

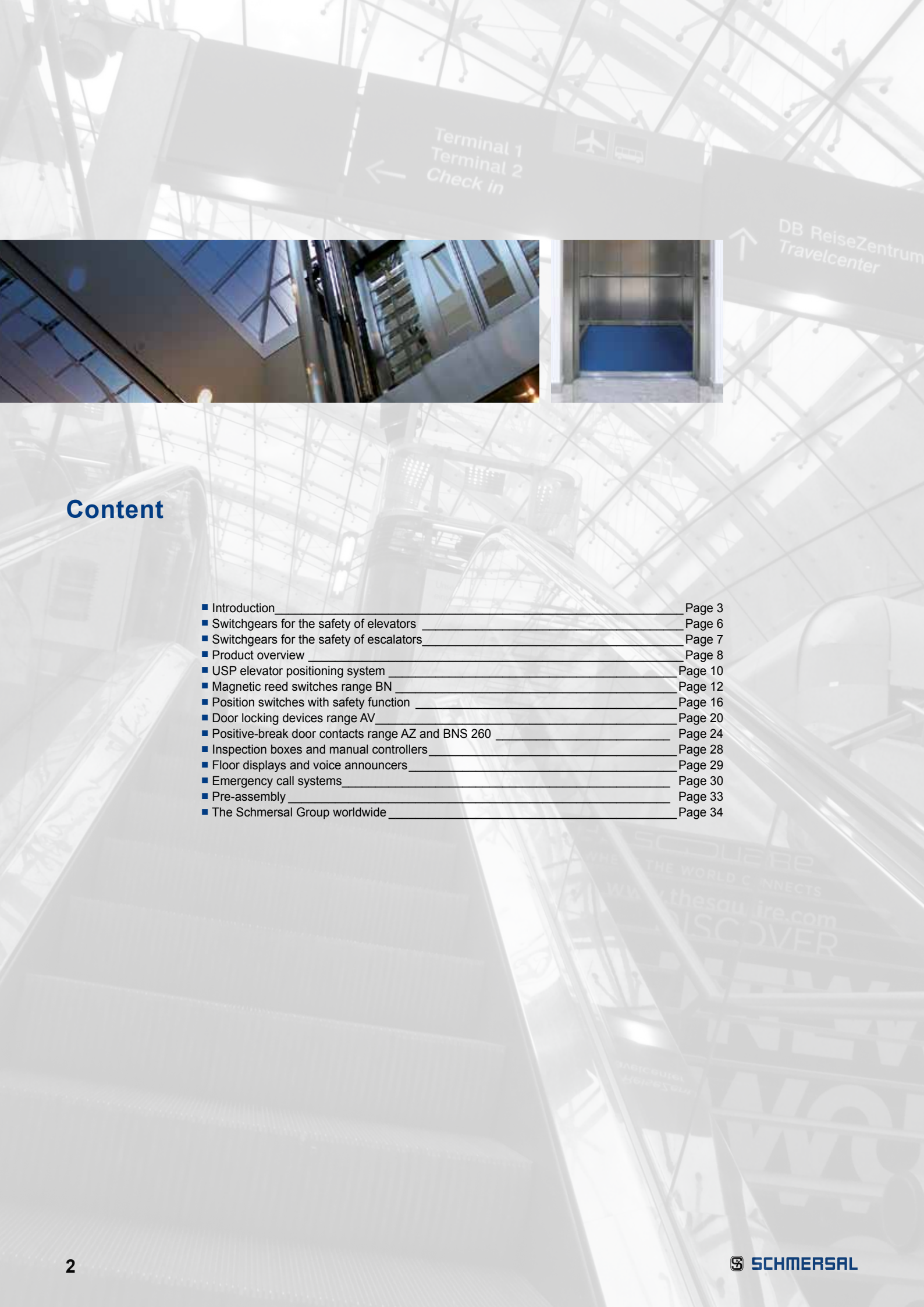
Switchgears for Elevators and Escalators

Industry brochure



SCHMERSAL

Safe solutions for your industry

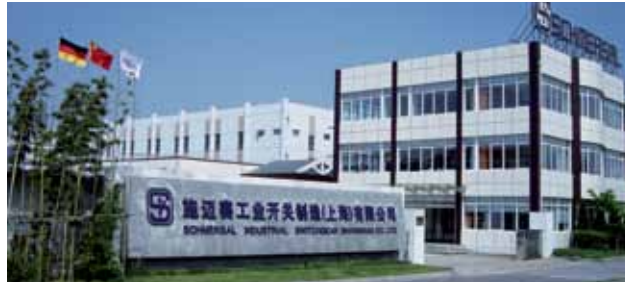


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On site all over the world



Factory in China



Trade fair stand
Interlift Augsburg

Solutions for Elevators and Escalators – Safe and reliable.

Elevators are one of the safest means of transport, on which Schmersal Group switchgears play a significant role. For almost 50 years, we have been producing switchgears which have been developed from scratch for special requirements of this industry.

A partner for elevator manufacturers with a worldwide presence

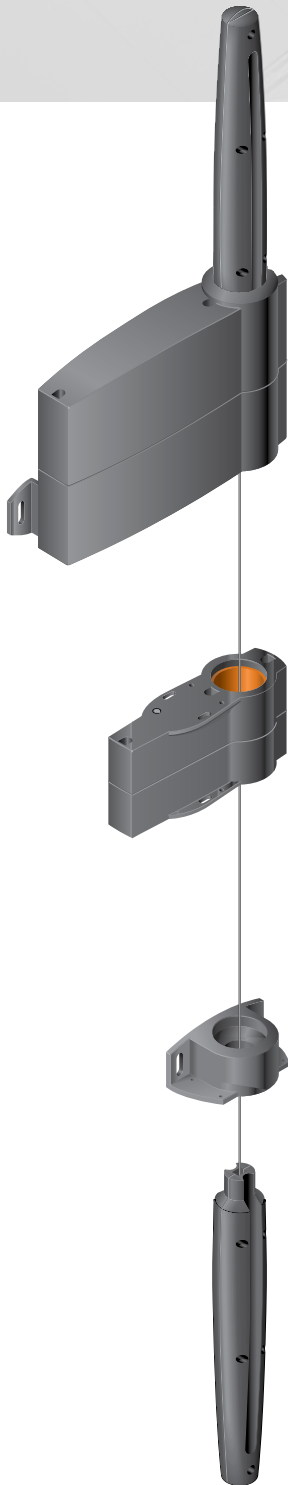
Like elevator customers, the Schmersal Group has also taken the international route. We manufacture switchgears in our main factory at Wuppertal, in Boituva/Brasil (since 1974) and Shanghai / China (since 1999). The construction of a manufacturing plant in India is in preparation. All manufacturing plants are certified according to DIN EN ISO 9001, thus all our products are manufactured to a high standard.

Experts are available for consultation, choosing components and service in more than 50 countries. As an efficient supplier and partner, we collaborate both with global players in the lift industry and with specialized regional companies.

Broad product range – different technologies

The product range has been continuously expanded in close collaboration with lift manufacturers. Today, we can offer a practical, reliable, high-quality solution, from the shaft pit to machine room, for almost any application in which switchgear is required (see page 6):

- The USP ultrasonic positioning system ensures precise approach to each floor.
- Magnetic switches are used to generate zone signals, levelling or delay control points.
- Position switches with safety function are used in areas where security and positioning are important.
- Positive-break door contacts monitor door positions and door locks.
- Door locks are used for the monitored locking of elevator cars and elevator shaft doors.
- Emergency call systems make for rapid assistance in an emergency.



