

Selection table for safety switches NZ.VZ.VS with guard locking without guard lock monitoring

Guard locking			
VSM		Mechanical guard locking, closed-circuit current principle	
	VSE	Electrical guard locking, open-circuit current principle	
		VSH	Manual release

Connection			
	M	Thread M20x1.5 for cable glands	
		SR6	Plug connector 6-pin + PE
		MR8	Plug connector 7-pin + PE
		SR11	Plug connector 11-pin + PE

Switching element		
Two contacts		2 NC ⊖ or 1 NC ⊖ + 1 NO
	Four contacts	2 NC ⊖ + 2 NO, 3 NC ⊖ + 1 NO or 4 NC ⊖



VSM	Guard locking		M	Connection			Switching element		Page
	VSE	VSH		SR6	MR8	SR11	Two contacts	Four contacts	
●			●				●	●	54
●				●			●		55
●						●		●	55
	●		●				●	●	56
	●			●			●		57
	●					●		●	57
		●	●					●	58
		●			●			●	59





Safety switch NZ.VZ.VSM with guard locking without guard lock monitoring

- ▶ Housing according to EN 50041
- ▶ Plug connector optional
- ▶ LED optional



Approach direction

- Horizontal
- Can be adjusted in 90° steps.

Solenoid operating voltage and optional LED-function display

A function display is available for the following voltage ranges:

- | | |
|-----------------|---------------------------------|
| Solenoid | LED |
| ▶ DC 24 V ±10% | AC/DC 12-60 V red |
| ▶ AC 110 V ±15% | AC 110 V ±15% red ¹⁾ |
| ▶ AC 230 V ±15% | AC 230 V ±15% red ¹⁾ |

Guard locking type

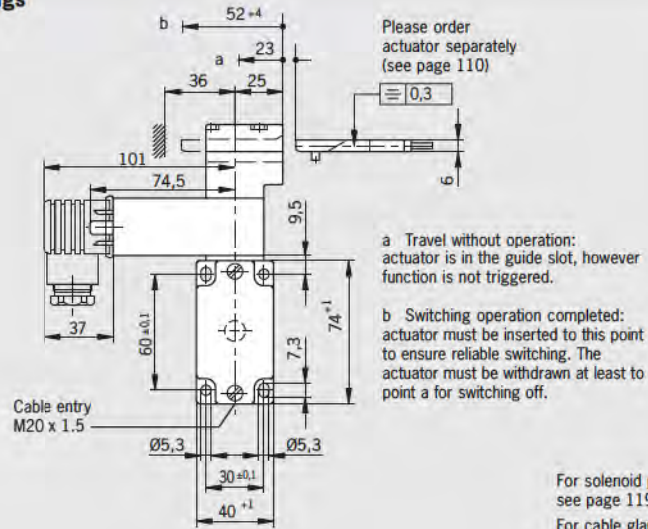
VSM Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

Switching elements (see also page 13/14)

- ▶ **511** Snap-action switching element
1 NC ⊖ + 1 NO
- ▶ **528H** Slow-action switching element
1 NC ⊖ + 1 NO
- ▶ **538H** Slow-action switching element
2 NC ⊖
- ▶ **2131H** Slow-action switching element
3 NC ⊖ + 1 NO
- ▶ **3131H** Slow-action switching element
2 NC ⊖ + 2 NO

