

Safety Switches with Separate Actuator, Metal Housing **EUCHNER**

Selection table for safety switches TZ with guard locking and guard lock monitoring

Release feature, front	
HE	Mechanical release can be sealed
E	Mechanical release cannot be sealed
HD	Mechanical release for triangular key acc. to DIN 22417 (latching)
ND	Emergency release on the front (pushbutton)
NR	Emergency unlocking on the front (rotary knob can be sealed)
○	Without manual release feature
Release feature, rear	
FS	Escape release on the rear (key button)
FD	Escape release on the rear (pushbutton/button without key)
Version	
SB	Protective plate, tamper protection on the switch head
Enabling switch connection	
BD4	Plug connector 4-pin
RC12	Plug connector 12-pin
Connection	
M	Thread M20 x 1.5 for cable glands
SR6	Plug connector 6-pin + PE
MR8	Plug connector 7-pin + PE
MR10	Plug connector 9-pin + PE
SR11	Plug connector 11-pin + PE
MR12	Plug connector 11-pin + PE
RC18	Plug connector 18-pin + PE
Switching element	
Two contacts	2 x (1 NC ⊖ + 1 NO)
Four contacts	2 x (4 NC ⊖) or 1 x (3 NC ⊖ + 1 NO) + 1 x (2 NC ⊕ + 2 NO)



Manual release			Enabling switch		Connection							Switching element		With version	Page							
HE	E	HD	ND	NR	○	FS	FD	SB	BD4	RC12	M	SR6	MR8	MR10	SR11	MR12	RC18	Two contacts	Four contacts			
●											●							●	●	C1925	62	
●												●						●		C1638	64	
●																●			●	C1924	66	
●																	●		●	C1826	63	
●															●			●	●	C1933	65	
●						●					●							●	●	C1815 / C1828	76	
●						●									●		●	●	●	C1815 / C1828	77	
●							●				●					●		●	●	C1684	80	
●							●								●			●	●	C1684	81	
●								●			●							●	●		68	
●								●			●				●			●	●	C1677	69	
●								●			●						●		●		70	
●								●			●								●		C2082	78
●								●			●								●		C2140	79
●	●																●		●		C1903	67
	●	●									●		●					●	●		C2159	71
		●									●							●	●		C1816 / C1823	72
		●													●		●	●	●		C1816 / C1823	73
			●					●							●			●	●			74
			●					●									●		●		C1937	75
			●					●									●		●		C2123	82
			●					●			●						●		●		C1623 / C2100	83
				●				●						●					●			84
				●				●								●			●		C1902 / C1971	85
				●				●	●			●						●			C1662	86
				●				●		●								●	●		C1803	87

Safety switch TZ with guard locking and guard lock monitoring



- ▶ Without mechanical release
- ▶ Protective plate for switch head optional
- ▶ Two LEDs, red and green
- ▶ Plug connector optional
- ▶ Actuating head fitted left or right



Protective plate for switch head
Makes it more difficult to tamper with the switch.

Solenoid operating voltage and LED function display

The following voltage ranges are available:

- ▶ 24 V AC/DC -15%, +10%
- ▶ 110 V AC -15%, +10%

Guard locking types

TZ1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

Switching elements (see also Page 13/14)

SK For monitoring the door/actuator position
ÜK For monitoring the guard locking (built-in solenoid)

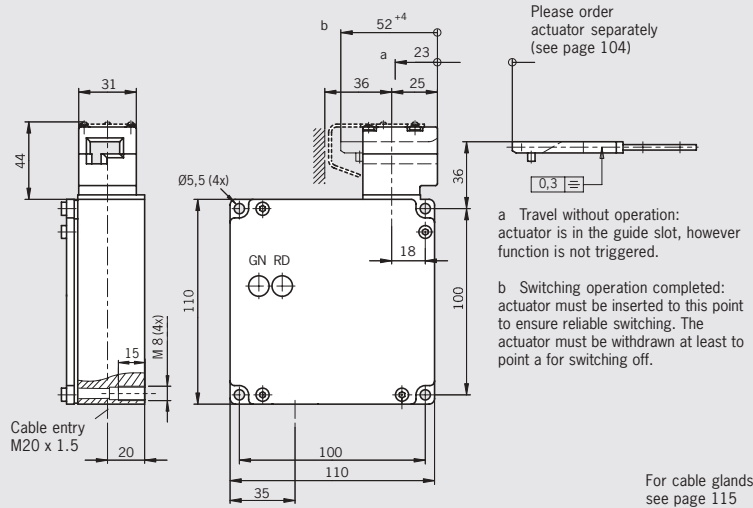
For combinations available see ordering table:

- ▶ **528H** Slow-action switching element
1 NC ⊖ + 1 NO
- ▶ **2121H** Slow-action switching element
4 NC ⊖
- ▶ **2131H** Slow-action switching element
3 NC ⊖ + 1 NO
- ▶ **3131H** Slow-action switching element
2 NC ⊖ + 2 NO

Cable entry M20 x 1.5

Dimension drawings

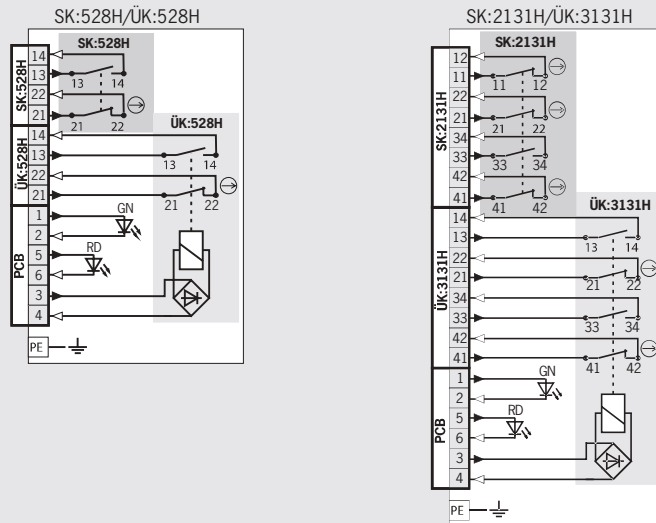
Actuating head on left is a mirror image



For cable glands see page 115

Wiring diagrams

Actuator inserted and locked



Ordering table

Series	Connection	Guard locking	Switch head	Switching element	Version	Red cover		Black cover	
						24 V	24 V	24 V	110 V
TZ	M20x1.5	1	Mechanical	LE Left	SK: 528H, 1 NC ⊖ + 1 NO	Without mechanical release,		083 246	On request
					ÜK: 528H, 1 NC ⊖ + 1 NO	with protective plate		TZ1LE024M-C1623	
					SK: 2131H, 3 NC ⊖ + 1 NO	Without mechanical release,		085 170	089 466
				ÜK: 3131H, 2 NC ⊖ + 2 NO	with protective plate		TZ1LE024MVAB-C1623	TZ1LE110MVAB-C1623	
				RE Right	SK: 2131H, 3 NC ⊖ + 1 NO	Without mechanical release	096 052		
					ÜK: 3131H, 2 NC ⊖ + 2 NO	Without mechanical release	TZ1LE024MVAB-RC2100		
SK: 528H, 1 NC ⊖ + 1 NO	Without mechanical release,		083 247		On request				
TZ	M20x1.5	1	Mechanical	LE Left	ÜK: 528H, 1 NC ⊖ + 1 NO	with protective plate		TZ1RE024M-C1623	
					SK: 2131H, 3 NC ⊖ + 1 NO	Without mechanical release,		085 171	088 063
					ÜK: 3131H, 2 NC ⊖ + 2 NO	with protective plate		TZ1RE024MVAB-C1623	TZ1RE110MVAB-C1623
				RE Right	SK: 2131H, 3 NC ⊖ + 1 NO	Without mechanical release	096 051		
					ÜK: 3131H, 2 NC ⊖ + 2 NO	Without mechanical release	TZ1RE024MVAB-RC2100		
					SK: 528H, 1 NC ⊖ + 1 NO	Without mechanical release,			