Safety and cost-effectiveness

Most elevator switchgears from Schmersal ensure that elevators have a high level of safety and operational reliability. Over time, however, other factors became more important for the development of new generations of switchgears.

- Standards and guidelines have set the scope of development for safety-related switchgears in the elevator industry and have created new opportunities for integrating safety functions in the elevator controller (keyword PESSRAL).
- Cost effectiveness - elevator manufacturers are experiencing intense pressure from competition and not only expect solutions from partners and suppliers to be inexpensive, but also fast and economic to install.

New lift switchgears are developed with this in mind. The high level of industrial expertise in lift switchgear which Schmersal has acquired over decades enables the company to come up with practical, market-driven solutions which further improve the operation and safety of elevators and make for cost-effective installation and maintenance.

For new build and modernisation

Elevator switchgears from Schmersal can be used in new builds, renovations and modifications for improving the safety of existing elevators. We offer suitable components and options for different control and safety concepts. These include the SafeLine™ emergency call system, which integrates well into existing elevators during modernisation, and the USP non-contact positioning system for which different interfaces are available for connection to existing (ie older) controller types.

New developments for lift switchgear

Among the latest innovations there are position switches with safety function Type Z/T 196 (see Page 16). They are small in size and capable of a wide range of uses - such as a slack wire switch, safety break switch, hinged support contact or buffer control switch. The wide range of different contacts and actuators makes it possible to adapt the Z/T 196 to a variety of different conditions.



Also new is the latching, electrically resettable position switch ZSM 476 (see Page 17) designed for broad application and available at a very competitive price. The series includes devices with up to three contacts, various actuators and different operating voltages. The electrical remote reset makes installation possible in inaccessible areas. The very short trigger distance of only 0.3 mm and low release force of 6 N (± 2 N) are ideal for speed limiters.

"Plug and switch": manufactured according to requirement

Elevator manufacturers are constantly reducing their production depth and striving to shorten the turnaround times during production. Auxiliary work such as the cable assembly is therefore often outsourced to external service providers.

On the other hand, the Schmersal group is a specialist when it comes to electrical engineering, electrical design and assembly. It was therefore logical also to provide this service in the elevator field and to supply pre-assembled switchgears to elevator manufacturers ready for installation - with brackets, mountings and markings or as a pre-assembled unit, depending on the requirement. And to do this all over the world at the highest standard of quality. For more information about this new service, see Page 33.

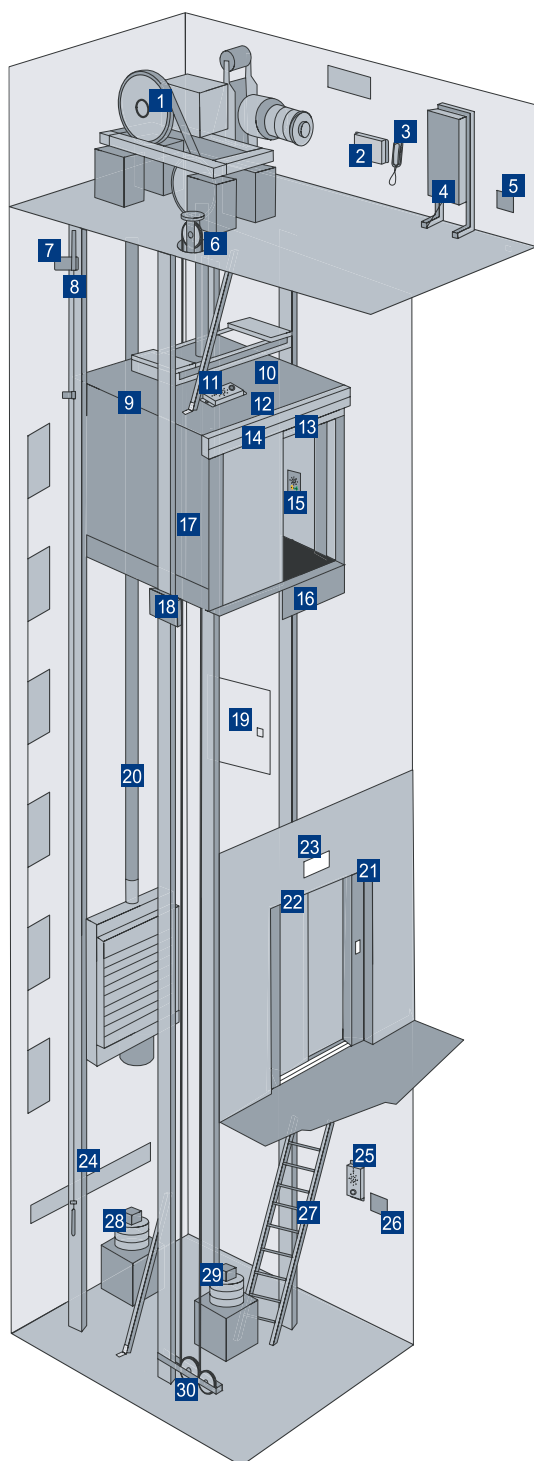
The catalogue: overview of a comprehensive product range

This catalogue gives an overview of all our elevator control equipment for passenger and freight elevators and escalators. All the equipment complies with the relevant regulations and guidelines. The safety components have the latest approvals and comply with the requirements of EN 81-1 and EN 115-1. For detailed technical information on all the product groups, see our online catalogue at www.schmersal.net.

Visit our industry portal at www.aufzug.schmersal.com! There, you will find a selection of the latest information and products prepared for the elevator industry.

Switchgears for the safety of elevators

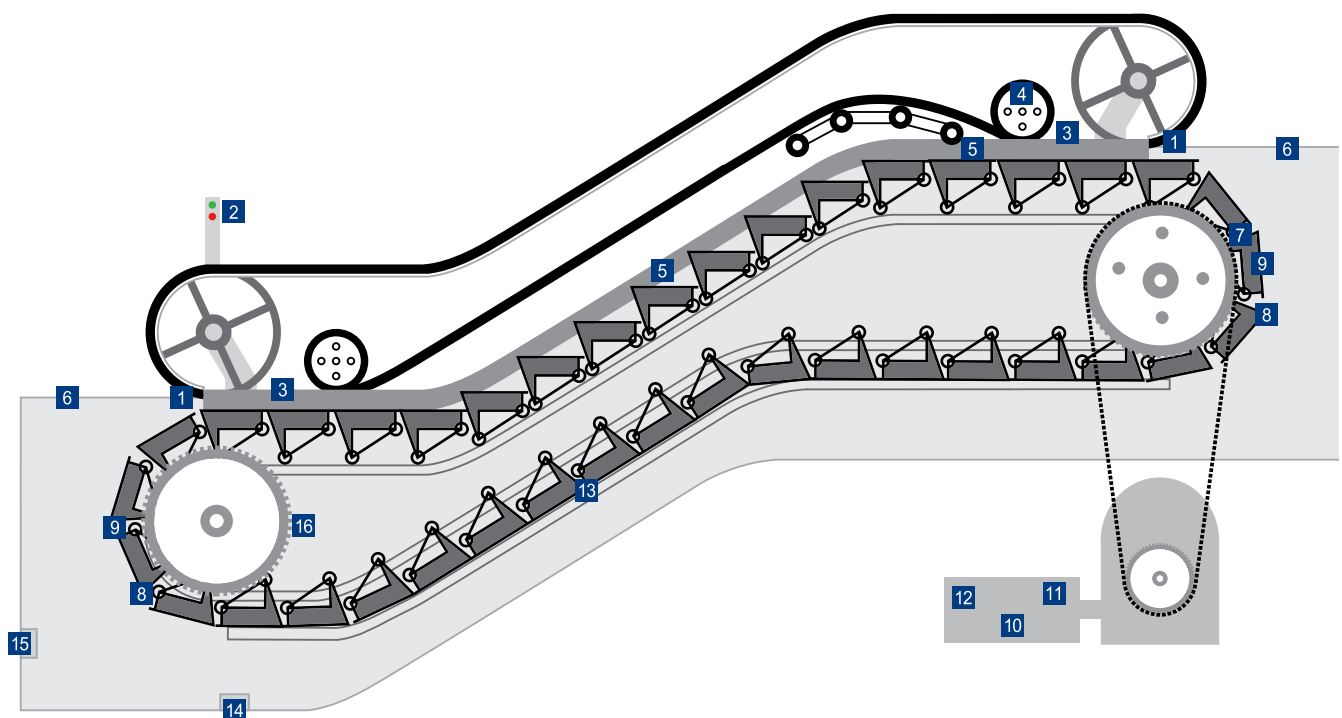
Switching, positioning and monitoring:
A wide application range for lift switchgear.