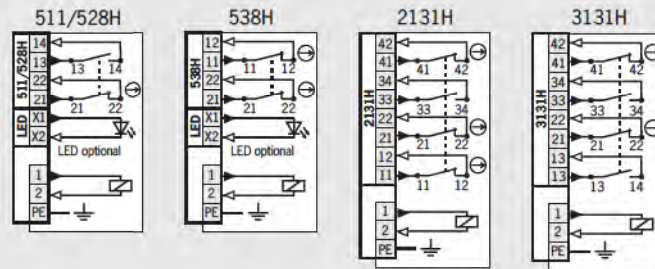
Cable entry M20 x 1.5

Dimension drawings



For solenoid plug see page 119
For cable glands see page 124

Wiring diagrams



Ordering table

Series	Actuator	Connection	Guard locking	Solenoid voltage	Switching element	Function display			
						Without LED	12-60V red LED	110 V red LED	230 V red LED
NZ	VZ Separate actuator	1 Cable entry M20 x 1.5	VSM Mech. guard locking closed-circuit principle	04 24 V DC	511 1 NC ⊖ + 1 NO	090 339 NZ1VZ-511E3VSM04-M	090 344 NZ1VZ-511E3VSM04L060-M	On request	On request
					528H 1 NC ⊖ + 1 NO	082 125 NZ1VZ-528E3VSM04-M	082 126 NZ1VZ-528E3VSM04L060-M	On request	089 488 NZ1VZ-528E3VSM04L220-M
					538H 2 NC ⊖	082 131 NZ1VZ-538E3VSM04-M	082 132 NZ1VZ-538E3VSM04L060-M	On request	090 345 NZ1VZ-538E3VSM04L220-M
					2131H 3 NC ⊖ + 1 NO	088 049 NZ1VZ-2131E3VSM04-M	-	-	-
					3131H 2 NC ⊖ + 2 NO	088 050 NZ1VZ-3131E3VSM04-M	-	-	-
					528H 1 NC ⊖ + 1 NO	082 129 NZ1VZ-528E3VSM07-M	On request	089 485 NZ1VZ-528E3VSM07L110-M	090 341 NZ1VZ-528E3VSM07L220-M
					538H 2 NC ⊖	088 046 NZ1VZ-538E3VSM07-M	On request	090 340 NZ1VZ-538E3VSM07L110-M	On request
					2131H 3 NC ⊖ + 1 NO	088 038 NZ1VZ-2131E3VSM07-M	-	-	-
					3131H 2 NC ⊖ + 2 NO	088 040 NZ1VZ-3131E3VSM07-M	-	-	-
				09 ¹⁾ 230 V AC	528H 1 NC ⊖ + 1 NO	088 045 NZ1VZ-528E3VSM09-M	090 349 NZ1VZ-528E3VSM09L060-M	On request	090 342 NZ1VZ-528E3VSM09L220-M
					538H 2 NC ⊖	088 044 NZ1VZ-538E3VSM09-M	On request	On request	On request
					2131H 3 NC ⊖ + 1 NO	088 039 NZ1VZ-2131E3VSM09-M	-	-	-
					3131H 2 NC ⊖ + 2 NO	088 041 NZ1VZ-3131E3VSM09-M	-	-	-
					-	-	-	-	-
					-	-	-	-	-

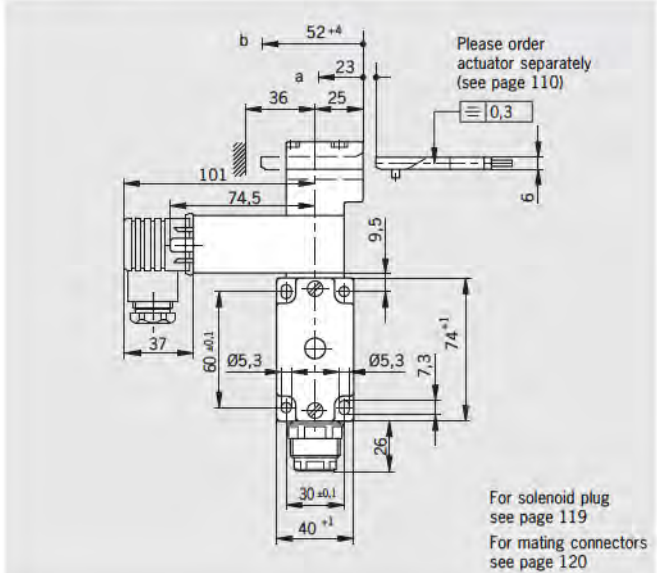
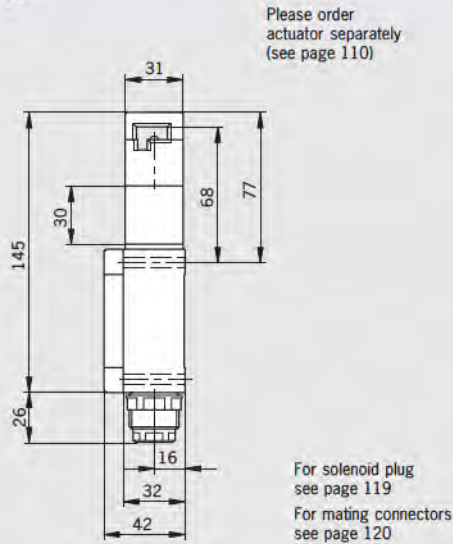
¹⁾ Use only solenoid plug with integrated rectifier (see page 119)