Please turn over

For safety precautions see page 164
For technical data see page 139

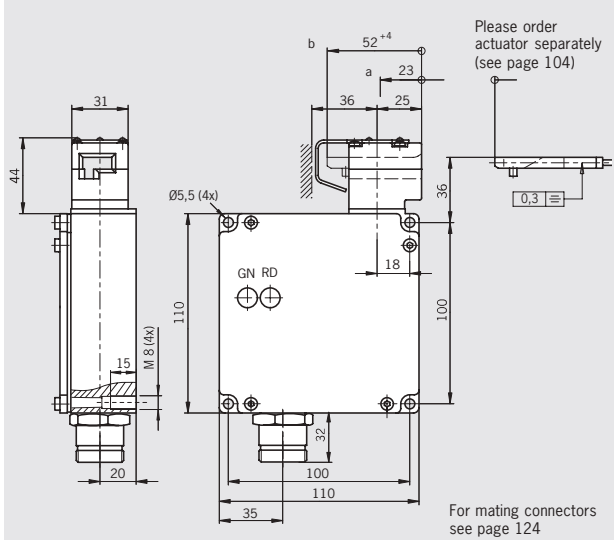
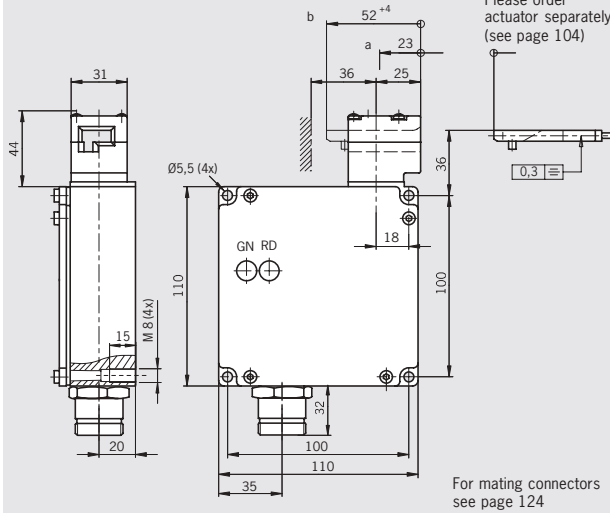




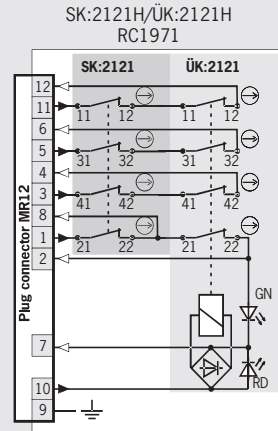
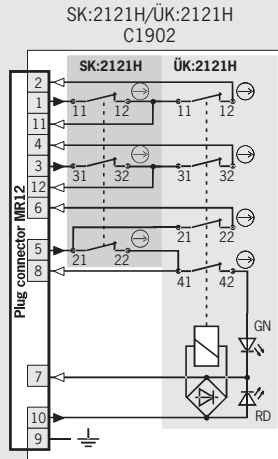
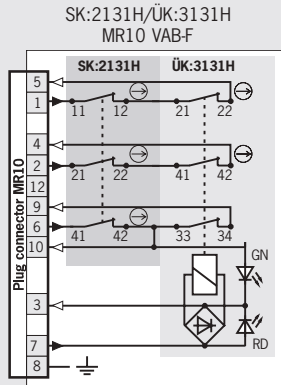
Plug connector MR10 9-pin + PE

