

## Proximity switch SDBT-MSX-..., for T-slot

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## Key features

### At a glance

- Quick and easy installation without the need to search for switching points
- Mounting without accessories (power supply)
- Reliable teaching-in of the switching position under load during operation
- Can be programmed flexibly for expanded applications

### Description

The SDBT-MSX is an electronic proximity switch for contactless feedback of the piston position of drives with magnetic proximity sensing.

The proximity switch has two crucial benefits in application:

### Auto teach-in

Very easy to install without a power supply or precision adjustment. Automatic set-up during operation.

- 1) 20 mm sensing range marked on the SDBT-MSX.
- 2) Roughly mount the switch so that the end stop of the piston is within the sensing range.
- 3) Connect SDBT-MSX to the input module (PLC)

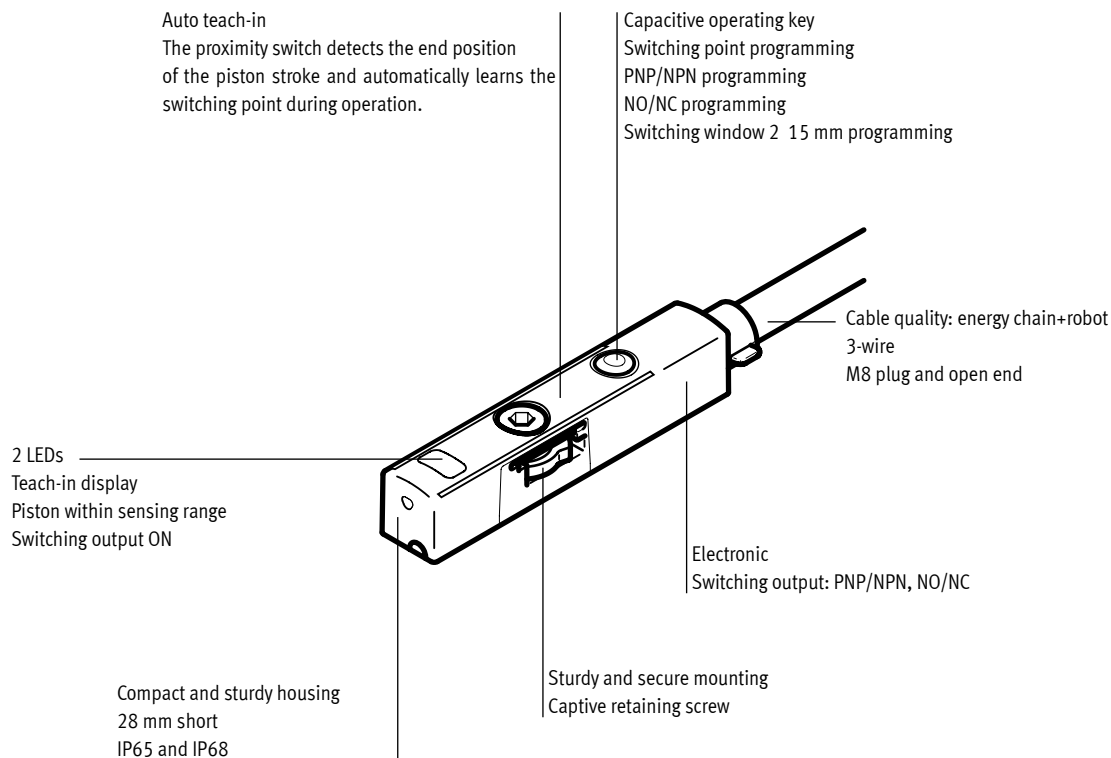
SDBT-MSX automatically learns the switching point during system start-up.

### Programmable

Programmable via integrated operating key.

- Switching point (alternative to auto teach-in)
- Width of switching window 2 ... 15 mm
- PNP/NPN
- NO/NC
- Reset

