

# Heavy industry

Materials handling industry



**SCHMERSAL**

Safe solutions for your industry

# Pull-wire emergency-stop switches

## One-side and two-side operating principle

### Type: T3Z 068

- Pull-wire and wire-breakage monitoring
- Two side operating principle 2 x 50 m
- Cast iron housing, galvanised with 2K paint resistant to oil, grease, salt and acids in thinned down concentration
- Silver contacts, max. 3 x NC positive break, 3 x NO
- Gold plated contacts optional
- Low actuation forces max. 50 N, 30 N in direction of wire
- Indicator lamp optional



### Type: ZQ 900

- Wire pull and breakage detection with front integrated Emergency-Stop button
- Selectable single side, max. 75 m wire length
- Robust galvanized cast iron casing with 2K painted, plastic cover
- Visible position indicator
- Optional indicator lamp for one of the 3 x M20 cable entries
- Max. 4 contacts e.g. 2 NC/2 NO or 4 NC
- NC with silver contacted automatic opener
- Gold plated contacts optional
- Front release push button for releasing after pull-wire or wire-break actuation



### Note:

Pull-wire switch conforming to standards ISO 13850, IEC 60947-5-1, IEC 60947-5-5  
2-wire bus option available upon request! Temperature range from -40°C ... +85°C  
IEC EX options II 2/3D Ex tD A21 IP65, IP66, IP67 T90°C



## Belt alignment switches

For heavy applications



### Type: T/M 250

- Extremely robust cast-iron housing, galvanized, 2K paint resistant to oil, grease, salt and acids in thinned down concentration
- Max. 4 contacts, e.g. 2 NC, 2 NO,
- Silver contacts, optional with gold contacts
- Choice between snap- or slow action
- Different roller lengths and switching points for the pre- and main shutdown
- Temperature range standard  $-30^{\circ}\text{C} \dots +90^{\circ}\text{C}$  optional  $-40^{\circ}\text{C} \dots +200^{\circ}\text{C}$  also possible
- Protection class IP67



### Type: T/M 441

- Extremely robust cast-iron housing, galvanized, 2K paint resistant to oil, grease, salt and acids in thinned down concentration
- 1 NO contact + 1 NC contact
- Choice between snap action or slow switching contacts
- Different roller lengths
- Temperature range standard  $-30^{\circ}\text{C} \dots +90^{\circ}\text{C}$  optional  $-40^{\circ}\text{C} \dots +200^{\circ}\text{C}$  also possible
- Special versions available for sea water resistance or harsh environmental conditions
- Protection class IP65