Plug connector MR12 11-pin + PE

Dimension drawings Actuating head on left is a mirror image



Wiring diagrams Actuator inserted and locked



Ordering table

Series	Connection	Guard locking	Switch head	Switching element	Version	Red cover
						24 V
TZ	MR10 Plug connector	1 Mechanical	LE Left	SK: 2131H , 3 NC ⊖ ÜK: 3131H , 2 NC ⊖ + 1 NO	Without mechanical release	095 904 ¹⁾ TZ1LE024MVAB-F
			RE Right	SK: 2131H , 3 NC ⊖ ÜK: 3131H , 2 NC ⊖ + 1 NO	Without mechanical release	095 905 ¹⁾ TZ1RE024MVAB-F
	MR12 Plug connector	Mechanical	LE Left	SK: 2121H , 4 NC ⊖ ÜK: 2121H , 4 NC ⊖	Without mechanical release, with protective plate	079 692 TZ1LE024BHA-C1902
					C1971 Alternative wiring, without mechanical release, with protective plate	085 569 TZ1LE024BHAVFG-RC1971
			RE Right	SK: 2121H , 4 NC ⊖ ÜK: 2121H , 4 NC ⊖	Without mechanical release, with protective plate	079 693 TZ1RE024BHA-C1902
					C1971 Alternative wiring, without mechanical release, with protective plate	085 570 TZ1RE024BHAVFG-RC1971

1) No BG approval

Safety switch TZ with guard locking and guard lock monitoring



- ▶ Without mechanical release
- ▶ Two LEDs, red and green
- ▶ Plug connector for switch connection
- ▶ Plug connector for enabling switch
- ▶ Actuating head fitted left or right



Solenoid operating voltage and LED function display

The following voltage range is available:

- ▶ 24 V AC/DC -15%, +10%

Guard locking types

TZ1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

TZ2 Open-circuit current principle, guard locking by applying voltage to the solenoid. Release by spring force.

Switching elements (see also Page 13/14)

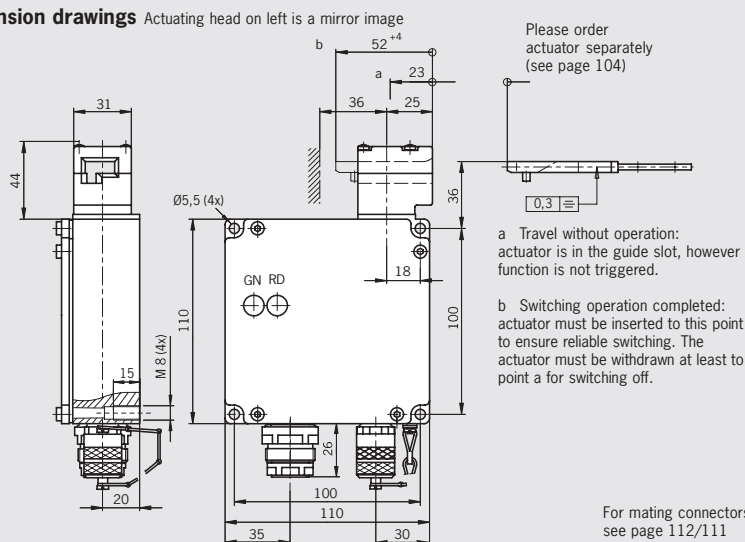
SK For monitoring the door/actuator position
ÜK For monitoring the guard locking (built-in solenoid)

For combinations available see ordering table:

- ▶ **528H** Slow-action switching element
1 NC ⊖ + 1 NO
- ▶ **2131H** Slow-action switching element
3 NC ⊖ + 1 NO
- ▶ **3131H** Slow-action switching element
2 NC ⊖ + 2 NO

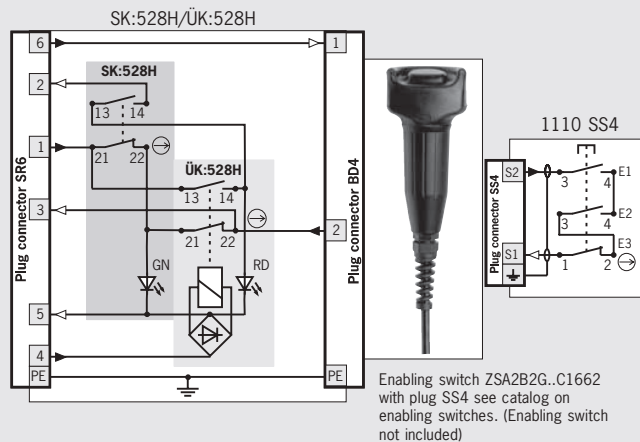
Plug connector SR6 and BD4 (enabling switch)
6-pin + PE / 4-pin

