

Selection table for safety switches NM with safety function

Actuating element								Connection		Housing		Switching element			Page
WO	RB	KB	HB	AV	AL	AG	AK	M	SM4	Short	Long	One contact	Two contacts	Three contacts	
													1 NC ⊖		14
													1 NC ⊖ + 1 NO,		14
													2 NC ⊖		15
															15
															16
															16
															17
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															20
															20

Safety switch NM..WO with domed plunger



Approach direction



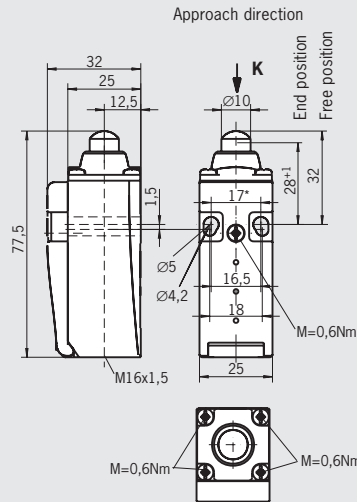
Vertical

Switching elements

- ▶ **ES01** Slow-action switching element
1 NC ⊖
- ▶ **ES11** Slow-action switching element
1 NC ⊖ + 1 NO
- ▶ **ES02** Slow-action switching element
2 NC ⊖
- ▶ **ES12** Slow-action switching element
2 NC ⊖ + 1 NO
- ▶ **ES03** Slow-action switching element
3 NC ⊖

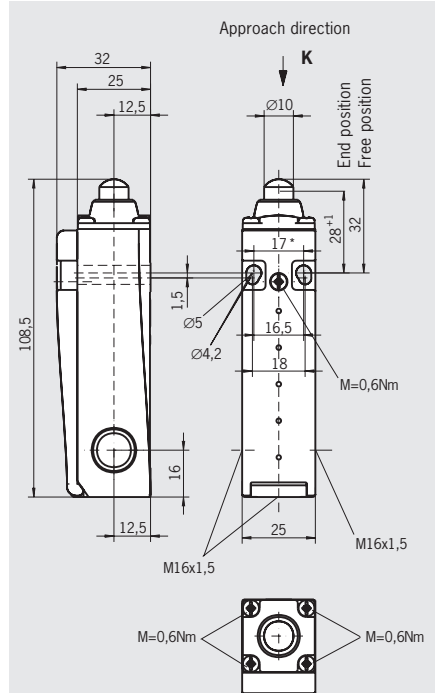
Cable entry M16 x 1.5
Short housing

Dimension drawing



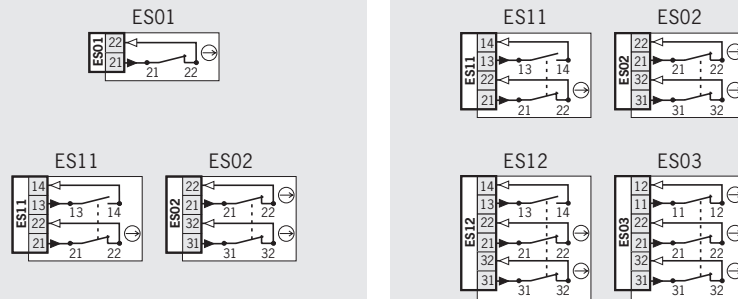
For cable glands see page 104

Cable entry M16 x 1.5
Long housing



For cable glands see page 104

Wiring diagrams Switch not actuated



Ordering table

Series	Actuator	Connection	Housing	Switching element	Order No. / Item
NM	WO Domed plunger	Cable entry 1 x M16 x 1.5	Short	01 1 NC ⊖	084495 NM01WOK-M
				11 1 NC ⊖ + 1 NO	095375 NM11WOK-MC2069
			Long	02 2 NC ⊖	095374 NM02WOK-MC2069
				11 1 NC ⊖ + 1 NO	084496 NM11WOK-M
		Cable entry 3 x M16 x 1.5	Long	02 2 NC ⊖	084497 NM02WOK-M
				12 2 NC ⊖ + 1 NO	084498 NM12WOK-M
			Long	03 3 NC ⊖	084499 NM03WOK-M