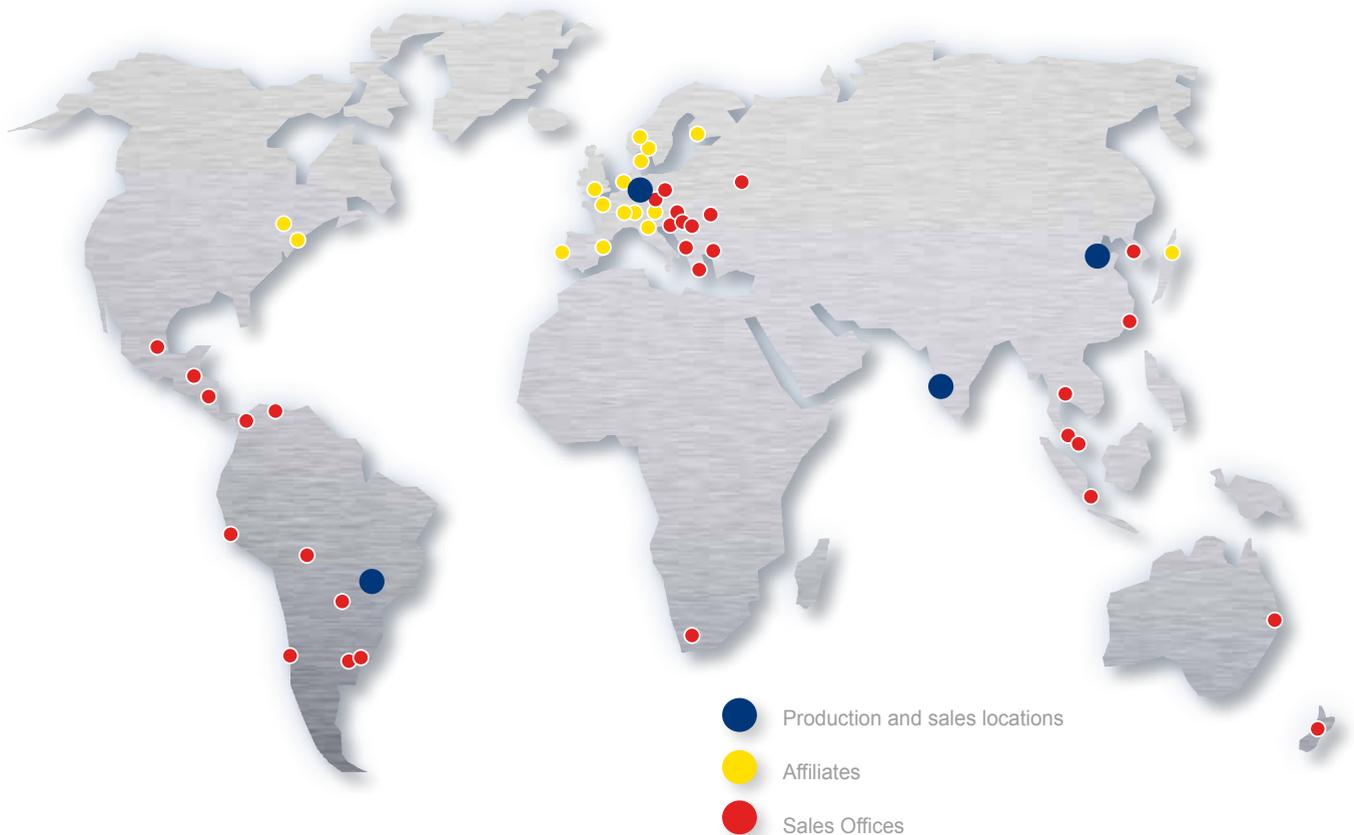
### Note:

2-wire bus option upon request

IEC EX option II 2/3D Ex tD A21 IP65, IP66, IP67 T90°C available



# Schmersal worldwide



With its own affiliates in around 20 countries and capable sales and service partners in 30 more countries, the Schmersal Group has operations worldwide.

We started quite early with the internationalization of sales, consultancy and production. This is also one of the reasons that we are a favoured global partner for machinery and plant construction and also an approved partner for many medium sized engineering companies with local presence. Wherever there are machines that work with Schmersal safety switches, the nearest branch or representative is not far away.

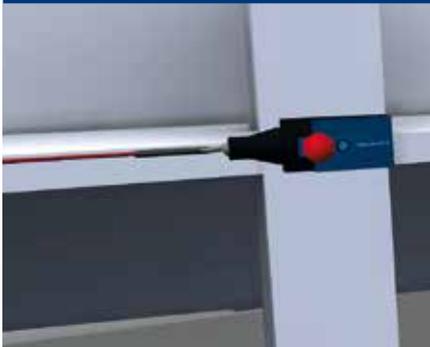
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| <ul style="list-style-type: none"> <li>■ Belgium, Aarschot</li> <li>■ Denmark, Ballerup</li> <li>■ Finland, Helsinki</li> <li>■ France, Seyssins</li> <li>■ United Kingdom, Worcestershire</li> <li>■ Italy, Borgosatollo</li> <li>■ Japan, Tokyo</li> <li>■ Canada, Brampton</li> <li>■ Netherlands, Harderwijk</li> <li>■ Norway, Oslo</li> <li>■ Austria, Vienna</li> <li>■ Portugal, Póvoa de Sta. Iria</li> <li>■ Sweden, Mölnlycke</li> <li>■ Switzerland, Arni</li> <li>■ Spain, Sant Cugat Sesgarrigues</li> <li>■ USA, Tarrytown NY</li> </ul> |  |  |



