class gL / melting integral < 100 A 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 EN 60529 (housing / terminals)		IP40 / IP20
Ambient temperature / storage temperature		-25 °C - +65 °C / -25 °C - + 75 °C
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.2 mm ² – 2.5 mm ² / 2 x 0.2 mm ² – 1.0 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 1.0 mm ²
Permissible torque		0.5 - 0.6 Nm
Wire ranges push-in terminals		2 x 0.25 mm ² – 1.5 mm ²
Weight		0.180 kg
Standards		EN ISO 13849-1, EN 62061, DIN EN 50156-1, EN 61511
Approvals		TÜV, cULus Listed, CCC

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

SENSOR PRO – SAFE SENSORS



SAFE ROTARY ENCODERS

SENC series

Safe rotary encoders for functional safety capture information about drive shaft position and angle in the form of increments. They offer users a higher resolution, simpler mounting and a more rugged construction than proximity sensors. Our safe rotary encoders offer redundancy and high diagnostic coverage, which the standard encoders are unable to realize, and hence achieve Kat 4, PL e und SIL 3.



LIGHT CURTAINS + LIGHT GRIDS

Safety light curtains – SLC4 series

SLC4 series safety light curtains are ideal for realizing optoelectronic protective devices. The SLC4 series is used to safeguard hazard points, for area protection or access protection.

Safety light grids – SLG4 series

SLG4 series safety light grids are optoelectronic personal protective devices for access protection at hazard points on plant and machinery.



EMERGENCY STOP BUTTONS

SNH series

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

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

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





CONTACTLESS SWITCHES

Non-contact safety switches – STS series

The non-contact RFID safety switches of the STS series have the highest level of manipulation protection and are used to monitor the position of guards.

Magnetic safety switches – SMA series

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

MECHANICAL SWITCHES

Safety switches with guard control – SIN series

SIN series safety switches are used for the position monitoring of movable guards and prevent the unintentional opening of safety doors and flaps via the integrated guard control. Typical fields of application are machines with coasting movements, at which access is allowed to be granted only when the hazard has been eliminated.

Safety switches with separate actuator – SMS series

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

SAFE POSITION SWITCHES

SLS series

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

SERIES SENC

SAFE HTL INCREMENTAL ENCODER



SENC-58H WITH HOLLOW SHAFT



SENC-58S WITH SOLID SHAFT

APPLICATIONS FOR SAMOS® PRO MOTION

- Safe Rotational speed, rotational direction or position monitoring to EN/IEC 61800-5-2
- Shutdown monitoring for commissioning or maintenance
- Safe direction detection (SDI) for rolls, gates or machines
- Safely reduced speed (SLS) for setup mode
- Safely limited position (SLP) for rotative or linear axes

FEATURES

- Rotational speed or position monitoring to SIL 3 and PL e, for 1 axis, and up to SIL 2 and PL d for 2 axes
- Special form fit with the positive lock for hollow shafts
- Compact 58 flange size with minimum space requirement inside the machine
- Flexible mounting with hollow shaft, solid shaft or axial connector
- Compatible HTL output for fast safe inputs on samos® PRO MOTION
- Resolutions from 360 ppr and 1024 ppr depending on accuracy requirement
- PUR encoder cable resistant to oil, UV, ozone and solvents
- Over 100,000 hours of service life from mounting at hollow shaft encoder
- Maximum peak speed of 9000 rpm and continuous speed of 4000 rpm

TYPE CODE

	SENC-	xxx	xx	xxx	xxxx	x
Shaft type and sizes	Solid shaft, size 58 mm	58S				
	Hollow shaft, size 58 mm	58H				
Shaft diameter	10 mm shaft diameter (58S only)		10			
	14 mm shaft diameter (58H only)		14			
Electronic system	Supply voltage 11-30 V, digital HTL output (AA/, BB/, ZZ/)			HTL		
Resolution	360 ppr (ppr: pulse/revolution)				0360	
	1024 ppr (ppr: pulse/revolution)				1024	
Connection orientation	Axial					A
	Radial					R

SAFETY-RELEVANT DATA

	PFD avg	PFH	MTTFd	DCavg	Mission Time	SIL	PL
Rotational speed monitoring (partially redundant) at 40 °C	6.60E-05	7.53E-10	1515	99.00 %	20 years	SIL 3	PL e / Cat 4
Rotational speed monitoring (partially redundant) at 80 °C	2.97E-04	3.39E-09	336	99.00 %	20 years	SIL 3	PL e / Cat 4
Position monitoring (single channel) at 40 °C	6.60E-05	7.53E-10	1515	99.00 %	20 years	SIL 3	PL e / Cat 4
Position monitoring (single channel) at 80 °C	2.97E-04	3.39E-09	336	99.00 %	20 years	SIL 3	PL e / Cat 4

SERIES SENC

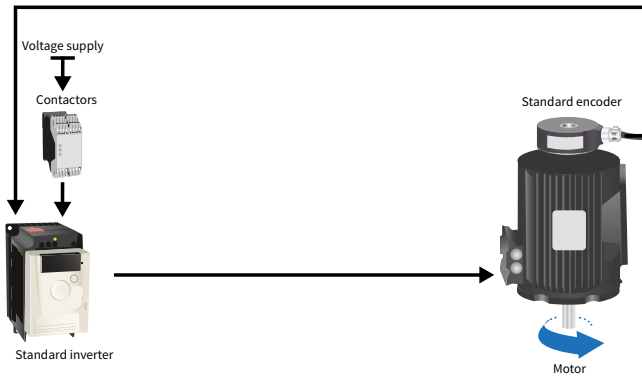
SAFE HTL INCREMENTAL ENCODER

TYPICAL ARCHITECTURE

The integration of encoders for speed monitoring in a safety loop is possible in various configurations. Various solutions, depending on the existing safety level and/or existing equipment, are presented below.

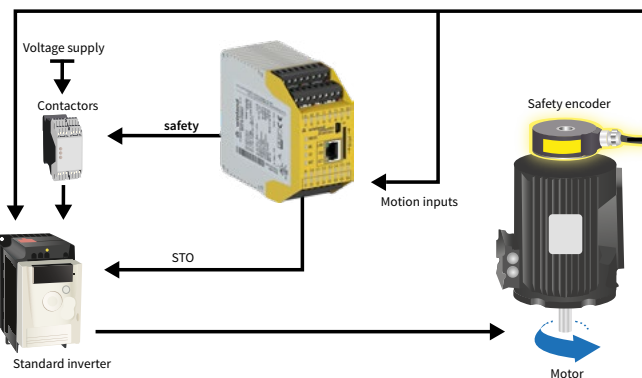
NOTE

The use of encoders in a safety loop requires external monitoring of the encoder signals. The safety modules offered by Wieland meet these requirements in a manner that is transparent for the user.



STANDARD INSTALLATION WITHOUT SIL CERTIFICATION

Safety level: 0



SOLUTION FOR MODULAR SAFETY

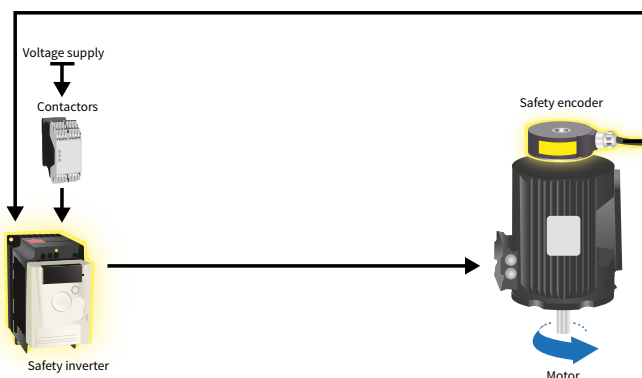
Safety level: to SIL 3/PL e

Establishing conformity of an existing system

Problem-free integration: +++
Cost-effective solution: +++

New design

Problem-free integration: +++
Cost-effective solution: ++



SOLUTION FOR INTEGRATED SAFETY

Safety level: to SIL 3/PL e

Establishing conformity of an existing system

Problem-free integration: +
Cost-effective solution: +

New design

Problem-free integration: +++
Cost-effective solution: +++

SERIES SENC

SAFE HTL INCREMENTAL ENCODER

TECHNICAL DATA		
Function	SENC-58Sxx	SENC-58Hxx
Incremental rotary encoder	Logging of position or angle changes via rectangular pulses with photoelectric sensing	
Nominal voltage U _N		24 V DC
Operating voltage range U _B		11 – 30 V DC
Galvanic isolation supply circuit - output circuit		No
Supply current		100 mA without load
Electrical data		
Output signals	Digital HTL signals (11-30 V DC)	
PIN coding	A, A/, B, B/ for safe incremental pulses 0, 0/ for index pulse (no internal plausibility check)	
Color coding of encoder cable (CABLE-M23CCW...)	A: gray, A/: pink, B: brown, B/: green, 0: red, 0/: black, +V: blue and green/brown, 0V: white and white/green	
Resolution	360 ppm and 1024 ppm	
Current per channel pair	40 mA	
Short circuit strength	Yes	
Protection against polarity reversal	Yes	
Mechanical data		
DIN-size	58 mm	
Shaft type	Solid shaft	Hollow shaft
Shaft diameter	1000 mm	14 mm
Housing material	Powder-coated, die-cast zinc	
Flange material	Aluminum	
Shaft material	AISI 303 stainless steel	
Bearing	6800 series – sealed	6803 series – sealed
Maximum loads	Axial: 40 N, radial: 80 N	Axial: 20 N, radial: 40 N
Shaft moment of inertia	< 2800 g/mm ²	< 9500 g/mm ²
Static/dynamic torque	5 / 35 mN/m	10 / 85 mN/m
Max. peak rotational speed	9000 rpm	9000 rpm
Max. continuous rotational speed	6000 rpm	4000 rpm
Theor. mechanical service life*	> 29.7/10 ⁹ revolutions / 82,365 hours	> 24/10 ⁹ revolutions / 100,000 hours
Weight (approx.)	0.300 kg	0.280 kg
General data		
Protection class as per DIN 60529	IP65	
Ambient temperature / storage temperature	-25°C – +85°C / -20°C – +85°C	
Standards	EN/ IEC 61508, IEC 13849-1, IEC 61800-5-2, IEC 62061	
Approvals	CE, TÜV, cULus listed	
* continuous max. rotational speed – ½ max. load – to ISO 281:1990, L10		

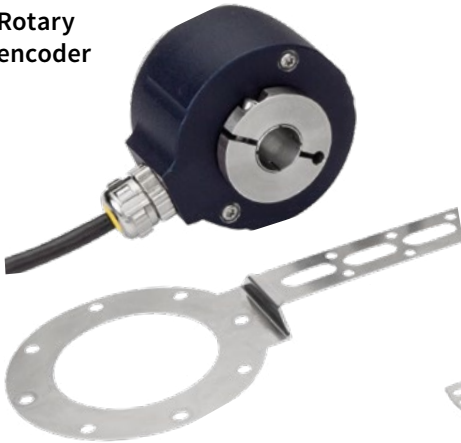
OVERVIEW OF DEVICES

Type	Description	Part. no.	P.U.
SENC-58S10HTL0360A	Safe HTL encoder, SIL 3, PL e, solid shaft, size 58mm, 360ppr, axial	R1.450.1010.0	1
SENC-58S10HTL0360R	Safe HTL encoder, SIL 3, PL e, solid shaft, size 58mm, 360ppr, radial	R1.450.1020.0	1
SENC-58S10HTL1024A	Safe HTL encoder, SIL 3, PL e, solid shaft, size 58mm, 1024ppr, axial	R1.450.1050.0	1
SENC-58S10HTL1024R	Safe HTL encoder, SIL 3, PL e, solid shaft, size 58mm, 1024ppr, radial	R1.450.1060.0	1
SENC-58H14HTL0360R	Safe HTL encoder, SIL 3, PL e, hollow shaft, size 58mm, 360ppr, radial	R1.450.1110.0	1
SENC-58H14HTL1024R	Safe HTL encoder, SIL 3, PL e, hollow shaft, size 58mm, 1024ppr, radial	R1.450.1130.0	1

SERIES SENC

ACCESSORIES FOR ROTARY ENCODER LINE

Rotary encoder



Torque support with retaining bracket



Torque support with stator coupling

Torque supports offer a high degree of rotatory stability, preventing the encoder rotating along with the shaft. Flange adapters are used to mount the encoder on a motor. The reducing bushes allow you to reduce the diameter of a hollow shaft encoder. The encoder cables from PUR with M23 connector (encoder side) and open core (controller side) offer high flexibility, ruggedness and durability.

Rated for maximum ruggedness and optimized safety



Safe drive with keyed joint.



A unique device for continuous hollow shafts, which effectively prevents slippage through locking pins.



Rugged mechanical design with additional bearing in the cover.

OVERVIEW OF DEVICES

Type	Description	Part. no.	P.U.
ACCESSORIES: COUPLING			
COUP-STATOR-58-S	Stator coupling, size 58mm, stainless-steel	R1.450.9110.0	1
COUP-TETHER-58-S	Tether arm coupling, size 58mm, stainless-steel	R1.450.9120.0	1
ACCESSORIES: FLANGE ADAPTERS			
FLANGE-58-A	Flange adapter, size 58mm, aluminium	R1.450.9210.0	1
ACCESSORIES: SHAFT			
COUP-SHAFT-58S-S-10-10	Shaft coupling, solid shaft, size 58mm, shaft diameter 10mm to 10mm	R1.450.9250.0	1
KEY-SHAFT-58S-S-04-10	Shaft key, solid shaft, size 58mm, width 4mm, length 10mm	R1.450.9260.0	10
ACCESSORIES: ENCODER CABLE			
CABLE-M23CKW-PUR-015	Encoder cable, 1,5 m, PUR, shielded	R1.450.9310.0	1
CABLE-M23CKW-PUR-030	Encoder cable, 3 m, PUR, shielded	R1.450.9314.0	1
CABLE-M23CKW-PUR-050	Encoder cable, 5 m, PUR, shielded	R1.450.9320.0	1
CABLE-M23CKW-PUR-070	Encoder cable, 7 m, PUR, shielded	R1.450.9324.0	1
CABLE-M23CKW-PUR-100	Encoder cable, 10 m, PUR, shielded	R1.450.9330.0	1
CABLE-M23CKW-PUR-150	Encoder cable, 15 m, PUR, shielded	R1.450.9335.0	1
CABLE-M23CKW-PUR-200	Encoder cable, 20 m, PUR, shielded	R1.450.9340.0	1
ACCESSORIES: TERMINAL BLOCKS			
WKFN 2,5 E/35/G-URL...	Duo Feed-through terminal with tension spring connection, nominal cross section: 2.5 mm ² , width: 5 mm, color: red, resistance: 3 kOhm	56.703.8455.5	1
WKFN 2,5 E/35/...ROT	Duo Feed-through terminal with tension spring connection, nominal cross section: 2.5 mm ² , width: 5 mm, color: red	56.703.7555.5	1
WKFN 2,5 E/SL/35	Ground terminal with tension spring connection, nominal cross section: 2.5 mm ² , width: 5 mm, color: Green-yellow	56.703.8955.0	1
IVBWKF 2,5- 2	Cross connector, insulated for DIN rail terminal blocks type WKF..., 2-pole	Z7.280.6227.0	1
WST 13,5 / TS 35	Shield connection terminal block for wire diameter 4 to 13.5 mm	Z2.803.6110.0	1
APFN 2,5 E/35	End plate for DIN rail terminal blocks type WKFN 2,5 E..., color: grey	07.312.7355.0	1

The fault elimination of the mechanic is not part of the device and has to be provided by the operator. For additional information (e.g. drawings and dimensions), visit the eShop at <http://eshop.wieland-electric.com>

SERIES SLC4

SAFETY LIGHT CURTAIN



MAXIMUM SAFETY AT HIGHEST EFFICIENCY

SLC4 is ideally suited for finger and hand protection to monitor safe access to machines, while ensuring high availability and reducing downtimes of the machines. The two different variants Base and Standard-Muting can solve standard as well as more complex applications, including muting-applications. Since all variants are based on the same platform, SLC4 can easily be replaced, e.g. for adaptations or retrofit at machines.