Dimension drawings



For mating connectors see page 112/111

Wiring diagrams



Please turn over

Ordering table

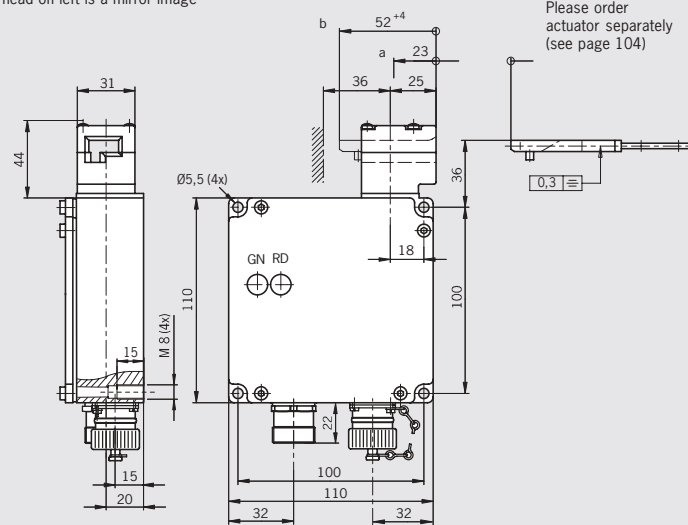
Series	Connection	Enabling switch connection	Guard locking	Switch head	Switching element	Version	Black cover
							24 V
TZ	SR6 Plug connector	Enabling switch plug BD4	1 Mechanical	LE	SK: 528H, 1 NC ⊖ + 1 NO	Without	070 527
				Left	ÜK: 528H, 1 NC ⊖ + 1 NO	mechanical release	TZ1LE024SR6-C1662
				RE	SK: 528H, 1 NC ⊖ + 1 NO	Without	054 781
			2 Electrical	Right	ÜK: 528H, 1 NC ⊖ + 1 NO	mechanical release	TZ1RE024SR6-C1662
				LE	SK: 528H, 1 NC ⊖ + 1 NO	Without	059 307
				Left	ÜK: 528H, 1 NC ⊖ + 1 NO	mechanical release	TZ2LE024SR6-C1662
Right	SK: 528H, 1 NC ⊖ + 1 NO	Without	059 305				
Left	ÜK: 528H, 1 NC ⊖ + 1 NO	mechanical release	TZ2RE024SR6-C1662				





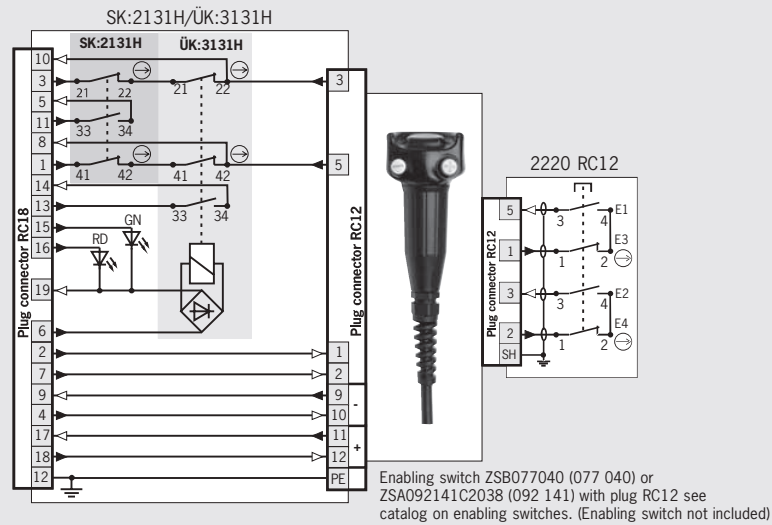
Plug connector RC18 and RC12 (enabling switch)
18-pin + PE / 12-pin

