

## 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)
<b>ND</b>	<b>Emergency release on the front (pushbutton)</b>
NR	Emergency unlocking on the front (rotary knob can be sealed)
O	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	<b>ND</b>	NR	O	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
				•				•			•						•		•		83
				•				•						•					•	C1623 / C2100	83
				•				•						•					•		84
				•				•			•						•		•	C1902 / C1971	85
				•				•	•			•						•	•	C1662	86
				•				•		•								•	•	C1803	87

## Safety switch TZ with guard locking and guard lock monitoring



- ▶ Emergency release on the front with pushbutton
- ▶ Two LEDs, red and green
- ▶ Plug connector optional
- ▶ Actuating head fitted left or right



### Emergency release

Is used for the manual release of the guard locking without tools. It is possible to remove the disable and return the switch to its operating state by hand without tools.

### 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

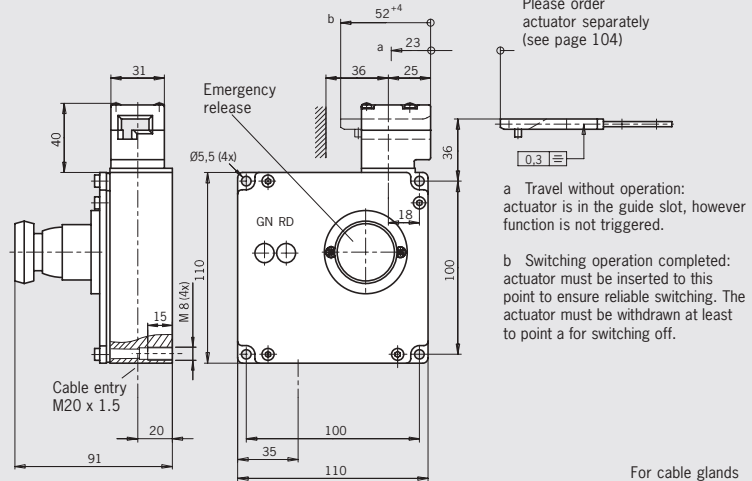
**ÜK** For monitoring the guard locking (built-in solenoid)

For combinations available see ordering table:

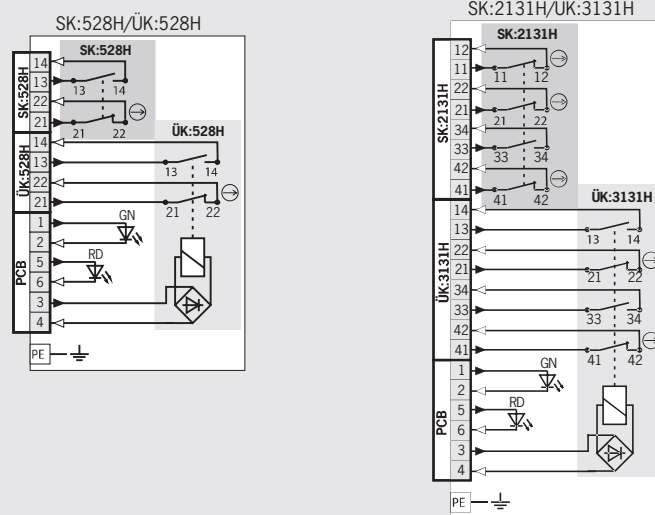
- ▶ **528H** Slow-action switching element  
1 NC ⊖ + 1 NO
- ▶ **2131H** Slow-action switching element  
3 NC ⊖ + 1 NO
- ▶ **3131H** Slow-action switching element  
2 NC ⊖ + 2 NO

