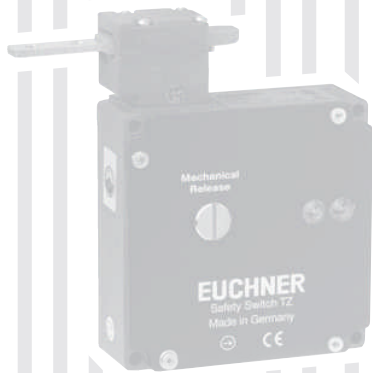


## Selection table for safety switches TZ with guard locking and guard lock monitoring

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

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



- ▶ Emergency unlocking on the front with rotary knob
- ▶ Protective plate for switch head optional
- ▶ Two LEDs, red and green
- ▶ Plug connectors
- ▶ Actuating head fitted left or right



### Emergency unlocking

Is used for the manual release of the guard locking without tools. The emergency unlocking mechanism must be returned to the locked state manually. A sealing wire can be fitted to protect against tampering. Lead sealing kit and tool included.

### Protective plate for switch head

Makes it more difficult to tamper with the switch.

### 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.

### 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:

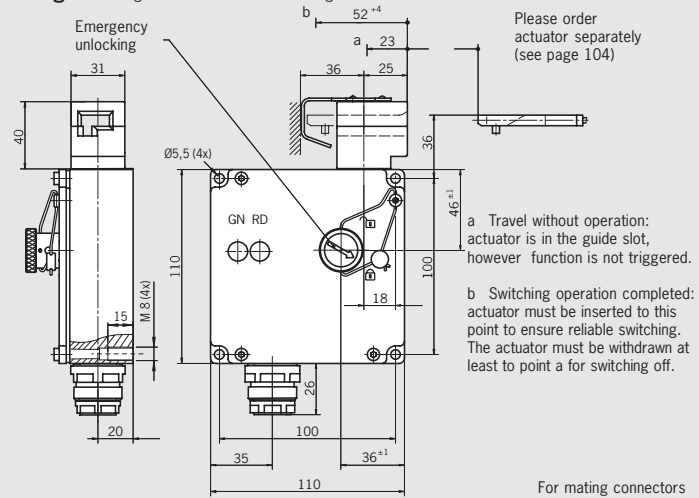
- ▶ **528H** Slow-action switching element  
1 NC  $\ominus$  + 1 NO
- ▶ **2131H** Slow-action switching element  
3 NC  $\ominus$  + 1 NO
- ▶ **3131H** Slow-action switching element  
2 NC  $\ominus$  + 2 NO

### Ordering table

Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover
						24 V
TZ	SR11 Plug connector	1 Mechanical	LE	SK: 528H, 1NC $\ominus$ + 1 NO	Emergency unlocking (rotary knob),	<b>094 342</b>
			Left	ÜK: 528H, 1NC $\ominus$ + 1 NO	with protective plate	TZ1LE024SR11-094342
			RE	SK: 528H, 1NC $\ominus$ + 1 NO	Emergency unlocking (rotary knob),	<b>094 343</b>
			Right	ÜK: 528H, 1NC $\ominus$ + 1 NO	with protective plate	TZ1RE024SR11-094343

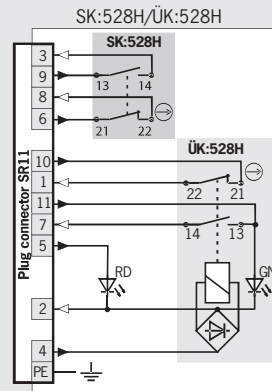
### Plug connector SR11 with protective plate 11-pin + PE