## Application examples

### Conveying plants

#### Application 1



#### Emergency stop shutdown on conveyor belts

We offer our customers complete safety solutions from a single source, consisting of pull-wire emergency stop switches, safety relay building blocks or 2-wire network solutions up to distance of 12 km.

Our pull-wire emergency-stop switches guarantee a reliable emergency stop function with wire breakage monitoring on conveyor plants over a distance of 75 m on one side and 2 x 50 m on both sides. All pull-wire emergency stop switches are insensitive to external influences such as torsion, vibrations and temperature variations. If the pull-wire switch is actuated, it safely mechanically latches in the emergency stop position and can only be released by actuation of the release device, optionally operated by key

selectors. Our safety monitoring modules make sure that the monitoring of the Emergency-Stop equipment is safe right up to a performance level of PL e, this is due to the integrated monitoring of the safety circuits against wire-breakage or shorts to ground or a cross-wire short. The maximum distance for the SRB relay is 2.5 km and is dependent on the cable cross section used for the safety equipment. For systems that are more than 2.5 km we recommend a 2-wire network solution that allows a safe Emergency Stop function up to a distance of 12 km. For further details please contact us directly, we are happy to assist you with your planning.

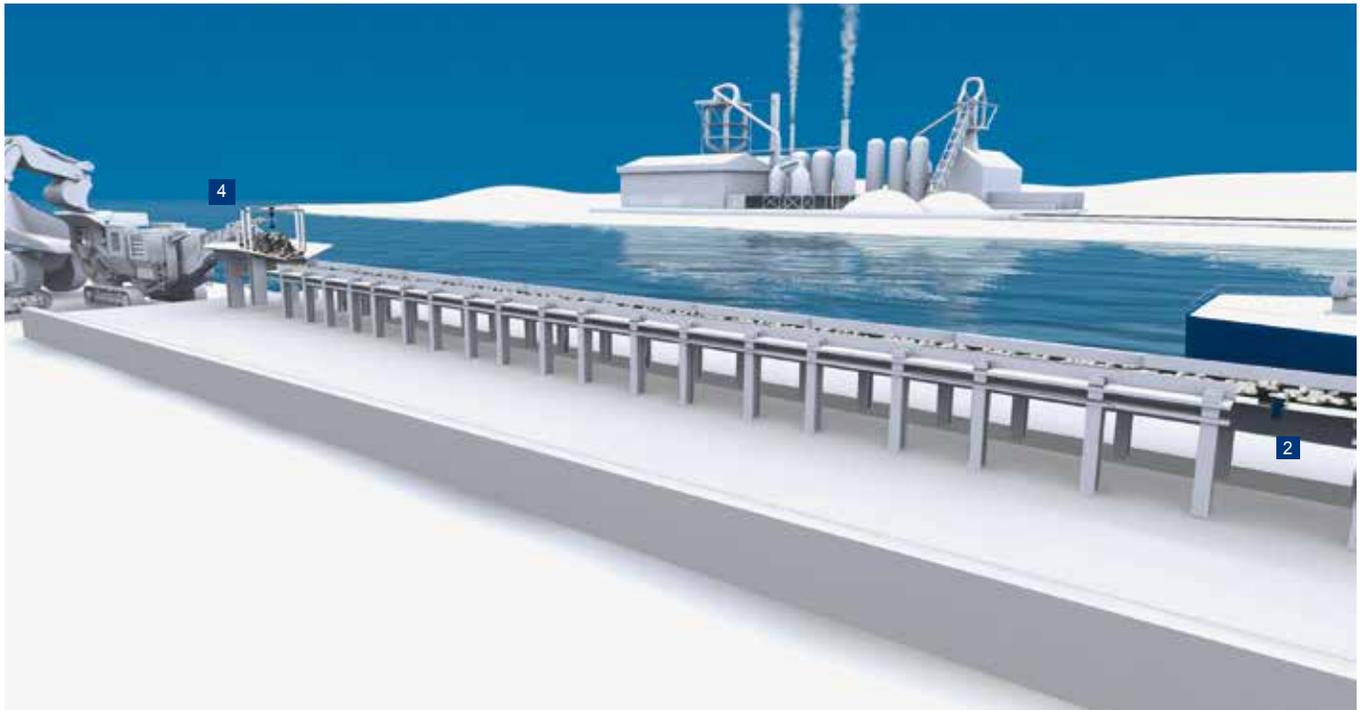