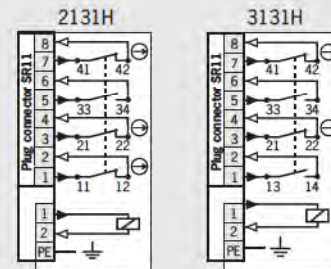
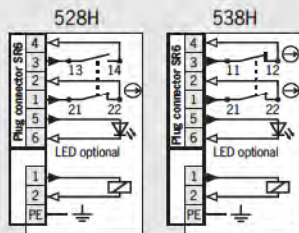
Plug connector SR6 6-pin + PE

Plug connector SR11 11-pin + PE

Dimension drawings



Wiring diagrams



Ordering table

Series	Actuator	Connection	Guard locking	Solenoid voltage	Switching element	Function display		
						Without LED	12-60V red LED	230 V red LED
NZ	VZ Separate Actuator	2 Plug connector SR6	VSM Mech. guard locking closed-circuit principle 230 V AC	04 24 V DC	528H 1 NC + 1 NO	037 299 NZ2VZ-528E3VSM04	045 856 NZ2VZ-528E3VSM04L060	070 039 NZ2VZ-528E3VSM04L220
					538H 2 NC	050 428 NZ2VZ-538E3VSM04	059 427 NZ2VZ-538E3VSM04L060	On request
				09 ¹⁾ 24 V AC	528H 1 NC + 1 NO	055 718 NZ2VZ-528E3VSM09	On request	On request
					538H 2 NC	076 502 NZ2VZ-538E3VSM09	On request	On request
		04 24 V DC	2 Plug connector SR11	VSM mech. guard locking closed-circuit principle	2131H 3 NC + 1 NO	074 471 NZ2VZ-2131E3VSM04	-	-
					3131H 2 NC + 2 NO	074 472 NZ2VZ-3131E3VSM04	-	-

1) Use only solenoid plug with integrated rectifier (see page 119)



Safety switch NZ.VZ.VSE with guard locking without guard lock monitoring

- ▶ Housing according to EN 50041
- ▶ Plug connector optional
- ▶ LED optional



Approach direction

- Horizontal
- Can be adjusted in 90° steps.

Solenoid operating voltage and optional LED-function display

A function display is available for the following voltage ranges:

- | Solenoid | LED |
|-----------------|---------------------------------|
| ▶ DC 24 V ±10% | AC/DC 12-60 V red |
| ▶ AC 110 V ±15% | AC 110 V ±15% red ¹⁾ |
| ▶ AC 230 V ±15% | AC 230 V ±15% red ¹⁾ |

Guard locking type

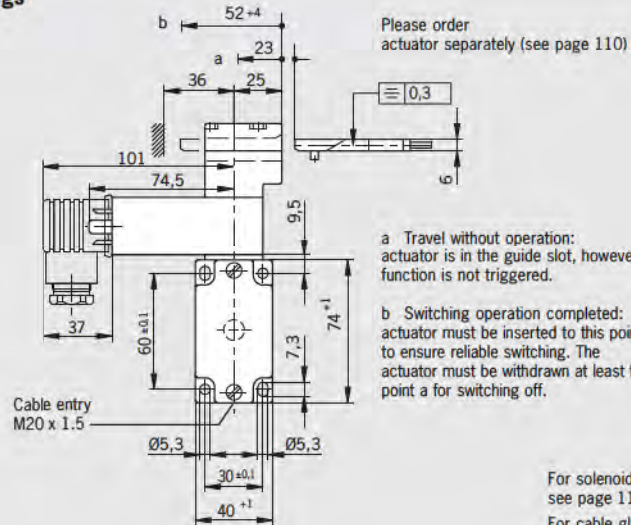
VSE Open-circuit current principle, guard locking by applying voltage to the solenoid. Release by spring force.

