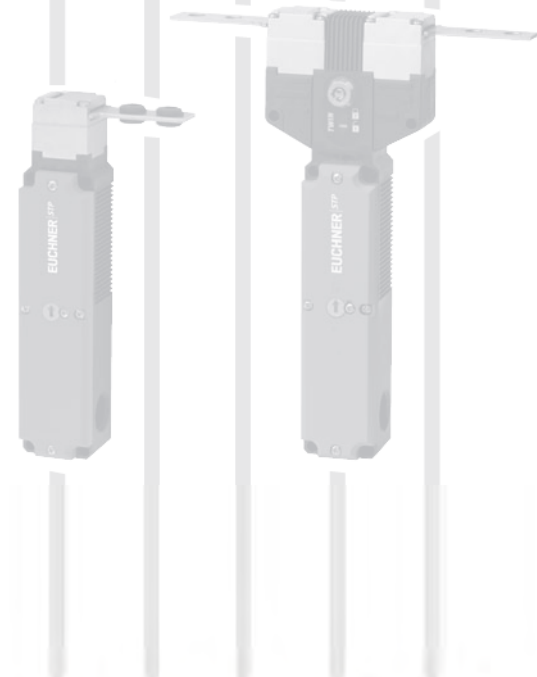


Safety Switches with Separate Actuator, Plastic Housing **EUCHNER**

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

Version		
Standard		One actuating head made of metal
	TW	TWIN, 2 actuating heads made of metal
	BI	BiState, with additional safety function
Release feature		
	HE	Mechanical release on the front
	FE	Escape release on the rear side
Door monitoring		
	STP3/4	With door monitoring contact
	STP1/2	Without door monitoring contact
Connection		
	M	Thread M20x1.5 for cable glands
	SR11	Plug connector; 11-pin+PE



Version		Release feature		Door monitoring		Connection		Page	
Standard	TW	BI	HE	FE	STP3/4	STP1/2	M	SR11	
●			●		●		●	●	56 - 57
●			●			●	●		58
●			●	●	●		●		59
		●	●		●			●	60
	●		●		●		●		61



Safety switch STP with guard locking and guard lock monitoring

- ▶ Actuating head made of metal
- ▶ Mechanical release on the front
- ▶ With door monitoring contact



Approach direction



Horizontal and vertical
Can be adjusted in 90° steps

Mechanical release

Is used for releasing the guard locking with the aid of a tool. The mechanical release is sealed with sealing lacquer to prevent tampering.

Solenoid operating voltage

- ▶ AC/DC 24 V +10%, -15%
- ▶ AC 110 V +10%, -15%
- ▶ AC 230 V +10%, -15%

LED function display (optional)

A function display (2 LEDs, red and green) is available for the following voltage ranges:

- ▶ AC/DC 24 V +10%, -15%

Guard locking types

STP3 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the interlocking solenoid.

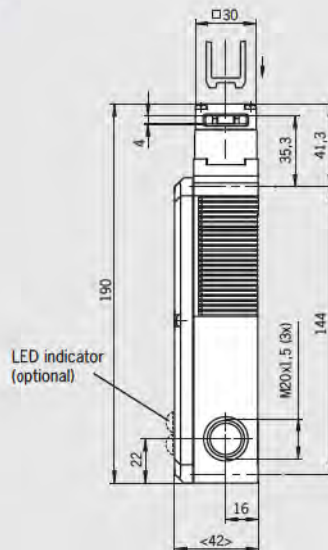
STP4 Open-circuit current principle, guard locking by applying voltage to the interlocking solenoid. Release by spring force.