BENEFITS

- Configuration without software
- Zero dead zone
- All models are based on the same platform
- Clearly visible LEDs for on-site diagnostic
- Protective field heights from 300 up to 2100 mm

APPLICATIONS

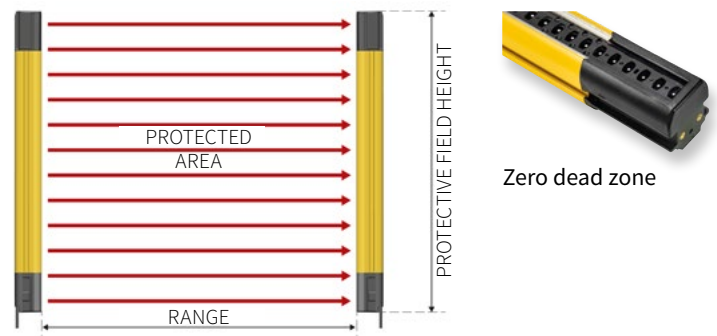
- Access protection (finger and hand protection)
- Monitoring of access points and hazardous areas
- Vertical and horizontal protection

SAFETY LEVEL

- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

- Safety light curtain AOPD type 4
- Beam resolution 14 and 30 mm
- Protection field heights from 300 up to 2100 mm
- Standardized connection technology (M12)
- Ranges up to 30 m can be implemented
- Base and Standard-Muting variants available
- One package: SLC4-Sets incl. brackets and pigtail (M12 connection)
- Accessories for installation, mounting and muting optional available



- Easy and fast installation without programming (Plug&Play for Base models)
- Space saving installation and flexible integration in the machine
- Easy replacement without design changes and reduced number of required accessories
- Fast on-site diagnostic to reduce downtimes of the machine
- Suitable devices for almost every application



Access protection with the safety light curtain SLC4

SERIES SLC4

SAFETY LIGHT CURTAIN

TECHNICAL DATA		
Function	Safety Light Curtain	
Function display	LED	
Power supply circuit		
Power supply U _N	24 Vdc ± 20% ^a	
Current consumption (transmitter)	3.5 W max	
Current consumption, no load (receiver)	5.5 W max (without load)	
Operating voltage range U _B	0,8 - 1,2 x U _N	
Electrical isolation supply circuit-control circuit	no	
Protection field data	Resolution	Range / protective field height
	14 mm	0.2 - 10 m/ 300 - 2.100 mm
	30 mm	0.2 - 30 m/ 300 - 2.100 mm
Output circuit OSSD		
Number	2	
Type	PNP	
Short circuit and cross circuit monitoring	Yes	
Switching current (max., per output)	250 mA (500 mA total max current)	
Leakage current (max.)	< 1 mA	
Switching voltage, high active (U _B - 1V)	18.0 - 27.0 V	
Output voltage - ON min	Power supply value less 1 V	
Output voltage - OFF max	0.2 V	
Output capacitive load	1 µF at 24 Vdc	
Line resistance / line length	< 4 Ω / ≤ 30 m	
Response time	from 7 to 16 ms (30 mm resolution uncoded) from 9 to 28 ms (14 mm resolution uncoded)	
Optical data		
Light source	Infrared LED (850 nm wavelength)	
EAA angle	< ±2.5° at 3 meters	
Ambient light rejection	EN 61496-2-2020	
General data		
Protection degree according to EN 60529 (mechanical protection)	IP67, IP65	
Electrical protection	Class III	
Pollution degree	2	
Operating temperature	-30...+55 °C	
Storage temperature	-30...+60 °C	
Connection	M12 5; 8 poles (depending on the model)	
Cable length (max.)	30 m	
Weight	1.4 Kg/mt (single bar - without package)	
Vibrations	10 mm / 3g, 5 to 150 Hz frequency, (EN 60068-2-6 / Class 3M7 IEC TR 60721-4-3)	
Shock resistance	25g x 6 ms x 600 (EN 60068-2-27 / Class 3M7 IEC TR 60721-4-3)	
Housing material	Painted aluminum (yellow RAL 1003)	
Caps material	PBT Valox 553 black	
Caps cover material	PBT 1403g3 black	
Frontal cover material	MAKROLON AR 7099 Clear	
Standards	EN 61496, EN ISO 13849-1, EN 62061, EN 61508	
Approvals	CE, TÜV, UKCA, cULus Listed	
Safety related data		
PL (EN ISO 13849-1)	up to PL e (ref. EN ISO 13849-1: 2015)	
Category (EN ISO 13849-1)	up to Cat. 4 (ref. EN ISO 13849-1: 2015)	
SIL (IEC 61508)	up to SIL 3 (ref.EN 61508)	
SILCL (EN IEC 62061)	up to SIL CL 3 (ref. EN 62061:2005/A2: 2015)	
Type (EN IEC 61496)	Type 4 (ref. EN 61496-1: 2020)	
PFH ₀	2.62 x 10 ⁻⁸ [1/h] (ref. EN 61508)	
MTTF _d [years]	43 (ref. EN ISO 13849-1 2015)	
T _M	20 years	
DC _{avg} (Average Diagnostic Coverage)	99%	
SFF (Safe Failure Fraction)	100%	
HTF (Hardware Fault Tolerance)	1	

SERIES SLC4 | DEVICE OVERVIEW

SAFETY LIGHT CURTAIN

	SLC4 Base	SLC4 Standard-Muting
LED Display	●	●
Automatic Start	●	●
Manual start/ restart interlock		●
Muting		●
Cascading		●
External Device Monitoring (EDM)		●
Anti-interference coding		●
Configuration		By Dip-Switch

TRANSMITTER + RECEIVER

Protective field height hhhh [mm]	Resolution Type	Base		Standard-Muting	
		14 mm	30 mm	14 mm	30 mm
		SLC4-B14-hhhh	SLC4-B30-hhhh	SLC4-SM14-hhhh	SLC4-SM30-hhhh
0300		R1.610.0300.0	R1.612.0300.0	R1.611.0300.0	R1.613.0300.0
0450		R1.610.0450.0	R1.612.0450.0	R1.611.0450.0	R1.613.0450.0
0600		R1.610.0600.0	R1.612.0600.0	R1.611.0600.0	R1.613.0600.0
0750		R1.610.0750.0	R1.612.0750.0	R1.611.0750.0	R1.613.0750.0
0900		R1.610.0900.0	R1.612.0900.0	R1.611.0900.0	R1.613.0900.0
1050		R1.610.1050.0	R1.612.1050.0	R1.611.1050.0	R1.613.1050.0
1200		R1.610.1200.0	R1.612.1200.0	R1.611.1200.0	R1.613.1200.0
1350		R1.610.1350.0	R1.612.1350.0	R1.611.1350.0	R1.613.1350.0
1500		R1.610.1500.0	R1.612.1500.0	R1.611.1500.0	R1.613.1500.0
1650		R1.610.1650.0	R1.612.1650.0	R1.611.1650.0	R1.613.1650.0
1800		R1.610.1800.0	R1.612.1800.0	R1.611.1800.0	R1.613.1800.0
1950		R1.610.1950.0	R1.612.1950.0	R1.611.1950.0	R1.613.1950.0
2100		R1.610.2100.0	R1.612.2100.0	R1.611.2100.0	R1.613.2100.0

Further information on the muting types and the associated product accessories can be found on pages 86–89!

SERIES SLG4

SAFETY LIGHT GRID



RELIABLE AND COST-EFFICIENT ACCESS PROTECTION AT HAZARDOUS AREAS

Whenever large areas at machine or on the production floor need reliable and safe access protection SLG4 series is the perfect choice. Ranges up to 70 m can be implemented with only one single system. The robust housing made of aluminum and the mechanical protection of IP67 in accordance with EN 60529 allow highest functional safety even under harsh environment conditions.

BENEFITS

- Configuration without software
- Robust design, operating temperature -30°C up to +50°C and protection degree IP67
- Finger/hand/body models are based on the same platform
- Clearly visible LEDs for on-site diagnostic
- Emitter, receiver, brackets and pigtail (already connected) included in package

APPLICATIONS

- Access and entry/exit protection (personal protection)
- Safeguarding of hazardous areas (long distances)

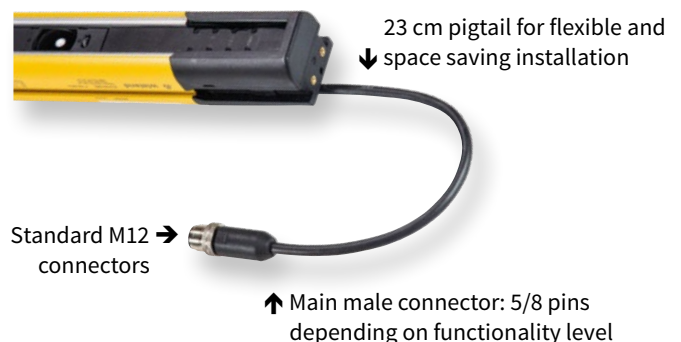
SAFETY LEVEL

- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SILCL 3 (EN 62061)

FEATURES

- Safety light grids AOPD type 4
- 2-, 3- and 4-beam systems
- Protection field heights from 500 up to 1200 mm
- Standardized connection technology (M12)
- Ranges up to 70 m can be implemented
- Base and Standard-Muting variants available
- One package: SLG4-Sets incl. brackets and pigtail (M12 connection)
- Accessories for installation, mounting and muting optional available

Standard M12 Connector for easy installation



- Easy and fast installation without programming (Plug&Play for Base models)
- Reliable and safe use even under harsh environmental conditions
- Easy replacement without design changes and reduced number of required accessories
- Fast on-site diagnostic to reduce downtimes of the machine and easy alignment of safety light grid
- Reduced assembly work and fast commissioning

SERIES SLG4

SAFETY LIGHT GRID

TECHNICAL DATA		
Function	safety light curtain	
Function display	LED	
Power supply circuit		
Power supply U _N	24 Vdc ± 20%	
Current consumption (transmitter)	3.5 W max	
Current consumption, no load (receiver)	5.5 W max (without load)	
Operating voltage range U _B	0,8 - 1,2 x U _N	
Electrical isolation supply circuit-control circuit	no	
Protection field data	Resolution	Range / protective field height
	Body Short Range	0.5 - 15 m/ 500, 800, 900, 1.200 mm
	Body Long Range	5.0 - 70 m/ 500, 800, 900, 1.200 mm
Output circuit OSSD		
Number	2	
Type	PNP	
Short circuit and cross circuit monitoring	Yes	
Switching current (max., per output)	250 mA (500 mA total max current)	
Leakage current (max.)	< 1 mA	
Switching voltage, high active (U _B - 1V)	18.0 - 27.0 V	
Output voltage - ON min	Power supply value less 1 V	
Output voltage - OFF max	0.2 V	
Output capacitive load	1 µF at 24 Vdc	
Line resistance / line length	< 4 Ω / ≤ 30 m	
Response time	from 12 to 15 ms (uncoded)	
Optical data		
Light source	Infrared LED (850 nm wavelength)	
EAA angle	< ±2.5° at 3 meters	
Ambient light rejection	EN 61496-2-2020	
General data		
Protection degree according to EN 60529 (mechanical protection)	IP67, IP65	
Electrical protection	Class III	
Pollution degree	2	
Operating temperature	-30...+55 °C	
Storage temperature	-30...+60 °C	
Connection	M12 5; 8 poles (depending on the model)	
Cable length (max.)	30 m	
Weight	1.4 Kg/mt (single bar - without package)	
Vibrations	10 mm / 3g, 5 to 150 Hz frequency, (EN 60068-2-6 / Class 3M7 IEC TR 60721-4-3)	
Shock resistance	25g x 6 ms x 600 (EN 60068-2-27 / Class 3M7 IEC TR 60721-4-3)	
Housing material	Painted aluminum (yellow RAL 1003)	
Caps material	PBT Valox 553 black	
Caps cover material	PBT 1403g3 black	
Frontal cover material	MAKROLON AR 7099 Clear	
Standards	EN 61496, EN ISO 13849-1, EN 62061, EN 61508	
Approvals	CE, TÜV, UKCA, cULus Listed	
Safety related data		
PL (EN ISO 13849-1)	up to PL e (ref. EN ISO 13849-1: 2015)	
Category (EN ISO 13849-1)	up to Cat. 4 (ref. EN ISO 13849-1: 2015)	
SIL (IEC 61508)	up to SIL 3 (ref. EN 61508)	
SILCL (EN IEC 62061)	up to SIL CL 3 (ref. EN 62061:2005/A2: 2015)	
Type (EN IEC 61496)	Type 4 (ref. EN 61496-1: 2020)	
B _{10D}	NA	
PFH _D	2.62 x 10 ⁻⁸ [1/h] (ref. EN 61508)	
MTTF _d [years]	43 (ref. EN ISO 13849-1 2015)	
T _M	20 years	
DC _{avg} (Average Diagnostic Coverage)	99%	
SFF (Safe Failure Fraction)	100%	
HTF (Hardware Fault Tolerance)	1	

SERIES SLG4

SAFETY LIGHT GRID

	SLG4 Base	SLG4 Standard-Muting
LED Display	●	●
Automatic Start	●	●
Range reduction	●	●
Manual start/ restart interlock		●
Muting		●
External Device Monitoring (EDM)		●
Anti-interference coding		●
Configuration		By Dip-Switch

BASE

Type	Protective Field Height [mm]	Description	Part. no.	P.U.
SLG4-B2-0500	0500	Safety Light Grid Transmitter + Receiver, 2 beams, range up to 70 m	R1.620.0500.0	1
SLG4-B3-0800	0800	Safety Light Grid Transmitter + Receiver, 3 beams, range up to 70 m	R1.620.0800.0	1
SLG4-B4-0900	0900	Safety Light Grid Transmitter + Receiver, 4 beams, range up to 70 m	R1.620.0900.0	1
SLG4-B4-1200	1200	Safety Light Grid Transmitter + Receiver, 4 beams, range up to 70 m	R1.620.1200.0	1

STANDARD-MUTING

Type	Protective Field Height [mm]	Description	Part. no.	P.U.
SLG4-SM2-0500	0500	Safety Light Grid Transmitter + Receiver, 2 beams, range up to 70 m	R1.621.0500.0	1
SLG4-SM3-0800	0800	Safety Light Grid Transmitter + Receiver, 3 beams, range up to 70 m	R1.621.0800.0	1
SLG4-SM4-0900	0900	Safety Light Grid Transmitter + Receiver, 2 beams, range up to 70 m	R1.621.0900.0	1
SLG4-SM4-1200	1200	Safety Light Grid Transmitter + Receiver, 2 beams, range up to 70 m	R1.621.1200.0	1

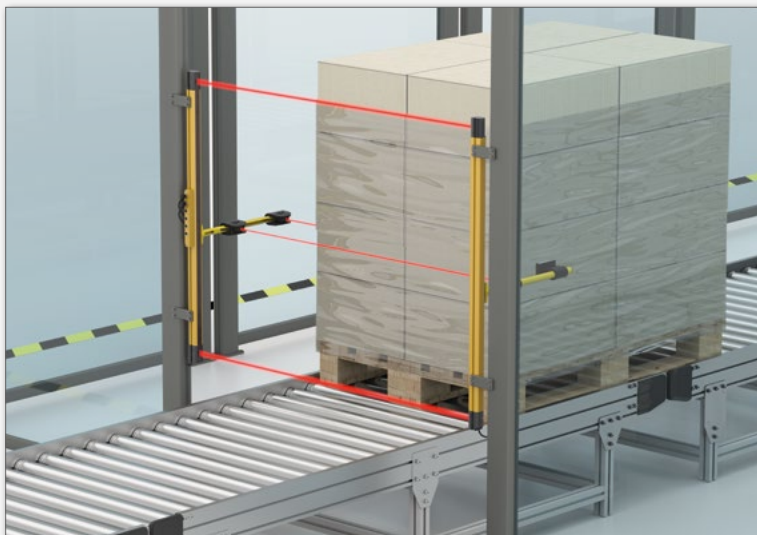
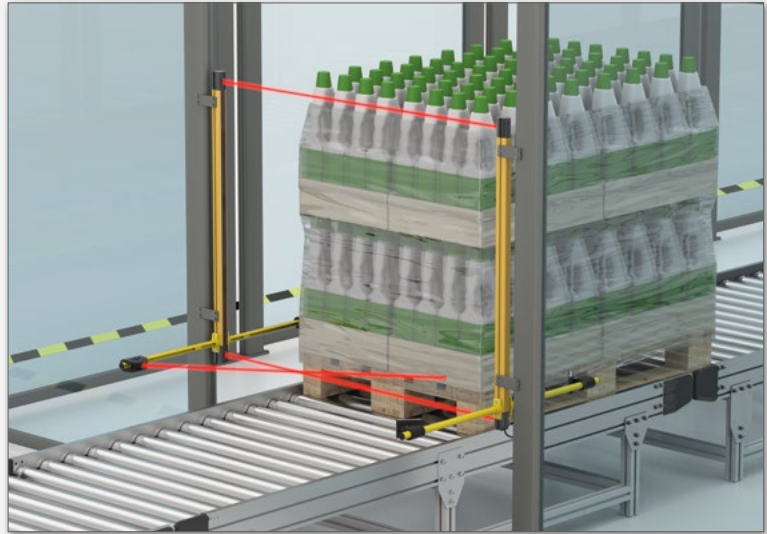
Further information on the muting types and the associated product accessories can be found on pages 86–89!

SERIES SLC4 + SLG4

MUTING TYPES

CROSS MUTING (2-SENSOR-MUTING)

Material movement possible in both directions.
Simultaneous activation of the muting sensors.