### Dimension drawings



For mating connectors see page 112

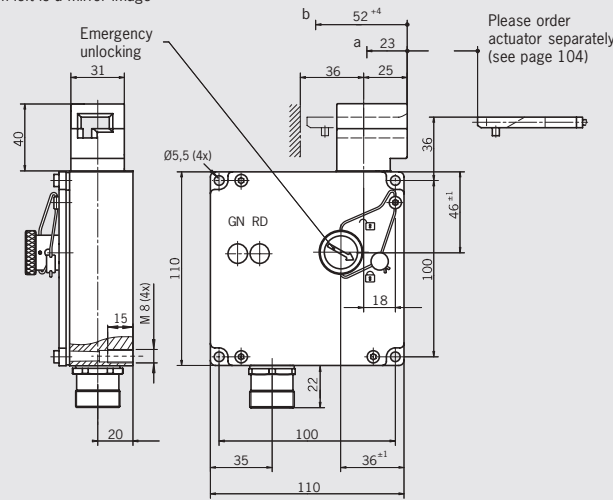
### Wiring diagrams





**Plug connector RC18**  
18-pin + PE

**Dimension drawings** Actuating head on left is a mirror image

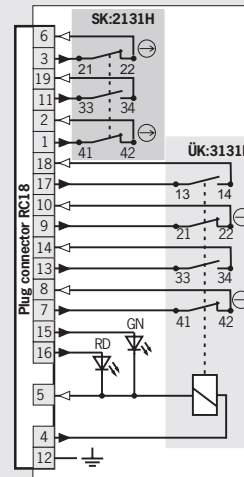
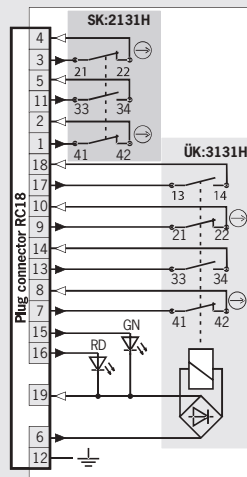


For mating connector with option C1825 see page 113

**Wiring diagrams** Actuator inserted and locked

SK:2131H/ÜK:3131H  
RC18-C1937

SK:2131H/ÜK:3131H  
RC18VAB



**Ordering table**

Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover
						24 V
TZ	RC18 <sup>1)</sup> Plug connector	1 Mechanical	LE	SK: 2131H, 3 NC ⊖ + 1 NO Left ÜK: 3131H, 2 NC ⊖ + 2 NO	Emergency unlocking (rotary knob)	<b>074 260</b> TZ1LE024RC18VAB-C1937
			RE	SK: 2131H, 3 NC ⊖ + 1 NO Right ÜK: 3131H, 2 NC ⊖ + 2 NO	Emergency unlocking (rotary knob)	<b>074 261</b> TZ1RE024RC18VAB-C1937
	RC18 Plug connector	1 Mechanical	LE	SK: 2131H, 3 NC ⊖ + 1 NO Left ÜK: 3131H, 2 NC ⊖ + 2 NO	Emergency unlocking (rotary knob), alternative wiring	<b>092 998 <sup>2)</sup></b> TZ1LE024RC18VAB-092998
			RE	SK: 2131H, 3 NC ⊖ + 1 NO Right ÜK: 3131H, 2 NC ⊖ + 2 NO	Emergency unlocking (rotary knob), alternative wiring	<b>092 999 <sup>2)</sup></b> TZ1RE024RC18VAB-092999

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

2) No BG approval



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



- ▶ Emergency unlocking on the front with rotary knob
- ▶ Escape release on the rear with pushbutton
- ▶ Protective plate for switch head
- ▶ Two LEDs, red and green
- ▶ Actuating head fitted left or right



### Emergency unlocking

Is used for the manual release of the guard locking without tools. The emergency unlocking mechanism must be returned to the locked state manually. A sealing wire can be fitted to protect against tampering. Lead sealing kit and tool included.

### Escape release

Is used for the manual release of the guard locking from within the danger area without tools.

### Protective plate for switch head

Makes it more difficult to tamper with the switch.

### 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.

### Switching elements (see also Page 13/14)

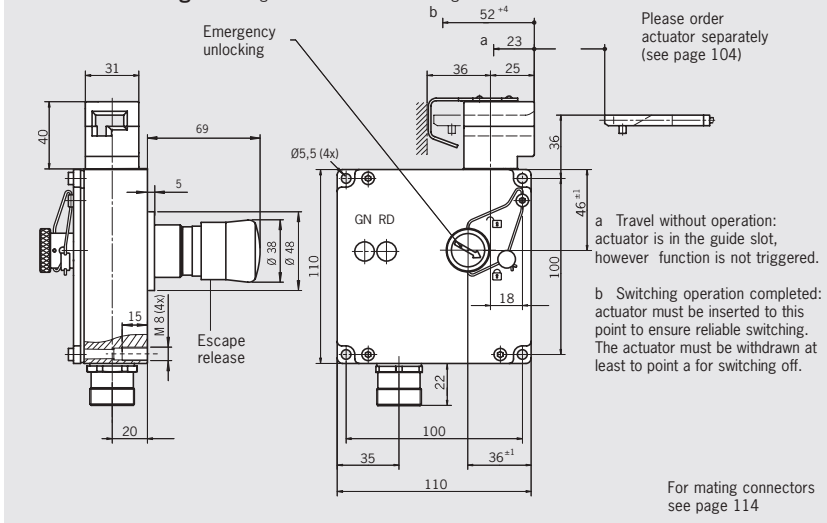
**SK** For monitoring the door/actuator position  
**ÜK** For monitoring the guard locking (built-in solenoid)

