

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



- ▶ Mechanical release on the front
- ▶ Two LEDs, red and green
- ▶ Plug connectors
- ▶ Actuating head fitted left or right



Mechanical release

Is used for releasing the guard locking with the aid of a tool.

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.

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
- ▶ **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

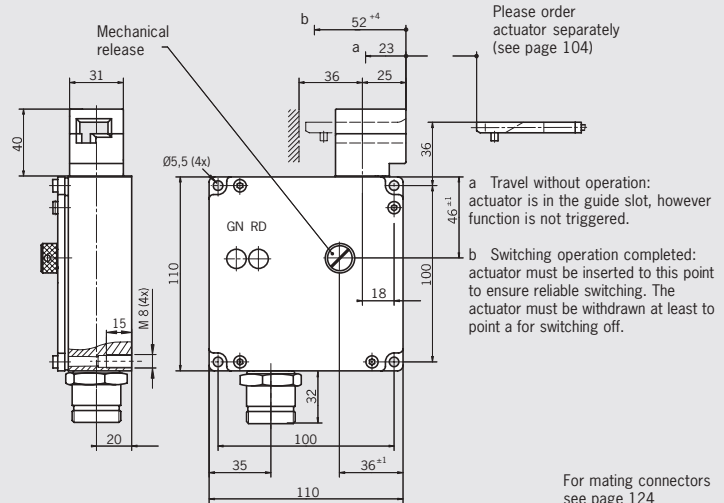
Plug connector MR8
7-pin + PE



Plug connector MR10
9-pin + PE

Dimension drawings

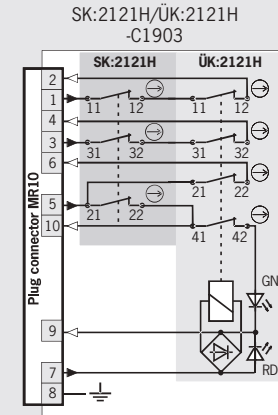
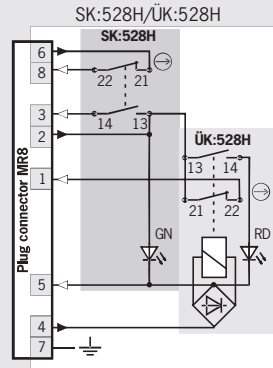
Actuating head on left is a mirror image



For mating connectors see page 124

Wiring diagrams

Actuator inserted and locked



Ordering table


Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover		Red cover
						24 V	110 V	24 V
TZ	MR8 Plug connector	1 Mechanical	LE	SK: 528H, 1 NC ⊖ + 1 NO	Mechanical release cannot be sealed	054 964	074 917	On request
			RE	SK: 528H, 1 NC ⊖ + 1 NO	Mechanical release cannot be sealed	059 920	074 916	On request
		2 Electrical	LE	SK: 2121H, 4 NC ⊖	Mechanical release cannot be sealed	On request	On request	082 095
			RE	SK: 2121H, 4 NC ⊖	Mechanical release cannot be sealed	On request	On request	082 096
	MR10 Plug connector	1 Mechanical	LE	SK: 528H, 1 NC ⊖ + 1 NO	Mechanical release cannot be sealed	On request	On request	TZ1LE024BHA-C1903
			RE	SK: 528H, 1 NC ⊖ + 1 NO	Mechanical release cannot be sealed	On request	On request	TZ1RE024BHA-C1903
		2 Electrical	LE	SK: 2121H, 4 NC ⊖	Mechanical release cannot be sealed	On request	On request	082 083
			RE	SK: 2121H, 4 NC ⊖	Mechanical release cannot be sealed	On request	On request	082 084







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			Value	Unit
Parameter				
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		 	Value	Unit
Parameter				
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		 	Value	Unit
Parameter				
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			Value	Unit
Parameter				
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			le 4 A U _e 230 V / DC13 / le 4 A U _e 24 V	

Connection, plug connector RC18			Value	Unit
Parameter				
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			le 4 A U _e 110 V / DC13 / le 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	

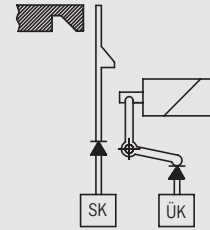
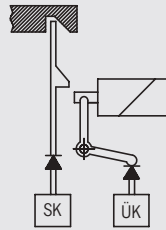
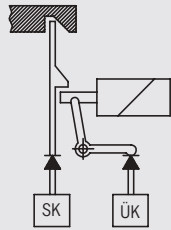
Switching functions TZ

Actuator:
Switching
position:

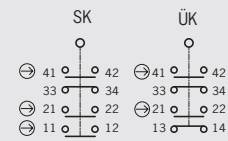
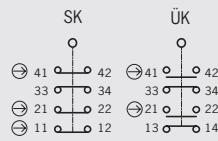
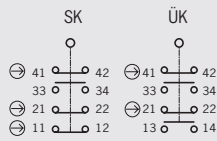
Inserted
locked

Inserted
not locked

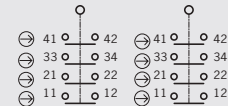
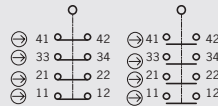
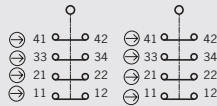
Removed
not locked



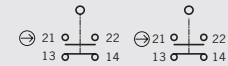
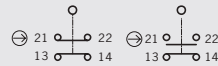
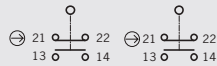
SK ÜK
SK 2131H
ÜK 3131H



SK ÜK
SK 2121H
ÜK 2121H



SK ÜK
SK 528H
ÜK 528H



SK ÜK
SK 538H
ÜK 538H