Switching elements (see also page 13/14)

- ▶ **511** Snap-action switching element
1 NC ⊖ + 1 NO
- ▶ **528H** Slow-action switching element
1 NC ⊖ + 1 NO
- ▶ **538H** Slow-action switching element
2 NC ⊖
- ▶ **2131H** Slow-action switching element
3 NC ⊖ + 1 NO
- ▶ **3131H** Slow-action switching element
2 NC ⊖ + 2 NO

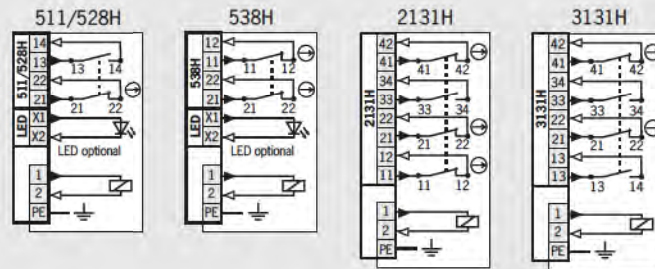
Cable entry M20 x 1.5

Dimension drawings



For solenoid plug see page 119
For cable glands see page 124

Wiring diagrams



Ordering table

Series	Actuator	Connection	Guard locking	Solenoid voltage	Switching element	Function display			
						Without LED	12-60V red LED	110 V red LED	230 V red LED
NZ	VZ Separate actuator	1 Cable entry M20 x 1.5	VSE Electr. guard locking open-circuit current principle	04 24 V DC	511 1 NC ⊖ + 1 NO	090 343 NZ1VZ-511E3VSE04-M	On request	On request	On request
					528H 1 NC ⊖ + 1 NO	079 300 NZ1VZ-528E3VSE04-M	082 130 NZ1VZ-528E3VSE04I060-M	On request	091 738 NZ1VZ-528E3VSE04L220-M
					538H 2 NC ⊖	089 905 NZ1VZ-538E3VSE04-M	082 128 NZ1VZ-538E3VSE04L060-M	On request	On request
					2131H 3 NC ⊖ + 1 NO	082 134 NZ1VZ-2131E3VSE04-M	-	-	-
					3131H 2 NC ⊖ + 2 NO	088 051 NZ1VZ-3131E3VSE04-M	-	-	-
					528H 1 NC ⊖ + 1 NO	082 133 NZ1VZ-528E3VSE07-M	090 337 NZ1VZ-528E3VSE07L060-M	089 484 NZ1VZ-528E3VSE07L110-M	090 336 NZ1VZ-528E3VSE07L220-M
				07 ¹⁾ 110 V AC	538H 2 NC ⊖	088 048 NZ1VZ-538E3VSE07-M	On request	090 348 NZ1VZ-538E3VSE07L110-M	On request
					2131H 3 NC ⊖ + 1 NO	088 036 NZ1VZ-2131E3VSE07-M	-	-	-
					3131H 2 NC ⊖ + 2 NO	088 042 NZ1VZ-3131E3VSE07-M	-	-	-
					528H 1 NC ⊖ + 1 NO	088 047 NZ1VZ-528E3VSE09-M	090 346 NZ1VZ-528E3VSE09L060-M	On request	090 335 NZ1VZ-528E3VSE09L220-M
					538H 2 NC ⊖	088 035 NZ1VZ-538E3VSE09-M	On request	On request	090 334 NZ1VZ-538E3VSE09L220-M
					2131H 3 NC ⊖ + 1 NO	088 037 NZ1VZ-2131E3VSE09-M	-	-	-
				09 ¹⁾ 230 V AC	3131H 2 NC ⊖ + 2 NO	088 043 NZ1VZ-3131E3VSE09-M	-	-	-