Safety switch NM..RB with roller plunger



Approach direction



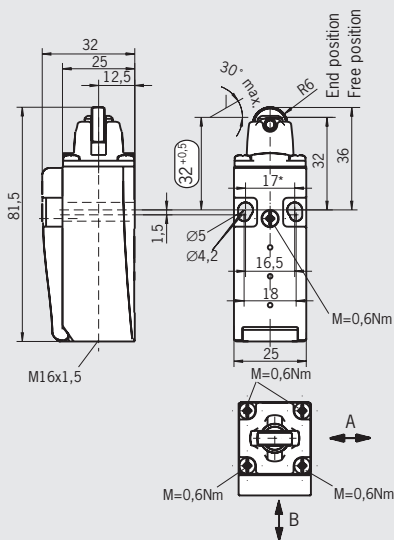
Horizontal
Can be adjusted in 90° steps.

Switching elements

- ▶ **ES01** Slow-action switching element
1 NC ⊖
- ▶ **ES11** Slow-action switching element
1 NC ⊕ + 1 NO
- ▶ **ES02** Slow-action switching element
2 NC ⊖
- ▶ **ES12** Slow-action switching element
2 NC ⊕ + 1 NO
- ▶ **ES03** Slow-action switching element
3 NC ⊖

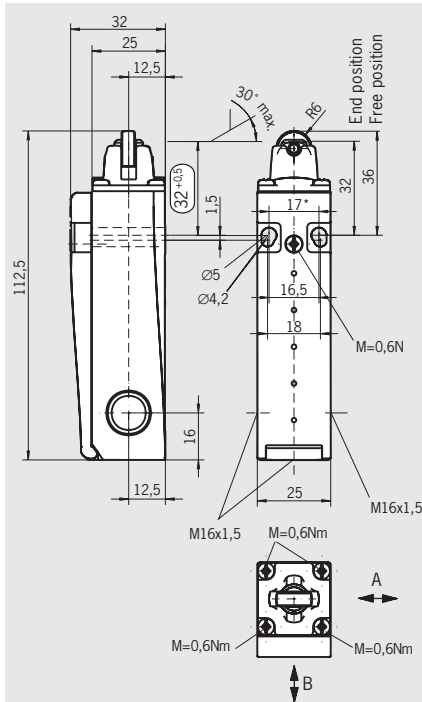
Cable entry M16 x 1.5
Short housing

Dimension drawing



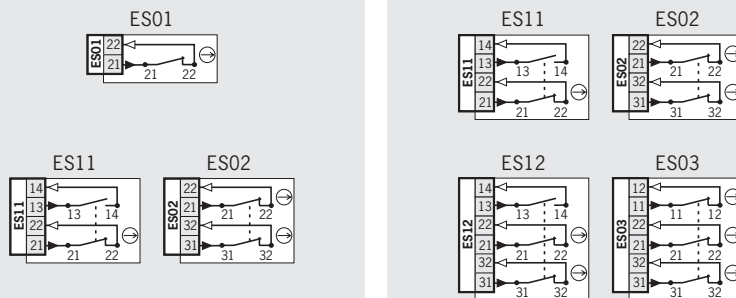
For cable glands see page 104

Cable entry M16 x 1.5
Long housing



For cable glands see page 104

Wiring diagrams Switch not actuated



Ordering table

Series	Actuator	Connection	Housing	Switching element	Order No. / Item
NM	RB Roller plunger	Cable entry 1 x M16 x 1.5		01 1 NC ⊖	084515 NM01RBA-M
				11 1 NC ⊕ + 1 NO	095373 NM11RBA-MC2069
				02 2 NC ⊖	095372 NM02RBA-MC2069
				11 1 NC ⊕ + 1 NO	084516 NM11RBA-M
		Cable entry 3 x M16 x 1.5		02 2 NC ⊖	084517 NM02RBA-M
				12 2 NC ⊕ + 1 NO	084518 NM12RBA-M
				03 3 NC ⊖	084519 NM03RBA-M

For safety precautions see page 160
For technical data see page 117



Safety switch NM..KB with roller arm



Approach direction



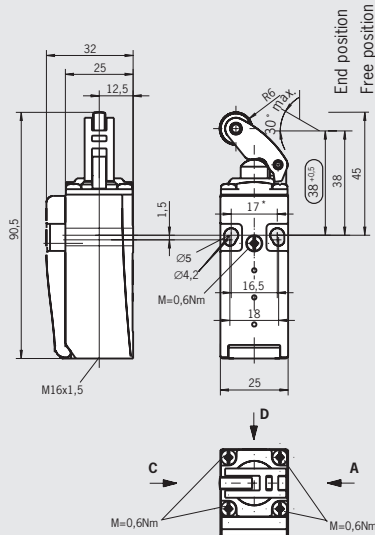
Horizontal
Can be adjusted in 90° steps.