### SDBT-MSX – Brief overview

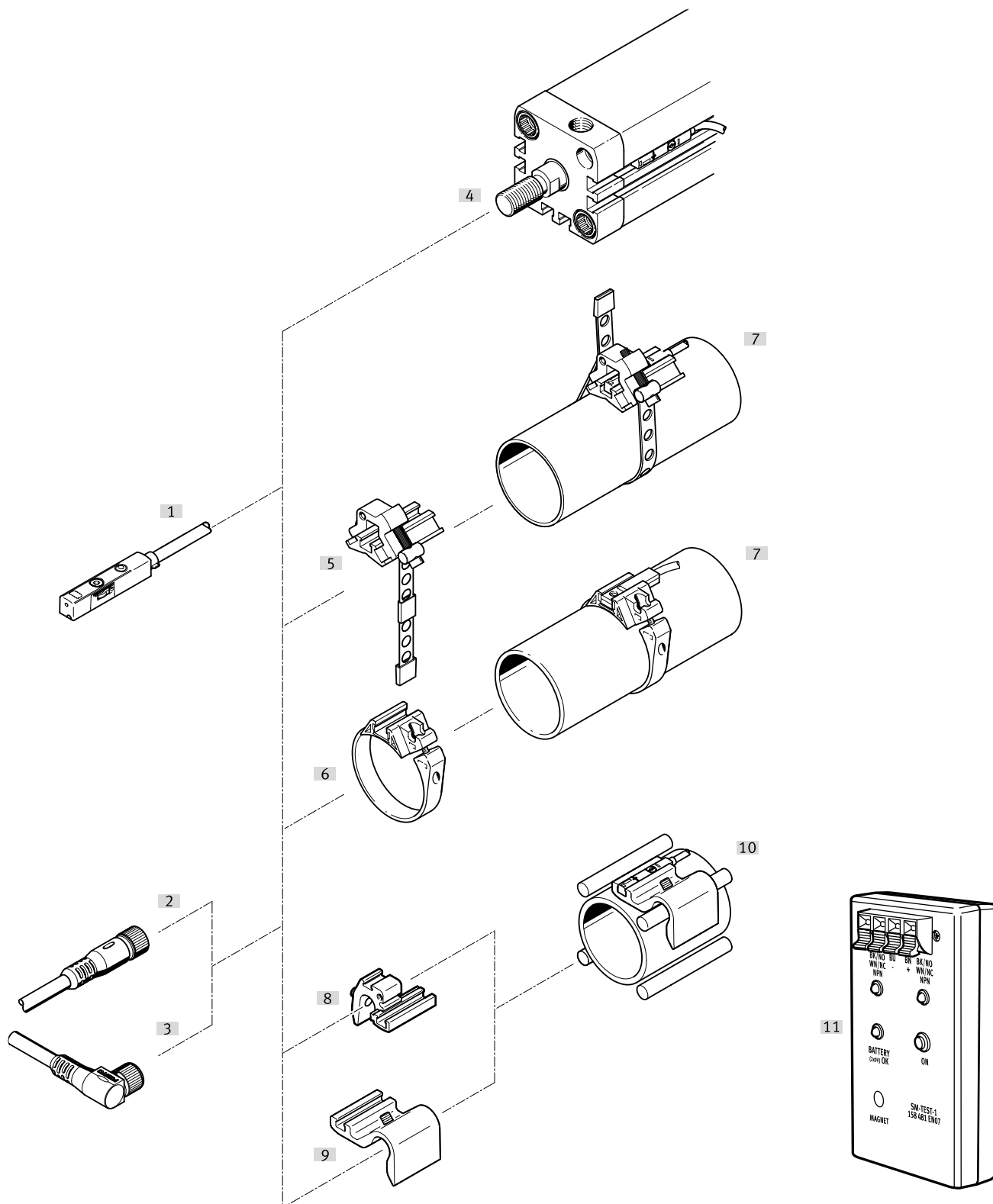


## Type codes

001	Series	
<b>SDBT</b>	Sensor, position, binary, T series	
002	Sensor version	
<b>M</b>	Can be inserted in the slot	
003	Sensor principle	
<b>S</b>	Contactless (solid state)	
004	Additional features	
<b>X</b>	Automatic teach-in and programmable	
005	Nominal operating voltage	
<b>1</b>	24 V DC	
006	Display	
<b>L</b>	LED	

007	Digital switching output	
<b>NU</b>	3-wire N/O contact, NPN	
<b>PU</b>	3-wire N/O contact, PNP	
008	Cable characteristic	
<b>E</b>	Suitable for energy chains/robot applications	
009	Cable length [m]	
<b>0.3</b>	0.3 m	
<b>2.5</b>	2.5 m	
<b>5</b>	5 m	
010	Cable identification	
<b>N</b>	Without label holder	
011	Electrical connection	
<b>LE</b>	Open end	
<b>M8</b>	Plug M8, A-coded	

Peripherals overview



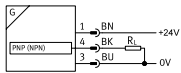
## Peripherals overview

Accessories		→ Page	Accessories		→ Page
[1]	Proximity switch SDBT-MSX-...-	6	[7]	Round cylinder	–
[2]	Connecting cables NEBU-M...G...	14	[8]	Mounting SMBZ-8-...	12
[3]	Connecting cables NEBU-M...W...	14	[9]	Sensor bracket DASP-M4-...	12
[4]	Drives with T-slot	–	[10]	Drives with tie rod or mounting rod	–
[5]	Mounting kit SMBR-8-8/100-S6, heat resistant	11	[11]	Sensor tester SM-TEST-1	14
[6]	Mounting kit SMBR	11			