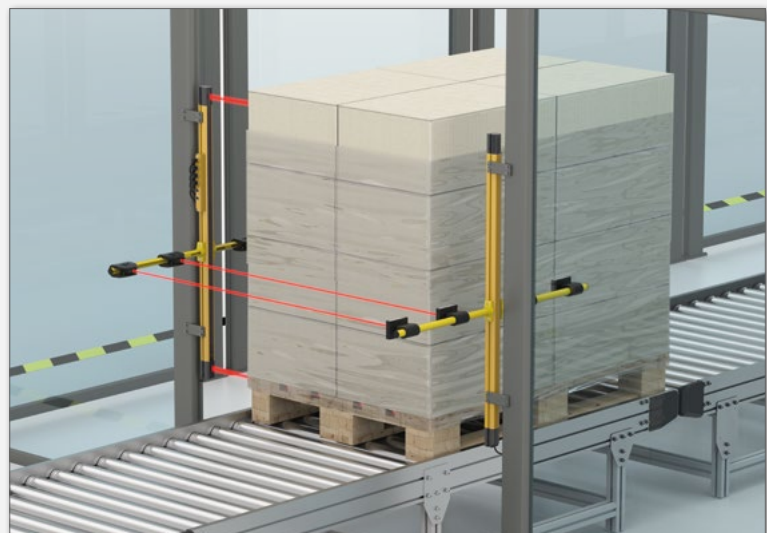


L-MUTING (2-SENSOR-MUTING)

Material movements only possible from hazardous area.
Successive activation of the muting sensors.
Well suited for space saving applications.

T-MUTING (4-SENSOR-MUTING)

Material movement possible in both directions.
Successive activation of the muting sensors.
If the beams of the muting sensors cannot cross, e.g. with highly reflective material surfaces.

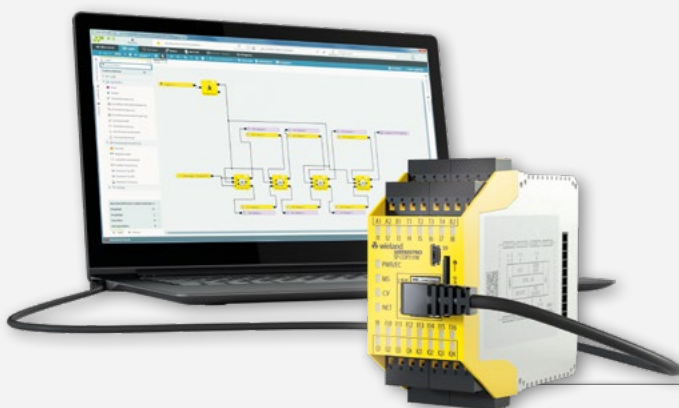
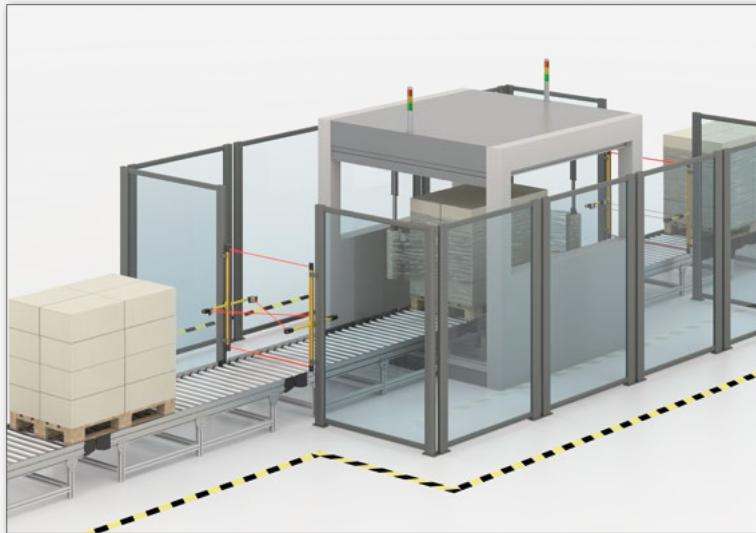


SERIES SLC4 + SLG4

APPLICATION EXAMPLES

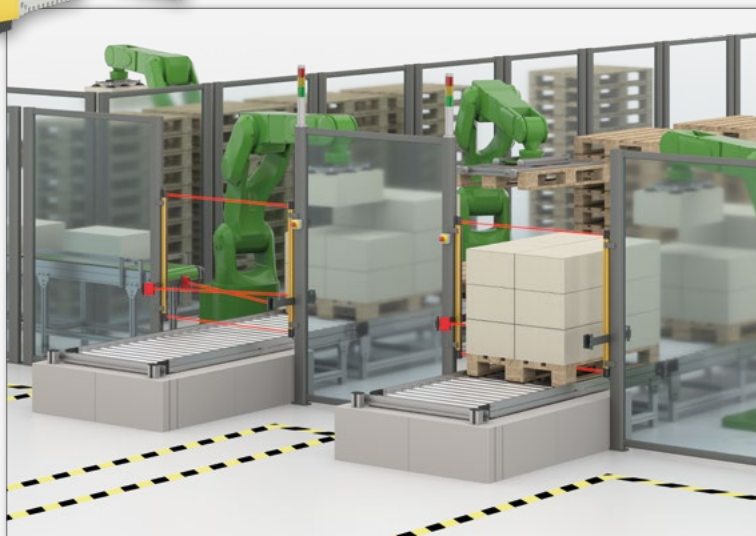
MUTING WITH SLG4

Safety light grids SLG4 Standard-Muting with 2-sensor-muting at a packaging machine.



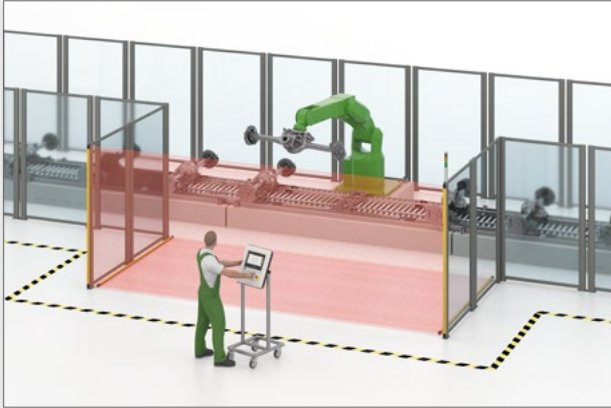
SLG4 – MUTING FUNCTIONS WITH SAMOS® PRO COMPACT

Safety Light Grids SLG4 and Safety Light Curtains SLC4 are ideally suited for monitoring material locks, such as in the packaging industry, in combination with the freely configurable muting function blocks of samos® PRO.



SERIES SLC4 + SLG4

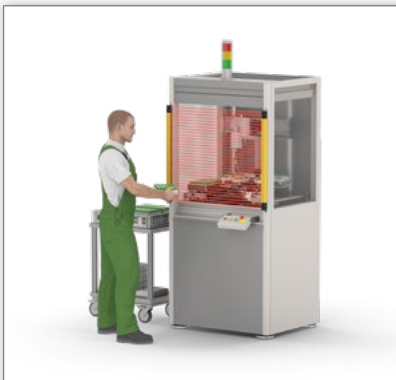
APPLICATION EXAMPLES



PRESENCE DETECTION VIA CASCADING OF SLC4

A vertically Safety Light Curtain SLC4 is used to protect the operator from the hazardous movement of the machine. In addition, presence detection is enabled with a horizontally mounted second SLC4. Both SLC4 Safety Light Curtains are connected via cascading function.

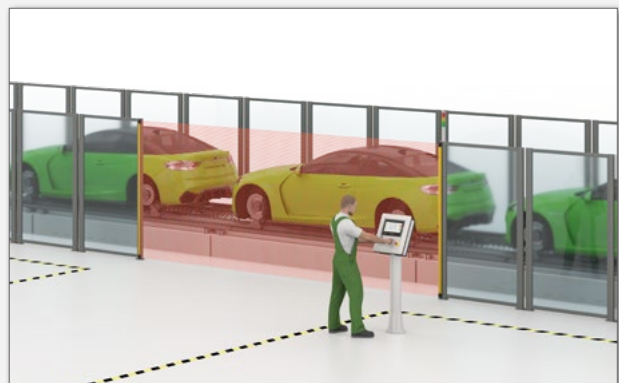
POINT OF OPERATING GUARDING



Point of operating guarding for hand and finger protection is typically the most common application for SLC4 series Base and Standard-Muting.

ACCESS GUARDING ON A PRODUCTION LINE

Safety Light Curtains SLC4 with up to 30 mm resolution can be used for access guarding into danger zones. SLC4 detect people upon entry into the danger zone.



SERIES SLC4 + SLG4

ACCESSORIES

MOUNTING

Type	Description	Part. no.	P.U.
SLX4-AC-LP	Laser alignment aid (external), battery-powered	R1.690.0001.0	1
SLX4-MO-RB	Rotative Bracket Set, 4 pcs	R1.690.0005.0	1
SLX4-AC-TB14	Test Bar Finger Protection, 14 mm Resolution	R1.690.0032.0	1
SLX4-AC-TB30	Test Bar Hand Protection, 30 mm Resolution	R1.690.0033.0	1
SLX4-MO-AVK	Shock absorber for Mounting L-Bracket Set, 4 pcs	R1.690.0040.0	1
SLX4-MO-LB	Mounting L-Bracket Set, 4 pcs	R1.690.0041.0	1

INSTALLATION CABLES

Type	Description	Part. no.	P.U.
SLX4-AC-CC1	Cascade Cable 1m	R1.690.0002.0	1
SLX4-AC-CC3	Cascade Cable 3m	R1.690.0003.0	1
SLX4-AC-CC10	Cascade Cable 10m	R1.690.0004.0	1
SLX4-AC-RP-5	Replacement Plug Base, Connector M12 5-poles	R1.690.0014.0	1
SLX4-AC-RP-5-5	Replacement Plug Standard-Muting, Female and Male Connector M12 5-poles	R1.690.0017.0	1
SLX4-AC-RP-8-5	Replacement Plug Standard-Muting, Female Connector M12 5-poles and Male Connector M12 8-poles	R1.690.0018.0	1
SLX4-AC-SP	Screw Plug	R1.690.0039.0	1

CONNECTION CABLES

Type	Description	Part no.	P.U.
SLX4-CAB-M12-0505	Connection cable M12, 5-pin, 5m, unshielded	M2.K52.5004.M	1
SLX4-CAB-M12-0510	Connection cable M12, 5-pin, 10m, unshielded	M2.K52.X004.M	1
SLX4-CAB-M12-0515	Connection cable M12, 5-pin, 15m, unshielded	M2.K52.D004.M	1
SLX4-CAB-M12-0525	Connection cable M12, 5-pin, 25m, unshielded	M2.K52.E004.M	1
SLX4-CAB-M12-0550	Connection cable M12, 5-pin, 50m, unshielded	M2.K52.F004.M	1
SLX4-CAB-M12-0805	Connection cable M12, 8-pin, 5m, unshielded	M2.K81.5004.M	1
SLX4-CAB-M12-0810	Connection cable M12, 8-pin, 10m, unshielded	M2.K81.X004.M	1
SLX4-CAB-M12-0815	Connection cable M12, 8-pin, 15m, unshielded	M2.K81.D004.M	1
SLX4-CAB-M12-0825	Connection cable M12, 8-pin, 25m, unshielded	M2.K81.E004.M	1
SLX4-CAB-M12-0850	Connection cable M12, 8-pin, 50m, unshielded	M2.K81.F004.M	1
SLX4-CAB-M12-S0505	Connection cable M12, 5-pin, 5m, shielded	M2.K57.5004.M	1
SLX4-CAB-M12-S0510	Connection cable M12, 5-pin, 10m, shielded	M2.K57.X004.M	1
SLX4-CAB-M12-S0515	Connection cable M12, 5-pin, 15m, shielded	M2.K57.D004.M	1
SLX4-CAB-M12-S0525	Connection cable M12, 5-pin, 25m, shielded	M2.K57.E004.M	1
SLX4-CAB-M12-S0550	Connection cable M12, 5-pin, 50m, shielded	M2.K57.F004.M	1
SLX4-CAB-M12-S0805	Connection cable M12, 8-pin, 5m, shielded	M2.K86.5004.M	1
SLX4-CAB-M12-S0810	Connection cable M12, 8-pin, 10m, shielded	M2.K86.X004.M	1
SLX4-CAB-M12-S0815	Connection cable M12, 8-pin, 15m, shielded	M2.K86.D004.M	1
SLX4-CAB-M12-S0825	Connection cable M12, 8-pin, 25m, shielded	M2.K86.E004.M	1
SLX4-CAB-M12-S0850	Connection cable M12, 8-pin, 50m, shielded	M2.K86.F004.M	1

MUTING

Type	Description	Part. no.	P.U.
SLX4-MUT-TMC	Muting Cable for T-Muting, M12 4-poles	R1.690.0006.0	1
SLX4-MUT-LMC	Muting Cable for L-Muting, M12 4-poles	R1.690.0007.0	1
SLX4-MUT-SETCAT	Muting-Sensor-Set T-Muting, incl. 4 Active and Passive Arms with pre-assembled Sensors and Reflectors	R1.690.0008.0	1
SLX4-MUT-SETCAL	Muting-Sensor-Set L-Muting, incl. 4 Active and Passive Arms with pre-assembled Sensors and Reflectors	R1.690.0009.0	1
SLX4-MUT-CONBOX	Muting Connection Box for Muting-Sensors, 4 Connection Sockets	R1.690.0010.0	1
SLX4-MUT-MOUNTKIT	Mounting Set for Muting Connection Box	R1.690.0011.0	1
SLX4-MUT-SET2P	Muting-Sensor-Set for Cross-Muting including 2 Passive and 2 Active Arms, adjustable, pre-assembled	R1.690.0034.0	1
SLX4-MUT-SET4S	Muting-Sensor-Set for Cross-Muting including 2 Passive and 2 Active Arms, adjustable, pre-assembled	R1.690.0035.0	1
SLX4-MUT-SET2BL	Muting-Sensor-Set for L-Muting including 1 Passive and 1 Active Arms, adjustable, pre-assembled, left sided	R1.690.0036.0	1
SLX4-MUT-SET2BR	Muting-Sensor-Set for L-Muting including 1 Passive and 1 Active Arms, adjustable, pre-assembled, right sided	R1.690.0037.0	1
SLX4-MUT-REFLEX	Replacement Reflector for Muting-Sensor-Sets	R1.690.0038.0	1

SERIES SNH

EMERGENCY STOP BUTTONS



APPLICATIONS

- Machine and plant manufacturing
- Logistics and automated guided vehicles

SAFETY LEVEL

- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

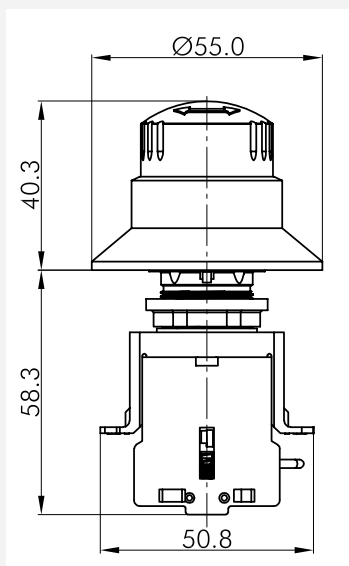
- For applications up to IP69K
- Tamper-proof according to EN 418/EN ISO 13850
- Modular design
- Turn-to-reset
- Integrated illumination (optional)
- Optical indication of the switching state

FUNCTION

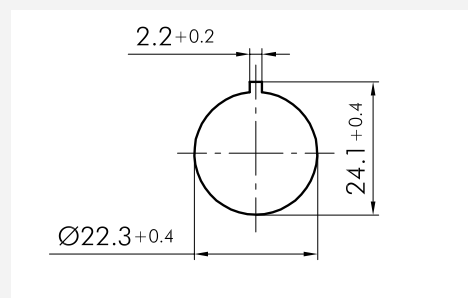
Emergency stop buttons of the SNH series are used on or near machines for the protection of persons. They serve the purpose of switching off / stopping machines and systems to avoid or reduce emerging or existing hazards to persons. Emergency stop buttons of the SNH series are also used to avoid damage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

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

DIMENSION DIAGRAM



CUT-OUT DIMENSIONS



SERIES SNH

EMERGENCY STOP BUTTONS

TECHNICAL DATA	
Function	
According to EN 418/EN ISO 13850	Emergency stop button
Actuator	
Housing material	Plastic
Protection degree	up to IP69
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, cULus
Safety related data	
B _{10D} (at DC -13; 24 V; I _{e2} = 0.1 A)	250.000 (SNH 0043 + SNH 1143: > 104.000)

SNH – EMERGENCY STOP BUTTONS

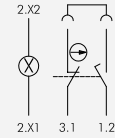
CONTACT BLOCKS



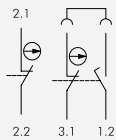
SNH 0001



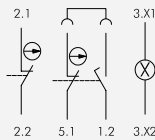
SNH 0002



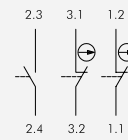
SNH 0003



SNH 0022



SNH 0023



SNH 0031

ACTUATING ELEMENTS



SNH 0100



SNH 0200



SNH 0300

(up to IP 69K)



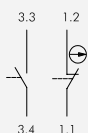
SNH 0500

SNH 0400 (WITH ILLUMINATION)

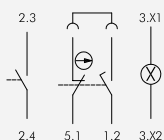


SNH – SAFE.