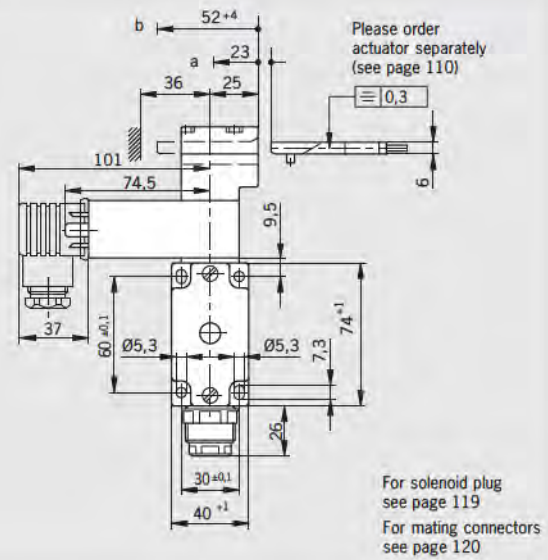
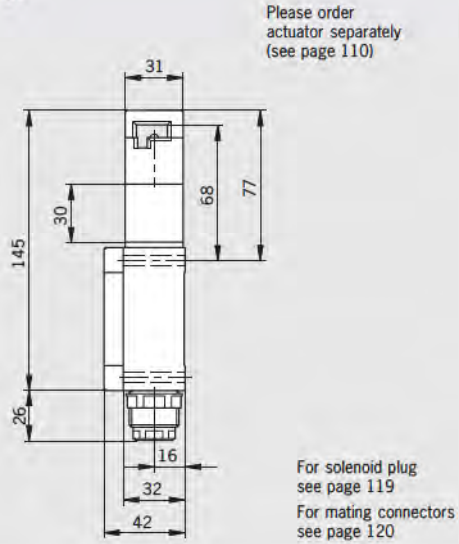
¹⁾ Use only solenoid plug with integrated rectifier (see page 119)



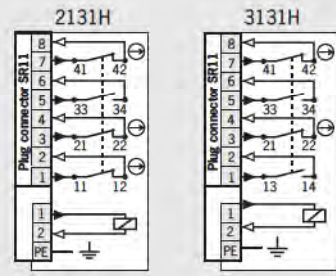
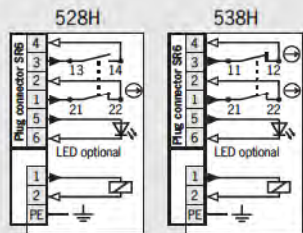
Plug connector SR6
6-pin + PE

Plug connector SR11
11-pin + PE

Dimension drawings



Wiring diagrams



Ordering table

Series	Actuator	Connection	Guard locking	Solenoid voltage	Switching element	Function display			
						Without LED	12-60V red LED	110 V red LED	
NZ	VZ Separate actuator	2 Plug connector SR6	VSE Electr. guard locking open-circuit current principle	04 24 V DC	528H 1 NC ⊖ + 1 NO	044 894 NZ2VZ-528E3VSE04	046 742 NZ2VZ-528E3VSE04L060	On request	
					538H 2 NC ⊖	047 837 NZ2VZ-538E3VSE04	057 921 NZ2VZ-538E3VSE04L060	On request	
		2 Plug connector SR11	VSE Electr. guard locking open-circuit current principle	04 24 V DC	528H 1 NC ⊖ + 1 NO	On request	On request	070 290 NZ2VZ-528E3VSE07L110	
					2131H 3 NC ⊖ + 1 NO	074 473 NZ2VZ-2131E3VSE04	-	-	
					3131H 2 NC ⊖ + 2 NO	074 474 NZ2VZ-3131E3VSE04	-	-	

1) Use only solenoid plug with integrated rectifier (see page 119)



Safety switch NZ.VZ.VSH with guard locking without guard lock monitoring

- ▶ Housing according to EN 50041
- ▶ Manual release
- ▶ Plug connector optional



Approach direction

- Horizontal
- Can be adjusted in 90° steps.