#### Application 2



#### Belt alignment monitoring

Belt alignment switches monitor the straight running of conveyor plants. If the conveyor belt moves off-centre from the drive and pulleys, the switching devices are triggered. With staggered switching a pre-warning for example is initiated with 15° deviation and the conveyor belt is switched off for example at 25°. Individual staggered switching are available upon request. In addition to multiple versions of belt alignment switches, we offer a comprehensive programme of rollers for our belt alignment switch with different lengths, diameters and materials.

With staggered conveyor systems the transparency of the system can be increased considerably by using a 2-wire bus connection because the switch condition of all belt alignment switches can be individually shown with all the other warning messages in a collective indication system. This helps with any troubleshooting and drastically reduces any downtime. The overall installation effort and expenditure is considerably reduced.



## Application examples

### Conveying plants

#### Application 3



#### Command devices on transport and conveyor plants

Dust, varying temperatures and an often "rough" handling: command devices installed on transport and conveyor plants must be able to permanently withstand harsh conditions. Our robust command devices and indicator lights, joystick switches and surface-mounted enclosures have been especially developed for such applications and provide for a safe switching.

The range of "R" switches is optionally available in metal version with high protective collar against inadvertent contact. The oil-resistant lar-

ge switch surfaces can also be operated reliably whilst wearing gloves.

The emergency stop switches are equipped with positive-locking and safe latching, optionally with increased protection against inadvertent unlocking. The message buttons and indicator lights feature bright LED's for a maximum signal effect at very low maintenance costs.