### Cable entry M20 x 1.5

### 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	Black cover
						24 V
TZ	M20x1.5	1 Mechanical	LE	SK: 528H, 1 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>089 477</b> TZ1LE024M-C1816
			RE	SK: 528H, 1 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>096 901</b> TZ1RE024M-C1816
			LE	SK: 528H, 1 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>087 992</b> TZ2LE024M-C1816
			RE	SK: 528H, 1 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>087 993</b> TZ2RE024M-C1816
		2 Electrical	LE	SK: 2131H, 3 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>089 455</b> TZ2LE024MVAB-C1823
			RE	SK: 2131H, 3 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>089 993</b> TZ2RE024M-C1816
			LE	ÜK: 528H, 1 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>087 992</b> TZ2LE024M-C1816
			RE	ÜK: 528H, 1 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>087 993</b> TZ2RE024M-C1816
				SK: 3131H, 2 NC ⊖ + 2 NO	Emergency release (blue pushbutton)	<b>089 456</b> TZ2RE024MVAB-C1823

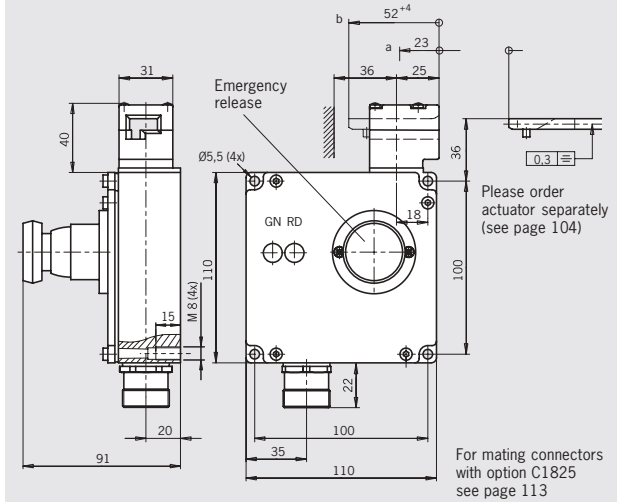
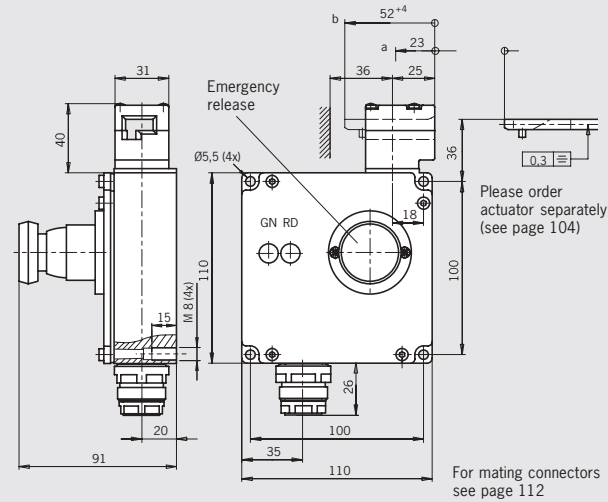


## Plug connector SR11 11-pin + PE

## Plug connector RC18 18-pin + PE

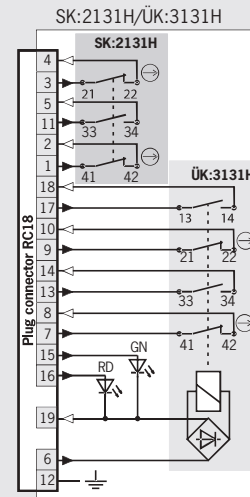
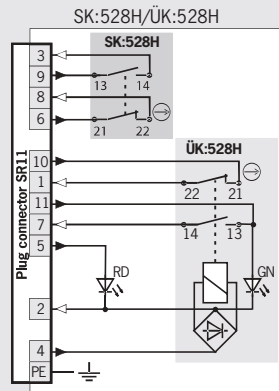
### Dimension drawings