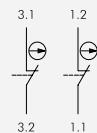
SNH – EMERGENCY STOP BUTTONS



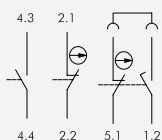
SNH 0011



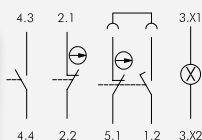
SNH 0013



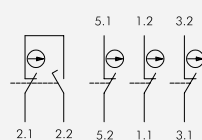
SNH 0021



SNH 0032



SNH 0033



SNH 0043



SNH 0600



SNH 0700

HOUSING



SNH 6001



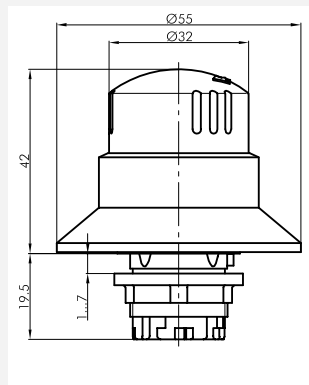
SIMPLE. MODULAR.

SERIES SNH

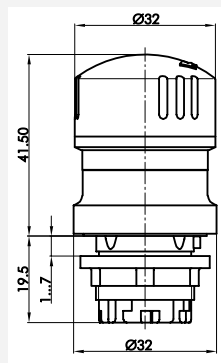
EMERGENCY STOP BUTTONS

DIMENSION DIAGRAM

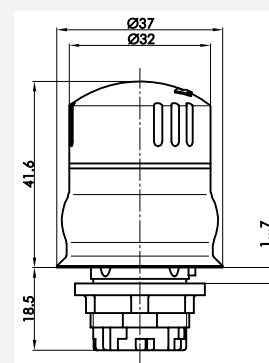
ACTUATING ELEMENTS



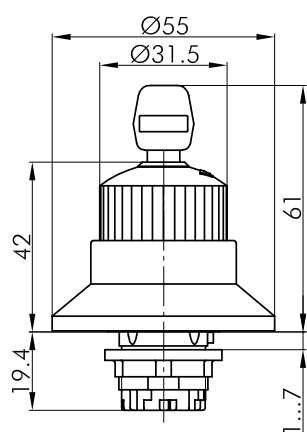
SNH 0100
SNH 0400



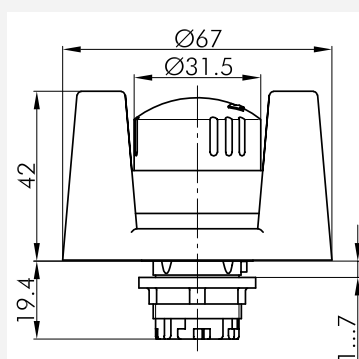
SNH 0200



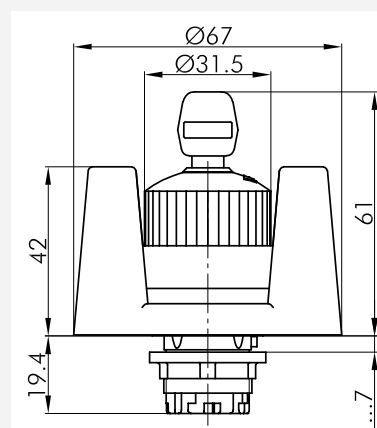
SNH 0300



SNH 0500

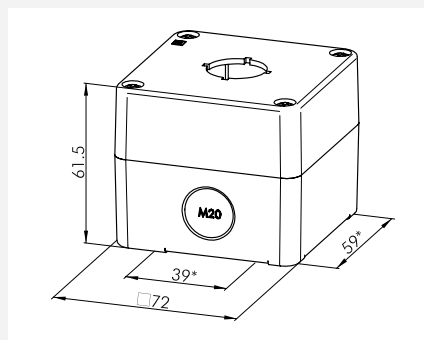


SNH 0600



SNH 0700

HOUSING



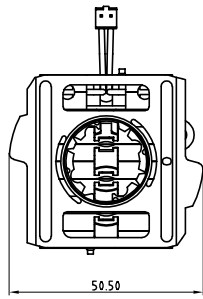
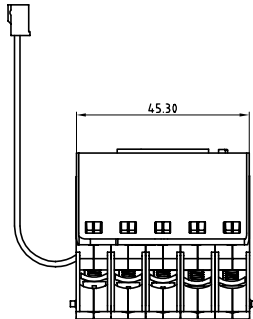
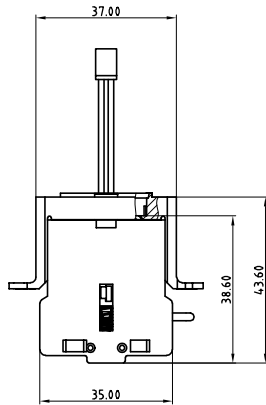
SNH 6001

SERIES SNH

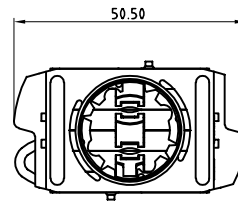
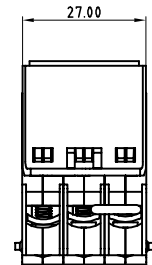
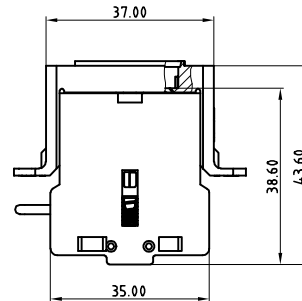
EMERGENCY STOP BUTTONS

DIMENSION DIAGRAM

CONTACT BLOCKS



SNH 0013
SNH 0023
SNH 0032
SNH 0033
SNH 0043



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

OVERVIEW OF DEVICES

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

SERIES SNH

EMERGENCY STOP BUTTONS M12



APPLICATIONS

- Mechanical engineering and plant construction
- Logistics and automated guided vehicles

SAFETY LEVEL

- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL_{CL} 3 (EN 62061)

FEATURES

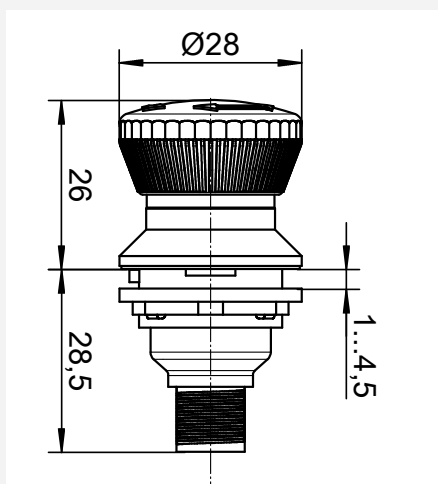
- Use up to IP67
- Tamper-proof according to EN 418/EN ISO 13850
- Rotary release
- Optical display of the switching status
- M12 connection, 5-pole A-coded

FUNCTION

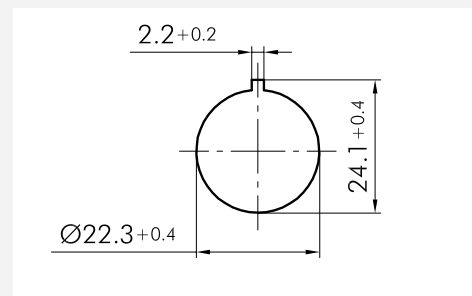
Emergency stop buttons M12 of the SNH series are used for the protection of persons at or near machines. They are used to shut down / stop machines and systems in order to avoid or reduce emerging or existing hazards to persons. M12 emergency stop buttons of the SNH series are also used to prevent damage to the machine or working material.

- **Plug and Play** – M12 emergency stop buttons of the SNH series are pre-assembled variants for quick and easy installation. The 5-pole M12 connection reduces the cabling effort and thus the probability of wiring errors.
- **Flexible use** – 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.

DIMENSIONS DIAGRAM SNH 2402 M12



CUT-OUT DIMENSIONS



SERIES SNH

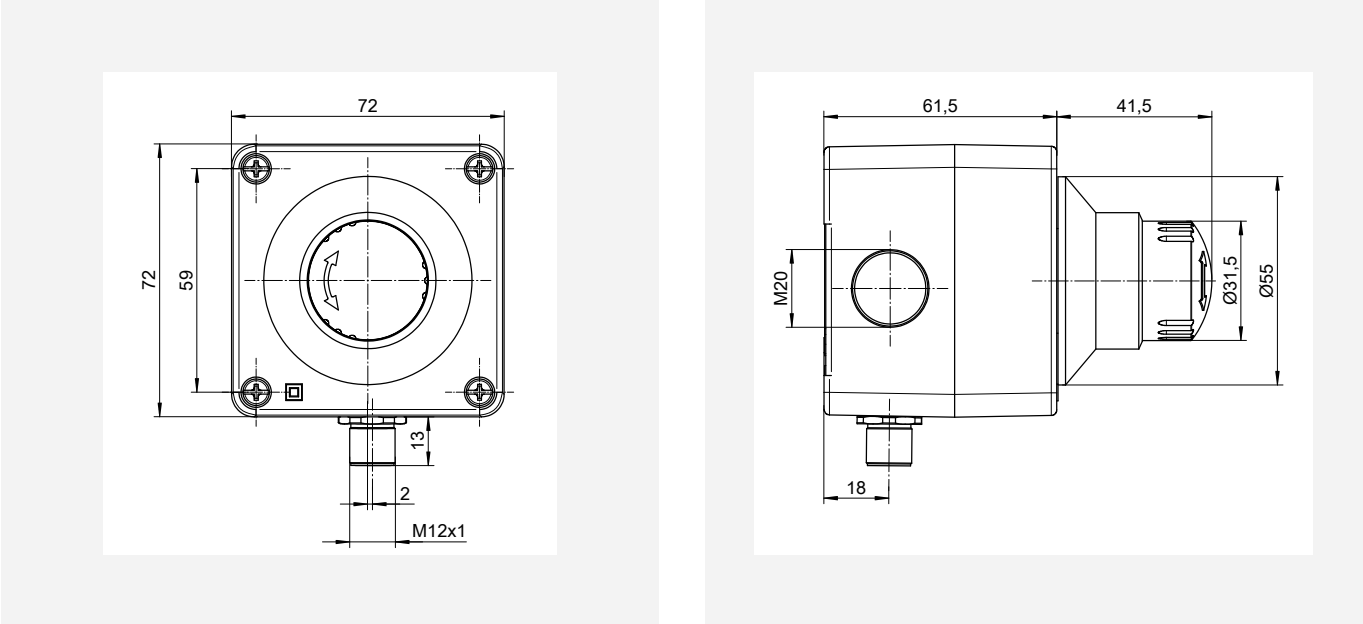
EMERGENCY STOP BUTTONS M12

TECHNICAL DATA		
Type	SNH 1102 M12	SNH 2402 M12
Function	Emergency stop button	
According to EN 418/EN ISO 13850		
Actuator		
Housing material	Plastic	
Protection degree	IP65/IP67 (from front) IP65/IP67 (from behind, with M12 connector connected)	IP65
Operating ambient temperature	-25°C – +70°C	-25°C – +60°C
Storage temperature	-40°C – +80°C	-25°C – +85°C
Max. torque	1.0 Nm ... 1.7 Nm	–
Installation diameter	22.3 mm	–
Contact blocks		
Contact type	Opener	
Contact material	AgNi	
Mechanical service life	50,000 switching cycles	
Electrical service life	50,000 switching cycles	
Application category	AC15: U _i 250 V; U _e 35 V; I _e 2 A DC13: U _i 250 V; U _e 35 V; I _e 2 A	DC13: U _e 60/24 V, I _e 1/2 A
Thermal continuous current I _{th}	2 A	4 A
Max. through-type thermistor	50 mΩ	30 mΩ
Max. bounce time	10 ms	9 ms
Connection technology	M12 connector (A-coded)	
Approvals	CE, TÜV, cURus, UKCA	
Safety related data		
B _{10D}	226.000	250.000

OVERVIEW OF DEVICES

Type	Description	Part no.	P.U.
SNH 1102 M12	Emergency stop button, complete device, tamper-proof, with integrated M12 connector, 5-pole, A-coded, AIDA, rotary release left/right, switch position indicator, contact configuration 2 O, IP65/IP67	R1.210.1102.0	1
SNH 2402 M12	Emergency stop set, complete device in housing, fail-safe with integrated M12 connector, 5-pole, A-coded, AIDA, rotary release left/right, switch position indicator, contact configuration 2 O, IP65	R1.210.2402.0	1

DIMENSIONS DIAGRAMM SNH 2402 M12



SERIES STS

NON-CONTACT SAFETY SWITCHES WITH CODING



STS 01XX



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

- SAFETY LEVEL**
- Up to PL e / category 4 (EN ISO 13849-1)
 - Up to SIL_{CL} 3 (EN 62061)

- FEATURES**
- Individual coding for maximum manipulation protection
 - Up to 30 sensors can be cascaded
 - Automatic or manual start
 - LED and semiconductor output for diagnostics
 - Switching distance of 8 mm / 10 mm
 - Protection class IP67 / IP69K

FUNCTION

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

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

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

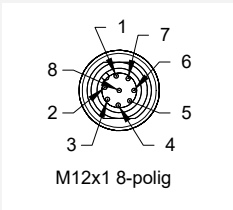
Safety switches from the STS series are also able to switch larger loads without wear via safe outputs (OSSDs).

CONNECTION ASSIGNMENT STS WITH CABLE CONNECTION

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

CONNECTION ASSIGNMENT STS WITH CONNECTION M12

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



SERIES STS

NON-CONTACT SAFETY SWITCHES WITH CODING

TAILOR-MADE MANIPULATION PROTECTION

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

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

Coded:

The safety switch accepts every STS actuator.

Fully coded:

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

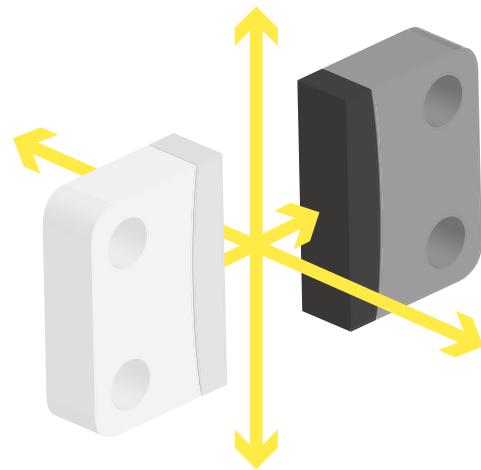
Unique:

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

DIVERSE INSTALLATION

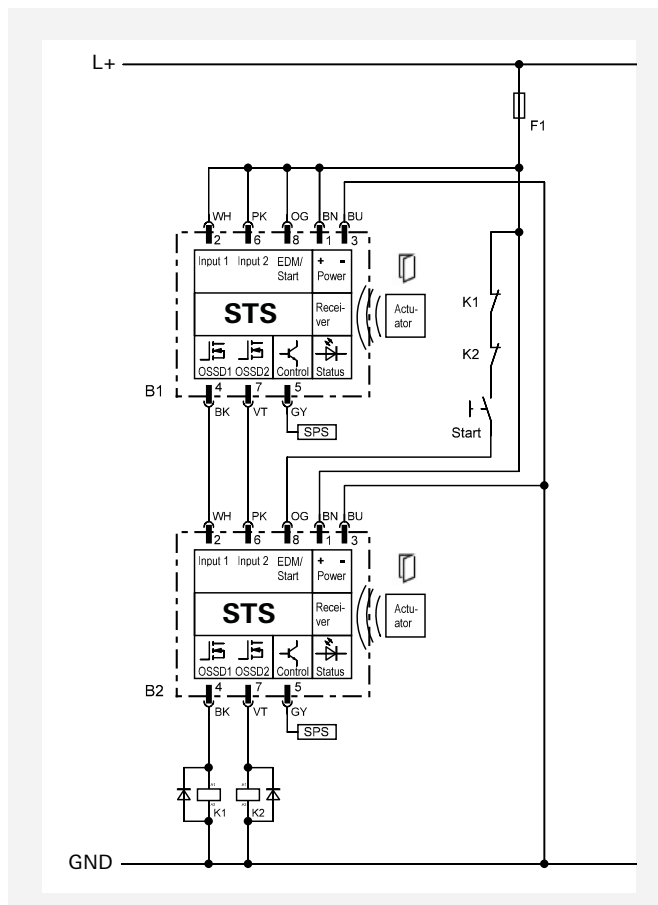
The 5 actuation directions of the STS series and the maximum displacement between the actuator and switch element of 8 mm make installation easy even when the protective device to be monitored has large mechanical tolerances.