- 1 Brake monitor release / wear
- 2 Emergency call system
- 3 Telephone unit machine room
- 4 Return controller
- 5 Emergency-Stop button
- 6 Speed limiter monitoring
- 7 Position system
- 8 Top end stop
- 9 Forked light barrier
- 10 Emergency escape monitoring
- 11 Call station elevator car roof
- 12 Inspection controller
- 13 Position switch for door drives
- 14 Lock monitoring
- 15 Emergency call system
- 16 Apron monitoring
- 17 Magnetic reed switches
- 18 Safety catch monitoring
- 19 Maintenance flap (in shaft wall) monitoring
- 20 Slack wire monitoring cable
- 21 Door locking devices
- 22 Lock monitoring
- 23 Floor display
- 24 Bottom end stop
- 25 Telephone unit shaft pit
- 26 Pit control element
- 27 Position monitor pit ladder
- 28 Counterweight buffer monitoring
- 29 Car buffer monitoring
- 30 Slack rope monitoring

Switchgears for the safety of escalators

The Schmersal group offers switchgears designed from scratch to meet the needs of elevator and escalator manufacturers for all applications.



- | | |
|---|--------------------------------------|
| 1 Handrail entry monitoring (left/right) | 9 Step presence monitoring |
| 2 Emergency stop/key-operated switch | 10 Brake lining monitoring |
| 3 Comb plate monitoring (horizontal/vertical) | 11 Speed monitoring |
| 4 Handrail speed monitoring (left/right) | 12 Brake operation monitoring |
| 5 Skirt plate contact (left/right) | 13 Chain break monitoring |
| 6 Floor plate monitoring (maintenance flap) | 14 Water level monitoring |
| 7 Blocking device monitoring | 15 Manual controller for maintenance |
| 8 Step break monitoring | 16 Chain tension monitoring |

The Schmersal product range of elevator switchgears

Overview



USP position system



Magnetic reed switches BN



Position switches

USP position system

The USP position system detects the current elevator car position non-contact and wear-free. The absolute position value can be transmitted to the relevant elevator controller via different interfaces. The position system requires little effort to install and maintain.

■ Page 10

Magnetic reed switches

Non-contact magnetic switches (with Reed-technology) are often used to create zone signals, levelling signals and delay points. The BN series sensors which Schmersal has developed for elevators feature bias magnets to ensure safe switching. Faulty switching or "wobbles" can be virtually eliminated.

■ Page 12

Position switch with safety function

Our various position switches are suitable for applications where reliable position detection is important - as a safety brake contact on the elevator car, as switches in the shaft head or in the shaft pit or for monitoring maintenance doors. Our range of position switches is rounded off with a wide range of field-tested actuators.

■ Page 16

Door locks

The AV series door locks have been used for decades to lock elevator doors securely. The range includes single- and double-leaf versions with metal and plastic enclosures. Our type-tested door locks fit a wide range of door designs and are equipped with magnetic certified locking device.

■ Page 20



Door locking devices AV



Positive-break door contact AZ



Inspection boxes



Floor displays and
voice announcers



Emergency call system

Positive-break door contact

The AZ-series positive-break door contacts monitor the door position and door lock. The circuit only closes when the actuator is inserted in the switch. Disconnection is forced by the actuator fixed on the door leaf. The non-contact and waterproof door contact BNS 260 is also available as an alternative.

■ Page 24

Inspection boxes and manual controllers

Schmersal Group manufactures inspection boxes with customised fittings and, if required, according to special designs for many international elevator manufactures. The control devices for the maintenance personnel are usually supplied pre-assembled with cables and connectors or terminals.

■ Page 28

Floor displays and voice announcers

High quality floor displays and voice announcers inform the passenger. The devices are easy to install and easy to program.

■ Page 29

Emergency call system

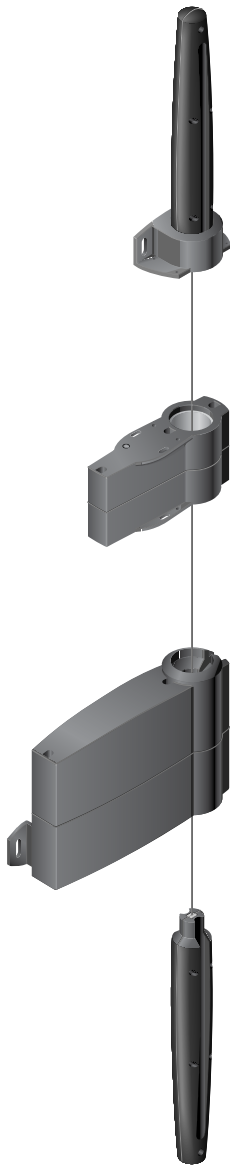
Emergency calls can be made from different positions in the elevator and in the shaft via emergency response systems. The different versions provide the right solution for every situation. The systems can be operated via a landline or mobile network and comply with all the requirements of EN 81-28. They are suitable for both initial installation and retrofitting.

■ Page 30

Positioning

Ultrasonic Positioning System USP

Function





Standard interfaces
RS422 SSI and UART
CANopen 417

The USP can be used with controllers such as those from the following manufacturers:
Böhneke + Partner GmbH
Georg Kühn Steuerungstechnik
Kollmorgen Steuerungstechnik GmbH
KW Aufzugstechnik GmbH
Langer & Laumann Ingenieurbüro GmbH
Lester Controls Ltd.
NEW-Lift Steuerungsbau GmbH
Pelazza Peppino s.r.l.

The ultrasonic position system (USP) is an absolute encoder, which operates according to the magnetostriction principle. Because of the non-contact procedure there is no mechanical wear and no maintenance required. It measures the distance between the transmitter and the receiver and returns the measured value to the controller as a binary code or Gray code via an interface. The system can be used for rises up to 130 m and speeds up to 8 m/s.

The mode of operation is simple, precise and reliable

The transmitter attached to the elevator car induces a pulse contactless to the signal wire which is suspended vertically in the shaft. The receiver in the shaft head or in the shaft pit calculates the exact distance between the transmitter and receiver based on the travel time of the pulse. The calculated position is passed to the elevator controller via an interface. The two dampers at either end of the signal wire neutralise the signals and prevent them being fed back again to the receiver. The basic version, USP 30, is suitable for rises up to 30 m. Version USP 100 is available for lifting height up to 130 m. It is fitted with a correction sensor and correction magnets to compensate for thermal changes in the building.