Switching elements

- ▶ **ES01** Slow-action switching element
1 NC ⊖
- ▶ **ES11** Slow-action switching element
1 NC ⊖ + 1 NO
- ▶ **ES02** Slow-action switching element
2 NC ⊖
- ▶ **ES12** Slow-action switching element
2 NC ⊖ + 1 NO
- ▶ **ES03** Slow-action switching element
3 NC ⊖

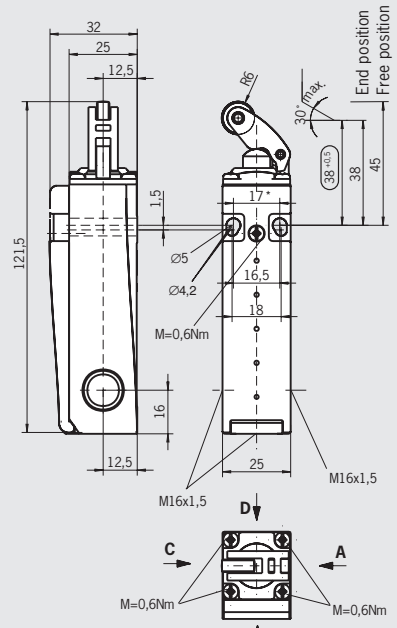
Cable entry M16 x 1.5 Short housing

Dimension drawing



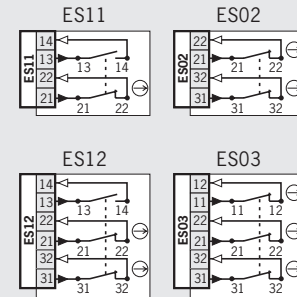
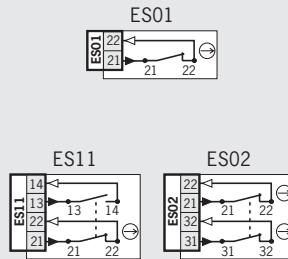
For cable glands see page 104

Cable entry M16 x 1.5 Long housing



For cable glands see page 104

Wiring diagrams Switch not actuated



Ordering table

Series	Actuator	Connection	Housing	Switching element	Order No. / Item
NM	KB Roller arm	Cable entry 1 x M16 x 1.5		01 1 NC ⊖	084522 NMO1KBA-M
				11 1 NC ⊖ + 1 NO	095371 NM11KBA-MC2069
				02 2 NC ⊖	095370 NM02KBA-MC2069
				11 1 NC ⊖ + 1 NO	084523 NM11KBA-M
		Cable entry 3 x M16 x 1.5		02 2 NC ⊖	084524 NMO2KBA-M
				12 2 NC ⊖ + 1 NO	084525 NM12KBA-M
				03 3 NC ⊖	084526 NMO3KBA-M

Safety switch NM..HB with lever arm



Approach direction



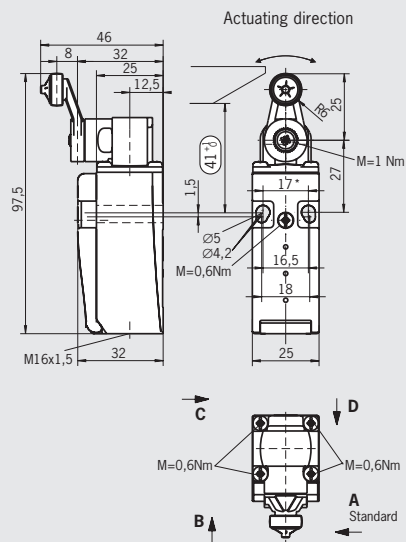
Horizontal
Can be adjusted in 90° steps.