Switching elements

- ▶ **537** Slow-action switching element
1 NC ⊖ + 1 NC (door monitoring contact)
- ▶ **2131** Slow-action switching element
2 NC ⊖ + 1 NO + 1 NC (door monit. contact)
- ▶ **4121** Slow-action switching element
2 NC ⊖ + 1 NC / 1 NO (door monit. contact)
- ▶ **4131** Slow-action switching element
2 NC ⊖ + 1 NO + 1 NO (door monit. contact)
- ▶ **4141** Slow-action switching element
2 NC ⊖ + 2 NC ⊖ (door monit. contacts)

Cable entry M20 x 1.5

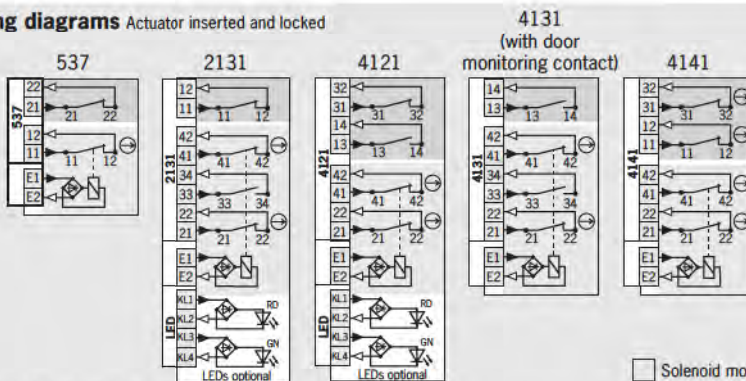
Dimension drawing



Please order actuator separately (see pages 80-82)

For cable glands see page 89

Wiring diagrams Actuator inserted and locked



For switching functions see technical data on page 112

Ordering table

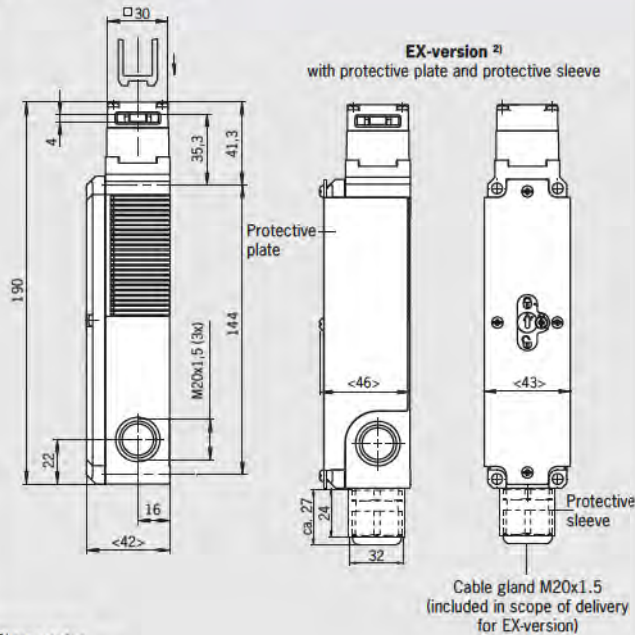
Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage		
					AC/DC 24 V	AC 110 V	AC 230 V
STP	M Cable entry 3 x M20x1.5	3 Mechanical	2131 2 NC ⊖ + 1 NO + 1 NC		091 493 STP3A-2131A024M	099 326 STP3A-2131A110M	On request
				024L LED display AC/DC 24 V	091 748 STP3A-2131A024L024M	On request	On request
			4121 2 NC ⊖ + 1 NC / 1 NO		096 890 STP3A-4121A024M	On request	094 792 STP3A-4121A230M
				024L LED display AC/DC 24 V	091 776 STP3A-4131A024M	On request	On request
			4131 2 NC ⊖ + 1 NO + 1 NO		099 272 STP3A-4141A024M	On request	On request
				024L LED display AC/DC 24 V	092 259 STP4A-537A024M	On request	On request
		4 Electrical	537 1 NC ⊖ + 1 NC		091 494 STP4A-2131A024M	097 754 STP4A-2131A110M	On request
				024L LED display AC/DC 24 V	091 749 STP4A-2131A024L024M	On request	On request
			4121 2 NC ⊖ + 1 NC / 1 NO		093 159 STP4A-4121A024M	094 793 STP4A-4121A110M	094 794 STP4A-4121A230M
				024L LED display AC/DC 24 V	100 026 STP4A-4121A024L024M		
			4131 2 NC ⊖ + 1 NO + 1 NO		093 158 STP4A-4131A024M	On request	On request
				024L LED display AC/DC 24 V	099 314 STP4A-4141A024M	On request	On request