Guard locking type

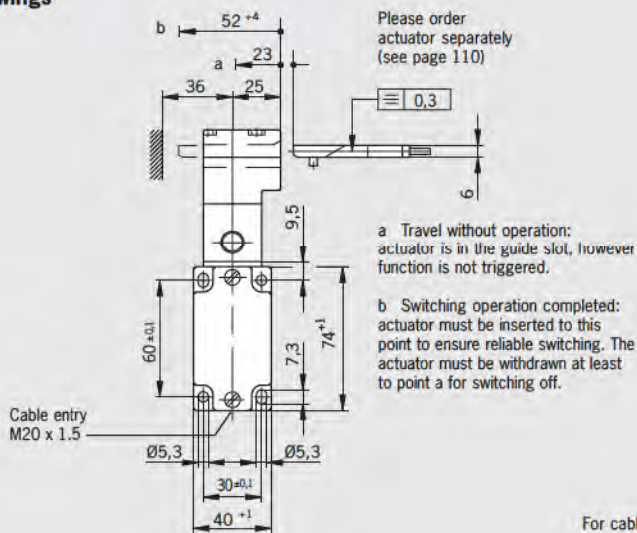
VSH Mechanical locking by spring force. Manual release.

Switching elements (see also Page 13/14)

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

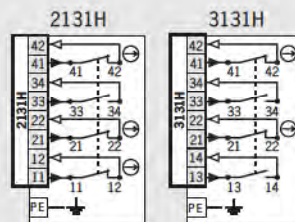
Cable entry M20 x 1.5

Dimension drawings



For cable glands see page 124

Wiring diagrams



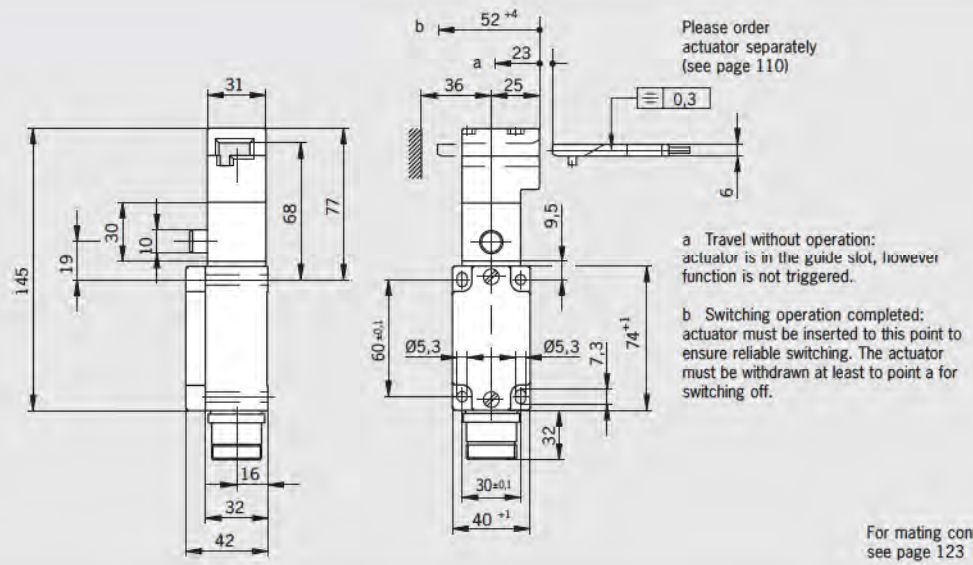
Ordering table

Series	Actuator	Connection	Guard locking	Switching element	Function display
					Without LED
NZ	VZ Separate actuator	1 Cable entry M20 x 1.5	VSH Manual guard locking not powered	2131H	089 483
				3 NC ⊖ + 1 NO	NZ1VZ-2131E3VSHM
				3131H	089 915
				2 NC ⊖ + 2 NO	NZ1VZ-3131E3VSHM

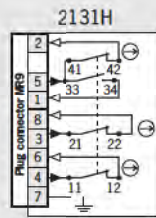


Plug connector MR8
7-pin + PE

Dimension drawings



Wiring diagrams



Ordering table

Series	Actuator	Connection	Guard locking	Switching element	Function display
					Without LED
NZ	VZ Separate actuator	1...8C Plug connector MR8	VSH Manual guard locking not powered	2131H 3 NC \ominus + 1 NO	093 611 NZ1VZ-2131E3VSH-8C-GMMF