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

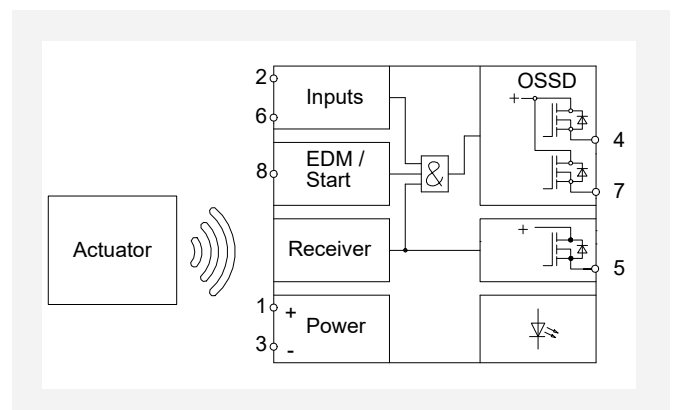


5 different actuation directions for universal use

APPLICATION



CIRCUIT DIAGRAM

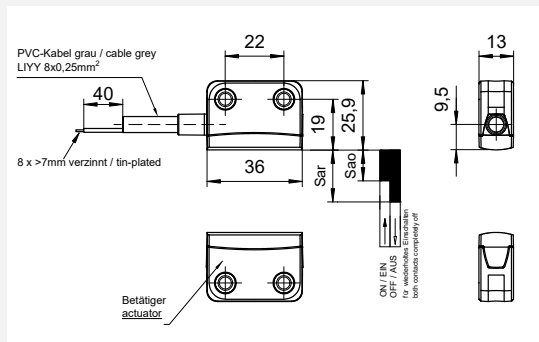


Serial wiring of 2 safety switches STS with manual start and EDM

SERIES STS

NON-CONTACT SAFETY SWITCHES WITH CODING

CIRCUIT DIAGRAM / SWITCHING FUNCTION



STS 01XX

TECHNICAL DATA

Function Non-contact safety switch

Function display LED, three-colored

Supply circuit

Nominal voltage U_N 24 V DC

Operating voltage range U_B 0.9 - 1.1 x U_N

Galvanic isolation supply circuit - output circuit no

Control circuits

Number of safety inputs 2

EDM/start input 1

Input current, max. 2 mA

Output circuits

Number OSSD 2

Diagnostics 1

Short-circuit and cross-circuit detection yes

Switching current, max. OSSD 400 mA

Diagnostics 50 mA

Switching voltage, max. $U_B - 0.2 V$

Series connection max. 30 sensors

Switching behavior

Switching distance / (Sao / Sar) 8 mm / 18 mm

Hysteresis 2 mm

Actuator displacement, max. 8 mm

Switching frequency 3 Hz

General data

Creepage distances and clearances between the circuits EN 60664-1

Protection class as per EN 60529 IP67

Operating ambient temperature -25 °C - +70 °C

Connection M12 (8 pole) / cable (8 pole)

Standards EN ISO 13849-1, EN 62061

Certificates / Approvals TÜV, cULus

Storage temperature -25 °C - +70 °C

Safety related data

PL (EN ISO 13849-1) up to PL e

Category (EN ISO 13849-1) up to category 4

SIL (IEC 61508) up to SIL 3

SIL_{CL} (EN IEC 62061) up to SIL_{CL} 3

B_{10D} NA

PFH_D (EN IEC 61508-1) 2.24 x 10⁻⁹ 1/h

T_M 20 years

SERIES STS

NON-CONTACT SAFETY SWITCHES WITH CODING

OVERVIEW OF DEVICES

Type	Description	Coding	Part no.	P.U.
STS 0110	Switch-set, automatic start, connection M12-8	coded	R1.400.0110.0	1
STS 0113	Switch-set, automatic start, connection cable 3m	coded	R1.400.0113.0	1
STS 0114	Switch-set, automatic start, connection cable 5m	coded	R1.400.0114.0	1
STS 0116	Switch-set, automatic start, connection cable 10m	coded	R1.400.0116.0	1
STS 0130	Switch-set, automatic start, connection M12-8	fully-coded	R1.400.0130.0	1
STS 0133	Switch-set, automatic start, connection cable 3m	fully-coded	R1.400.0133.0	1
STS 0134	Switch-set, automatic start, connection cable 5m	fully-coded	R1.400.0134.0	1
STS 0150	Switch-set, automatic start, connection M12-8	unique	R1.400.0150.0	1
STS 0153	Switch-set, automatic start, connection cable 3m	unique	R1.400.0153.0	1
STS 0154	Switch-set, automatic start, connection cable 5m	unique	R1.400.0154.0	1
STS 0120	Switch-set, manual start, connection M12-8	coded	R1.400.0120.0	1
STS 0123	Switch-set, manual start, connection cable 3m	coded	R1.400.0123.0	1
STS 0124	Switch-set, manual start, connection cable 5m	coded	R1.400.0124.0	1
STS 0126	Switch-set, manual start, connection cable 10m	coded	R1.400.0126.0	1
STS 0140	Switch-set, manual start, connection M12-8	fully-coded	R1.400.0140.0	1
STS 0143	Switch-set, manual start, connection cable 3m	fully-coded	R1.400.0143.0	1
STS 0144	Switch-set, manual start, connection cable 5m	fully-coded	R1.400.0144.0	1
STS 0160	Switch-set, manual start, connection M12-8	unique	R1.400.0160.0	1
STS 0164	Switch-set, manual start, connection cable 5m	unique	R1.400.0164.0	1
STS 0166	Switch-set, manual start, connection cable 10m	unique	R1.400.0166.0	1
STS 3110	Actuator for STS 011x, 012x, 013x, 014x		R1.400.3110.0	1

SERIES STS

ACCESSORIES

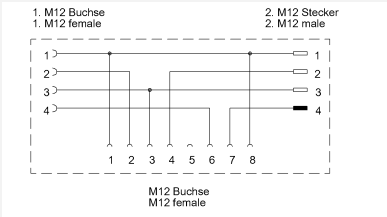


STS-CON-448
T-Connector for serial wiring
of STS-switches

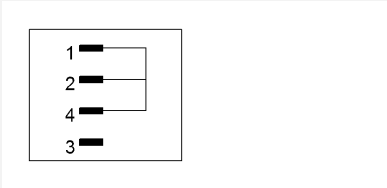


STS-CON-TER
Terminal-connector of the serial wiring

DIMENSIONS DIAGRAMM



STS-CON-448



STS-CON-TER

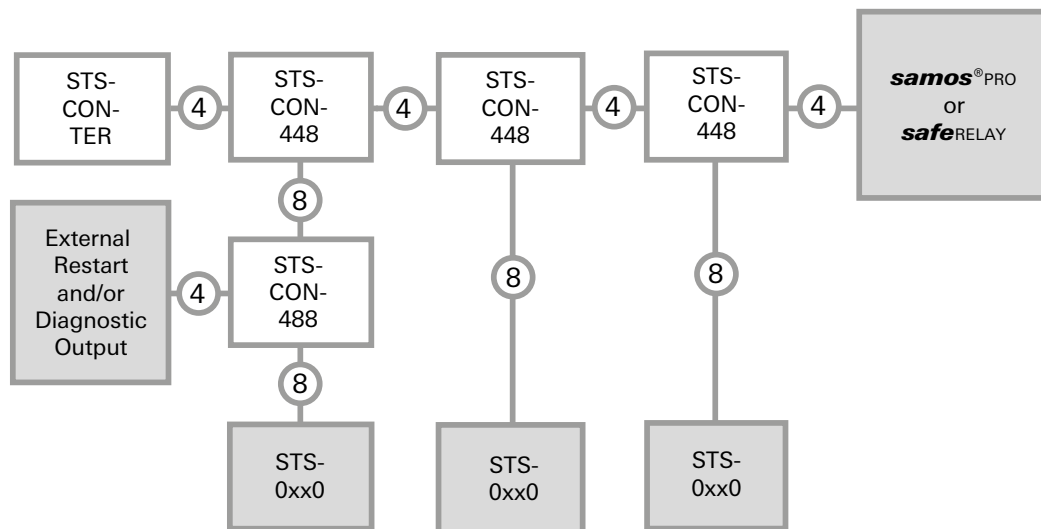
OVERVIEW OF DEVICES

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

SERIES STS

ACCESSORIES

APPLICATION



SERIES SMA

MAGNETIC SAFETY SWITCHES



SMA 01XX



APPLICATIONS

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

SAFETY LEVEL

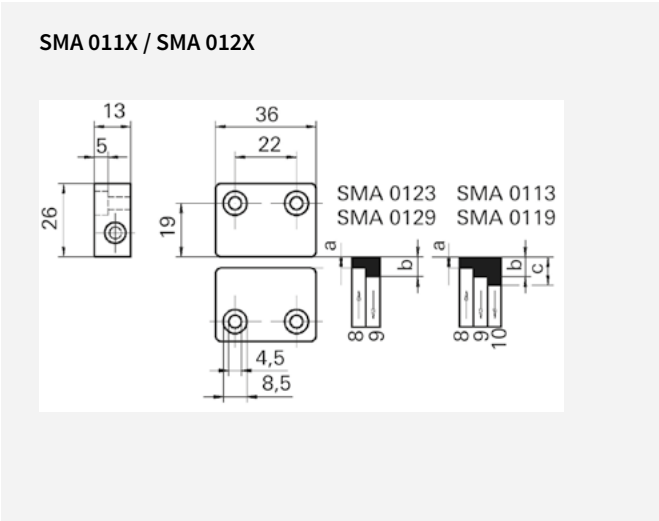
- Can be used up to PL e / Category 4 (EN ISO 13849-1)

FEATURES

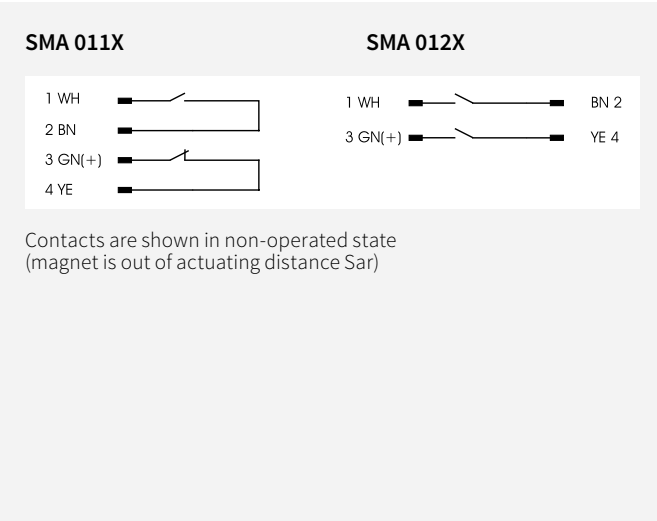
- Block-shaped design
- For harsh operating conditions
- Tamper proof
- Degree of Protection IP67

TECHNICAL DATA		
Set	SMA 011x	SMA 012x
Dimensions / mm (L x W x H)	36 x 26 x 13 mm	
Actuating distance / (Sao / Sar)	8 / 17 mm	
Directions of actuation	Front - Front / Front - Side / Side - Side	
Protection degree	IP67	
Contact type	Reed	
Contact assignment	NC / NO	NO / NO
Switching current	0.2 A	
Maximum cable length	20 m	
Connection type or cable length see device overview		
Operating voltage	max. 30 V DC	
Operating ambient temperature	-25 °C - +75 °C	
Storage temperature	-40 °C - +80 °C	
Safety related data		
PL (EN ISO 13849-1)	up to PL e	
Category (EN ISO 13849-1)	up to category 4	
SIL (IEC 61508)	up to SIL 3	
SIL _{CL} (EN IEC 62061)	up to SIL _{CL} 3	
B _{10D} (EN ISO 13849-1; < 20% contact load)	20,000,000	
PFH _D (EN IEC 61508-1)	NA	
T _M	20 years	

DIMENSION DIAGRAM / SWITCHING FUNCTION



CIRCUIT DIAGRAM



SERIES SMA

MAGNETIC SAFETY SWITCHES



SMA 02XX

SMA 06XX



APPLICATIONS

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

SAFETY LEVEL

- Can be used up to PL e / Category 4 (EN ISO 13849-1)

FEATURES

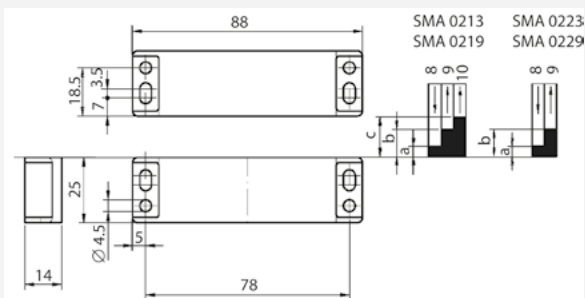
- Rectangle-shaped design
- For harsh operating conditions
- Tamper proof
- Degree of Protection IP67

TECHNICAL DATA

Set	SMA 021x	SMA 022x	SMA 023x	SMA 024x	SMA 061x	SMA 062x
Dimensions / mm (L x W x H)	88 x 25 x 14 mm					
Actuating distance / (Sao / Sar)	7 / 17 mm	7 / 18 mm	7 / 22 mm	7 / 22 mm	4 / 16 mm	4 / 17 mm
Directions of actuation	Front - Front / Front - Side / Side - Side					
Protection degree	IP67					
Contact type	Reed					
Contact assignment	NC / NO	NO / NO	NO / NO / NC	NO / NO / NC	NC / NO	NO / NO
Switching current	max. 0.2 A	max. 0.2 A	max. 0.2 A	max. 0.01 A	max. 0.2 A	max. 0.2 A
Maximum cable length	20 m					
Connection type or cable length see device overview						
Operating voltage	max. 30 V DC				max. 28.8 V DC	
Operating ambient temperature	-25 °C - +70 °C					
Storage temperature	-40 °C - +80 °C					
Safety related data						
PL (EN ISO 13849-1)	up to PL e					
Category (EN ISO 13849-1)	up to category 4					
SIL (IEC 61508)	up to SIL 3					
SIL _{CL} (EN IEC 62061)	up to SIL _{CL} 3					
B _{10D} (EN ISO 13849-1; < 20% contact load)	20,000,000					
PFH _D (EN IEC 61508-1)	NA					
T _M	20 years					

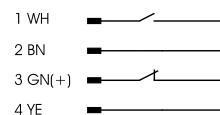
DIMENSION DIAGRAM / SWITCHING FUNCTION

SMA 021X / SMA 022X / SMA 023X / SMA 024X / SMA 061X / SMA 062X

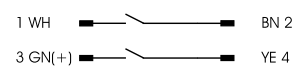


CIRCUIT DIAGRAM

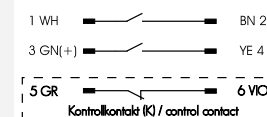
SMA 021X / SMA 0219



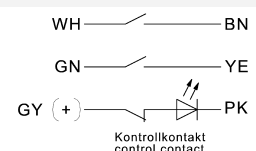
SMA 022X / SMA 0229



SMA 023X



SMA 024X (WITH LED)



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

SERIES SMA

MAGNETIC SAFETY SWITCHES



SMA 03XX



APPLICATIONS

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

SAFETY LEVEL

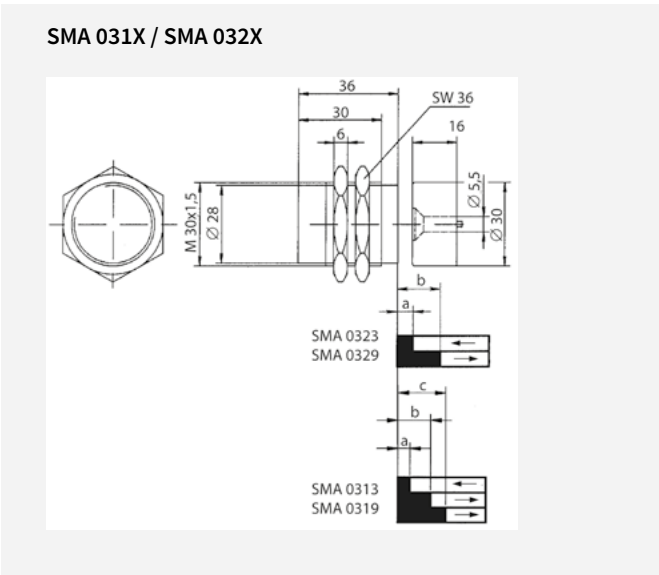
- Can be used up to PL e / Category 4 (EN ISO 13849-1)

FEATURES

- Round-shaped design
- For harsh operating conditions
- Tamper proof
- Degree of Protection IP67

TECHNICAL DATA		
Set	SMA 031x	SMA 032x
Dimensions / mm (Ø x L)	M30 x 32 mm	
Actuating distance / (Sao / Sar)	7 / 20 mm	
Directions of actuation	Front - Front	
Protection degree	IP67	
Contact type	Reed	
Contact assignment	NC / NO	NO / NO
Switching current	0.2 A	
Maximum cable length	20 m	
Operating voltage	max. 30 V DC	
Operating ambient temperature	-25 °C - +75 °C	
Storage temperature	-40 °C - +80 °C	
Safety related data		
PL (EN ISO 13849-1)	up to PL e	
Category (EN ISO 13849-1)	up to category 4	
SIL (IEC 61508)	up to SIL 3	
SIL _{CL} (EN IEC 62061)	up to SIL _{CL} 3	
B _{10D} (EN ISO 13849-1; < 20% contact load)	20,000,000	
PFH _D (EN IEC 61508-1)	NA	
T _M	20 years	