1) With cable entry M, DC 24 V / AC 110 V



Cable entry M20 x 1.5

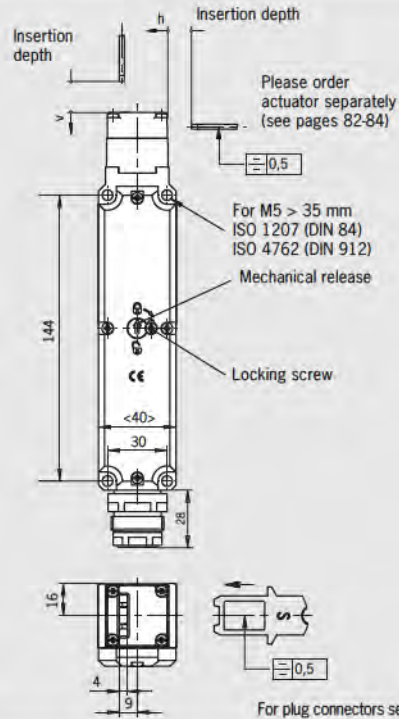
Dimension drawing



Please order actuator separately (see pages 80-82)

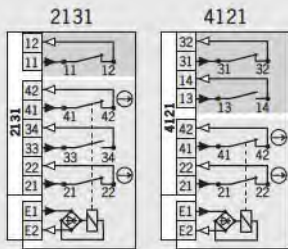
Plug connector SR11

11-pin + PE



Please order actuator separately (see pages 80-82)

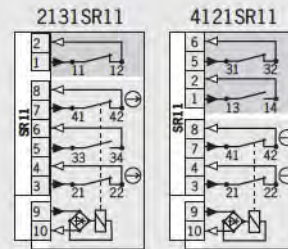
Wiring diagrams Actuator inserted and locked



Solenoid monitoring
 Door monitoring

For switching functions see technical data on page 112

Wiring diagrams Actuator inserted and locked



Solenoid monitoring
 Door monitoring

For switching functions see technical data on page 112

Ordering table

Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage		
					AC/DC 24 V	AC 110 V	AC 230 V
STP	M Cable entry 3 x M20x1.5	3 Mechanical	2131 2 NC ⊖ + 1 NO + 1 NC	ATEX Incl. cable gland	093 794 ²⁾ STP3A-2131A024M-EX	On request	On request
			4121 2 NC ⊖ + 1 NC / 1 NO	ATEX Incl. cable gland	097 626 ²⁾ STP3A-4121A024M-EX	On request	On request
		4 Electrical	2131 2 NC ⊖ + 1 NO + 1 NC	ATEX Incl. cable gland	093 795 ²⁾ STP4A-2131A024M-EX	On request	On request
			4121 2 NC ⊖ + 1 NC / 1 NO		096 318 STP3A-4121A024SR11	-	-
	SR11 Plug connector	3 Mechanical	2131 2 NC ⊖ + 1 NO + 1 NC		097 565 STP4A-2131A024SR11	-	-
			4121 2 NC ⊖ + 1 NC / 1 NO		099 301 STP4A-4121A024SR11	-	-

1) With cable entry M, DC 24 V/AC 110 V 2) II 3 G Ex nC IIC T4 / III 3 D Ex tD A22 T110°C X



Safety switch STP with guard locking and guard lock monitoring

- ▶ Actuating head made of metal
- ▶ Mechanical release on the front
- ▶ Without door monitoring contact



Approach direction



Horizontal and vertical
Can be adjusted in 90° steps

Mechanical release

Is used for releasing the guard locking with the aid of a tool. The mechanical release is sealed with sealing lacquer to prevent tampering.

Solenoid operating voltage

- AC/DC 24 V +10%, -15%
- AC 110 V +10%, -15%
- AC 230 V +10%, -15%

LED function display (optional)

A function display (2 LEDs, red and green) is available for the following voltage ranges:

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

Guard locking types

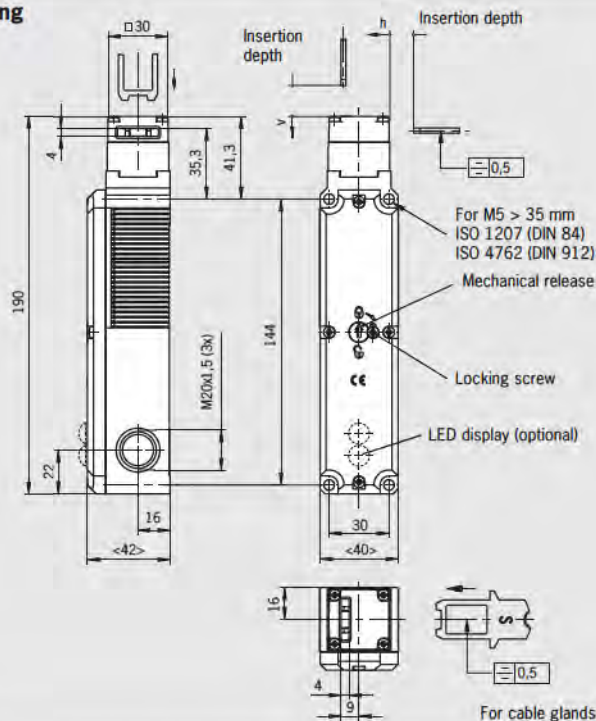
- STP1** Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the interlocking solenoid.
- STP2** Open-circuit current principle, guard locking by applying voltage to the interlocking solenoid. Release by spring force.

Switching elements

- **528** Slow-action switching element
1 NC ⊖ + 1 NO
- **538** Slow-action switching element
2 NC ⊖
- **4131** Slow-action switching element
2 NC ⊖ + 2 NO

Cable entry M20 x 1.5

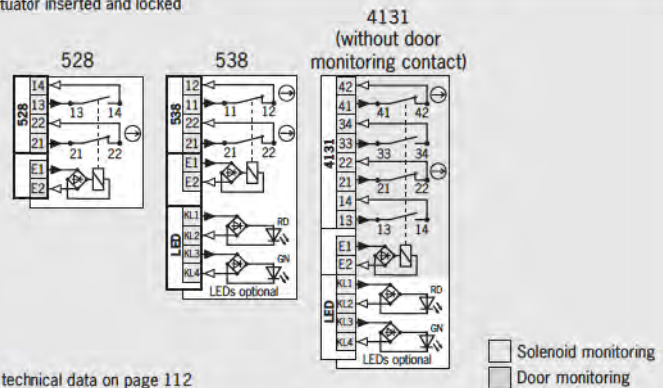
Dimension drawing



Please order actuator separately (see pages 80-82)

For cable glands see page 89

Wiring diagrams Actuator inserted and locked



For switching functions see technical data on page 112

Ordering table

Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage		
					AC/DC 24 V	AC 110 V	AC 230 V
STP	M Cable entry 3 x M20 x 1.5	1 Mechanical	528 1 NC ⊖ + 1 NO		092 266 STP1A-528A024M	On request	On request
					092 258 STP1A-538A024M	On request	On request
			538 2 NC ⊖	024L LED display AC/DC 24 V with pre-assembled insertion funnel	092 489 STP1D-538A024L024M	On request	On request
					091 491 STP1A-4131A024M	On request	On request
		2 Electrical	4131 2 NC ⊖ + 2 NO	024L LED display AC/DC 24 V	091 746 STP1A-4131A024L024M	On request	On request
					092 260 STP2A-538A024M	On request	On request
			538 2 NC ⊖	024L LED display AC/DC 24 V	092 490 STP2A-538A024L024M	On request	On request
					091 492 STP2A-4131A024M	On request	On request
	4131 2 NC ⊖ + 2 NO	024L LED display AC/DC 24 V	091 747 STP2A-4131A024L024M	On request	On request		



Safety switch STP with guard locking and guard lock monitoring

- ▶ Escape release on the rear side
- ▶ With door monitoring contact
- ▶ Increased horizontal overtravel



Approach direction



Horizontal and vertical
Can be adjusted in 90° steps

Escape release

Is used for the manual release of the guard locking from within the danger area without tools. With identification of On/Off position.