For safety precautions see page 179
For technical data see page 151







Safety switch NZ.VZ.VS... with guard locking




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. 0.7	kg
Max. approach speed		20	m/min
Approach speed, min.		0.02 (for switching element ES511)	m/min
Actuating force		45	N
Extraction force		40	N
Retention force		35	N
Locking force, max.		2000	N
Locking force F _{zh} in accordance with test principles GSET-19		1500	N

Switching element		 	
Parameter		Value	Unit
Switching principle		Snap-action switching element	Slow-action switching element
Switching elements with 2 switching elements	511 1 NC ⊖ + 1 NO	528H 1 NC ⊖ + 1 NO	538H 2 NC ⊖
Switching elements with 4 switching elements	-	2131H 3 NC ⊖ + 1 NO	3131H 2 NC ⊖ + 2 NO
Min. switching current at 24 V DC	10	1	mA
Switching current max.	6	4	A
Contact closing time	< 4	-	ms
Contact bounce time	< 3	-	ms
Rated impulse withstand voltage U _{imp}		2.5	kV
Contact material		Silver alloy, gold flashed	

Guard locking (not for NZ.VZ.VSH)		 	
Parameter		Value	Unit
Solenoid operating voltage		DC 24 V +10/-15% AC 110 V +10/-15% ¹⁾ AC 230 V +10/-15% ¹⁾	
Connection		Switch mounted connector (2-pin + PE) according to 43 650	
Conductor cross-section		For technical data on the solenoid plug see page 101	
Duty cycle		100	%
Power consumption		< 10	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 according to IEC 60529		IP 65	
Rated insulation voltage U _i		250	V AC/DC
Switching element		Snap-action switching element	Slow-action switching element
Conventional thermal current I _{th}	511	528H, 538H, 2131H, 3131H	
Short circuit protection according to IEC 60269-1 (control circuit fuse)	6	4	A
Utilization category to IEC 60947-5-1	6	4	A gG
	AC-12	I _e 10 A U _e 230 V	-
	AC-15	I _e 6 A U _e 230 V	I _e 4 A U _e 230 V
	DC-13	I _e 6 A U _e 24 V	I _e 4 A U _e 24 V

1) Use only solenoid plug with integrated rectifier

Connection, plug connector SR6



Parameter		Value	Unit
Connection		Plug connector according to DIN 43651	
Version		SR6 (6-pin + PE)	
Degree of protection according to IEC 60529		IP 65 ²⁾	
Rated insulation voltage U _i		250	V AC/DC
Switching element		Slow-action switching element 528H, 538H	
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 MR8



Parameter		Value	Unit
Connection		Plug connector	
Version		MR8 (7-pin + PE)	
Degree of protection according to IEC 60529		IP 65 ²⁾	
Rated insulation voltage U _i		250	V AC/DC
Switching element		Slow-action switching element 2131H	
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 SR11



Parameter		Value	Unit
Connection		Plug connector	
Version		SR11 (11-pin + PE)	
Degree of protection according to IEC 60529		IP 65 ²⁾	
Rated insulation voltage U _i		50	V AC/DC
Switching element		Slow-action switching element 2131H, 3131H	
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	

2) Screwed tight with the related plug connector (see page 120 and 123)



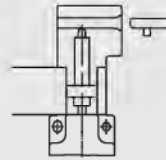
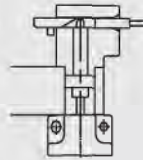
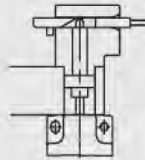
Switching functions NZ.VZ.VS

Actuator:
Switching
position:

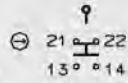
Inserted
locked

Inserted
not
locked

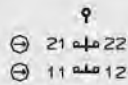
Removed
not
locked



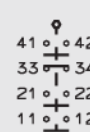
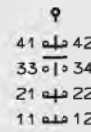
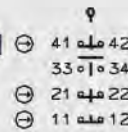
511
528



538



2131



3131