Dimension drawings Actuating head on left is a mirror image



For mating connector with option C1825 see page 111/113

Wiring diagrams Actuator inserted and locked



Ordering table


Series	Connection	Enabling switch connection	Guard locking	Switch head	Switching element	Version	Black cover
							24 V
TZ	RC18 ¹⁾ Plug connector	Enabling switch plug RC12	1 Mechanical	LE	SK: 2131H, 3 NC ⊖ + 1 NO	Without	091 062
				Left	ÜK: 3131H, 2 NC ⊖ + 2 NO	mechanical release	TZ1LE024RC18VAB-C1803
				RE	SK: 2131H, 3 NC ⊖ + 1 NO	Without	091 063
			2 Electrical	Right	ÜK: 3131H, 2 NC ⊖ + 2 NO	mechanical release	TZ1RE024RC18VAB-C1803
				LE	SK: 2131H, 3 NC ⊖ + 1 NO	Without	075 955
				Left	ÜK: 3131H, 2 NC ⊖ + 2 NO	mechanical release	TZ2LE024RC18VAB-C1803
Right	SK: 2131H, 3 NC ⊖ + 1 NO	Without	077 149				
Right	ÜK: 3131H, 2 NC ⊖ + 2 NO	mechanical release	TZ2RE024RC18VAB-C1803				


1) **Important:** use suitable mating connector with option C1825!


Safety switch TZ with guard locking and guard lock monitoring





The technical data on switches, switching elements and guard locking apply to all connections. Further technical data are given for the connection selected.

Switch			
Parameter		Value	Unit
Housing material		Anodized die-cast alloy	
Mechanical life		2 x 10 ⁶ operating cycles	
Ambient temperature		- 25 ... + 80	°C
Weight		Approx. 1.2	kg
Max. approach speed		20	m/min
Actuating force		35	N
Extraction force		30	N
Retention force		10	N
Locking force, max.		2000	N
Locking force F _{Zl} in accordance with test principles GS-ET-19		1500	N

Switching element			
Parameter		Value	Unit
Switching principle		Slow-action switching element	
Switching elements with 2 switching elements		SK: 528H / ÜK: 528H 1 NC + 1 NO / 1 NC + 1 NO	
Switching elements with 4 switching elements		SK: 2131H / ÜK: 3131H / SK: 2121H / ÜK: 2121H 3 NC + 1 NO / 2 NC + 2 NO / 4 NC / NC	
Switching current, min., at 24 V		1	mA
Rated impulse withstand voltage U _{imp}		2.5	kV
Contact material		Silver alloy, gold flashed	

Guard locking			
Parameter		Value	Unit
Solenoid operating voltage	AC/DC 24 V +10/-15%	AC 110 V +10/-15% / AC 230 V +10/-15%	
Duty cycle ED		100	%
Power consumption		7	W

Connection, cable entry M20 x 1.5			
Parameter		Value	Unit
Connection		Screw terminal	
Version		M20 x 1.5	
Conductor cross-section max.		per wire 1.5 mm ²	
Degree of protection acc. to IEC 60529	IP 67	IP 65: With escape release TZ...C1815, TZ...C1828 With emergency release TZ...C1816, TZ...C1823	
Rated insulation voltage U _i		250	V AC/DC
Conventional thermal current I _{th}		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category to IEC 60947-5-1	AC15	I _e 4 A U _e 230 V	
	DC13	I _e 4 A U _e 24 V	

Connection, plug connector RC18			
Parameter		Value	Unit
Connection		Plug connector	
Version		RC18 (18-pin + PE)	
Degree of protection according to IEC 60529		IP 65 ¹⁾	
Rated insulation voltage U _i		110	V AC/DC
Conventional thermal current I _{th}		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category to IEC 60947-5-1	AC15	I _e 4 A U _e 110 V	
	DC13	I _e 4 A U _e 24 V	

1) Screwed tight with the related plug connector (see page 113)

Connection, plug connector SR6



Parameter		Value	Unit
Connection		Plug connector	
Version		SR6 (6-pin + PE)	
Degree of protection according to IEC 60529		IP 65 ¹⁾	
Rated insulation voltage U_i		250	V AC/DC
Conventional thermal current I_{th}		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category to IEC 60947-5-1	AC15	I_e 4 A U_e 230 V	
	DC13	I_e 4 A U_e 24 V	

1) Screwed tight with the related plug connector (see page 112)

Standard wiring TZ...SR6

The green LED indicates the state of the safety circuit and the red LED the state of the monitoring circuit.