Switching elements

- ▶ **ES01** Slow-action switching element
1 NC ⊖
- ▶ **ES11** Slow-action switching element
1 NC ⊕ + 1 NO
- ▶ **ES02** Slow-action switching element
2 NC ⊖
- ▶ **ES12** Slow-action switching element
2 NC ⊕ + 1 NO
- ▶ **ES03** Slow-action switching element
3 NC ⊖

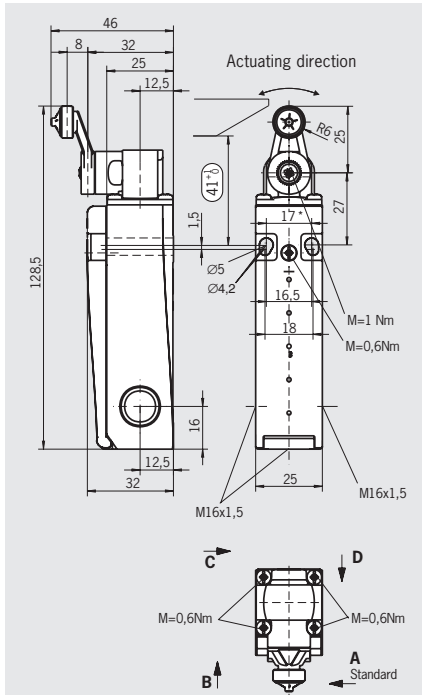
Cable entry M16 x 1.5 Short housing

Dimension drawing



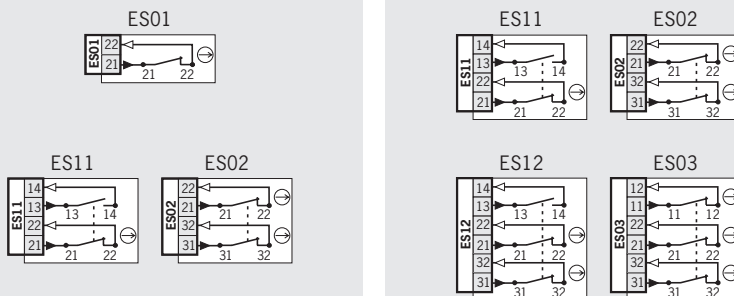
For cable glands see page 104

Cable entry M16 x 1.5 Long housing



For cable glands see page 104

Wiring diagrams Switch not actuated



Ordering table

Series	Actuator	Connection	Housing	Switching element	Order No. / Item
NM	HB Lever arm	Cable entry 1 x M16 x 1.5		01 1 NC ⊖	084527 NM01HBA-M
				11 1 NC ⊕ + 1 NO	095369 NM11HBA-MC2069
				02 2 NC ⊖	095368 NM02HBA-MC2069
				11 1 NC ⊕ + 1 NO	084528 NM11HBA-M
		Cable entry 3 x M16 x 1.5		02 2 NC ⊖	084529 NM02HBA-M
				12 2 NC ⊕ + 1 NO	084530 NM12HBA-M
				03 3 NC ⊖	084531 NM03HBA-M

For safety precautions see page 160
For technical data see page 117

Safety switch NM..AV / NM..AL



- ▶ Hinged actuator as solid shaft
- ▶ Shaft length 75 mm or 110 mm

Cable entry M16 x 1.5
Short housing

Cable entry M16 x 1.5
Long housing

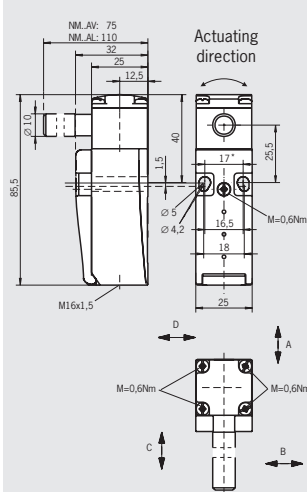
Plug connector M12
4-pin, long housing



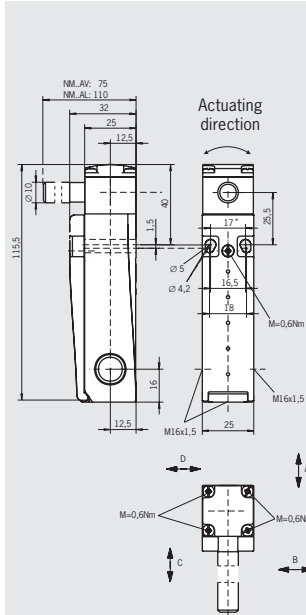
Switching elements

- ▶ **ES01** Slow-action switching element 1 NC ⊖
- ▶ **ES11** Slow-action switching element 1 NC ⊕ + 1 NO
- ▶ **ES02** Slow-action switching element 2 NC ⊖
- ▶ **ES12** Slow-action switching element 2 NC ⊖ + 1 NO
- ▶ **ES03** Slow-action switching element 3 NC ⊖

