

Linear actuators DLP, Copac

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Linear actuators DLP, Copac

Key features and type codes



General

-  - Diameter
80 ... 320 mm
-  - Stroke length
40 ... 600 mm
-  - Force
2,800 ... 48,000 N

Festo Copac linear valve actuators are ideally suited for use in water, sewage, industrial process water and sileage technology, as well as the paper and bulk goods industry. A clean solution for shut-off, safety and control slide valves. The Copac linear actuator acts directly upon the slide plate and facilitates accurate advancing to various positions.

- Fast or slow valve actuation
- Position sensing
- Internal air channels eliminate protruding tubing and attachments, and thus also harmful accumulation of contaminants
- Suitable for manual on-site use, as well as automatic operation
- Opening and closing actuated via flange-mounted solenoid valve with port pattern to Namur, or via valve terminals with a choice of 30 different fieldbus protocols
- Sturdy and reliable, even in aggressive environments
- Highly corrosion resistant
- Mounting port pattern to DIN 3358/ISO 5210 for direct mounting
- Port pattern to Namur VDI/VDE 3845 for attaching solenoid valves

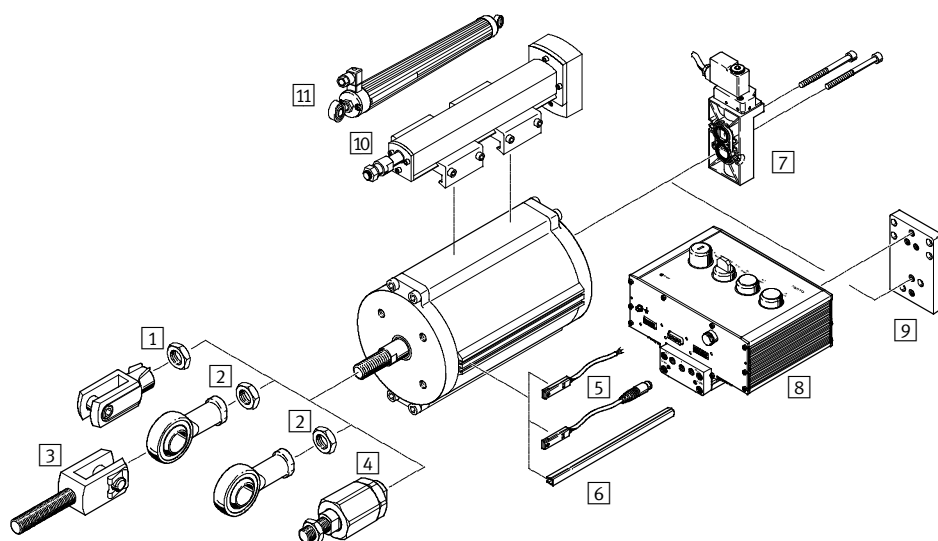


		DLP	—	100	—	125	—	A
Type								
DLP	Double-acting linear actuator							
Piston Ø [mm]								
Stroke [mm]								
Position sensing								
A	Via proximity sensor							

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Peripherals overview

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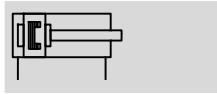
Mounting attachments and accessories					
	Brief description	DLP-80/100	DLP-125/160	DLP-200 ... 320	→ Page/Internet
1	Rod clevis SG	■	■	■	9
	Rod clevis, stainless steel CRSG	■	■	–	9
2	Rod eye SGS	■	■	■	9
	Rod eye, stainless steel CRSGS	■	■	–	9
3	Rod clevis SGA	■	■	■	9
4	Self-aligning rod coupler FK	■	■	■	9
5	Proximity sensor SMT-8F-I	■	■	■	11
	Proximity sensor SMT-8	■	■	■	10
	Proximity sensor SME-8	■	■	■	10
6	Slot cover ABP-5-S	■	■	■	15
7	Solenoid valve	■	■	■	solenoid valve
8	Local controller DLP-VSE	■	■	■	dlp-vse
9	Sub-base DLP-VSE-OBEN-NAMUR	■	■	■	dlp-vse
10	Measuring unit ASDLP	■	■	–	asdlp
11	Displacement encoder MLO-POT	■	■	■	mlo-pot