Green only: Safety circuit closed
Red only: Actuator unlocked, safety circuit open

LED		Actuator		Safety circuit	
Red	Green	Locked	Unlocked	Closed	Open
ON	ON		X	X	
ON	OFF		X		X
OFF	ON	X		X	
OFF	OFF	Not defined or no power			

The exact states of the safety circuit and the actuator can be seen in the adjacent table for the safety switch TZ...SR6.

Connection, plug connector SR11



Parameter		Value	Unit
Connection		Plug connector	
Version		SR11 (11-pin + PE)	
Degree of protection according to IEC 60529		IP 65 ¹⁾	
Rated insulation voltage U_i		50	V AC/DC
Conventional thermal current I_{th}		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category to IEC 60947-5-1	AC15	I_e 4 A U_e 50 V	
	DC13	I_e 4 A U_e 24 V	

Connection, plug connector MR8



Parameter		Value	Unit
Connection		Plug connector	
Version		MR8 (7-pin + PE)	
Degree of protection according to IEC 60529		IP 65 ¹⁾	
Rated insulation voltage U_i		250	V AC/DC
Conventional thermal current I_{th}		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category to IEC 60947-5-1	AC15	I_e 4 A U_e 230 V	
	DC13	I_e 4 A U_e 24 V	

Connection, plug connector MR10



Parameter		Value	Unit
Connection		Plug connector	
Version		MR10 (9-pin + PE)	
Degree of protection according to IEC 60529		IP 65 ¹⁾	
Rated insulation voltage U_i		250	V AC/DC
Conventional thermal current I_{th}		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category to IEC 60947-5-1	AC15	I_e 4 A U_e 230 V	
	DC13	I_e 4 A U_e 24 V	

Connection, plug connector MR12



Parameter		Value	Unit
Connection		Plug connector	
Version		MR12 (11-pin + PE)	
Degree of protection according to IEC 60529		IP 65 ¹⁾	
Rated insulation voltage U_i		230	V AC/DC
Conventional thermal current I_{th}		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category to IEC 60947-5-1	AC15	I_e 4 A U_e 60 V	
	DC13	I_e 4 A U_e 24 V	

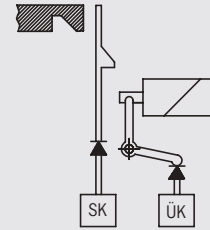
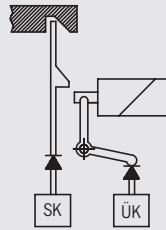
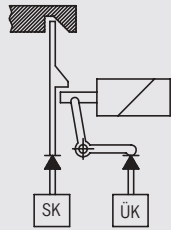
Switching functions TZ

Actuator:
Switching
position:

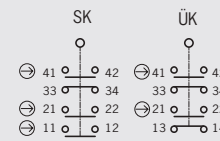
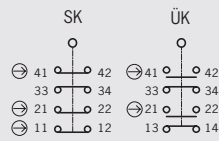
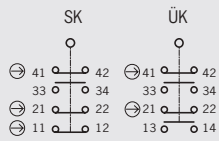
Inserted
locked

Inserted
not locked

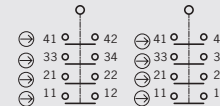
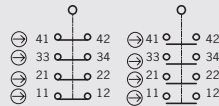
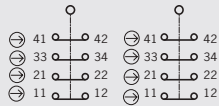
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not locked



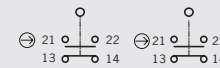
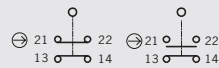
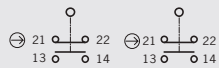
SK ÜK
SK 2131H
ÜK 3131H



SK ÜK
SK 2121H
ÜK 2121H



SK ÜK
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ÜK 528H



SK ÜK
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ÜK 538H