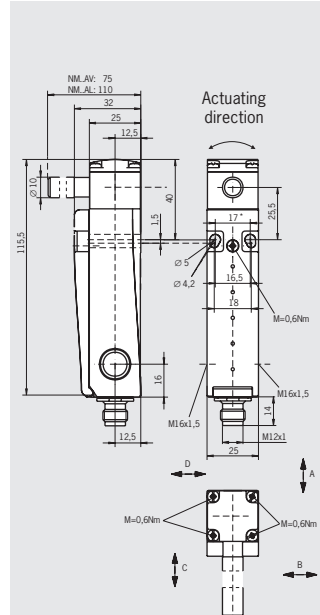
Dimension drawing



For cable glands see page 104

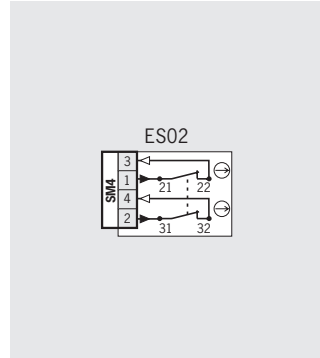
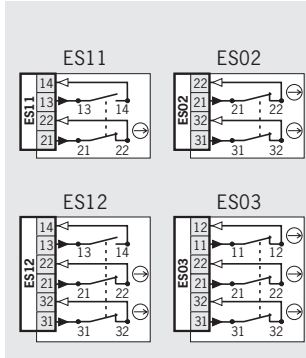
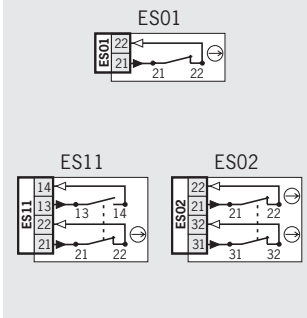


For cable glands see page 104



For plug connectors see page 99

Wiring diagrams Switch not actuated



Ordering table

Series	Actuator	Connection	Housing	Switching element	Order No. / Item
NM	AV Hinged actuator solid shaft length 75 mm	Cable entry 1 x M16 x 1.5	Short	01 1 NC ⊖	084545 NM01AV-M
				11 1 NC ⊕ + 1 NO	095367 NM11AV-MC2069
				02 2 NC ⊖	095366 NM02AV-MC2069
		Cable entry 3 x M16 x 1.5	Long	11 1 NC ⊕ + 1 NO	084546 NM11AV-M
				02 2 NC ⊖	084547 NM02AV-M
				12 2 NC ⊕ + 1 NO	084548 NM12AV-M
	AL Hinged actuator solid shaft length 110 mm	Cable entry 1 x M16 x 1.5	Short	01 1 NC ⊖	079117 NM01AL-M
				11 1 NC ⊕ + 1 NO	095365 NM11AL-MC2069
				02 2 NC ⊖	095364 NM02AL-MC2069
		Cable entry 3 x M16 x 1.5	Long	11 1 NC ⊕ + 1 NO	079118 NM11AL-M
				02 2 NC ⊖	079119 NM02AL-M
				12 2 NC ⊕ + 1 NO	079120 NM12AL-M
Plug connector M12	Long	03 3 NC ⊖	079121 NM03AL-M		
			02 2 NC ⊖	093246 NM02AL-SM4	

Safety switch NM..AG

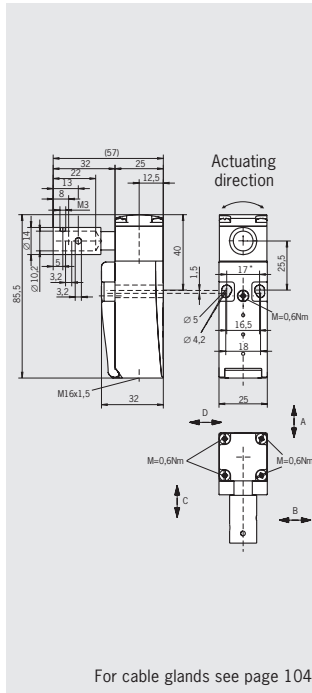
- ▶ Hinged actuator as hollow shaft
- ▶ Internal diameter 10.2 mm