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Technical data

Function



- Ø - Diameter
80 ... 320 mm

- | - Stroke length
40 ... 600 mm

- ||| - Force
2,800 ... 48,000 N



General technical data							
Piston Ø	80	100	125	160	200	250	320
Pneumatic connection	G $\frac{1}{4}$						
Based on standard	DIN 3358						
Valve connection conforms to	VDI/VDE 3845 (NAMUR)						
Design	Piston cylinder, double-acting						
Cushioning	None						
Stroke reserve [mm]	2				4		
Assembly position	Any						
Position sensing	Via proximity sensor						
Efficiency actuator [%]	95						

Operating and environmental conditions		
Operating pressure ¹⁾ [bar]	2 ... 10	
Nominal operating pressure [bar]	6	
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)	
Ambient temperature ²⁾³⁾ [°C]	-20 ... +80	
Corrosion resistance class CRC ⁴⁾	3	
CE marking (see declaration of conformity) → www.festo.com	To EU Explosion Protection Directive (ATEX)	
ATEX category gas	II 2G	
Ex-ignition protection type gas	c T4	
ATEX category dust	II 2D	
EX-ignition protection type dust	c 120°C	
ATEX ambient temperature ³⁾	-20°C ≤ Ta ≤ +60°C	

1) Depending upon the counter force of the valve slide, a higher minimum pressure may be required to actuate the overall system

2) Further temperature ranges upon request

3) Note operating range of proximity sensors

4) Corrosion resistance class 3 according to Festo standard 940 070

Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface

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Technical data

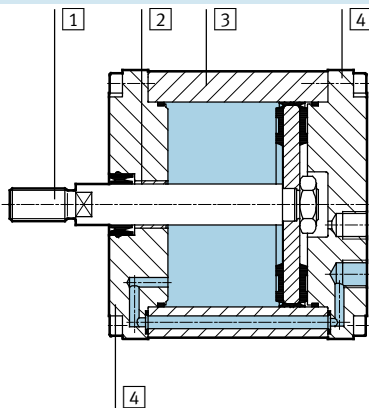
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Forces [N] and air consumption [NI]							
Piston Ø	80	100	125	160	200	250	320
Theoretical force at 6 bar, advancing	3,016	4,712	7,363	12,064	18,850	29,452	48,255
Theoretical force at 6 bar, retracting	2,827	4,524	6,881	11,581	18,080	28,698	47,501
Theoretical air consumption at 6 bar and 10 mm stroke, pushing	0.35	0.55	0.86	1.41	2.12	3.44	5.63
Theoretical air consumption at 6 bar and 10 mm stroke, pulling	0.33	0.53	0.80	1.35	2.11	3.35	5.54

Weights [g]							
Piston Ø	80	100	125	160	200	250	320
Basic weight with 0 mm stroke	1,843	2,801	4,855	5,854	12,831	21,117	33,907
Additional weight per 10 mm stroke	68	80	145	159	187	325	399
Moving load with 0 mm stroke	624	997	1,809	2,183	4,691	6,650	11,040
Additional moving load per 10 mm stroke	25	25	63	63	99	99	99

Materials

Sectional view



Linear actuator	
1	Piston rod
2	Rod bearing
3	Cylinder barrel Ø 80 ... 200
	Ø 250, 320
4	Cylinder cap
-	Seals