Technical features	USP 30	USP 100
Repeat accuracy under normal shaft conditions	± 3 mm	± 1 mm
Repeat accuracy at calibration temperature	± 1 mm	± 1 mm
Ambient temperature	-10 °C ... +50 °C	-20 °C ... +60 °C
Maximum rise	30 m	130 m
Maximum travel speed	2 m/s	8 m/s
Operating voltage	24 VDC + 15 % / -10 %	24 VDC + 15 % / -10 %
Rated current	180 mA	180 mA
Protection class	max. IP54 depending on the USP receiver cable	max. IP54 depending on the USP receiver cable
Interference radiation	EN 50081-2, EN 12015	EN 50081-2, EN 12015
EMC rating	IEC 61000-6-2, EN 12016	IEC 61000-6-2, EN 12016
Approvals		

Positioning

Ultrasonic Positioning System USP

Parallel interface USP-PI

A universal system – multiple interfaces

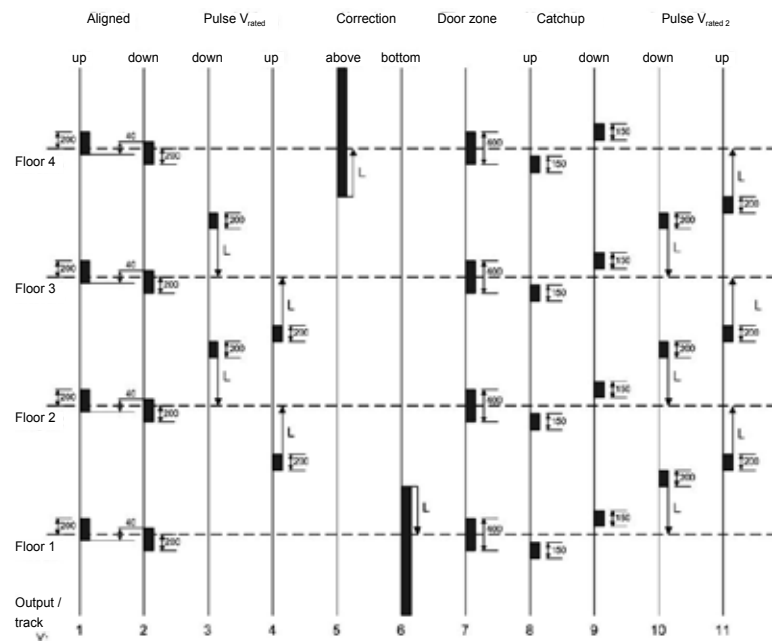
The Schmersal Group has created different interfaces, such as the parallel interface USP-PI for connection to controllers with conventional digital technology, so that the USP can operate with different control systems. It converts the absolute position value of the USP 24 VDC signals, which can be used just like the shaft signals from magnetic switch copying units, via two pre-programmed and one programmable profile. A number of different direct interfaces for connecting the USP to lift controllers from various manufacturers is also available.

Easy to put into operation

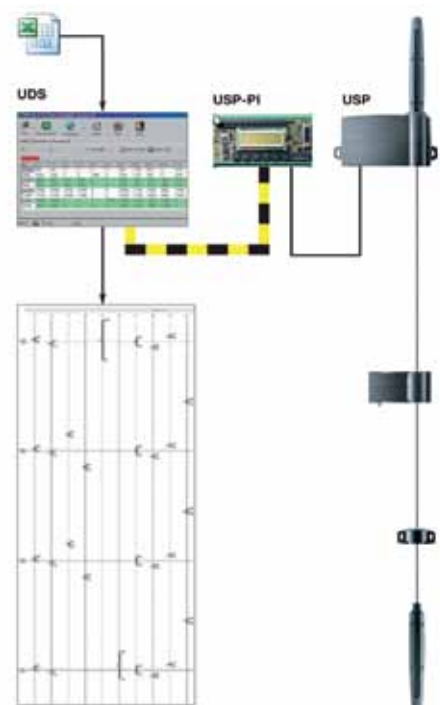
The USP is not only easy to put into operation but is also easy to maintain. One learning cycle is usually sufficient to read the floor positions. If the USP is used with the parallel interface, the signals can be shifted easily by programming, without having to enter the elevator shaft. An upload / download software UDS is available to make it easy to program the PI, and for the visualisation. The UDS software enables you to read the values from the USP-PI parallel interface via a PC (download).

All the downloaded values can be stored on Excel®-spreadsheets for further processing. Values can also be displayed graphically, as is the custom for magnetic reed switch shaft copying.

Data which have been changed on the PC can be transferred back to the parallel interface (upload). The UDS software is ideal for documenting and archiving the PI settings.



Technical features	USP-PI
Interference radiation	EN 50081-1, EN 12015
EMC rating	IEC 61000-6-2, EN 12016
Material of the enclosure	PVC
Fixing	Snap onto standard DIN rails according to EN 50022 and EN 50035
Connection type	Screw connection 0.5 ... 1.5 mm ²
Protection class	IP00
Operating voltage	24 VDC +15 % / -10 %
Operating current without outputs I _o	0.15 A
Input L _o	Learning button
Maximum current	35 mA
Input resistance	approx. 3 kΩ to GND
Input signal "1"	10 ... 30 V
Input signal "0"	0 ... 2 V
Outputs Y1 ... Y16	short-circuit proof, p-type
Max. cable length	30 m
Output voltage U _a	U _e - 1 V
Output current I _a	max. 100 mA each output
Overvoltage category	III
Degree of pollution	2
Resistance to vibrations	10 ... 55 Hz / 0.0375 mm
Resistance to shock	15 g / 11 ms
Ambient temperature	-5 °C ... +60 °C
Storage / transport temperature	-25 °C ... +70 °C



Magnetic reed switches

Range BN



■ BN 85 ¹⁾




■ BN 310



■ BN 325 ²⁾

Technical features

Material of the enclosure	thermoplastic	thermoplastic	thermoplastic
Enclosure construction form	rectangular	rectangular, flat	rectangular
Dimensions (H x W x D)	40 x 35 x 16.5	88 x 25 x 13	85 x 24 x 26
Protection class	IP40	IP67	IP40 / IP67
Connection	enclosure hole, pluggable on C-rail	enclosure hole	rear with 2 threaded bolts
Actuation direction	front side	side or front available on request	lateral
Contact variants	bistable contact	bistable contact NC / NO	bistable contact
Elevator speed ³⁾	18 m/s	18 m/s	18 m/s
Switching frequency		< 300 Hz	< 300 Hz
Switching voltage	max. 60 VAC/VDC	max. 250 VAC/VDC	max. 250 VAC
Switching current	max. 1 A	max. 3 A	max. 3 A
Switching capacity	max. 30 VA / W	max. 120 VA / W	max. 120 VA / W
LED switching conditions display	not available	not available	LED (IndexG)
Ambient temperature	0 °C ... +75 °C	-25 °C ... +75 °C	-25 °C ... +75 °C
Approvals			

¹⁾ The magnetic switch BN 85-5 enables installing up to 5 BN 85 units in one enclosure.
Mutual interference can be avoided due to the integrated shielded plate.

²⁾ Because of its integrated shield and plug connector, BN 325 is suitable especially for array.
Protection class: IP40 with insulated plug, IP67 with cable outlet on additional shielding plate.

³⁾ The elevator speed relates to the application with round magnets.