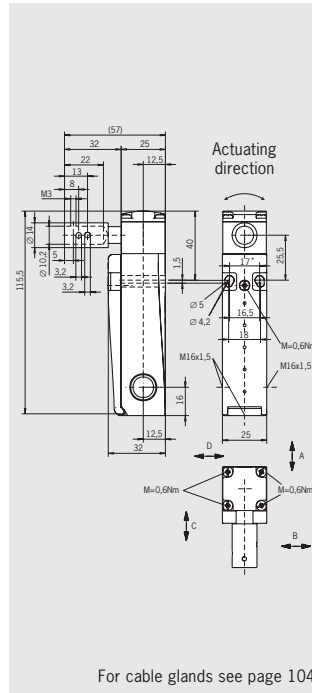
Switching elements

- ▶ **ES01** Slow-action switching element 1 NC ⊖
- ▶ **ES11** Slow-action switching element 1 NC ⊖ + 1 NO
- ▶ **ES02** Slow-action switching element 2 NC ⊖
- ▶ **ES12** Slow-action switching element 2 NC ⊖ + 1 NO
- ▶ **ES03** Slow-action switching element 3 NC ⊖

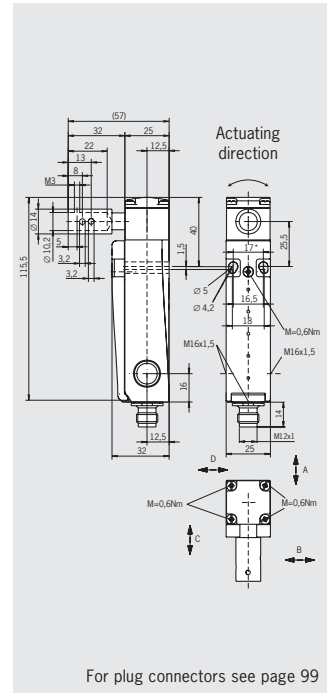
Cable entry M16 x 1.5
Short housing



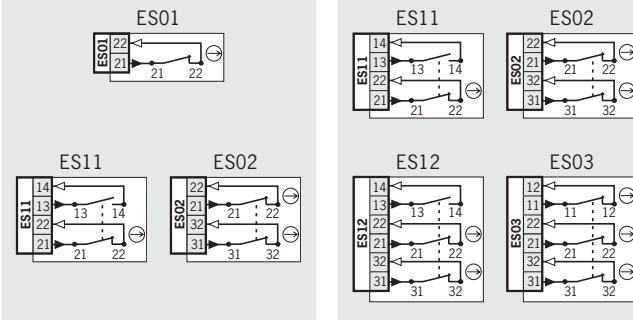
Cable entry M16 x 1.5
Long housing



Plug connector M12
4-pin, long housing



Wiring diagrams Switch not actuated



Ordering table

Series	Actuator	Connection	Housing	Switching element	Order No. / Item	
NM	AG Hinged actuator hollow shaft ∅ 10.2 mm	Cable entry 1 x M16 x 1.5		01 1 NC ⊖	084553 NM01AG-M	
				11 1 NC ⊖ + 1 NO	095361 NM11AG-MC2069	
				02 2 NC ⊖	095360 NM02AG-MC2069	
		Cable entry 3 x M16 x 1.5		11 1 NC ⊖ + 1 NO	084554 NM11AG-M	
				02 2 NC ⊖	084555 NM02AG-M	
				12 2 NC ⊖ + 1 NO	084556 NM12AG-M	
		Plug connector M12		03 3 NC ⊖	084557 NM03AG-M	
					02 2 NC ⊖	084565 NM02AG-SM4

For safety precautions see page 160
For technical data see page 117

Safety switch NM..AK

- ▶ Hinged actuator as hollow shaft
- ▶ Internal diameter 8.2 mm

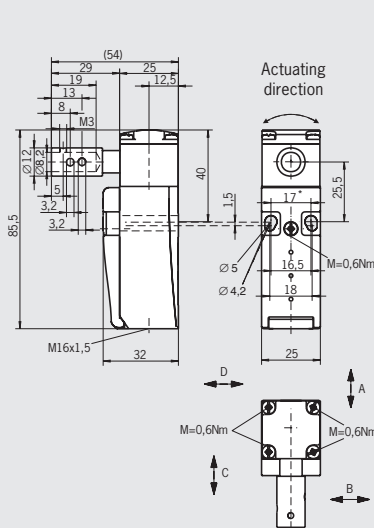


Switching elements

- ▶ **ES01** Slow-action switching element
1 NC ⊖
- ▶ **ES11** Slow-action switching element
1 NC ⊖ + 1 NO
- ▶ **ES02** Slow-action switching element
2 NC ⊖
- ▶ **ES12** Slow-action switching element
2 NC ⊖ + 1 NO
- ▶ **ES03** Slow-action switching element
3 NC ⊖