DIMENSION DIAGRAM / SWITCHING FUNCTION



CIRCUIT DIAGRAM



SERIES SMA

MAGNETIC SAFETY SWITCHES

OVERVIEW OF DEVICES

Type	Description	Contact	Part no.	P.U.
SMA 0113	Switch-set with cable 3 m + magnet	NC / NO	R1.100.0113.0	1
SMA 0123	Switch-set with cable 3 m + magnet	NO / NO	R1.100.0123.0	1
SMA 0119	Switch-set mit with M8 connection + magnet	NC / NO	R1.100.0119.0	1
SMA 0129	Switch-set mit with M8 connection + magnet	NO / NO	R1.100.0129.0	1
SMA 0213	Switch-set with cable 3 m + magnet	NC / NO	R1.100.0213.0	1
SMA 0223	Switch-set with cable 3 m + magnet	NO / NO	R1.100.0223.0	1
SMA 0224	Switch-set with cable 5 m + magnet	NO / NO	R1.100.0224.0	1
SMA 0226	Switch-set with cable 10 m + magnet	NO / NO	R1.100.0226.0	1
SMA 0228	Switch-set with cable 20 m + magnet	NO / NO	R1.100.0228.0	1
SMA 0233	Switch-set with cable 3 m + magnet	NO / NO / NC	R1.100.0233.0	1
SMA 0243	Switch-set with cable 3 m, LED + magnet	NO / NO / NC	R1.100.0243.0	1
SMA 0249	Switch-set with M12 connection, LED + magnet	NO / NO / NC	R1.100.0249.0	1
SMA 0219	Switch-set with M8 connection + magnet	NC / NO	R1.100.0219.0	1
SMA 0229	Switch-set with M8 connection + magnet	NO / NO	R1.100.0229.0	1
SMA 0313	Switch-set with cable 3 m + magnet	NC / NO	R1.100.0313.0	1
SMA 0320	Switch-set with M8 pigtail + magnet	NO / NO	R1.100.0320.0	1
SMA 0323	Switch-set with cable 3 m + magnet	NO / NO	R1.100.0323.0	1
SMA 0324	Switch-set with cable 5 m + magnet	NO / NO	R1.100.0324.0	1
SMA 0319	Switch-set with M8 connection + magnet	NC / NO	R1.100.0319.0	1
SMA 0329	Switch-set with M8 connection + magnet	NO / NO	R1.100.0329.0	1
SMA 0613	Switch-set with cable 3 m + magnet	NC / NO	R1.100.0613.0	1
SMA 0626	Switch-set with cable 10 m + magnet	NO / NO	R1.100.0626.0	1
SMA 0629	Switch-set with M8 + magnet	NO / NO	R1.100.0629.0	1

SERIE SMA

ACCESSORIES

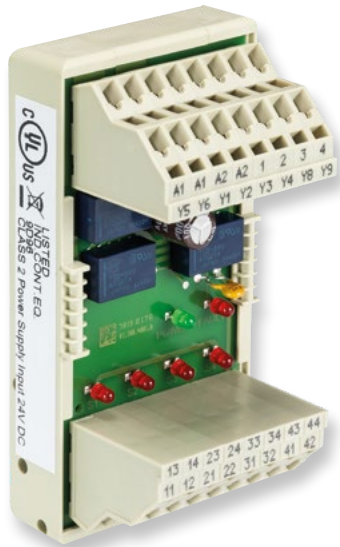
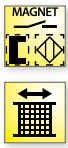
OVERVIEW OF DEVICES

Type	Description	Contact	Part no.	P.U.
SMA 3110	Magnet (NC / NO) for SMA 011x		R1.100.3110.0	5
SMA 3120	Magnet (NO / NO) for SMA 012x		R1.100.3120.0	5
SMA 3200	Magnet for SMA 02xx		R1.100.3200.0	5
SMA 3300	Magnet for SMA 03xx		R1.100.3300.0	5
SMA 4100	Washer for SMA 01xx		R1.100.4100.0	10
SMA 4200	Washer for SMA 02xx / SMA 06xx		R1.100.4200.0	10
SMA 5004	Cable, 5 m		R1.100.5004.0	1
SMA 5005	Cable, 10 m		R1.100.5005.0	1
SMA 5008	Cable, 15 m		R1.100.5008.0	1

Note: Suitable M12 cables (SLX-CAB) can be selected on P. 89

SMI 1001

MAGNETIC SWITCH INTERFACE



FUNCTION

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

APPLICATIONS

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

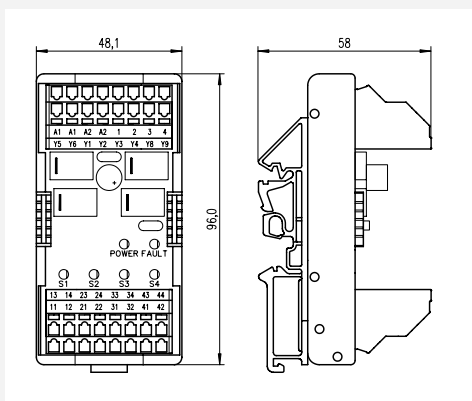
FEATURES

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

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

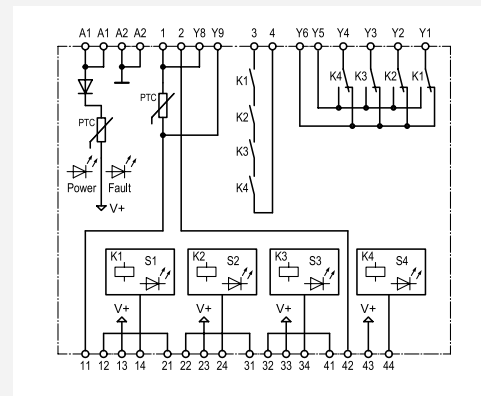
DIMENSION DIAGRAM

SMI 1001



CIRCUIT DIAGRAM

SMI 1001



SMI 1001

MAGNETIC SWITCH INTERFACE

OVERVIEW OF DEVICES

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

TECHNICAL DATA

Function

Function display 1 x LEDs green, 5 x LEDs red

Power supply circuit

Rated voltage 24 V DC

Rated consumption 1.5 W

Control circuit 11 - 44

Max. cable length 30 m

Output circuit signal outputs Y1 – Y6

Contact type NO

Rated switching voltage 24 V DC

Max. switching current 0.5 A

Output circuit 1, 2, 3, 4

Contact type NO

Rated switching voltage 24 V DC

Max. switching current 150 mA

General data

Creepage distances and clearances according to EN 60664-1

Ambient temperature/ storage temperature -25 °C - +55 °C / -25 °C - +70 °C

Wire ranges fine-stranded/ solid 0.08 - 2.5 mm²

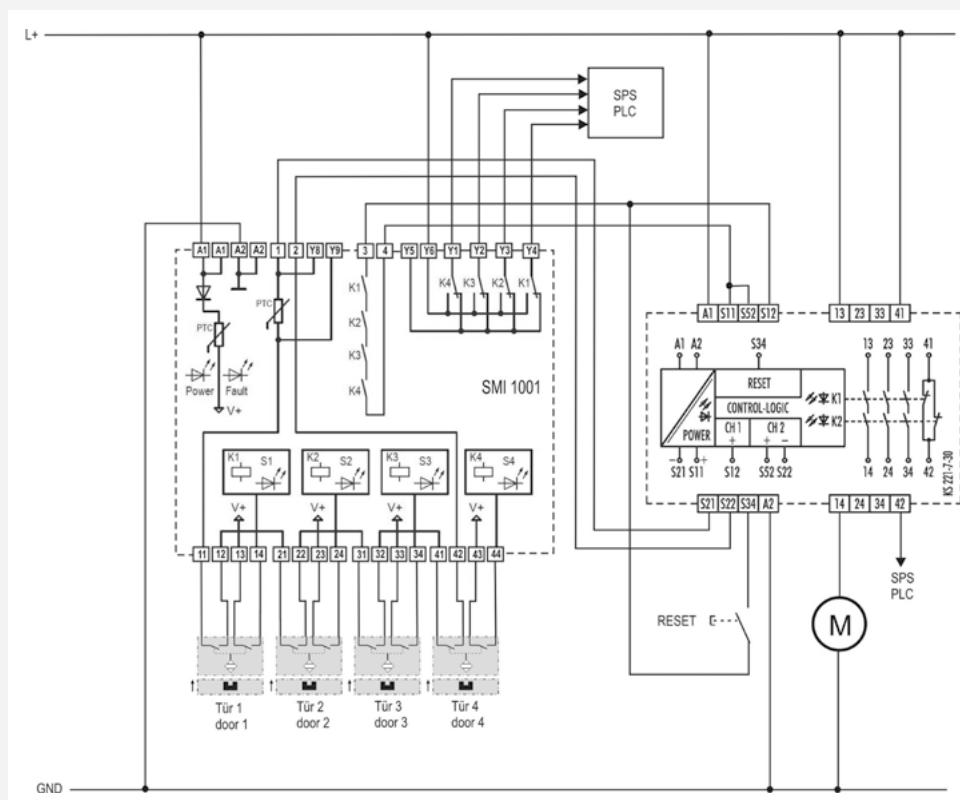
or fine-stranded with ferrules 0.08 - 1 mm²

or fine-stranded with TWIN-ferrule 0.08 - 1.5 mm²

Weight 0.1 kg

Approvals cULus

APPLICATION



SIN M SERIES

SAFETY SWITCH WITH SEPARATED ACTUATOR AND GUARD LOCKING



SIN 9005 M



SIN 9006 M



SIN 9007 M



APPLICATIONS

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

FEATURES

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

FUNCTION

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

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

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

SPRING-ACTUATED LOCKING

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

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

MAGNET-ACTUATED LOCKING

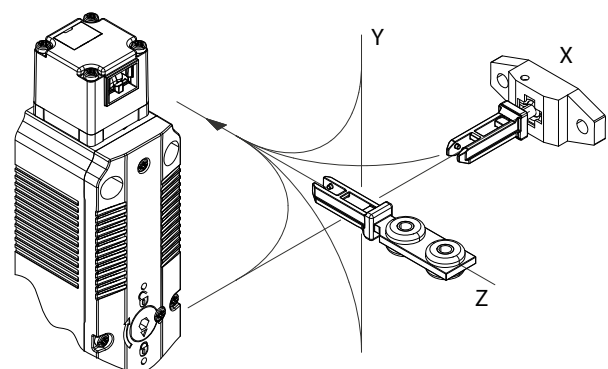
The safety switch on the guard is locked by energizing the internal electromagnet when the actuator reaches its end position.

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:



SIN M SERIES

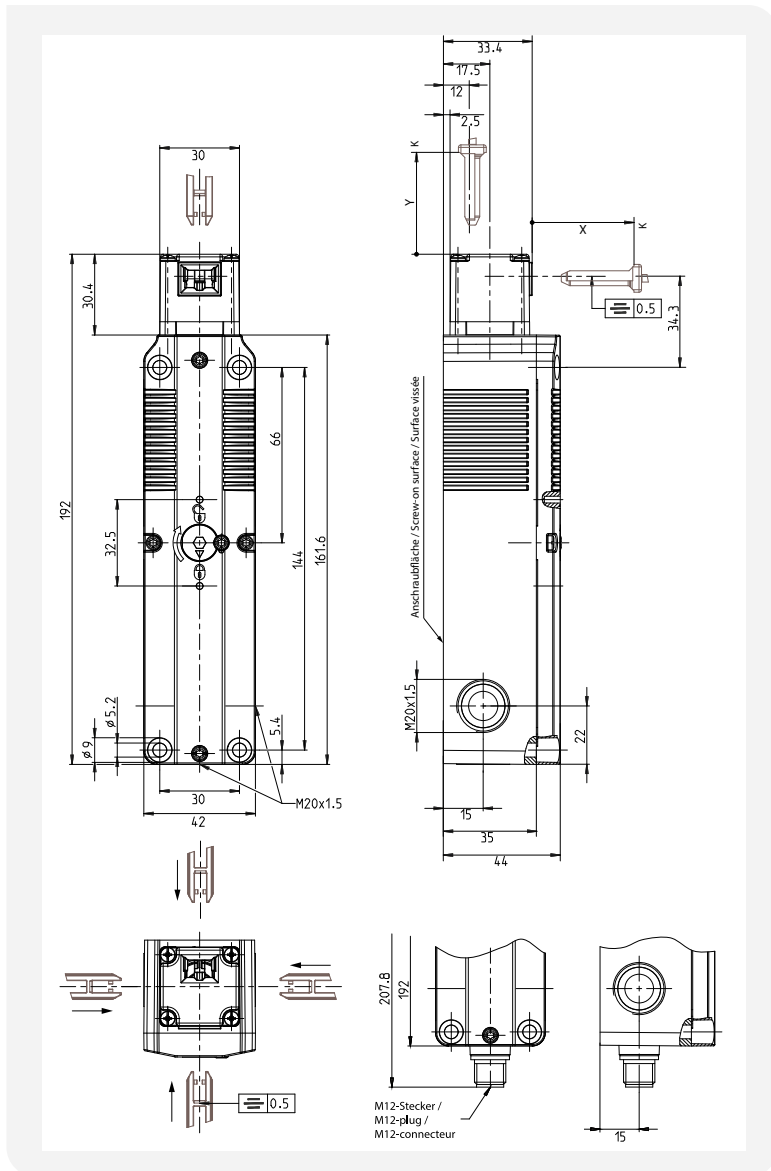
SAFETY SWITCH WITH SEPARATED ACTUATOR AND GUARD LOCKING

TECHNICAL DATA	
Function	
according EN 14119	Safety switch with separated actuator and guard locking
Power supply circuit	
Rated voltage	24 V AC/DC
Continuous output	4.4 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	1×10^6 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 °C - +70 °C
Wire ranges push-in terminals	$1 \times 0.5 - 1.5 \text{ mm}^2$
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, EN ISO 14119
Approvals	DGUV, c-CSA-us, CCC
Safety related data	
B_{10D} (at DC -13; 24 V; $I_{e2} = 0.1 \text{ A}$)	2,000,000

SIN M SERIES

SAFETY SWITCH WITH SEPARATE ACTUATOR AND GUARD LOCKING

DIMENSIONS



OVERVIEW OF DEVICES - SAFETY SWITCH

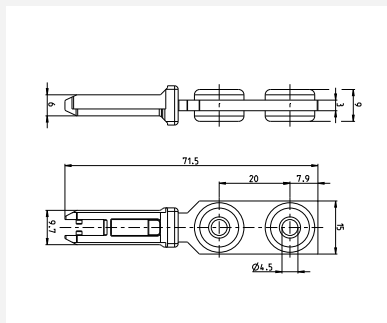
Type *	Locking principle	Contact assignment (actuator + guard control)	Supply voltage	Other features	Article number	Std. pack
SIN 1150 M	Spring	1NC/1NO+1NC/1NO	24 V AC/DC	Auxiliary release, screw connection	R.1.311.1150.0	1
SIN 1120 M	Spring	2NC + 2NC	24 V AC/DC	Auxiliary release, screw connection	R.1.311.1120.0	1
SIN 1130 M	Spring	2NC + 1NC/1NO	24 V AC/DC	Auxiliary release, screw connection	R.1.311.1130.0	1
SIN 1140 M	Spring	3NC + 1NO	24 V AC/DC	Auxiliary release, screw connection	R.1.311.1140.0	1
SIN 1161 M	Spring	1NC + 2NC	24 V AC/DC	Auxiliary release, M12 connection	R.1.311.1161.0	1
SIN 2130 M	Magnet	2NC + 1NC/1NO	24 V AC/DC	Auxiliary release, screw connection	R.1.311.2130.0	1
SIN 2120 M	Magnet	2NC + 2NC	24 V AC/DC	Auxiliary release, screw connection	R.1.311.2120.0	1
SIN 2161 M	Magnet	1NC + 2NC	24 V AC/DC	Auxiliary release, M12 connection	R.1.311.2161.0	1
SIN 2140 M	Magnet	3NC + 1NO	24 V AC/DC	Auxiliary release, screw connection	R.1.311.2140.0	1

*the respective actuator must be ordered separately

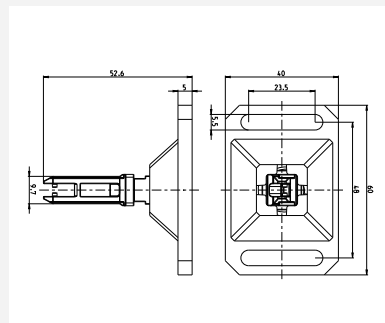
SIN M SERIES

ACTUATOR

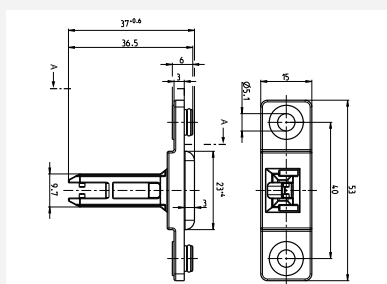
DIMENSIONS



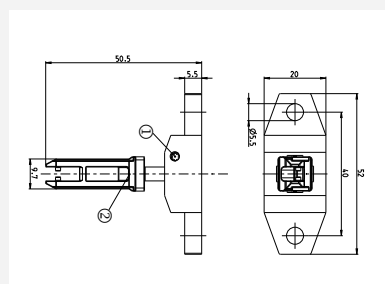
SIN 9001 M



SIN 9002 M



SIN 9003 M



SIN 9004 M

APPROACH RADII

SIN 9001 M min > 800 mm

SIN 9003 M min > 600 mm

SIN 9002 M min > 400 mm

SIN 9004 M min > 150 mm

OVERVIEW OF DEVICES - ACTUATOR + ACCESSORIES

Model	Actuator	Article number	Std. pack
SIN 9001 M	Standard actuator, stainless steel, minimum actuating radius $R_{\min}$ 800 mm	R1.311.9001.0	1
SIN 9002 M	Flexible actuator, stainless steel, minimum actuating radius $R_{\min}$ 400 mm	R1.311.9002.0	1
SIN 9003 M	Cross actuator, stainless steel, minimum actuating radius $R_{\min}$ 600 mm	R1.311.9003.0	1
SIN 9004 M	Radius actuator, stainless steel, minimum actuating radius $R_{\min}$ 150 mm	R1.311.9004.0	1
SIN 9005 M	Emergency release front side	R1.311.9005.0	1
SIN 9006 M	Escape release basic set	R1.311.9006.0	1
SIN 9007 M	Extension module for escape release, length 40 mm	R1.311.9007.0	1

SERIES SIN

SAFETY SWITCH WITH SEPARATED ACTUATOR AND GUARD LOCKING



APPLICATIONS

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

FEATURES

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

FUNCTION

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

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

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

SPRING-ACTUATED LOCKING

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

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

MAGNET-ACTUATED LOCKING

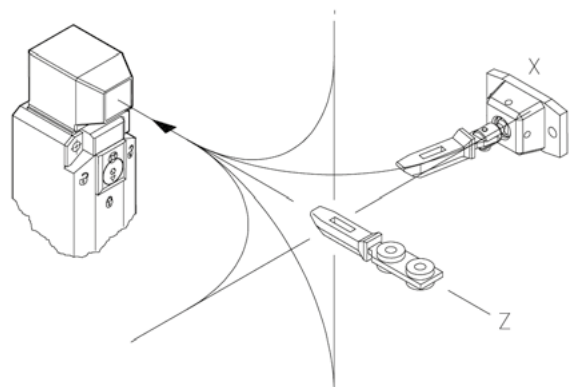
The safety switch on the guard is locked by energizing the internal electromagnet when the actuator reaches its end position.