■ BN 65 / BN 65V



■ BN 650 / BN 650V



■ BN 12 / BN 12V



■ BN 120 / BN 120V



■ BN 120L / BN 120L/V

thermoplastic cylindrical Ø13, 103 IP67 central with threaded flange	thermoplastic cylindrical Ø13, 103 IP67 central with threaded flange	metal cylindrical Ø12, 71 IP67 central with thread	thermoplastic cylindrical Ø12, 71 IP67 central with thread	thermoplastic cylindrical Ø12, 102 IP67 central with thread
side or front	side or front	side or front	side or front	side or front
bistable contact NC / NO 18 m/s < 300 Hz max. 250 VAC max. 3 A max. 120 VA / W not available -25 °C ... +75 °C	bistable contact NC / NO 18 m/s < 300 Hz max. 200 VAC/DC max. 1 A max. 30 VA / W not available -25 °C ... +70 °C	bistable contact NC / NO 18 m/s < 300 Hz max. 200 VAC max. 1 A max. 30 VA / W not available -25 °C ... +70 °C	bistable contact NC / NO 18 m/s < 300 Hz max. 200 VAC max. 1 A max. 30 VA / W not available -25 °C ... +70 °C	bistable contact NC / NO 18 m/s < 300 Hz max. 200 VAC max. 1 A max. 30 VA / W not available -25 °C ... +70 °C

More information:

The electrical life is between 1 million and 1 billion operations, depending on load.

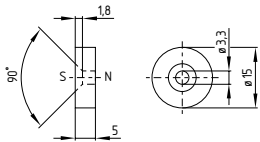
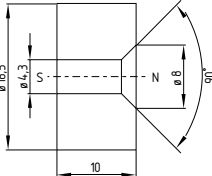
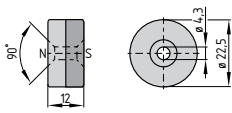
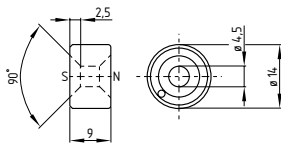
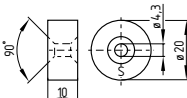
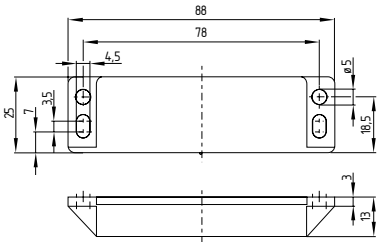
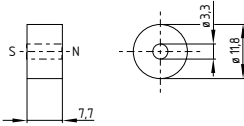
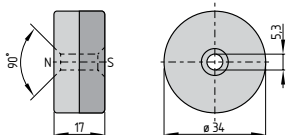
The magnetic switches are supplied with pre-assembled cables or connectors.

System components, such as clamps and brackets are available for magnetic switches

BN 65, BN 65/V, BN 12, BN 12/V and BN 120, BN 120/V.

Magnetic reed switches

Actuator-Overview

BP 6 unenclosed	BP 10 unenclosed	BP 15 with plastic enclosure
		
BP 7 unenclosed	BP 15/2 unenclosed	BP 310 with plastic enclosure
		
BP 8 unenclosed		BP 34 with plastic enclosure
		

Different actuating magnets are available for the magnetic switches presented here. These must be selected according to the specific installation situation.

Magnetic reed switches

Selection table: Switching distances

Actuating magnet	BN 85-5 N or S	BN 85 N or S	BN 310 NC contact/NO contact N/S	BN 310 Bistable contact S or N	BN 325 S or N	BN 65 NC contact/NO contact N/S	BN 65 Bistable contact S or N	BN 65/V NC contact/NO contact S or N	BN 65/V Bistable contact N/S	BN 650, 12, 120, 120L NC contact/NO contact N/S	BN 650, 12, 120, 120L Bistable contact S or N	BN 650/V, 12/V, 120/V, 120L/V NC contact/NO contact S or N	BN 650/V, 12/V, 120/V, 120L/V NC contact/NO contact S or N	BNS 260
Unenclosed														
BP 6 S		2 - 12												
BP 7 S	6 - 22													
BP 8 S		2 - 10												
BP 10			0 - 5	0 - 15	0 - 10	0 - 5	0 - 15	0 - 5		0 - 5	0 - 15	5		
2 x BP 10		6 - 27	0 - 17	0 - 20	0 - 15	0 - 17	0 - 20	0 - 10	0 - 3	0 - 19	0 - 22	0 - 11	0 - 3	
2 x BP 15/2			0 - 17	0 - 22	0 - 17	0 - 17	0 - 22			0 - 19	0 - 24			
With plastic enclosure														
BP 15		5 - 22	0 - 6	0 - 17	0 - 12	0 - 6	0 - 17	0 - 6		0 - 7	0 - 19	0 - 7		
2 x BP 15		7 - 28	0 - 17	0 - 22		0 - 17				0 - 19	0 - 22			
BP 34		10 - 40	5 - 20	15 - 30	10 - 25	15 - 22	15 - 30	0 - 20	0 - 15	16 - 22	16 - 35	0 - 22	0 - 16	
BP 310-1S			0 - 10											
BP 310-1N			0 - 10											
BP 310-2S			0 - 15											
BP 310-2N			0 - 15											
BPS 260														0 - 5

All dimensions in millimeter (mm)

Note:

The specified switching distances are applicable for the actuation of individually mounted components without ferromagnetic influence. A change of the distance, positive or negative, is possible due to ferromagnetic influences. The mutual interference between multiple actuating magnets must be observed. (For special versions: diverging values possible.)

Position switches with safety function

Overview of the series



■ Z/T 196



■ Z/T 235



■ Z/T 236

Technical features

Material of the enclosure	thermoplastic	metal	thermoplastic
Number of cable entries	1	1	1
Dimensions (H x W x D)	30 x 66 x 20	30 x 63.5 x 30	30 x 58.5 x 30
Mounting details	to DIN EN 50047	to DIN EN 50047	to DIN EN 50047
Protection class	IP67	IP67	IP67
Double insulated	yes	no	yes
Number of contacts	2 ¹⁾	2 ¹⁾	2 ¹⁾
Switching principle	slow action or snap action	slow action or snap action	slow action or snap action
Switch function latching	no	optional (manual reset)	optional (manual reset)
Electrical connection ⁴⁾	L, ST	SC, L, ST	SC, L, ST
Operating current I _e / Operating voltage U _e	slow action: 6 A / 250 VAC; 4 A / 24 VDC snap action: 8 A / 250 VAC; 5 A / 24 VDC	4 A / 230 VAC; 1 A / 24 VDC	4 A / 230 VAC; 1 A / 24 VDC
Ambient temperature	-25 °C ... +80 °C	-30 °C ... +80 °C	-30 °C ... +80 °C
Mechanical life (operations)	10,000,000	20,000,000	20,000,000
AS-Interface Safety at Work	no	optional	optional
Approvals			



¹⁾ Switching function: 2 NC, 1 NC / 1 NO or 2 NO (also with different switching points - overlapping and early switching)

²⁾ Switching function: max. 3 NC, max. one as NO also possible

³⁾ Switches ZSM 476 and Z 231-01yr-1256 feature a small release force and small trip mode.