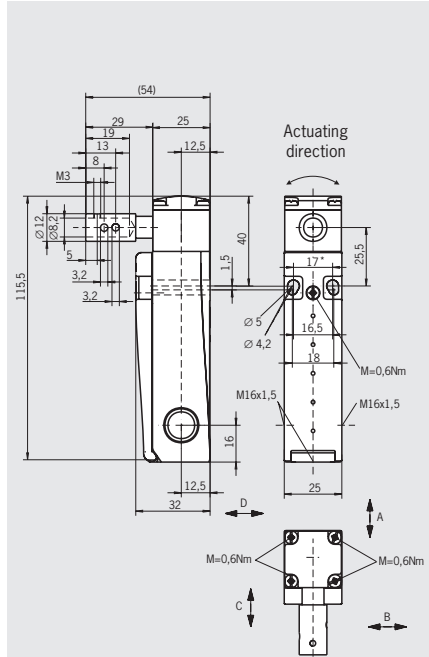
Cable entry M16 x 1.5 Short housing

Dimension drawing



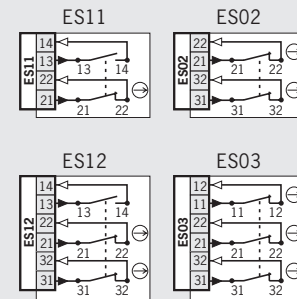
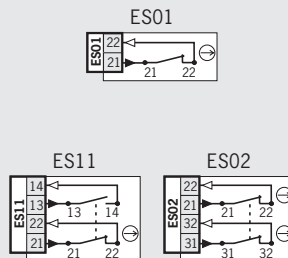
For cable glands see page 104

Cable entry M16 x 1.5 Long housing



For cable glands see page 104

Wiring diagrams Switch not actuated



Ordering table

Series	Actuator	Connection	Housing	Switching element	Order No. / Item
NM	AK Hinged actuator hollow shaft Ø 8.2 mm	Cable entry 1 x M16 x 1.5	Short	01 1 NC ⊖	084559 NM01AK-M
				11 1 NC ⊖ + 1 NO	095363 NM11AK-MC2069
			Long	02 2 NC ⊖	095362 NM02AK-MC2069
				11 1 NC ⊖ + 1 NO	084560 NM11AK-M
		Cable entry 3 x M16 x 1.5	02 2 NC ⊖	084561 NM02AK-M	
			12 2 NC ⊖ + 1 NO	084562 NM12AK-M	
			03 3 NC ⊖	084563 NM03AK-M	

Safety switch NM...



The technical data on switches and switching elements apply to all connections. Further technical data are given for the connection selected.

Reliability values acc. to EN ISO 13849-1

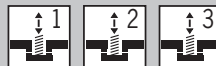
Parameter	Value	Unit
B _{10d}	2 x 10 ⁷ operating cycles	

Switch



Parameter	Value			Unit
Housing material	Reinforced thermoplastic			
Mechanical life	WO/RB 30 x 10 ⁶	KB/HB 20 x 10 ⁶	AV/AL/AG/AK > 4 x 10 ⁶	Operating cycles
Weight	approx. 0.1			kg
Actuator material	Plastic; hinged actuators steel (stainless)			
Approach speed, max.	60			m/min
Actuating force	15			N

Switching element



Parameter	Value				Unit
Switching principle	Slow-action switching element				
Switching elements with 1 switching element	ES01 1 NC ⊖				
Switching elements with 2 switching elements	ES11 1 NC ⊖ + 1 NO	ES02 2 NC ⊖	ES12 2 NC ⊖ + 1 NO	ES03 3 NC ⊖	
Switching current, min., at DC 24 V	1				mA
Switching voltage, min.	12				V
Contact material	Silver alloy, gold flashed				