High-alloy rolled steel

Smooth composite material

Smooth anodised aluminium

Stainless steel

Extruded aluminium

Polyurethane, nitrile rubber

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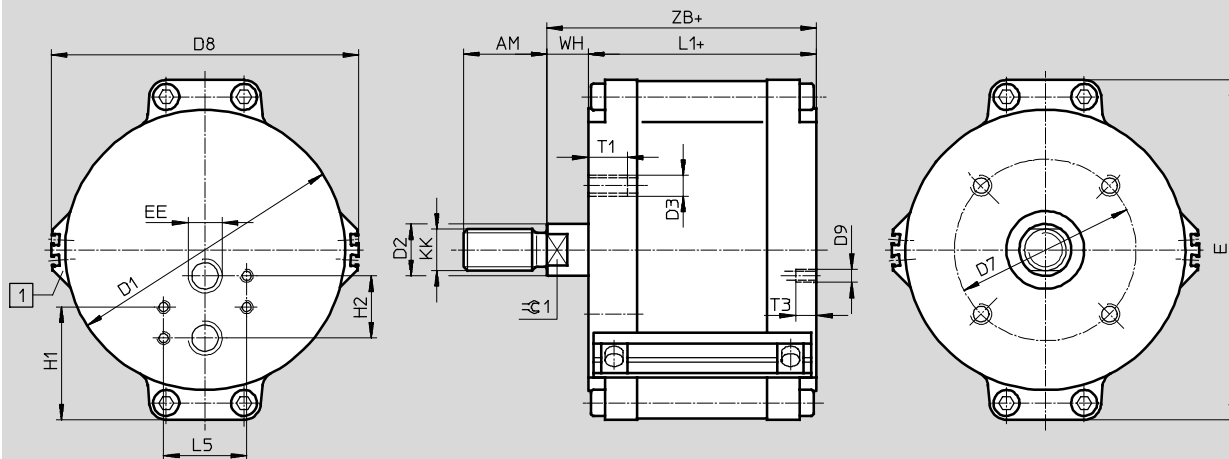
Technical data

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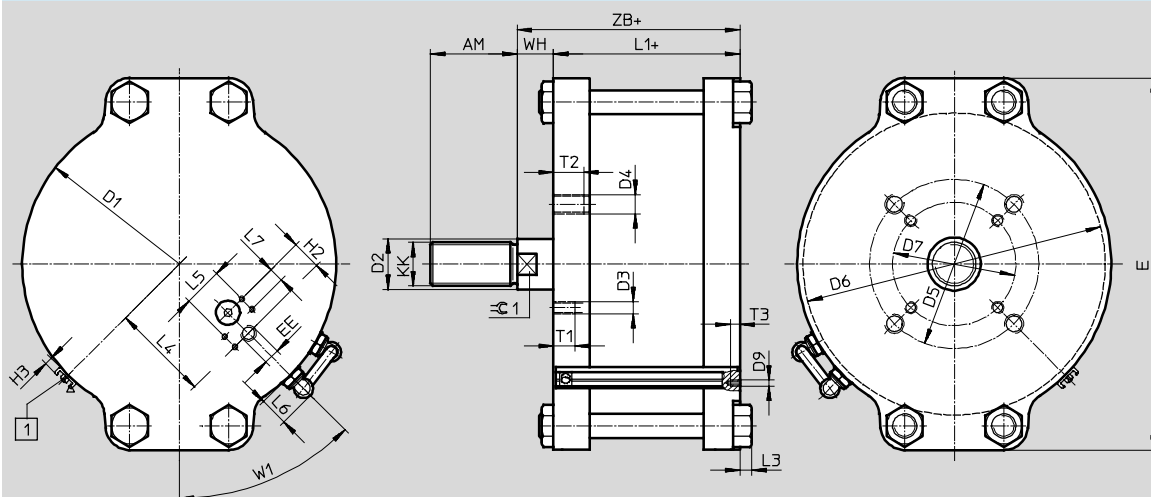
Dimensions

Download CAD data → www.festo.com

Ø 80 ... 160



Ø 200 ... 320



1 Mounting slots for proximity sensor SME/SMT-8 + = plus stroke length

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Technical data

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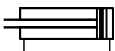
∅ [mm]	AM -2	D1 ∅	D2 ∅	D3 ∅	D4 ∅	D5 ∅	D6 ∅	D7 ∅	D8 ∅	D9 ∅	E	EE	H1	H2	H3
DLP-80-...-A	32	87	20	M8	-	-	-	70	99	M5	108	G $\frac{1}{4}$	43.5	24	-
DLP-100-...-A	32	108	20	M8	-	-	-	70	119	M5	131	G $\frac{1}{4}$	43.5	24	-
DLP-125-...-A	54	135	32	M10	-	-	-	102	147	M5	163	G $\frac{1}{4}$	43.5	24	-
DLP-160-...-A	54	170	32	M10	-	-	-	102	182	M5	199	G $\frac{1}{4}$	43.5	24	-
DLP-200-...-A	72	216	40	M10	M16	140	210	102	-	M5	271	G $\frac{1}{4}$	43.5	24	4.5
DLP-250-...-A	72	260	40	M10	M16	140	244	102	-	M5	308	G $\frac{1}{4}$	43.5	24	4.5
DLP-320-...-A	72	332	40	M10	M16	140	324	102	-	M5	378	G $\frac{1}{4}$	43.5	24	4.5