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	Black cover	
						24 V	
TZ	SR11 Plug connector	1	Mechanical	LE	SK: 528H, 1 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>077 044</b> TZ1LE024SR11-C1816
				Left	ÜK: 528H, 1 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>077 042</b> TZ1RE024SR11-C1816
			Mechanical	RE	SK: 528H, 1 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>088 090</b> TZ1LE024RC18VAB-C1823
				Right	ÜK: 528H, 1 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>088 091</b> TZ1RE024RC18VAB-C1823
	RC18 <sup>1)</sup> Plug connector	1	Mechanical	LE	SK: 2131H, 3 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>088 090</b> TZ1LE024RC18VAB-C1823
				Left	ÜK: 3131H, 2 NC ⊖ + 2 NO	Emergency release (blue pushbutton)	<b>088 091</b> TZ1RE024RC18VAB-C1823
			Right	SK: 2131H, 3 NC ⊖ + 1 NO	Emergency release (blue pushbutton)	<b>088 091</b> TZ1RE024RC18VAB-C1823	
			Right	ÜK: 3131H, 2 NC ⊖ + 2 NO	Emergency release (blue pushbutton)	<b>088 091</b> TZ1RE024RC18VAB-C1823	

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				Value	Unit
Parameter					
Housing material				Anodized die-cast alloy	
Mechanical life				2 x 10 <sup>6</sup> 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 <sub>Zl</sub> 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: <b>528H</b> / ÜK: <b>528H</b> 1 NC + 1 NO / 1 NC + 1 NO	
Switching elements with 4 switching elements				SK: <b>2131H</b> / ÜK: <b>3131H</b> / SK: <b>2121H</b> / ÜK: <b>2121H</b> 3 NC + 1 NO / 2 NC + 2 NO / 4 NC / NC	
Switching current, min., at 24 V				1	mA
Rated impulse withstand voltage U <sub>imp</sub>				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 <sup>2</sup>	
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 <sub>i</sub>				250	V AC/DC
Conventional thermal current I <sub>th</sub>				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 <sub>e</sub> 4 A U <sub>e</sub> 230 V	
		DC13		I <sub>e</sub> 4 A U <sub>e</sub> 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 <sup>1)</sup>	
Rated insulation voltage U <sub>i</sub>				110	V AC/DC
Conventional thermal current I <sub>th</sub>				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 <sub>e</sub> 4 A U <sub>e</sub> 110 V	
		DC13		I <sub>e</sub> 4 A U <sub>e</sub> 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 <sup>1)</sup>	
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 <sup>1)</sup>	
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 <sup>1)</sup>	
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 <sup>1)</sup>	
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 <sup>1)</sup>	
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	

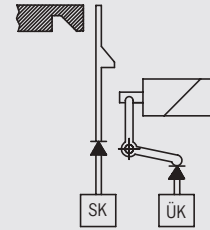
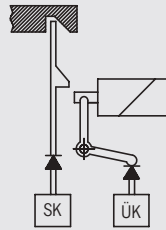
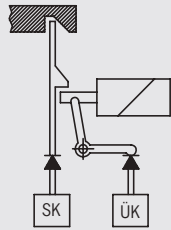
## Switching functions TZ

Actuator:  
Switching  
position:

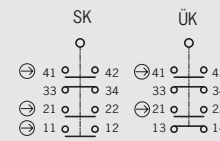
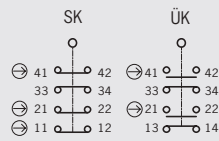
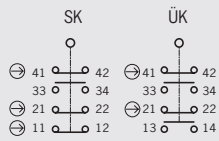
Inserted  
locked

Inserted  
not locked

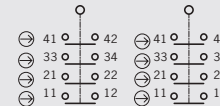
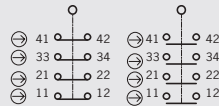
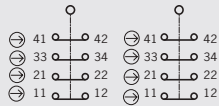
Removed  
not locked



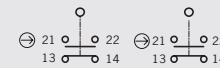
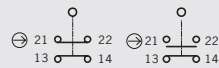
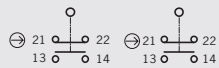
SK ÜK  
SK 2131H  
ÜK 3131H



SK ÜK  
SK 2121H  
ÜK 2121H



SK ÜK  
SK 528H  
ÜK 528H



SK ÜK  
SK 538H  
ÜK 538H