Connection, cable entry M16 x 1.5



Parameter	Value	Unit
Ambient temperature	- 20 ... + 80	°C
Connection	Screw terminal	
Version	M16 x 1.5	
Conductor cross-section	0.34 ... 1.5	mm ²
Degree of protection according to IEC 60529	IP 67	
Rated insulation voltage U _i	250	V AC/DC
Rated impulse withstand voltage U _{imp}	2.5	kV
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 DC-13	I _e 4 A U _e 230 V I _e 4 A U _e 24 V

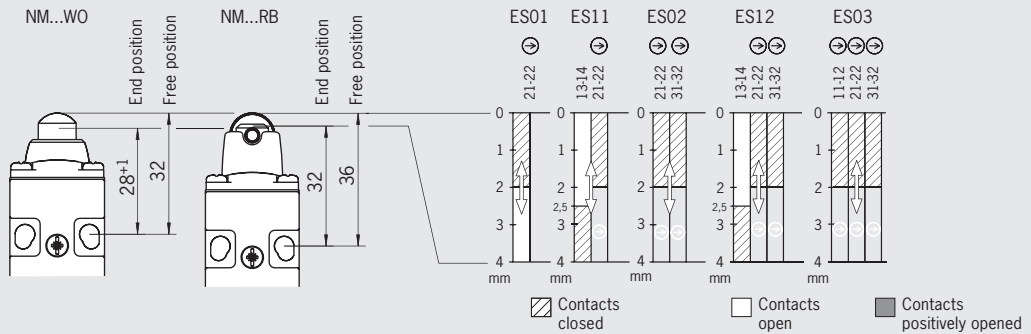
Connection, plug connector SM 4 (M12)



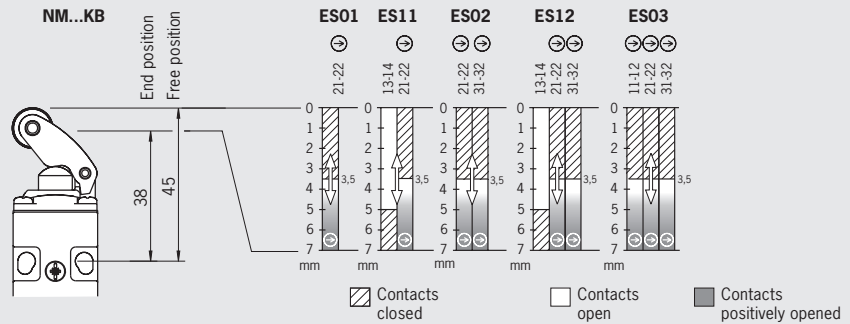
Parameter	Value	Unit
Ambient temperature	- 20 ... + 60	°C
Connection	Plug connector	
Version	M12 (4-pin)	
Degree of protection according to IEC 60529	IP 67 ¹⁾	
Rated insulation voltage U _i	250	V AC/DC
Rated impulse withstand voltage U _{imp}	2.3	kV
Conventional thermal current I _{th}	1.5	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)	4	A gG
Utilization category to IEC 60947-5-1	AC-15 DC-13	I _e 4 A U _e 230 V I _e 4 A U _e 24 V

1) Screwed tight with the related plug connector (see page 99)

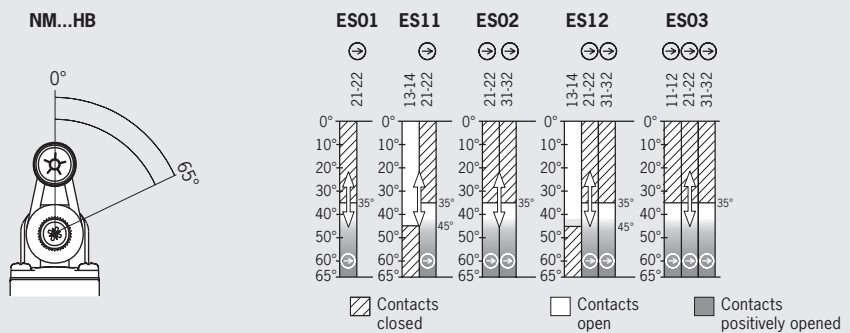
Travel diagram NM.WO/NM.RB



Travel diagram NM.KB



Travel diagram NM.HB



Travel diagram NM.AV/NM.AL/NM.AG/NM.AK