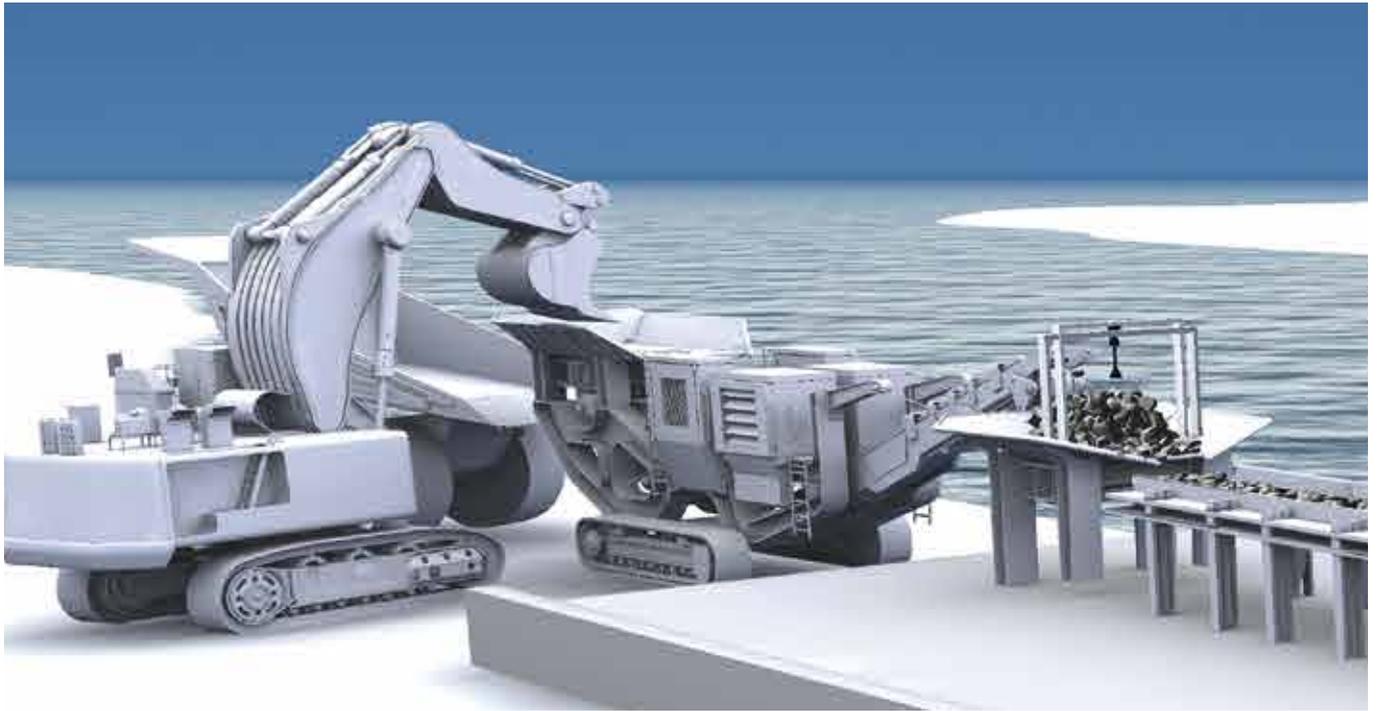
#### Application 4



#### Level monitoring

On belt transfer stations or in silo installations, the level of bulk goods such as granulates, powder or seeds often needs to be monitored. For this application, Schmersal has developed a level switch for heavy-duty applications on the basis of the 441 type position switch. The flexible reinforced fibreglass shift gate ensures that the switch is actuated throughout 360° when deflected by less than 20° or when the

pressure comes from below. It comes with protection class IP65 and is suitable for ambient temperatures of -30 °C ... +90 °C.



## Level and slack wire switch

### For heavy applications

#### Type: MAF/S 441

Level switch for hopper and container

- Robust cast-iron housing, galvanized, 2K paint resistant to oil, grease, salt and acids in thinned down concentration
- 1 NO contact / 1 NC contact
- Silver contact, gold contacts upon request
- Fibreglass actuator with return spring, including 360° radius of movement in all directions
- Switch off at approx. 20° in all directions, or with pressure from below
- Temperature range -30°C ... +90°C optional
- Protection class IP65



#### Type: T/M 441 Slack-wire switch

Monitoring of the rope tensioner on conveyor systems

- Robust cast-iron housing, galvanized, 2K paint resistant to oil, grease, salt and acids in thinned down concentration
- 1 NO contact / 1 NC contact
- Choice between snap- or slow action
- Galvanized cast iron, actuation lever with V2A castor
- Temperature range -30°C ... +90°C
- Protection class IP65