∅ [mm]	KK	L1	L3	L4	L5	L6	L7	T1	T2	T3	W1	WH	ZB	≤G1
DLP-80-...-A	M16x1.5	73 +1.4/-0.4	-	-	32	-	-	15	-	8	45°	16 +0.6/-1.8	89 +0.6/-0.8	16
		100 +1.4/-0.4												
DLP-80-...-A		76 +1.4/-0.4												
	M16x1.5	100 +1.4/-0.4	-	-	32	-	-	15	-	8	45°	16 +0.6/-1.8	116 +0.6/-0.8	16
DLP-100-...-A		104 +1.4/-0.4												
		100 +1.4/-0.4												
DLP-125-...-A	M27x2	114 +1.6/-0.6	-	-	32	-	-	18	-	8	45°	24 +0.8/-1.8	138 +0.8/-1.0	27
DLP-160-...-A	M27x2	114 +1.6/-0.6	-	-	32	-	-	18	-	8	45°	24 +1.2/-1.8	138 +1.2/-0.8	27
DLP-200-...-A	M36x2	150 +0.8/-1.0	10	81	32	24.5	12	20	24	8	45°	30 ±1.4	180 ±1	36
DLP-250-...-A	M36x2	152 +0.8/-1.4	25	94	32	24.5	12	20	25	8	45°	30 +1.8/-1.4	182 ±1	36
DLP-320-...-A	M36x2	159 +0.8/-1.4	-	130	32	24.5	12	20	25	8	45°	30 +1.8/-1.6	189 +0.8/-1.2	36

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Technical data

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Ordering data				
Version	Piston Ø [mm]	Stroke [mm]	Part No.	Type
With position sensing				
	80	40 ... 500	187 479	DLP-80-...-A
	100	50 ... 500	187 480	DLP-100-...-A
	125	50 ... 500	187 481	DLP-125-...-A
	160	100 ... 500	187 482	DLP-160-...-A
	200	100 ... 600	542 711	DLP-200-...-A
	250	100 ... 600	187 483	DLP-250-...-A
	320	150 ... 600	187 484	DLP-320-...-A



Note

Stroke length of the actuator

Generally, the stroke length of the Copac linear actuator corresponds to the nominal diameter of the process valve. The system tolerances may lead to a greater stroke range than the specified nominal stroke range of

the linear actuator. The zero point is set with an adjustable rod clevis. This ensures that the end position of the valve slide is reached and the zero position of the system is fixed.

Linear actuators DLP, Copac

Accessories

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Ordering data – Piston rod attachments				Technical data → Internet: piston rod attachment			
Designation	For Ø	Part No.	Type	Designation	For Ø	Part No.	Type
Rod eye SGS				Rod clevis SG			
	80, 100	9 263	SGS-M16x1,5		80, 100	6 146	SG-M16x1,5
	125, 160	10 774	SGS-M27x2		125, 160	14 987	SG-M27x2-B
	200, 250, 320	10 775	SGS-M36x2		200, 250, 320	9 581	SG-M36x2
Rod clevis SGA				Self-aligning rod coupler FK			
	80, 100	10 768	SGA-M16x1,5		80, 100	6 142	FK-M16x1,5
	125, 160	10 770	SGA-M27x2		125, 160	10 485	FK-M27x2
	200, 250, 320	10 771	SGA-M36x2		200, 250, 320	10 746	FK-M36x2

Ordering data – Piston rod attachments, corrosion-resistant				Technical data → Internet: crsg			
Designation	For Ø	Part No.	Type	Designation	For Ø	Part No.	Type
Rod eye CRSG				Rod clevis CRSGS			
	80, 100	13 571	CRSG-M16x1,5		80, 100	195 584	CRSGS-M16x1,5
	125, 160	185 361	CRSG-M27x2		125, 160	195 586	CRSGS-M27x2

Ordering data – Displacement encoders			Technical data → Internet: mlo	
	Stroke [mm]	Part No.	Type	
	100	192 213	MLO-POT-100-LWG	
	150	192 214	MLO-POT-150-LWG	
	225	152 645	MLO-POT-225-LWG	
	300	152 646	MLO-POT-300-LWG	
	360	152 647	MLO-POT-360-LWG	
	450	152 648	MLO-POT-450-LWG	
	600	152 650	MLO-POT-600-LWG	
	750	152 651	MLO-POT-750-LWG	