⁴⁾ SC – screw connector L – pre-assembled cable, ST – plug connector M12

					
■ Z/T 255	■ Z/T 256	■ Z/T 335	■ Z/T 336	■ Z 231-01yr-1256 ³⁾	■ ZSM 476 ³⁾














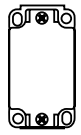
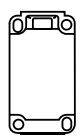
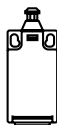
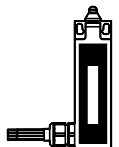
metal	thermoplastic	metal	thermoplastic	thermoplastic	thermoplastic
2	2	1	1	1	1
52 x 63.5 x 30	50 x 50.5 x 31	40.5 x 76 x 38	40.5 x 76 x 38	30 x 58 x 31	30 x 104 x 36
to DIN EN 50047	to DIN EN 50047	to DIN EN 50041	to DIN EN 50041	to DIN EN 50047	to DIN EN 50047
IP67	IP67	IP67	IP67	IP65	IP65 and IP67
no	yes	no	yes	yes	yes
2 ¹⁾	2 ¹⁾	3 ²⁾	2 ¹⁾	1	3 ²⁾
slow action or snap action	slow action or snap action	slow action or snap action	slow action or snap action	snap action	snap action
no	optional (manual reset)	no	optional (manual reset)	yes (manual reset)	yes (electrical reset)
SC, L	SC, L	SC, L, ST	SC, L, ST	SC, L	L
4 A / 230 VAC; 1 A / 24 VDC	4 A / 230 VAC; 1 A / 24 VDC	4 A / 230 VAC; 1 A / 24 VDC	4 A / 230 VAC; 1 A / 24 VDC	4 A / 230 VAC; 2.5 A / 400 VAC; 1 A / 500 VAC;	4 A / 230 VAC; 4 A / 24 VDC
-30 °C ... +80 °C	-30 °C ... +80 °C	-30 °C ... +80 °C	-30 °C ... +80 °C	-30 °C ... +80 °C	-25 °C ... +50 °C
20,000,000	20,000,000	30,000,000	30,000,000	20,000,000	150,000
no	optional	optional (with slow action contacts only)	optional (with slow action contacts only)	no	no
					

Note:

According to EN 81, safety switch must be actuated 2 mm above the switching point.

Selection table: Position switches

Actuator-Overview

Position switches		Actuating elements				
		 	 	 	 	 
	Z/T 196 • Thermoplastic enclosure • Right, left or central cable output • Mounting details to EN 50047	S	R			
	Z/T 235 • Metal enclosure • 1 cable entry • Mounting details to EN 50047	S	R	4S	4R	1R
	Z/T 236 • Thermoplastic enclosure • 1 cable entry • Mounting details to EN 50047	S	R	4S	4R	1R
	Z/T 255 • Metal enclosure • 3 cable entries • Mounting details to EN 50047	S	R	4S	4R	1R
	Z/T 256 • Thermoplastic enclosure • 2 cable entries • Mounting details to EN 50047	S	R	4S	4R	1R
	Z/T 335 • Metal enclosure • 1 cable entry • Mounting details to EN 50041	S	R			
	Z/T 336 • Thermoplastic enclosure • 1 cable entry • Mounting details to EN 50041	S	R			
	Z 231 • Thermoplastic enclosure • 1 cable entry • Mounting details to EN 50047	S				
	ZSM 476 • Thermoplastic enclosure • Right, left or central cable output • Mounting details to EN 50047	S				1R

¹⁾ The actuators of the series 2 are available in different lengths (from 24.5 to 70 mm).

²⁾ The length-adjustable actuators are available in lengths of 31...70 mm; 63.5...115.5 mm and 115.5...167.5 mm.

³⁾ This actuator is not suitable for safety applications.

Actuating elements

	3K			14H				
K	3K	4K	K4	..H	..H-1058	7H-2138-	7H-1058/-2138	10H
K	3K	4K	K4	..H	..H-1058	7H-2138-	7H-1058/-2138	10H
K	3K	4K	K4	..H	..H-1058	7H-2138-	7H-1058/-2138	10H
K	3K	4K	K4	..H	..H-1058	7H-2138-	7H-1058/-2138	10H
1K	3K			H	H-1058	7H-2138-	7H-1058/-2138	10H
1K	3K			H	H-1058	7H-2138-	7H-1058/-2138	10H
	3K		K4					

The technical specifications of the actuators depend on the series.

Detailed information for the selection of the actuators can be found at www.schmersal.net

Monitoring and locking of doors to EN 81-1/2



Range AV















■ AV 15

■ AV 20

Technical features

Material of the enclosure	metal	thermoplastic
Dimensions of the device (H x W x D)	165 x 80 x 36	165 x 80 x 37
Number of door leafs	1	1
Certified locking device	yes ¹⁾	yes ¹⁾
Emergency release	with M5 triangular key	with M5 triangular key
Auxiliary contact	optional	Yes
Protection class	IP20, IP41	IP54
Design of the actuating element	selectable (pull strap, lever, bearing block)	selectable (pull strap, lever, bearing block)
Operating current I _e / Operating voltage U _e	2 A/230 VAC; 2 A/200 VDC	2 A/230 VAC; 2 A/200 VDC
Ambient temperature	-15 °C ... +70 °C	-15 °C ... +70 °C
Approvals		

¹⁾ The certified locking device of the AV series are based on a magnetic operating principle which allows the door lock to be operated even with large tolerances of the door leaf. These door locking devices moreover are relatively insensitive to contamination and have low wear characteristics. The actuating magnets for the certified locking device are included in delivery.

			
■ AV 18	■ AV 21	■ AV 25	■ AV 28
metal	thermoplastic	metal	metal
165 x 80 x 37.5	165 x 80 x 37	285 x 80 x 36	285 x 80 x 36
1	1	2	2
No	No	Yes ¹⁾	No
with M5 triangular key	with M5 triangular key	with M5 triangular key	with M5 triangular key
optional	yes	optional	optional
IP20, IP41	IP54	IP20	IP20
selectable (pull strap, lever, bearing block)	selectable (pull strap, lever, bearing block)	pull strap	pull strap
2 A/230 VAC; 2 A/200 VDC	2 A/230 VAC; 2 A/200 VDC	2 A/230 VAC; 2 A/200 VDC	2 A/230 VAC; 2 A/200 VDC
-15 °C ... +70 °C	-15 °C ... +70 °C	-15 °C ... +70 °C	-15 °C ... +70 °C
 	 	 	 

More information:

The door locking devices are available with different locking bolt lengths (see definition X dimension, page 23). In order to comply with the requirements of EN 81-1/2, the locking bolts have a 45° bevel, right, left, top or bottom. The door locking devices are available with a standard M20 cable gland or with cable entries for single conductors.

SOL-AV 15 / AV 18 solenoid

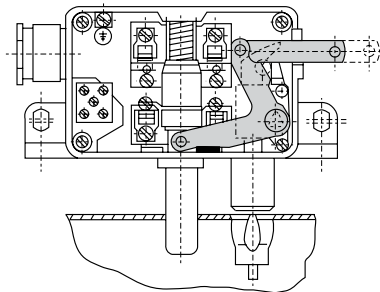
The SOL-AV 15 / AV 18 solenoid was developed for the electrical actuation of the AV 15 and AV 18 door interlocks, which have been used all over the world for many years to lock single-leaf elevator shaft doors.

In addition to the conventional mechanical actuation by roller levers, the SOL-AV 15 / AV 18 solenoid now also enables an electrical actuation of the above-mentioned door interlocks. It requires very little space and therefore offers excellent application possibilities. Mounting brackets, fork head and pull strap adapter are included in delivery.

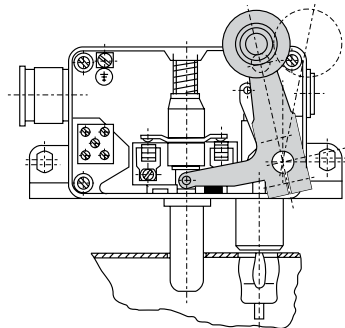
Door locks

Actuator-Overview

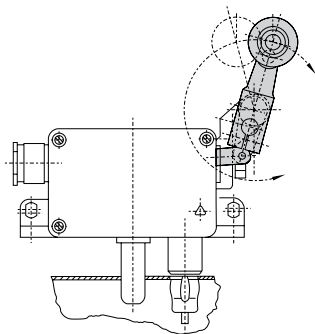
Version R with pull strap



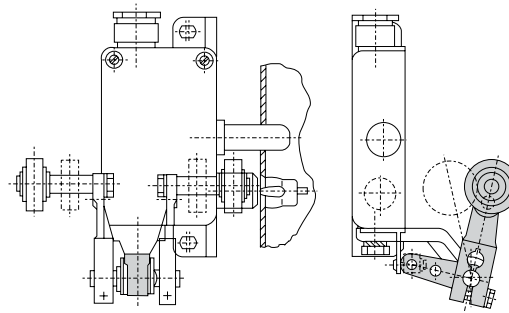
Version RH with roller lever



Version RB with roller lever and bearing block B



Version LB2 with roller lever and bearing block B2



The door locking devices can be adjusted to the individual application via a variety of actuators. Different types of lever and different lever lengths, deflections and bearing blocks are available.