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

VERSATILE INSTALLATION

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

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



SERIES SIN

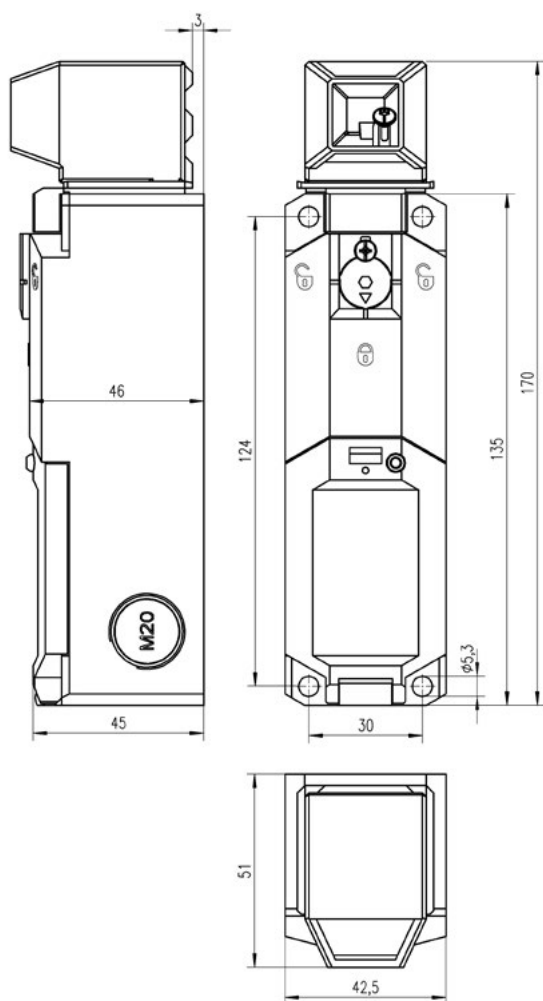
SAFETY SWITCH WITH SEPARATED ACTUATOR AND GUARD LOCKING

TECHNICAL DATA	
Function	
according EN 14119	Safety switch with separated actuator and guard locking
Power supply circuit	
Rated voltage	24 V AC/DC
Continuous output	4.4 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	1×10^6 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 °C - +70 °C
Wire ranges push-in terminals	$1 \times 0.5 - 1.5 \text{ mm}^2$
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, EN ISO 14119
Approvals	DGUV, c-CSA-us, CCC
Safety related data	
B_{10D} (at DC -13; 24 V; $I_{e2} = 0.1 \text{ A}$)	2,000,000

SERIES SIN

SAFETY SWITCH WITH SEPARATED ACTUATOR AND GUARD LOCKING

DIMENSIONS DIAGRAMM



SIN 1XXX

SIN 2XXX

OVERVIEW OF DEVICES SAFETY SWITCH

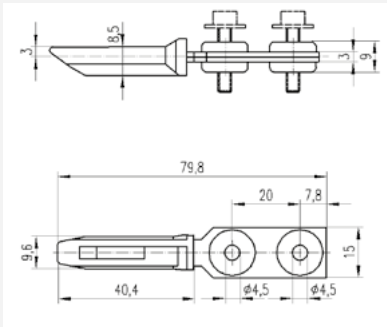
Type*	Locking principle	Contact assignment (actuator + guard locking)	Rated voltage	Additional features	Part. no.	P.U.
SIN 1120	Spring-actuated	2NC + 2NC	24 V AC/DC	Auxiliary release	R1.310.1120.0	1
SIN 1150	Spring-actuated	1NC/1NO + 1NC/1NO	24 V AC/DC	Auxiliary release	R1.310.1150.0	1
SIN 1130	Spring-actuated	2NC + 1NC/1NO	24 V AC/DC	Auxiliary release	R1.310.1130.0	1
SIN 1330	Spring-actuated	2NC + 1NC/1NO	24 V AC/DC	Auxiliary release, LED	R1.310.1330.0	1
SIN 1350	Spring-actuated	1NC/1NO + 1NC/1NO	24 V AC/DC	Auxiliary release, LED	R1.310.1350.0	1
SIN 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

* the associated actuator must be ordered separately

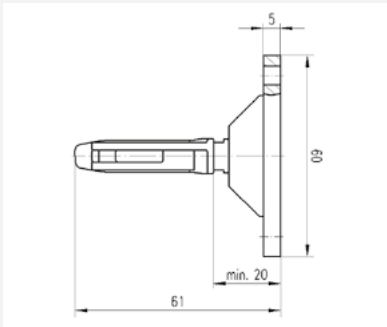
SERIES SIN

ACTUATOR

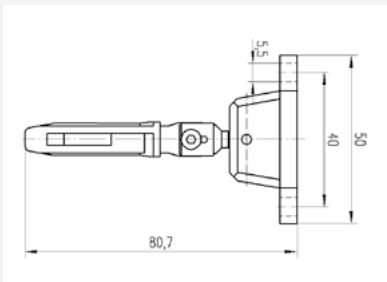
DIMENSIONS DIAGRAMM



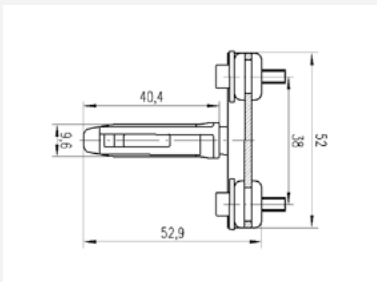
SIN 9001



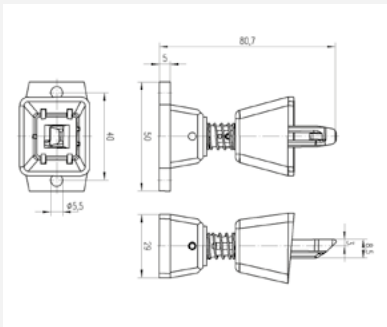
SIN 9004



SIN 9002



SIN 9005



SIN 9003

APPROACH RADII
 SIN 9001, 9003, 9005: R min > 400mm
 SIN 9004 R min > 350mm
 SIN 9002 R min > 150mm

OVERVIEW OF DEVICES ACTUATOR

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

SERIES SMS

SAFETY SWITCH WITH SEPARATED ACTUATOR



SMS 4XXX



SMS 3XXX



APPLICATIONS

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

FEATURES

- Flexible use with 2 horizontal or 2 vertical actuating directions
- Protection against simple bypassing in accordance 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



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 movable guards

FEATURES

- Flexible use with 4 horizontal or 4 vertical actuating directions
- Slim design for installation on profile systems and in confined spaces
- Protection against simple bypassing in accordance 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

SERIES SMS

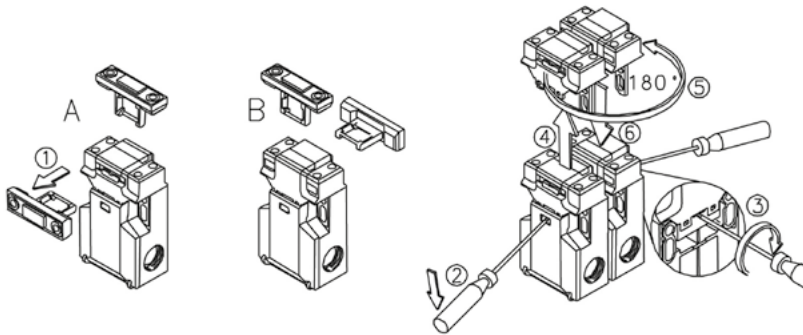
SAFETY SWITCH WITH SEPARATED ACTUATOR

FUNCTION

The mechanical safety switches in the SMS 2xxx, SMS 3xxx and SMS 4xxx series are suitable for the reliable position monitoring of movable guards (EN 60947-5-3).

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

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



Simple installation and wiring in each application.

TECHNICAL DATA

Function

according EN 14119

Safety switch with separated actuator

Power supply circuit

Max. continuous thermal current I_{th}

SMS 2xxx 10 A

SMS 3xxx/SMS 4xxx 5 A (contact assignment 1 NC or 2 NC/1 NO)

SMS 3xxx/SMS 4xxx 10 A (contact assignment 1 NC/1 NO or 2 NC)

Application category

AC-15: 240 V, 1.5 A (contact assignment 1 NC or 2 NC/1 NO)

AC-15: 240 V, 3 A (contact assignment 1 NC/1 NO or 2 NC)

Mechanical life (B10d)

1 x 10⁶ bzw. 1 x 10⁵ with increased extraction force

Short-circuit protection

lead fuse 6 A class gL/gG (contact assignment 1 NC or 2 NC/1 NO)

lead fuse 10 A class gL/gG (contact assignment 1 NC/1 NO)

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°C - +80°C

Wire ranges screw terminals

1 x 0.5 - 1.5 mm²

Protection degree according to EN 60529

IP 65

Weight

0.15 kg

Standards

EN 60947-1, EN 60947-5-1, DIN EN ISO 14119

Approvals

TÜV, UL, c-CSA-us

Safety related data

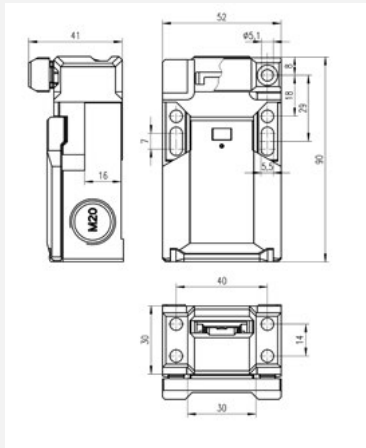
B_{10d} (at DC -13; 24 V; I_{e2} = 0.1 A)

2,000,000 or 200,000 for increased extraction force

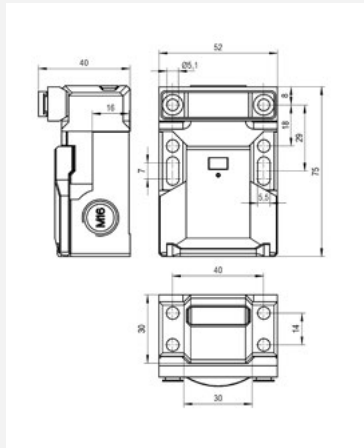
SERIES SMS

SAFETY SWITCH WITH SEPARATED ACTUATOR

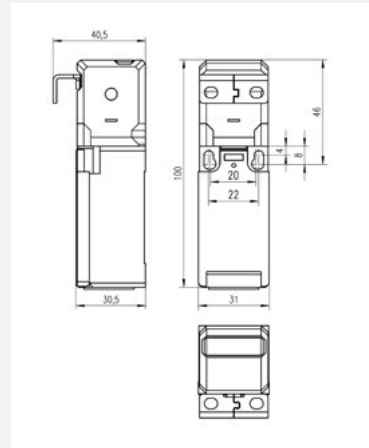
DIMENSIONS DIAGRAMM



SMS 4XXX



SMS 3XXX



SMS 2XXX

OVERVIEW OF DEVICES SAFETY SWITCH

Type	Actuator*	Contact assignment	Extraction force	Part no.	P.U.
SMS 3210	Actuator for increased force	1NC	30 N	R1.320.3210.0	1
SMS 4040	Standard actuator	1NC/1NO	10 N	R1.320.4040.0	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 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 2020	Standard actuator 2	2NC	10 N	R1.320.2020.0	1
SMS 2220	Actuator for increased force	2NC	50 N	R1.320.2220.0	1
SMS 2070	Standard actuator 2	2NC/1NO	10 N	R1.320.2070.0	1
SMS 2270	Actuator for increased force	2NC/1NO	50 N	R1.320.2270.0	1

* The relevant actuator is included in the scope of delivery

SERIES SMS

ACTUATOR



SMS 9001



SMS 9002

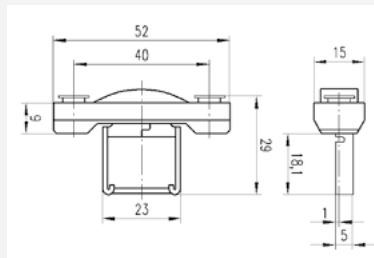


SMS 9003

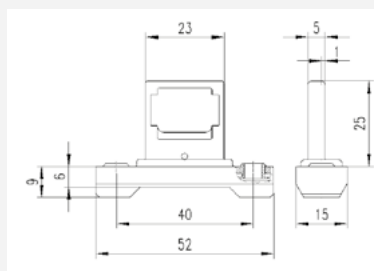


SMS 9004

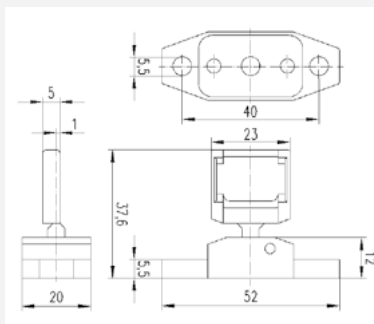
DIMENSIONS DIAGRAMM



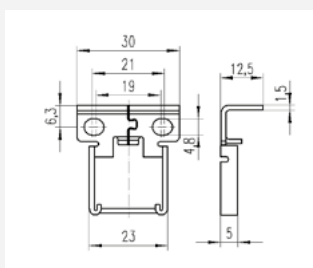
SMS 9001



SMS 9002



SMS 9003



SMS 9004

OVERVIEW OF DEVICES ACTUATOR

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

SERIES SLS

POSITION SWITCH



APPLICATIONS

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

FEATURES

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

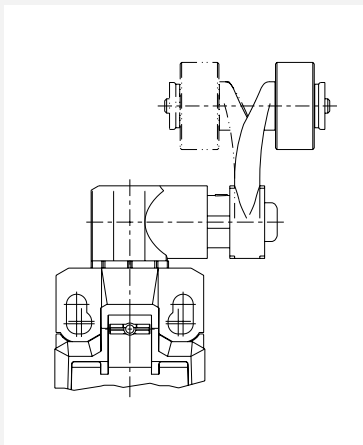
FUNCTION

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

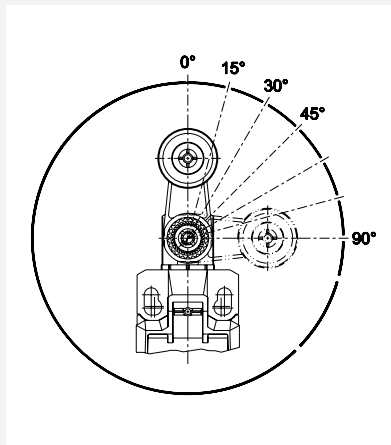
If the corresponding guard on a machine is opened, the hazardous machine movement is stopped.