Solenoid operating voltage

• AC/DC 24 V +10%, -15%

Guard locking types

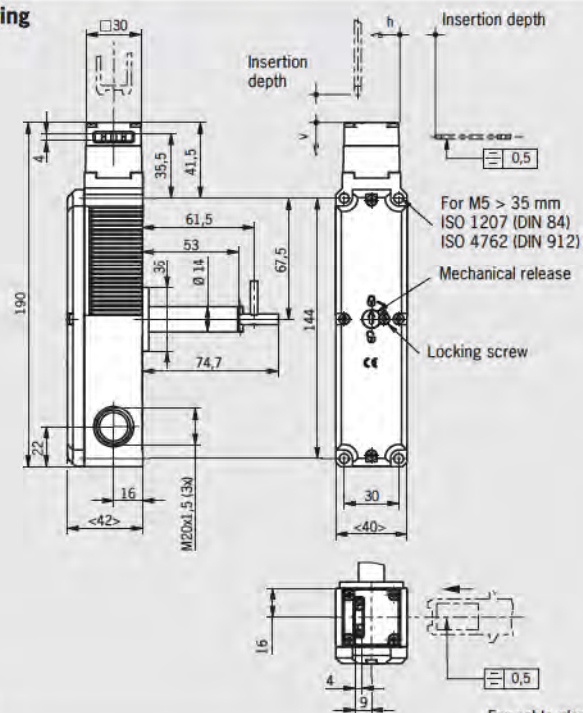
STP3 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the interlocking solenoid.

Switching elements

- ▶ **4121** Slow-action switching element
2 NC ⊖ + 1 NC / 1 NO
(door monitoring contact)

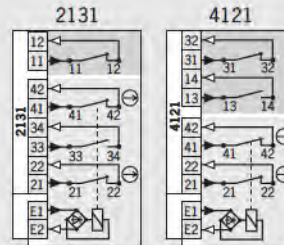
Cable entry M20 x 1.5

Dimension drawing



Please order actuator separately (see pages 80-82)

Wiring diagrams Actuator inserted and locked



Solenoid monitoring
 Door monitoring

For switching functions see technical data on page 112

Ordering table

Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage	
					AC/DC 24 V	
STP	M Cable entry 3 x M20 x 1.5	3 Mechanical	2131 2 NC ⊖ + 1 NO + 1 NC	C1993 Long actuator shaft	102 267	STP3A-2131A024MC1993
			4121 2 NC ⊖ + 1 NC / 1 NO	C1993 Long actuator shaft	096 885	STP3A-4121A024MC1993



Safety switch STP-BI with guard locking and guard lock monitoring

- ▶ Actuating head made of metal
- ▶ Mechanical release on the front
- ▶ Additional safety function
- ▶ With door monitoring contact



Approach direction

Horizontal and vertical
Can be adjusted in 90° steps

Mechanical release

Is used for releasing the guard locking with the aid of a tool. The mechanical release is sealed with sealing lacquer to prevent tampering.

Safety function

The STP-BI additionally features a safety function that prevents

- persons unintentionally locking themselves inside if the safety guard is open in the event of a power failure or when the machine is switched off
- the activated guard locking being deactivated in the event of a power failure.

Solenoid operating voltage

• AC/DC 24 V +10%, -15%

Guard locking types

STP3 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the interlocking solenoid.

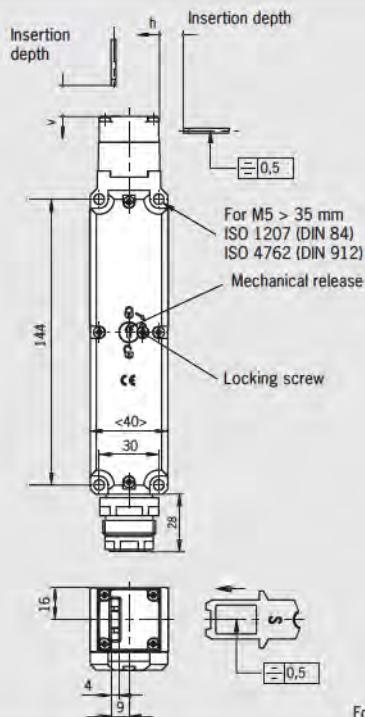
Switching elements

- **2131** Slow-action switching element
2 NC ⊖ + 1 NO + 1 NC (door monit. contact)