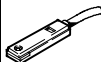
Ordering data – Plug socket for displacement encoder			Technical data → Internet: sd-4	
	Pin	Pin allocation	Part No.	Type
	1	Power supply	194 332	SD-4-WD-7
	2	Signal		
	3	0 V		
	4	PE (yellow), screened		

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Accessories

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Ordering data – Proximity sensor for T-slot, magneto-resistive					Technical data → Internet: smt-8	
	Switching output	Electrical connection		Cable length [m]	Part No.	Type
		Cable	Plug M8x1			
	N/O contact					
	PNP	3-wire	–	2.5	175 436	SMT-8-PS-K-LED-24-B
				5.0	175 434	SMT-8-PS-K5-LED-24-B
		–	3-pin	0.3	175 484	SMT-8-PS-S-LED-24-B
	NPN	3-wire	–	2.5	171 180	SMT-8-NS-K-LED-24-B
				–	3-pin	0.3

Ordering data – Proximity sensor for T-slot					Technical data → Internet: crsmt	
	Switching output	Electrical connection	Cable length [m]	Part No.	Type	
	N/O contact					
	PNP	Cable, 3-wire	2.5	525 563	CRSMT-8-PS-K2,5-LED-24	
			5.0	525 564	CRSMT-8-PS-K5-LED-24	

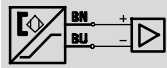
Ordering data – Proximity sensor for T-slot, magnetic reed				Technical data ➔ Internet: sme	
	Connection technology		Cable length [m]	Part No.	Type
	Cable	Cable with plug M8x1			
	N/O contact				
	Operating voltage range 0 ... 30 V AC/DC				
	3-wire	–	2.5	150 855	SME-8-K-LED-24
			5.0	175 404	SME-8-K5-LED-24
			7.5	530 491	SME-8-K-7,5-LED-24
	–	3-pin	0.3	150 857	SME-8-S-LED-24
	2-wire	–	2.5	171 169	SME-8-ZS-KL-LED-24
	Heat-resistant up to 120 °C				
	2-wire	–	2.5	161 756	SME-8-K-24-S6
	Operating voltage range 3 ... 250 V AC/DC				
	2-wire	–	2.5	152 820	SME-8-K-LED-230
	Operating voltage range 5 ... 250 V AC/DC				
	2-wire	–	2.5	538 816	SME-8-ZS-230V-K2,5Q-OE
			5.0	538 817	SME-8-ZS-230V-K5,0Q-OE
	N/C contact				
	3-wire	–	7.5	160 251	SME-8-O-K-LED-24

Linear actuators DLP, Copac

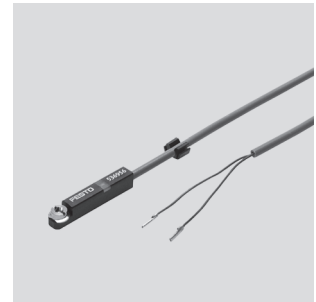
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Accessories – Proximity sensors, to EU Explosion Protection Directive (ATEX)

Function
Namur, with cable



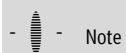
- EU conformity in accordance with EU EMC Directive, to EU Explosion Protection Directive (ATEX)
- Magneto-inductive measuring principle
- Insertable in the slot from above
- Cable clip included in the scope of delivery



Technical data		
Switching element function		Namur
Switching output		Namur
Design		For T-slot
Type of mounting		Clamped in T-slot
Reproducibility of switching point ¹⁾	[mm]	±0.1
Electrical connection		Cable, 2-wire
Mounting position		Any
Cable length	[m]	5
Rated operating voltage	[V DC]	8.2
Max. output current in Namur operation	[mA]	0 ... 4.5
Residual current	[mA]	0 ... 0.7
Switch-on time	[ms]	0 ... 0.5
Switch-off time	[ms]	0 ... 0.5
Protection against short circuit		For all electrical connections
Reverse polarity protection		For all electrical connections
Conforms to		EN 60947-5-6
Certificate issuing authority		KEMA 04 ATEX 1114 X
Switching status display		Yellow LED
Product weight	[g]	70

1) Only applicable to drives protected against rotation

Operating and environmental conditions		
Cable installation	Fixed	Flexible
Ambient temperature	[°C]	–25 ... +70
Protection class		IP65, IP67
Certification		C-Tick



Note

When used in explosive atmospheres, the proximity sensor SMT-8F-I must absolutely be operated on a circuit breaker amplifier according to DIN EN 60 947-5-6.