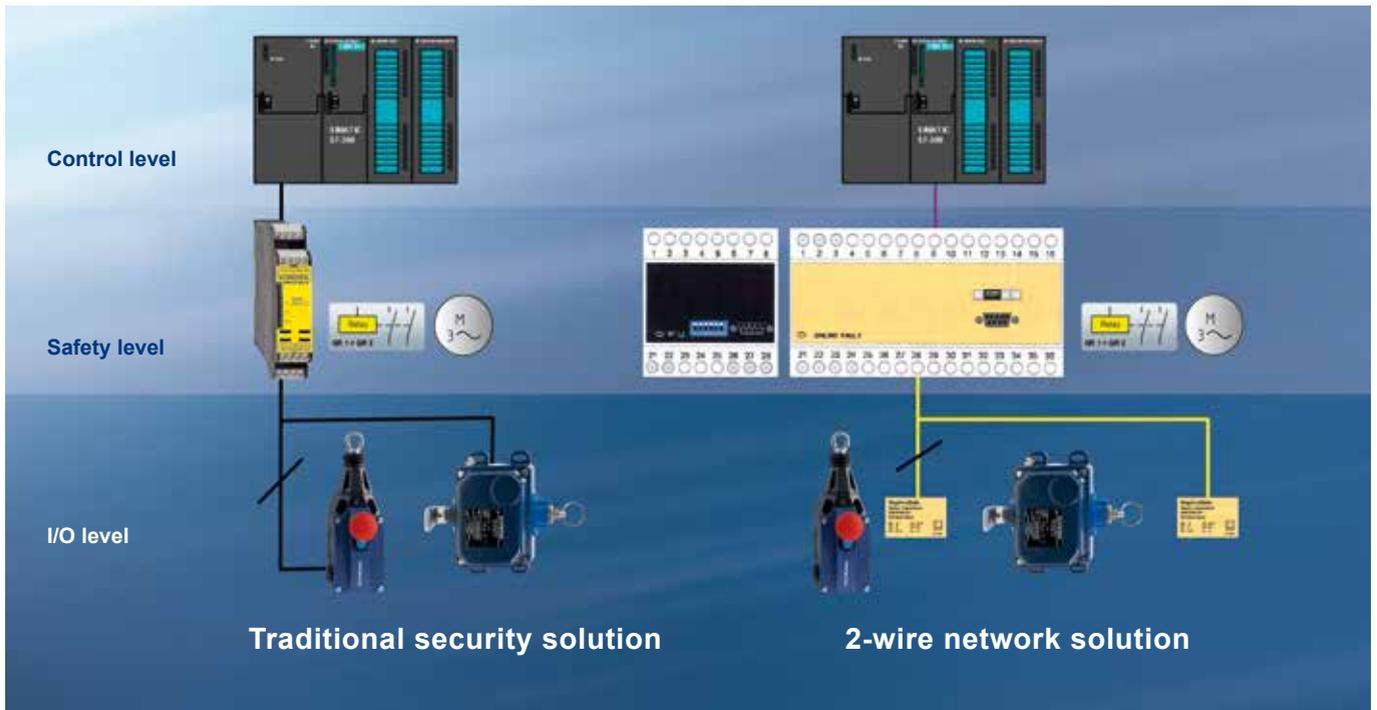


#### Note:

2-wire bus option upon request

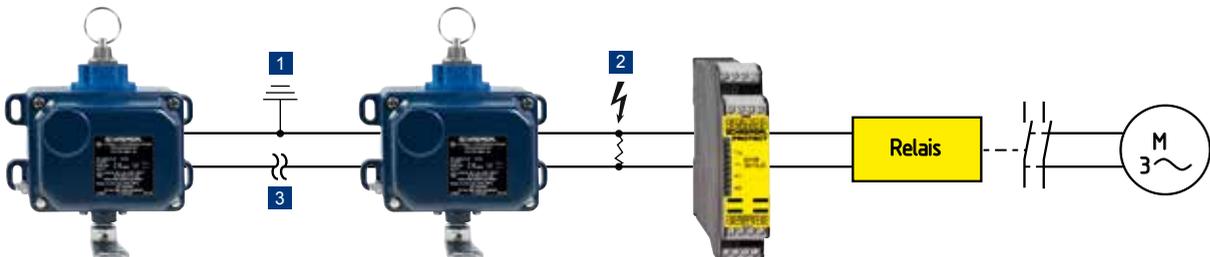
IEC Ex Option II 2D Ex tD A21 IP65, IP66, IP67 T90° C available