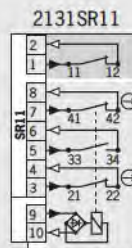
Plug connector SR11

11-pin + PE

Dimension drawing



Wiring diagrams Actuator inserted and locked



- Solenoid monitoring
- Door monitoring

For switching functions see technical data on page 113

Ordering table

Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage	
					AC/DC	24 V
STP-BI	SR11 Plug connector	3 Mechanical	2131 2 NC ⊖ + 1 NO + 1 NC		100	105
					STP-BI-3A-2131A024SR11	

Sicherheitsschalter STP-TW mit Zuhaltung und Zuhaltungsüberwachung

- ▶ Zwei Betätigungsköpfe aus Metall
- ▶ Gleichzeitige Überwachung von zwei Schutztüren
- ▶ Hilfssentriegelung an der Frontseite
- ▶ Schlüsselhilfsentriegelung optional
- ▶ Mit Türmeldekontakt



Approach direction

Horizontal and vertical
Can be adjusted in 90° steps

Mechanical release

Is used for releasing the guard locking with the aid of a tool. The mechanical release is sealed with sealing lacquer to prevent tampering.

Mechanical key release

If the switch has a mechanical key release, the drive's safety circuit can be opened and retained in this position. In this way unintentional starting of the system can be prevented. The lock function setting is indicated in the window.

Two keys are included.

Solenoid operating voltage

• AC/DC 24 V +10%, -15%

Guard locking types

STP3 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the interlocking solenoid.

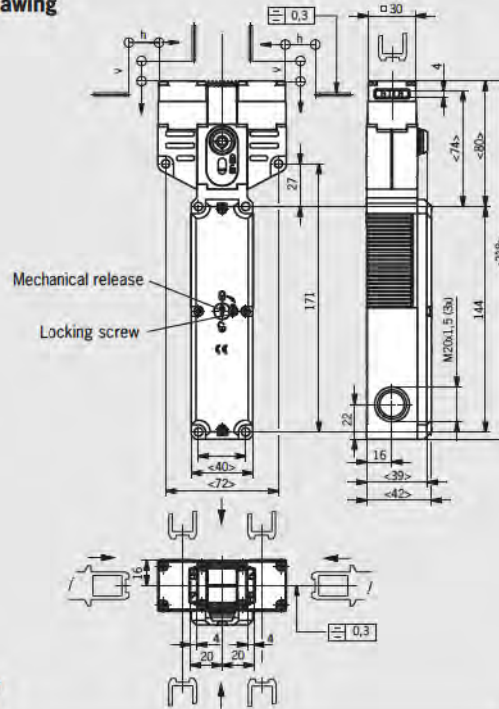
STP4 Open-circuit current principle, guard locking by applying voltage to the interlocking solenoid. Release by spring force.

Switching elements

- **2131** Slow-action switching element
2 NC ⊖ + 1 NO + 1 NC (door monit. contact)

Cable entry M20 x 1.5

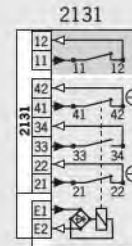
Dimension drawing



Please order actuator separately (see pages 80-82)

For cable glands see page 89

Wiring diagrams Actuator inserted and locked



- Solenoid monitoring
- Door monitoring

For switching functions see technical data on page 115

Ordering table


Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage
					AC/DC 24 V
STP-TW	M Cable entry M20x1,5	3 Mechanical	2131 2 0 ⊖ + 1 S + 1 0		099 973 STP-TW-3A-2131AC024M
				with mechanical key release (identical locking)	098 827 STP-TW-3A-2131AC024M-S1
		4 Electrical	2131 2 0 ⊖ + 1 S + 1 0		100 849 STP-TW-4A-2131AC024M
				with mechanical key release (identical locking)	100 850 STP-TW-4A-2131AC024M-S1