Note

Operating instructions, conformity declarations and statements of conformity → www.festo.com

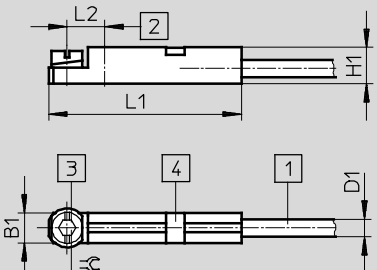
Linear actuators DLP, Copac

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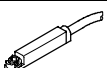
Accessories – Proximity sensors, to EU Explosion Protection Directive (ATEX)

ATEX	
ATEX category for gas	II 1G
Explosion ignition protection type for gas	Ex ia IIC T4 ... T6
ATEX category for dust	II 1D
Explosion ignition protection type for dust	Ex iaD 20 IP67 T95°C
Explosion-proof temperature rating	-10°C ≤ Ta ≤ +70°C
Explosion protection	Zone 0 (ATEX)
	Zone 1 (ATEX)
	Zone 2 (ATEX)
	Zone 20 (ATEX)
	Zone 21 (ATEX)
	Zone 22 (ATEX)
Explosion protection certification outside the EU	GOST-R EPL Dc
	GOST-R EPL Gc
CE marking (see declaration of conformity)	To EU EMC Directive
	To EU Explosion Protection Directive (ATEX)

Materials	
Housing	PA
Cable sheath	PVC
Note on materials	Free of copper and PTFE

Dimensions		Download CAD data → www.festo.com/en/engineering
 Technical drawing of the SMT-8F-I-8 proximity sensor. The top view shows dimensions L1 (total length) and L2 (cable length). The side view shows dimensions B1 (cable diameter), D1 (housing diameter), and H1 (housing height). Callouts 1, 2, 3, and 4 point to the cable, switching point, clamping component, and yellow LED respectively.		
		1 Cable 2 Switching point 3 Clamping component, max. tightening torque 0.6 Nm 4 Yellow LED for switching status

Type	B1	D1 Ø	H1	L1	L2	≅
SMT-8F-I-8 ...	5	2.9	6	31.8	6.2	1.5

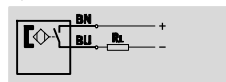
Ordering data					
	Switching output	Electrical connection	Cable length [m]	Part No.	Type
	Namur	Cable, 2-wire	5.0	536 956	SMT-8F-I-8,2V-K5,0-0E-Ex

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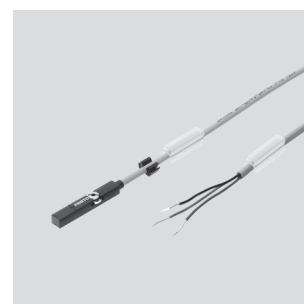
Accessories – Proximity sensors, to EU Explosion Protection Directive (ATEX)

Function

N/O contact, two-wire, with cable



- EU conformity in accordance with EU EMC Directive, to EU Explosion Protection Directive (ATEX)
- Magneto-resistive measuring principle
- Insertable in the slot from above
- Cable clip included in the scope of delivery



Technical data		
Switching element function		N/O contact
Type of mounting	Insertable in the slot from above, secured with screw	
Electrical connection	Cable, 2-wire	
Connection direction	In-line	
Cable length	[m]	5
Protection against short circuit	Pulsed	
Protection against overloading	Yes	
Reverse polarity protection	For all electrical connections	
Measuring principle	Magneto-resistive	
Cable characteristics	Standard, energy chain	
Test conditions for cable	Energy chain: 5 million cycles, bending radius 75 mm	
	Resistance to bending: to Festo standard	
	Test conditions on request	
Switching output	Non-contacting, 2-wire	
Max. output current	[mA]	80
Operating voltage DC	[V]	8 ... 30
Max. switching capacity DC	[W]	2.4
Product weight	[g]	54.8