## Safety solutions

### Safety-monitoring modules



#### Safety monitoring module type SRB 301

Clocked impulse output,  
 max. system resistance 40 Ω  
 Max. cable length with 1.5 mm<sup>2</sup> 1,500 m,  
 Max. cable length with 2.5 mm<sup>2</sup> 2,500 m,

Characteristics of the safety relay  
 module, safe monitoring of:

- 1 Ground fault
- 2 Cross fault
- 3 Line break

#### SRB 301 with 2-channel control and 3 safety contacts

#### Wide variety

IECEX Safety-monitoring modules  
 with encapsulated relay outputs  
 for dusty environments



## Ordering details and variants

### Pull-wire emergency-stop switches

#### Options T3Z 068-①YR② ③ ④ ...

	Description	Type	Option	Order code	Pull-wire switches with	Order of the EX option
①	1 NO - 1 NC	11	22 / 33	T3Z 068-11YR	nx NO contact / nx NC contact	EX-T3Z 068-11YR
	AS-i SaW interface	AS	Network	T3Z 068-ST-AS	AS = Connector M12, 5 pole	not available
②	Reset by pull ring	-		T3Z 068-nnYR	Standard	Standard
	Release by key	S		T3Z 068-nnYRS	n x NC/NO + Key release (option)	not available
③	without indicator lamp	-		T3Z 068-nnYR	Standard	Standard
	with indicator lamp	G		T3Z 068-nnYRG	n x NC/NO + indicator lamp	not available
④	Temp. -40°C +90°C		1172	T3Z 068-nnYR-1172	n x NC/NO, ext. temp. range -40°C to +90°C	Standard -20°C to +60°C
	Gold-plated contacts		1637	T3Z 068-nnYR-1637	0.3 µm Gold-plated contacts	EX-T3Z 068-nnYR-1637
	External parts in V4A		2867	T3Z 068-nnYR-2867	Screws, pins, lever etc. in V4A	not available

Order example: T3Z 068 33YR S G 1172 = 3 x NO contact, 3 x NC contact, key release, indicator lamp, ext. temp. range -40°C to +90°C

#### Options ZQ900-① ②

	Description	Type	Option	Order code	Pull-wire switches with	Order of the EX option
①	2 NO / 2 NC	22	11/02/13/04	ZQ 900-22	nx NO contact / nx NC contact	EX-ZQ 900-22-3D
	AS-i SaW interface	AS	Network	ZQ 900 ST-AS	AS = connector M12, 5 pole output down	not available
②	Emergency-Stop button	N		ZQ 900-nnN	n x S/O + Emergency-Stop button front side	not available
	Gold-plated contacts		1637	ZQ 900-nn-1637	0.3 mm Gold-plated contacts	EX-ZQ 900-nn-3D-1637

Order example: ZQ900-13 N = 1 x NO contact, 3 x NC contact, with emergency-stop button on the front

### Belt alignment switches

#### Options ①250-②Z-③-④ ⑤

	Description	Type	Option	Order code	Belt alignment switches with	Order of the EX option
①	Snap action	M.		M. 250-nnZ	Snap action contact type	EX-M. 250-nn
	Slow action	T.		T. 250-nnZ	Slow action contact design	EX-T. 250-nn
②	1 NO - 1 NC	11	22	n. 250-11Z	nx NO contact / nx NC contact	EX-n. 250-11
③	Staggered contacts	H		n. 250-nnZ-H	Staggered contacts exp. 1NO1NC=10G./=25G,	EX-n. 250-nnH
④	Cast iron lever		243	n. 250-nnZ-243	Lever L 129 mm Castor ø 25 mm L 50 mm	EX-n. 250-nn-243
	Cast iron lever		966	n. 250-nnZ-966	Lever L 142 mm Castor ø 32 mm L 65 mm	EX-n. 250-nn-966
	Cast iron lever		1224	n. 250-nnZ-1224	Lever L 177 mm Castor ø 32 mm L 100 mm	EX-n. 250-nn-1224
	Cast iron lever		2087	n. 250-nnZ-2087	Lever L 227 mm Castor ø 32 mm L 150 mm	EX-n. 250-nn-2087
⑤	Temp. -40°C +90°C		1172	n. 250-nnZ-1172	Ext. temp. range -40°C to +90°C	Standard -20°C to +60°C
	Temperature tolerant	T		n. 250-nnZ-T	Ext. temp.resistance -40°C to +200°C	not available
	Gold-plated contacts		1276-2	n. 250-nnZ-1276-2	0.3 mm Gold-plated contacts	EX-n. 250-nn-1276-2
	Toothed shaft		2825-2	n. 250-nnZ-2825-2	Toothed shaft output 10 ° tooting	not available