More information:

When looking from the car to the device, which is integrated in the door post, the definition is as follows:

- If the door locking device is actuated from the right-hand side, it is a right-hand version
- If the door locking device is actuated from the left-hand side, it is a left-hand version

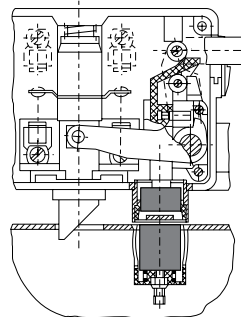
Door locks

Explanations

Definition of "certified locking devices"

According to the elevator standards, door locking devices for passenger elevators must be equipped with a certified locking devices. This protection must prevent the elevator car from being locked and hence from moving as long as the door is open.

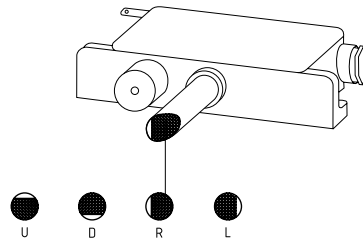
This requirement is met by the AV 15, AV 20 and AV 25 door locks with certified locking devices. The large sphere of action of the solenoids provides for a quick and smooth fitting as well as for a permanent adjustment-free use.



Definition of "locking bolt bevel"

The bevel of the locking bolt is always located on the side, where the shaft door hits the locking bolt during the closing operation.

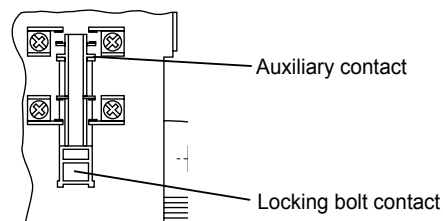
For standard hinged doors, this is below the AV door locking device, bevel U. For sliding doors, this can be either on the right-hand side or the left-hand side. Cover-side bevels are very rare, as in this case the triangular emergency release points to the elevator shaft and therefore is inaccessible from the outside.



Auxiliary contact K

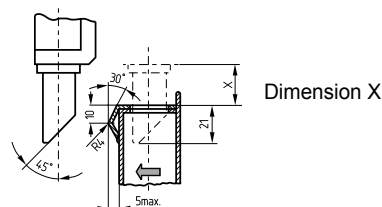
The auxiliary contact K shows the unlocked position of the bolt. In this way for example, it is possible to detect which door is unlocked or which electric door opener is actuated. The top contact is concerned.

The AV 20 and AV 21 door locking devices are equipped by default with an auxiliary contact, for AV 25, AV 28, AV 15 and AV 18, it can be ordered optionally.



Dimension X

The total length of locking bolt is the sum of the required engagement depth into the door leaf of 21 mm and dimension X. Dimension X represents the air gap between the case of the door locking device and the door leaf.



Door contacts

Range AZ and BNS 260



■ AZ 05







■ AZ 06



■ AZ 07

Technical features

Actuator	selectable	selectable	selectable
Longitudinal mounting holes for fine adjustment	no	no	yes
Fixing screws	allen	allen	allen
Protection class	IP00	IP20	IP20
Double insulated 	no	no	no
Contact design	contact pins in the switch ³⁾	contact pin in actuator bridge	contact pin in actuator bridge
Cable entry	single conductor entry	single conductor entry	single conductor entry
Operating current I_e / Operating voltage U_e	2A / 230 VAC, 1A / 200 VDC	2A / 230 VAC, 2A / 200 VDC	2A / 230 VAC, 2A / 200 VDC
Ambient temperature	-15 °C ... +70 °C	-15 °C ... +70 °C	-15 °C ... +70 °C
Approvals			

¹⁾ The AZ 15-zo door contact is suitable for use in dusty and wet environments.

²⁾ in connection with safety-monitoring module AES 9107

³⁾ Contact pins in the switch allow the actuator to be applied in small radii and allow greater mobility for the actuator when closed.

⁴⁾ optional integrated plug

⁵⁾ TÜV expert opinions

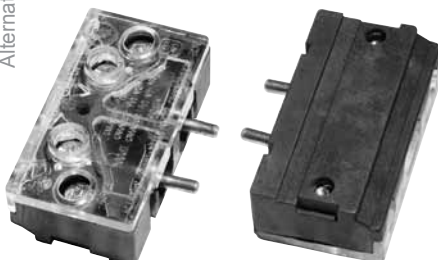
					
■ AZ 051 / 052 / 053	■ AZ 061 / 062 / 063	■ AZ 08	■ AZ 14-1	■ AZ 15-zo ¹⁾	■ BNS 260 ²⁾
selectable no	selectable no	selectable yes	selectable yes	included yes	BPS 260 no
self-forming PoziDriv screws	self-forming PoziDriv screws	not included	not included	not included	not included
IP00	IP20	IP20	IP20	IP67	IP67
no	no	no	no	yes	no
contact pins in the switch ³⁾	contact pin in actuator bridge	contact pin in actuator bridge	contact pin in actuator bridge	actuating bracket (without electrical function)	contactless via magnet
single conductor entry plastic-sheathed cable	single conductor entry plastic-sheathed cable	single conductor entry	sheathed cable	sheathed cable	sheathed cable with connecting cable ⁴⁾
2A / 230 VAC, 1A / 200 VDC	2A / 230 VAC, 2A / 200 VDC	2A / 230 VAC, 2A / 200 VDC	2A / 230 VAC, 2A / 200 VDC	2A / 230 VAC, 0.5A / 200 VDC	400mA / 75 VDC (without LED), 10mA / 24 VDC (with LED)
-30 °C ... +70 °C	-30 °C ... +70 °C	-30 °C ... +80 °C	-30 °C ... +70 °C	-30 °C ... +80 °C	-25 °C ... +70 °C
					

More information:

The Series AZ door contacts have self-extinguishing thermoplastic enclosures. All screws are captive and can be supplied in different lengths on request. Self-forming PoziDriv screws can be used instead of Allen screws.

The door contacts

AZ 05x and AZ 06x: overview

AZ 061	AZ 062	AZ 063
<p>Standard</p> 	<p>Standard</p> 	<p>Standard</p> 
AZ 051	AZ 052	AZ 053
<p>Alternative</p>  <ul style="list-style-type: none"> ■ Enclosure height 16 mm ■ Without cable duct ■ Self-forming M4 Pozidrive screws 	<p>Alternative</p>  <ul style="list-style-type: none"> ■ Enclosure height 19 mm ■ Bottom-side cable duct ■ Self-forming M4 Pozidrive screws 	<p>Alternative</p>  <ul style="list-style-type: none"> ■ Enclosure height 19 mm ■ Bottom- and rear-side cable duct ■ Self-forming M4 Pozidrive screws

Note:

The rear of the door contact provides wiring possibilities for single conductors and for sheathed cables. The cable insulation is led into the enclosure through largely dimensioned openings.