For combinations available see ordering table:

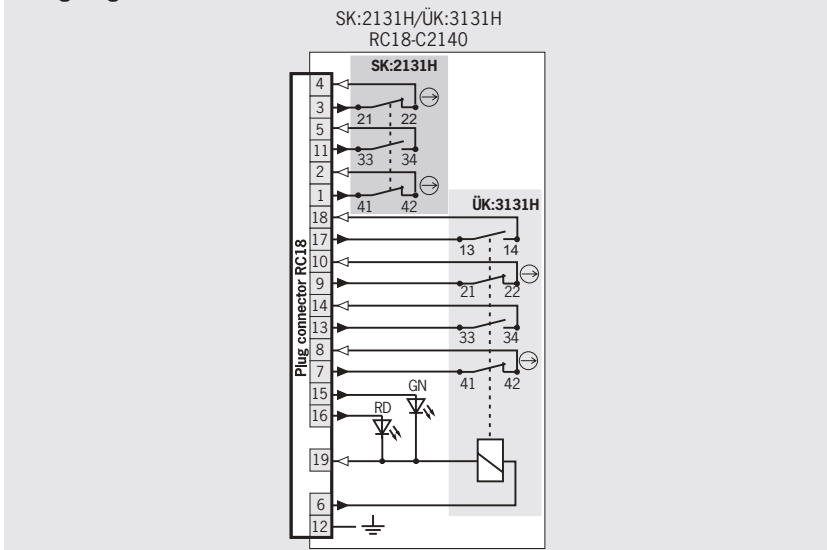
- ▶ **2131H** Slow-action switching element  
3 NC  $\ominus$  + 1 NO
- ▶ **3131H** Slow-action switching element  
2 NC  $\ominus$  + 2 NO

### Plug connector RC18 18-pin + PE

### Dimension drawings



### Wiring diagrams




### Ordering table

Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover 24 V
TZ	RC18 Plug connector	1 Mechanical	LE Left	SK: 2131H, 3 NC $\ominus$ + 1 NO ÜK: 3131H, 2 NC $\ominus$ + 2 NO	Emergency unlocking (rotary knob), escape release (pushbutton), with protective plate	<b>097 347</b> TZ1LE024RC18VAB-C2123
			RE Right	SK: 2131H, 3 NC $\ominus$ + 1 NO ÜK: 3131H, 2 NC $\ominus$ + 2 NO	Emergency unlocking (rotary knob), escape release (pushbutton), with protective plate	<b>097 348</b> TZ1RE024RC18VAB-C2123

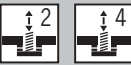
## Safety switch TZ with guard locking and guard lock monitoring




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 <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			
Parameter		Value	Unit
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			
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 <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			
Parameter		Value	Unit
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	

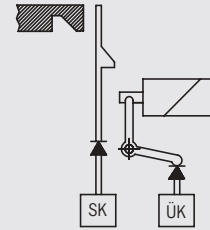
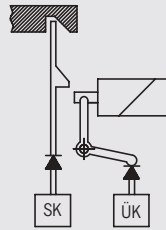
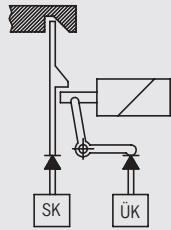
## Switching functions TZ

Actuator:  
Switching  
position:

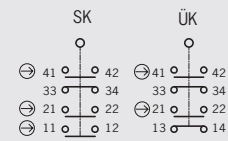
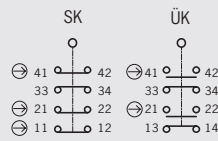
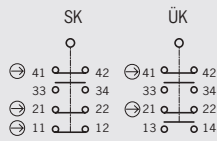
Inserted  
locked

Inserted  
not locked

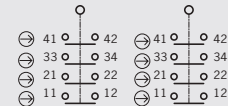
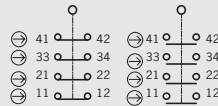
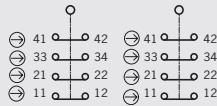
Removed  
not locked



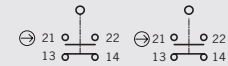
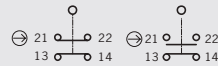
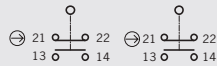
SK ÜK  
SK 2131H  
ÜK 3131H



SK ÜK  
SK 2121H  
ÜK 2121H



SK ÜK  
SK 528H  
ÜK 528H



SK ÜK  
SK 538H  
ÜK 538H