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

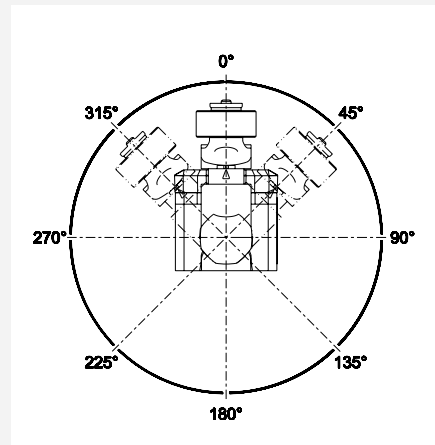
ROTATING LEVER



ADJUSTABLE LEVER



ADJUSTABLE ACTUATING DEVICE



SERIES SLS

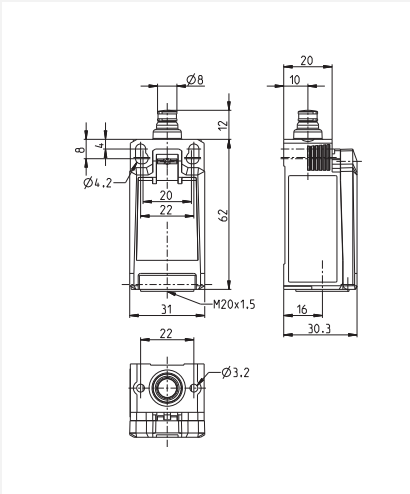
POSITION SWITCH

TECHNICAL DATA			
Function			
to EN 14119	Position switch		
Output circuit			
Rated operating voltage	240 V AC / 24 V DC		
Max. thermal continuous current I _{th}	5 A		
Min. continuous current (24 VDC)	1 mA		
Utility category	AC-15: 230 V, 3 A		
	DC-13: 24 V, 4 A		
Mechanical life	10 x 10 ⁶		
Short-circuit protective device	4 A class gG fuse		
Mechanical data			
Housing	Thermoplastic GV (UL94-V0)		
Actuation speed	0.06 m/min ≤ V ≤ 30 m/min		
Operating cycles	≤ 60 / min		
Mounting	2 x M5		
Cable entry	1 x M20 x 1.5		
General data			
Operating ambient temperature	-30°C - +75°C		
Connection cross sections of screw terminal	1 x 0.34 - 1.5 mm ²		
Protection class as per EN 60529	IP66, IP67 / Type 4X		
Weight	≈ 0.06 kg		
Standards	EN 60947-1, EN 60947-5-1		
Approvals			
Safety related data	Part number	NC	NO
B _{10D} (at DC -13; 24 V; I _{e2} = 0.1 A)	R1.340.5150.0	20.000.000	1.000.000
B _{10D} (at DC -13; 24 V; I _{e2} = 0.1 A)	R1.340.6230.0	30.000.000	1.000.000
B _{10D} (at DC -13; 24 V; I _{e2} = 0.1 A)	R1.340.6350.0	30.000.000	1.000.000
B _{10D} (at DC -13; 24 V; I _{e2} = 0.1 A)	R1.340.6330.0	30.000.000	1.000.000
B _{10D} (at DC -13; 24 V; I _{e2} = 0.1 A)	R1.340.6550.0	30.000.000	1.000.000
B _{10D} (at DC -13; 24 V; I _{e2} = 0.1 A)	R1.340.6530.0	30.000.000	1.000.000
B _{10D} (at DC -13; 24 V; I _{e2} = 0.1 A)	R1.340.6650.0	20.000.000	1.000.000
B _{10D} (at DC -13; 24 V; I _{e2} = 0.1 A)	R1.340.6630.0	20.000.000	1.000.000
B _{10D} (at DC -13; 24 V; I _{e2} = 0.1 A)	R1.340.6950.0	20.000.000	1.000.000
B _{10D} (at DC -13; 24 V; I _{e2} = 0.1 A)	R1.340.6930.0	20.000.000	1.000.000

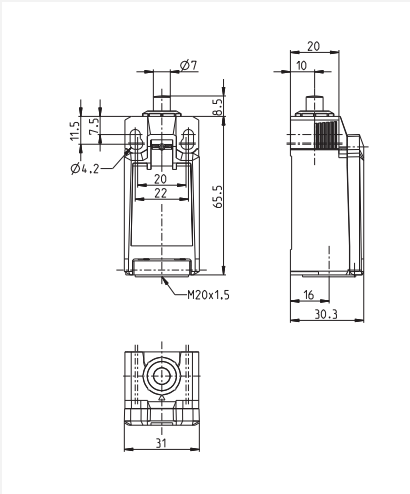
SERIES SLS

POSITION SWITCH

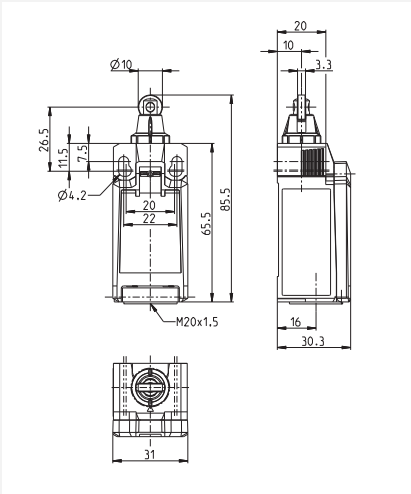
DIMENSIONS



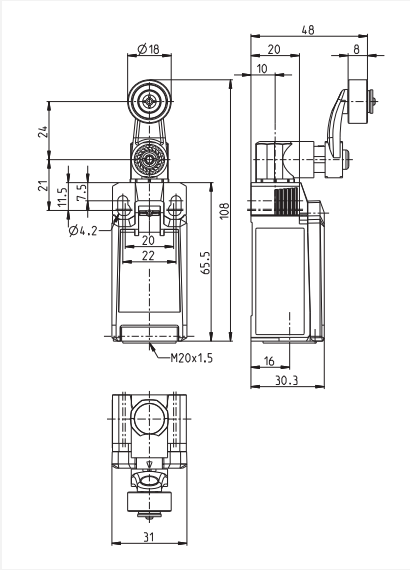
SLS 51XX



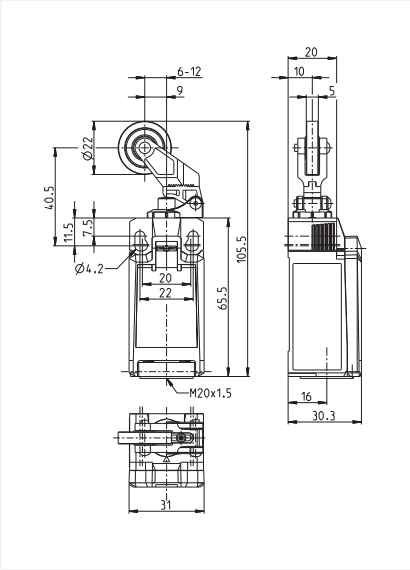
SLS 62XX



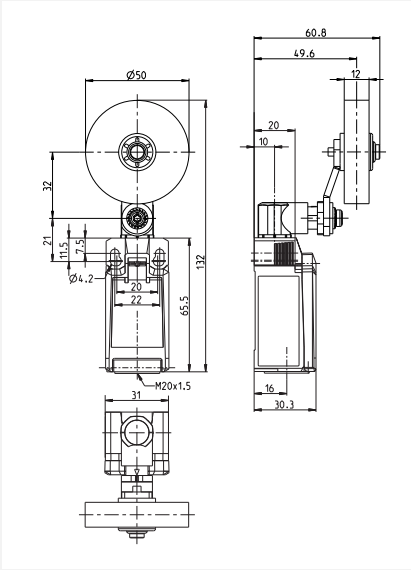
SLS 63XX



SLS 65XX



SLS 66XX



SLS 69XX

SERIES SLS

POSITION SWITCH

OVERVIEW OF DEVICES

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

WIPOS

POWER SUPPLIES

A reliable and efficient power supply is essential for every machine or plant operation. Our wipos product family offers a stable supply voltage for various functions and in different power classes, ensuring smooth and therefore highly economical production processes.

POWER SUPPLY REQUIREMENTS

- **Reliable DC voltage**

A reliable and efficient power supply is essential for every machine or plant operation. Our wipos product family offers a stable supply voltage for various functions and in different power classes, ensuring smooth and therefore highly economical production processes.

- **Reliable redundancy**

To ensure maximum reliability, wipos redundancy modules are used. These decouple parallel-connected power supplies from each other at the output.

- **Uninterrupted operation**

Uninterruptible power supplies (UPS) can have serious consequences. Protect your critical equipment not only from power outages, but also from short-term undervoltages and overvoltages in the grid. The integrated DC-DC converter allows you to design your power supply system individually and independently, enabling you to reliably implement specific requirements within your circuit designs.



WIPOS PSW

Fit for renewable energies

wipos PSW modules not only meet the high market demand for compact power supplies, but also fulfill the requirements of the renewable energy sector. They offer reliable protection mechanisms in the event of a power outage as well as over- and undervoltage.



WIPOS UPS

Maximum protection against network problems

Especially in highly complex and cost-sensitive automation processes, maximum protection is essential. Our wipos UPS 20-960 reliably protects critical loads from network problems, outages, voltage spikes, dips, and fluctuations.



WIPOS R50

Redundancy module for device failures

The use of redundancy modules helps avoid downtime and thus increases system availability. Our wipos R50 redundancy module monitors the incoming power supplies in parallel. In the event of a device failure, the other device automatically takes over the power supply.



WIPOS PSU3

Space-saving power supply

Maximum efficiency in power supply operation also means using resources responsibly. The wipos PSU3 series of switched-mode power supplies is characterized by high efficiency and a space-saving design.

WIPOS PSW

SWITCHED-MODE POWER SUPPLY



FEATURES

- 1, 2 or 3-phase input AC (187 V - 550 V) + DC (250 V - 750 V)
- Compact design
- Active PFC according to EN 61000-3-2
- High efficiency: >88...>93 %
- Status and diagnosis (overload, DC OK LED, DC OK relay contact)

PERFORMANCE FEATURES

- Switched-mode power supply **PSW 24**
 - Output voltage 24 V
 - Output power DC 120 / 240 / 480 W
 - Output current 5 / 10 / 20 A
- Switched-mode power supply **PSW 48-10**
 - Output voltage 48 V
 - Output power DC 480 W
 - Output current 10 A

DEVICE OVERVIEW

Model	Output	Continuous current	Input voltage AC/DC	Power	W x H x D (mm)	Part no.	P.U.
PSW 24-20	24 V DC	20 A	187 - 550 V / 250 - 725 V	480 W	73 x 140 x 125	81.000.7530.0	1
PSW 48-10	48 V DC	10 A	187 - 550 V / 250 - 725 V	480 W	73 x 140 x 125	81.000.7531.0	1
PSW 24-5	24 V DC	5 A	187 - 550 V / 250 - 725 V	120 W	40 x 115 x 110	81.000.7532.0	1
PSW 24-10	24 V DC	10 A	187 - 550 V / 250 - 725 V	240 W	54 x 115 x 110	81.000.7533.0	1

GENERAL TECHNICAL DATA FOR THE SERIES

Terminal type	Pluggable clamps
Rail mounting possible	Yes
Operating temperature min.-max.	-40 °C...+70 °C
Relative humidity min.-max.	5 - 95 %
Storage temperature / transport min.-max.	-40 °C...+80 °C
Protection class	IP20
Certificates / approvals	CE, cULus Listed

WIPOS UPS 20-960

UNINTERRUPTIBLE POWER SUPPLY (UPS)



FEATURES

- Compatible with any battery technology
- Usage even with supercaps
- For every battery/supercap voltage 12 - 58 V DC
- Monitoring of the battery condition
- Connection to other systems with Modbus/USB port
- Programmable DC/DC conversion

PERFORMANCE FEATURES

- Output voltage 12 - 58 V DC
- Output current max. 20 A
- Battery voltage 12 - 58 V
- Battery powered max. 20 A
- Input voltage 10 - 60 V DC

DEVICE OVERVIEW

Model	Output voltage	Input voltage	Power	W x H x D (mm)	Part no.	P.U.
UPS 20-960 P	12 - 58 V DC	10 - 60 V DC	max. 960 W	54 x 115 x 131	81.000.6230.1	1
UPS 20-960 ECO	12 - 58 V DC	10 - 60 V DC	max. 960 W	54 x 115 x 131	81.000.6240.1	1
UPS 20 SENSOR	Battery temperature sensor	-	-	2 m twin cable	81.000.6231.0	1

GENERAL TECHNICAL DATA FOR THE SERIES	
Terminal type	Push-in connection
Rail mounting possible	Yes
Operating temperature min.-max.	-40 °C...+70 °C
Relative humidity min.-max.	5 - 95 %
Storage temperature / transport min.-max.	-40 °C...+85 °C
Protection class	IP20
Certificates / approvals	CE, cULus Listed
Parameterization / Diagnostics (both variants)	with wipos PLAN software
Operation / visualization (P version only)	4 buttons and color display

WIPOS R50

REDUNDANCY MODULE



FEATURES

- 2 inputs/1 output
- Full performance up to 75 °C operating temperature
- One signal contact per input
- One LED per input
- Ensures safe parallel connection
- Increases system availability

PERFORMANCE FEATURES

- Output voltage 24 V DC
- Output current max. 20 A

DEVICE OVERVIEW

Model	Output voltage	Input voltage	Power	W x H x D (mm)	Part no.	P.U.
R50	12 - 85 V DC	12 - 85 V DC	50 A	54 x 90 x 114	81.000.6201.0	1

GENERAL TECHNICAL DATA FOR THE SERIES	
Terminal type	Screw connection
Rail mounting possible	Yes
Operating temperature min.-max.	-25 °C...+71 °C
Relative humidity min.-max.	20 - 95 %
Storage temperature / transport min.-max.	-25 °C...+85 °C
Protection class	IP20
Certificates / approvals	CE, cULus

WIPOS PSU3

SWITCHED-MODE POWER SUPPLY



IEC EN 61010-1

FEATURES

- Additional power reserve of up to 150 % power boost
- Communicates with DC OK and INHIBIT signal contact
- Tool-free wiring or use in the event of vibrations possible thanks to push-in terminals
- Very low switch-on energy pulse for reliable function of the line protection
- Wide voltage range for AC and DC voltages on the input side
- Space-saving thanks to modern circuit concepts

PERFORMANCE FEATURES

- AC or DC input 3-phase
- DC output power 120 - 960 W
- Voltage 24 V, 48 V
- Output current 5 - 40 A
- Mains failure bridging time >30 ms

DEVICE OVERVIEW

Model	Output	Continuous current	Input voltage AC/DC	Power	W x H x D (mm)	Part no.	P.U.
PSU3 24-5 P	24 V DC	5 A	350 - 575 V / 450 - 810 V	120 W	55 x 129 x 138	81.000.1401.0	1
PSU3 24-10 P	24 V DC	10 A	350 - 575 V / 450 - 810 V	240 W	55 x 129 x 138	81.000.1410.0	1
PSU3 48-5 P	48 V DC	5 A	350 - 575 V / 450 - 810 V	240 W	55 x 129 x 138	81.000.1620.0	1
PSU3 24-20 P	24 V DC	10 A	350 - 575 V / 450 - 810 V	480 W	65 x 129 x 159	81.000.1420.0	1
PSU3 48-10 P	48 V DC	10 A	350 - 575 V / 450 - 810 V	480 W	65 x 129 x 159	81.000.1630.0	1
PSU3 24-40 P	24 V DC	40 A	350 - 575 V / 450 - 810 V	960 W	100 x 129 x 171	81.000.1430.0	1
PSU3 48-20 P	48 V DC	20 A	350 - 575 V / 450 - 810 V	960 W	100 x 129 x 171	81.000.1640.0	1

GENERAL TECHNICAL DATA FOR THE SERIES	
Terminal type	Push-in connections
Rail mounting possible	Yes
Operating temperature min.-max.	-40 °C...+70 °C
Relative humidity min.-max.	0 - 95,9 %
Storage temperature / transport min.-max.	-40 °C...+85 °C
Protection class	IP20
Certificates / approvals	IEC EN 61010-1

GLOSSARY

	Emergency stop monitoring Floating contacts		Single-channel input circuit 1 NC contact or semiconducto
	Protective gate monitoring Floating contacts		Two-channel input circuit 2 NC contacts or semiconductors
	Position monitoring Magnetic switch		Two-channel input circuit, antivalent 1 NO / 1 NC contacts or semiconductors
	Safety light grid / -light curtain acc. to EN 61496 BWS Type 4		Cross monitoring between two input circuits
	Two-hand control according to EN 574		Synchro-check between two input circuits
	Controlled Stop according to EN 60204-1 stop category 1		Safe Start Start command is accepted only when the input circuits are closed
	Standstill and motion monitoring		Combi-reset Automatic start possible after voltage failure, based on the risk analysis
	Safety shut-off mat monitoring (4-wire principle, short-circuiting)		Automatic Reset after application of the voltage and/or after safety request
	Valve position monitoring		Manual Reset in the case of a rising edge at the reset input
	Contact expansion		Reset button monitoring in the case of a falling edge at the reset input
	Machine building industry		Contacts (NO/NC) safe semiconductor outputs
	Press		Alarm contacts
	Elevator systems in accord. with EN 81-1		Safe changeover contacts
	Combustion plants according to EN 50156-1		Safe semi conductor outputs
	Process technology according to IEC 61511		Safe OFF-delay
	Finger protection		Safe ON-delay
	Hand protection		Monoflop for rapid tactile applications
	Arm protection		Reset of time lapse for OFF-delayed contacts
	Access protection		Expanded diagnostics
	Personal protection		



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0860.1 AC 11/25

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