Inspection boxes and manual controller

Inspection boxes (elevators)



- Design
 - according to customer specification
 - according to different national regulations
- Supply
 - labelled and assembled
 - labelled and assembled and wired
 - tested, with customer nameplate and number
- Standard-inspect switches as cam switches with positive break
- Button, standard version
- Switch element for DC 24 V and AC 230 V
- Button with recessed actuator against accidental operation
- Buttons and switches with guard collar against accidental operation

Inspection boxes (elevators/North America)



- Design
 - according to customer specification
 - according to different national regulations
- Supply
 - labelled and assembled
 - labelled and assembled and wired
 - tested, with customer nameplate and number
- Standard-inspect switches as cam switches with positive break
- Button, standard version
- Buttons and switches with guard collar against accidental operation
- With lamp and GFCI according to US code
- Enclosure and components with UL / CSA certification for USA and Canada
- With UL/CSA assembly inspection available on request

Manual controllers for elevators and escalators



- Design
 - according to customer specification
 - according to different national regulations
- Supplied
 - labelled, assembled and wired,
 - tested, with customer type plate and numbering
- Minimum dimensions
- Ergonomic design
- Button, standard version
- Button with recessed actuator against accidental operation

Command devices for shaft and elevator control cabinets



- Enclosure
- Button
- Switch
- Indicator lamp

Not all products in this folder are available in all countries. Please check local availability with your sales contact.
Detailed information about the products can be found at www.schmersal.net

Floor displays and voice announcers

SafeLine voice announcer VA4

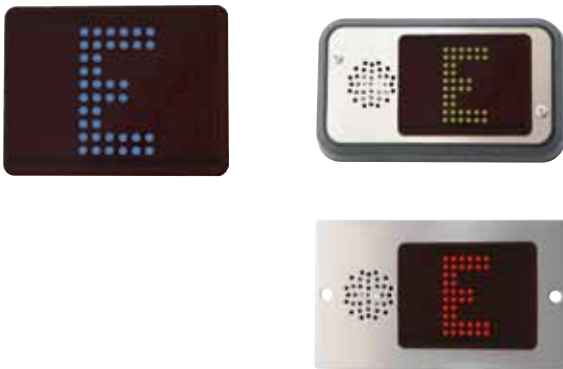
Voice announcer for 32 floors and 8 standard texts



- Inputs binary/decimal/Grey code
- 240s voice memory for WAV files
- Inputs electrically insulated
- Positive and negative logic
- Standard announcements via download (free)
- Programming with Safeline Pro Software (free)
- Separate loudspeaker (VA accessory, order separately)

SafeLine floor displays FD4

Floor displays with integrated voice announcer



- Inputs binary/decimal/Grey code
- 60s voice memory for WAV files
- Easy mounting with the snap-on clip
- Recessed or surface mounted unit, with optional integrated loudspeakers
- Loudspeaker as accessory
- Display available in red, blue, yellow or green
- Device displays floors, direction arrow and alternating texts
- Programming with Safeline Pro Software (free)

SafeLine floor displays FD4-CAN

Floor displays with integrated voice announcer and I/Os



- Connection via CAN bus
- Integrated I/O-card with 4 programmable inputs and outputs
- Micro-SD card for storing voice and CAN configuration
- Micro USB connection for configuration
- Loudspeaker as accessory
- Display available in red, blue, yellow or green
- Device displays floors, direction arrow and alternating texts
- Programming with Safeline Pro Software (free)



Not all products in this folder are available in all countries. For more information on the safeLine products, contact +49 (0)2 02 / 64 74 351 or send us an e-mail to safeline@schmersal.com.

Emergency call systems

SafeLine™

Features

- Reliable
- Compliant when switching over to VoIP and telephone networks without integrated power supply
- Good value for money
- Compliant with EN 81-28 and -70
- Compatible with most call centres
- Programming via PC or remotely via telephone connection

SafeLine Emergency call system SLMX2

Unit for one call station per elevator



- Very compact
- Icons according to EN 81-70
- Battery monitor possible
- PSTN optional GSM
- Up to 9 units per line
- Free self-test according to EN 81-28
- Many mounting options
- A wide range of accessories is available

SafeLine SL 3000

Units for up to 3 call stations per elevator



- Central control unit with battery and monitor integrated
- Call stations for elevator car, pit and machine room
- PSTN or GSM
- Up to 9 units per line
- Different mounting options for the call station
- Free self-test according to EN 81-28
- Many other options available

Not all products in this folder are available in all countries. For more information on the safeLine products, contact +49 (0)2 02 / 64 74 351 or send us an e-mail to safeline@schmersal.com.

SafeLine SL 6

Digital bus-based emergency call system - New functionalities with pioneering technology – The safe line



- Central control unit with battery and monitor
- 2-wire transmission, via CANbus
- Interference proof, no shielded wire is necessary
- Max. 6 call stations for elevator car, pit and machine room etc.
- Fire service call stations and intercom integrated
- USB interface for programming
- Fixed network (PSTN) or GSM card, in parallel also
- CANopen Lift interface option
- Many options available



SafeLine Call-Center SLCC

Call centres for small/medium sized applications



- Receives and documents alarms
- Receives and monitors test calls in compliance with EN 81-28
- Cost-effective solution for service companies and owners of large elevator fleets running their own emergency call centre
- Automatic notification via SMS or email in the absence of test alarms
- Easy to operate
- Clear layout on screen

Additional SafeLine modules

GSM modules and emergency power supply



- GSM module replaces the telephone line
- Low connection costs
- Cheap and easy to install
- Battery backup for operation during power failures



variants

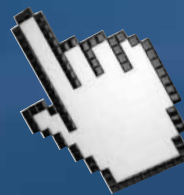
- GSM-Module
- Battery Module
- GSM module with battery

Not all products in this folder are available in all countries. For more information on the safeLine products, contact +49 (0)2 02 / 64 74 351 or send us an e-mail to safeline@schmersal.com.



Typical Schmersal.
Always there for you, the
"Elevators and Escalators" industry portal at:

www.aufzug.schmersal.com





"Plug and switch": manufactured according to requirement

Focus on core areas of expertise – this production strategy is being pursued by more and more elevator companies. They rely on partners and suppliers who can also introduce their own core areas of expertise to build powerful and cost-efficient production networks. It is this trend which is being shaped by the Schmersal Group so that customers in the elevator and escalator industry can be offered pre-assembled devices.

We have access to comprehensive know-how in the development, production and assembly of customer-specific switching devices for automation technology. This means that service is clearly one of our core areas of expertise – and this now also applies to elevator and escalator technology.

Supply according to customer requirements

We will deliver the required switchgears exactly as you need them -

- With actuators assembled ready to install
- With cable gland and/or connector
- Includes mounting hardware (loose or pre-assembled as a kit)
- With markings / labels on connectors, cables and devices
- Packaged according to your requirements
- With customised labelling on the packaging

Many advantages for elevator and escalator manufacturers

From the perspective of the elevator manufacturer, pre-assembly has many advantages. The assembly time is considerably shortened since ready-to-install switches are now available. Work such as cable assembly and labelling are no longer necessary. The coordination of an external service provider for cable assemblies is also unnecessary. This saves time and simplifies the logistics, especially since we also offer just-in-time delivery to the factory.

Since assembly is integrated into the Schmersal Group quality management system, the customer can expect the highest quality. The pre-assembled units are supplied with CCC, UL or other certifications.

Another advantage is that the Schmersal group has an international presence - we deliver the pre-assembled switchgear from production sites on three continents all across the world.

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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 1,200 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
- Medicine/pharmaceuticals
- Machine tools
- Wood working
- Construction machines and cranes
- Renewable energy sources
- Automotive
- Chemical 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

All data mentioned in this flyer have been carefully checked.
Technical modifications and errors excepted.

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