Order example: T.250-22Z 1224 1172 = slow action switch, 2 x NO - 2 x NC, lever 1224, exp. temp. range -40 to + 90°C

#### Options ①441-②-③

	Description	Type	Option	Order code	Pull-wire switches with	Order of the EX option
①	Snap action	M.		M. 441-nnY	Snap action contact type	EX-M. 441-nn
	Slow action	T.		T. 441-nnY	Slow action contact design	EX-T. 441-nn
②	Cast iron lever		243	n. 441-nnY-243	Lever L 129 mm Castor ø 25 mm L 50 mm	EX-n. 441-nn-243
	Cast iron lever		966	n. 441-nnY-966	Lever L 142 mm Castor ø 32 mm L 65 mm	EX-n. 441-nn-966
③	Temp. -40°C +90°C		1172	n. 441-nnY-1172	Ext. temp. range -40°C to +90°C	Standard -20°C to +60°C
	Temperature tolerant	T		n. 441-nnZ-T	Ext. temp. range -40°C to +200°C	not available
	Gold-plated contacts		1276-2	n. 441-nnY-1276-2	0.3 mm Gold-plated contacts	EX-n. 441-nn-1276-2
	Actuator attachment		1090	n. 441-nnY-1090	Seawater resistant brass alloy	not available

Order example: T.441-11Y 966 1172 = slow action switch, 1 x NO - 1 x NC, lever 966, ext. temp. range -40 to + 90°C



# The Schmersal Group

For many years the privately owned Schmersal Group has been developing and manufacturing products to enhance occupational safety. What started out with the development and manufacture of a very wide variety of mechanical and non-contact switchgear has now become the world's largest range of safety systems and solutions for the protection of man and machine. Over 1,500 employees in more than 50 countries around the world are developing safety technology solutions in close cooperation with our customers, thus contributing to a safer world.

Motivated by the vision of a safe working environment, the Schmersal Group's engineers are constantly working on the development of new devices and systems for every imaginable application and requirement of the different industries. New safety concepts require new solutions and it is necessary to integrate new detection principles and to discover new paths for the transmission and evaluation of the information provided by these principles. Furthermore, the set of ever more complex standards, regulations and directives relating to machinery safety also requires a change in thinking from the manufacturers and users of machines.

These are the challenges which the Schmersal Group, in partnership with machinery manufacturers, is tackling and will continue to tackle in the future.

## Product ranges



### Safe switching and monitoring

- Guard door monitoring safety switches
- Command devices with safety function
- Tactile safety devices
- Optoelectronic safety devices

### Safe signal processing

- Safety monitoring modules
- Safety controllers
- Safety bus systems

### Automation

- Position detection
- Command and signalling devices

## Industries



- Elevators and escalators
- Packaging
- Food
- Machine tools
- Heavy industry

## Services



- Application advice
- CE conformity assessment
- Risk assessment in accordance with the Machinery Directive
- Stop time measurements
- Training courses

## Competences



- Machine safety
- Automation
- Explosion protection
- Hygienic design

Precautions have been taken to assure accuracy of the information in this catalogue. Typographic or pictorial errors that are brought to our attention will be corrected in subsequent issues.

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