Safety switch STP.../STP-BI 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
Material	Housing		Reinforced thermoplastic	
	Actuating head		Die-cast aluminum	
	Cam in actuating head		Stainless steel	
Mechanical life			1 x 10 ⁶ operating cycles	
Ambient temperature			-20 ... + 55	°C
Weight			approx. 0.5	kg
Max. approach speed			20	m/min
Actuating force			35	N
Extraction force (not locked)			30	N
Retention force			20	N
Locking force, max.			Approach direction	
			From top (v)	Side (h)
			2500	2500
Locking force F _{zh} in accordance with test principles GS-ET-19			Approach direction	
			From top (v)	Side (h)
			2000	2000
Insertion depth (minimum required travel + permissible overtravel)		Actuator S standard	Actuator L for insertion funnel	
Approach direction side (h)		24.5 + 5	28.5 + 5	mm
Approach direction from top (v)		24.5 + 5	28.5 + 5	mm

Switching element				Value	Unit
Switching principle				Slow-action switching element	
Switching elements with 2 switching elements				528 1 NC ⊖ + 1 NO	
				537 1 NC ⊖ + 1 NC	
Switching elements with 4 switching elements				538 1 NC ⊖ + 1 NC	
				2131 2 NC ⊖ + 1 NO + 1 NC	
Switching current, min., at DC 24 V				4121 2 NC ⊖ + 1 NC + 1 NO	
				4131 2 NC ⊖ + 2 NO	
Switching voltage, min., at 10 mA				4141 4 NC ⊖	mA
Contact material				Silver alloy, gold flashed	V

Guard locking				Value	Unit
Solenoid operating voltage				AC/DC 24 V +10/-15%	
Connection				AC 110 V +10/-15%	
Duty cycle ED				AC 230 V +10/-15%	
Power consumption				Reverse polarity protected, integrated bridge rectifier	
				100	%
				8	W

Connection, cable entry M20 x 1.5			Value	Unit
Connection			Screw terminal	
Version			M20 x 1.5	
Conductor cross-section max.			0.34 ... 1.5	mm ²
Degree of protection according to IEC 60529			IP 67	
Rated impulse withstand voltage U _{imp}			2.5	kV
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		

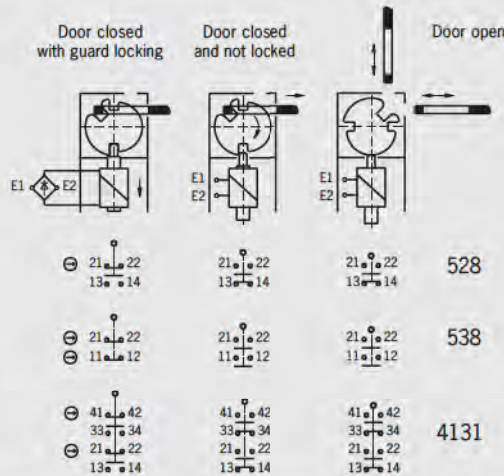
Plug connector SR11 connection



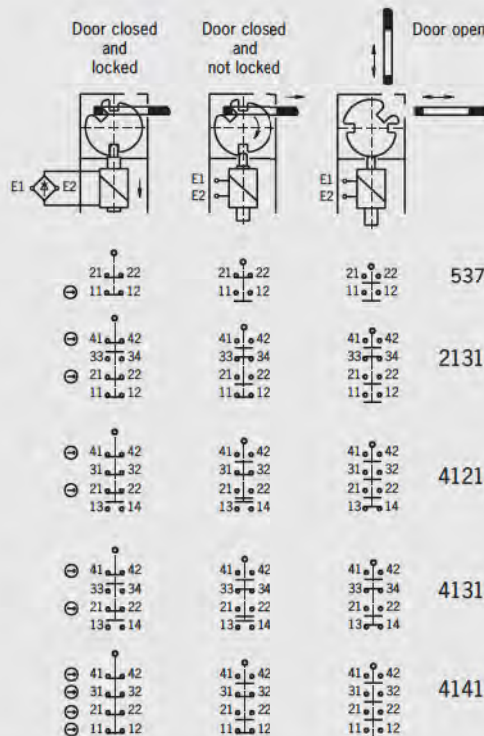
Parameter		Value	Unit
Connection		Plug connector	
Version		11-pin + PE	
Degree of protection according to IEC 60529		IP 65 ¹⁾	
Rated impulse withstand voltage U_{imp}		1.5	kV
Rated insulation voltage U_i		50	V AC/DC
Conventional thermal current I_{th}		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category to IEC 60947-5-1	AC-15	I_e 4 A U_e 50 V	
	DC-13	I_e 4 A U_e 24 V	