Operating and environmental conditions		
Cable installation	Fixed	Flexible
Ambient temperature	[°C]	–20 ... +70 °C
Protection class	IP65, IP68	
Certification	C-Tick	
	cULus listed (OL)	

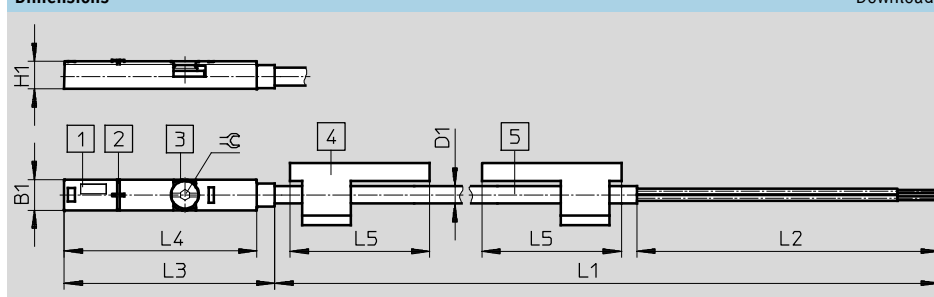
ATEX	
ATEX category for gas	II 3G
Explosion ignition protection type for gas	Ex nA II T4 X
ATEX category for dust	II 3D
Explosion ignition protection type for dust	Ex tD A22 IP65 T120°C X
Explosion-proof temperature rating	[°C]
Explosion protection	Zone 2 (ATEX)
	Zone 22 (ATEX)
CE marking (see declaration of conformity)	To EU EMC Directive
	To EU Explosion Protection Directive (ATEX)

Linear actuators DLP, Copac

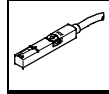
FESTO

Accessories – Proximity sensors, to EU Explosion Protection Directive (ATEX)

Materials	
Housing	High-alloy stainless steel, PA
Cable sheath	TPE-U, oil-resistant
Note on materials	Free of copper and PTFE, RoHS-compliant

Dimensions		Download CAD data → www.festo.com/en/engineering
		1 Yellow LED for switching status 2 Centre of the sensor element 3 Clamping component 4 Inscription label holder drawn turned by 90° 5 Connecting cable

Type	B1	D1 Ø	H1	L1	L2	L3	L4	L5	⌀
SMT-8F-ZS- ...	5	2.9	4.6	5000	50	34.8	31.8	23	1.5

Ordering data				Technical data → Internet: smt-8m	
	Switching output	Electrical connection	Cable length [m]	Part No.	Type
	N/O contact	Cable, 2-wire	5.0	543 874	SMT-8M-ZS-24V-K-5,0-OE-Ex2

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Accessories

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Ordering data – Connecting cable M8x1					Technical data ➔ Internet: nebu	
	Electrical connection, left	Electrical connection, right	Switching output	Cable length [m]	Part No.	Type
Basic version						
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	–	2.5	541 333	NEBU-M8G3-K-2.5-LE3
				5	541 334	NEBU-M8G3-K-5-LE3
				10	541 332	NEBU-M8G3-K-10-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	–	2.5	541 338	NEBU-M8W3-K-2.5-LE3
				5	541 341	NEBU-M8W3-K-5-LE3
				10	541 335	NEBU-M8W3-K-10-LE3
With switching status display						
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	PNP	2.5	541 337	NEBU-M8W5P-K-2.5-LE3
				5	541 340	NEBU-M8W5P-K-5-LE3
			NPN	2.5	541 336	NEBU-M8W5N-K-2.5-LE3
				5	541 339	NEBU-M8W5N-K-5-LE3

Ordering data – Slot cover for T-slot			
	Assembly	Length [m]	Part No. Type
	Insertable from above	2x 0.5	151 680 ABP-5-S

Ordering data – Cable clip SMBK-8		
		Part No. Type
	For fixing the cable in the sensor slot	534 254 SMBK-8

Ordering data – Inscription labels					
	Material	Usage	Dimensions [mm]	Part No. Type	PU ¹⁾
	Polycarbonate	For insertion in the inscription label holder	23x4	541 598 ASLR-L-423	34

1) Packaging unit per frame