1) Screwed tight with the related plug connector (see page 86)

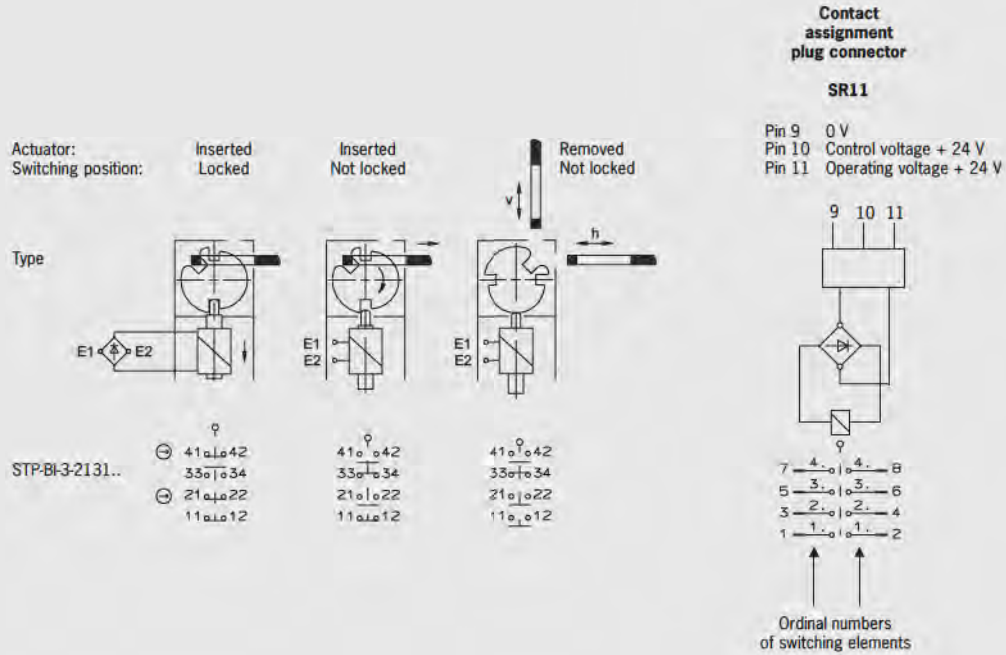
Switching functions STP1/STP2 without door monitoring contact



Switching functions STP3/STP4 with door monitoring contact




Switching functions STP-BI






Safety switch STP-TW 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
Material	Housing		Reinforced thermoplastic	
	Actuating head		Die-cast aluminum	
	Cam in actuating head		Stainless steel	
Mechanical life			1 x 10 ⁶ operating cycles	
Ambient temperature			- 20 ... + 55	°C
Weight			approx. 0.65	kg
Max. approach speed			20	m/min
Actuating force			35	N
Extraction force (not locked)			30	N
Retention force			20	N
Locking force, max.			Approach direction	
			From top (v)	Side (h)
			2500	2500
Locking force F _{ZH} in accordance with test principles GS-ET-19			Approach direction	
			From top (v)	Side (h)
			2000	2000
Insertion depth (minimum required travel + permissible overtravel)			Actuator S standard	
Approach direction side (h)			24.5 + 5	mm
Approach direction from top (v)			24.5 + 5	mm

Switching element			Value	Unit
Switching principle			Slow-action switching element	
Switching elements with 4 switching elements			2131	
Switching current, min., at DC 24 V			2 NC ⊖ + 1 NO + 1 NC	
Switching voltage, min., at 10 mA			1	mA
Contact material			12	V
			Silver alloy, gold flashed	

Guard locking		 	Value	Unit
Solenoid operating voltage			AC/DC 24 V +10/-15%	
Connection			Reverse polarity protected, integrated bridge rectifier	
Duty cycle ED			100	%
Power consumption			8	W

Connection, cable entry M20 x 1.5			Value	Unit
Connection			Screw terminal	
Version			M20 x 1.5	
Conductor cross-section max.			0.34 ... 1.5	mm ²
Degree of protection according to IEC 60529			IP 67	
Rated impulse withstand voltage U _{imp}			2.5	kV
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	

Switching functions STP-TW