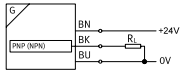
## Datasheet – Magnetic Hall

## Function

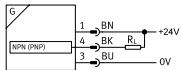
...PU-...-M8



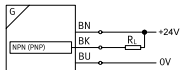
...PU-...-LE



...NU-...-M8



...NU-...-LE



## General technical data

Design type	For T-slot
Based on standard	EN 60947-5-2
Certification	RCM
	c UL us listed (OL)
Certificate issuing authority	UL E232949
CE marking (see declaration of conformity)	To EU EMC Directive
	To EU RoHS Directive
KC mark	KC EMC
Note on materials	Free of copper and PTFE
	RoHS-compliant
	Halogen-free

## Input signal/measuring element

Measuring principle	Magnetic Hall
Measured variable	Position
Ambient temperature [°C]	-40 ... +85
UL ambient temperature	
Fixed cable installation [°C]	-40 ... +80
Flexible cable installation [°C]	-20 ... +80


## Signal processing

Max. speed of travel [m/s]	3
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## Datasheet – Magnetic Hall

Switching output		...-PU-...	...-NU-...
Switching output		PNP/NPN, switchable	
Switching element function		N/O or N/C contact, switchable	
Repetition accuracy	[mm]	0.2	
Switch-on time	[ms]	≤ 2	
Switch-off time	[ms]	≤ 2	
Max. switching frequency	[Hz]	200	
Max. output current	[mA]	100	
Max. output current in mounting kits	[mA]	100	
Max. switching capacity DC	[W]	2.8	
Max. switching capacity DC in mounting kits	[W]	2.8	
Voltage drop	[V]	< 1.5	
Minimum load current	[mA]	0.15	
Residual current	[mA]	< 0.2	
<b>Output, additional data</b>			
Short circuit current rating		Yes	
Overload protection		Available	
<b>Electronic</b>			
Rated operating voltage	[V DC]	24	
Operating voltage range	[V DC]	10 ... 30	
Reverse-polarity protection		For all electrical connections	

## Datasheet – Magnetic Hall

Electromechanics		...-PU/ NU-...-M8	...-PU/ NU-...-LE
Electrical connection		Cable with plug, screw-type lock M8x1, A-coded to EN 61076-2-104	Cable Open end
Number of pins/wires		3	
Connection pattern			–
Outlet direction of connection		In-line	
Cable characteristic		Suitable for energy chains/robot applications	
Cable test conditions		Cable chain: 5 million cycles, bending radius 28 mm	
		Torsional resistance: > 300,000 cycles, ±270°/0.1 m	
		Resistance to bending: to Festo standard; test conditions on request	
Mechanical system		...-PU/ NU-...-M8	...-PU/ NU-...-LE
Type of mounting		Screw-clamped, inserted in the slot from above	
Mounting position		Any	
Max. tightening torque	[Nm]	0.6	
Housing material		High-alloy stainless steel	
		Reinforced PA	
		Nickel-plated brass	–
Housing colour		Black	
Cable sheath		TPE-U(PUR)	
Cable sheath colour		Grey	
Wire ends		–	Wire end sleeve
Display/operation			
Setting options		Auto teach-in	
		Capacitive pushbutton	
Switching status indication		Yellow LED	
Status indication		Green LED	
Immission/emission			
Ambient temperature with flexible cable installation	[°C]	–5 ... 85	
Degree of protection		IP68	

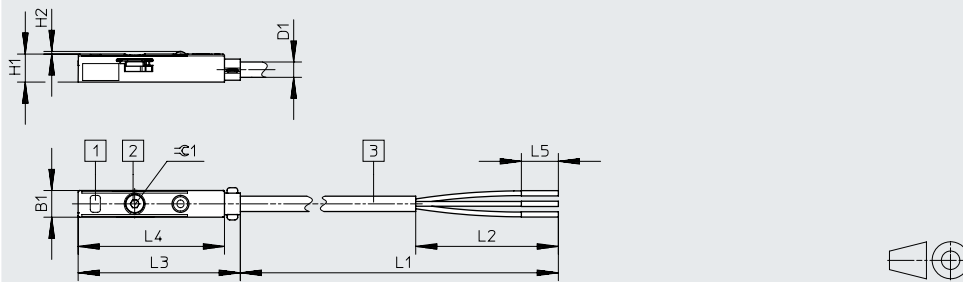


Datasheet – Magnetic Hall

**Dimensions, open end**

Download CAD data → [www.festo.com](http://www.festo.com)

SDBT-MSX-1L-...-U-E-...-N-LE



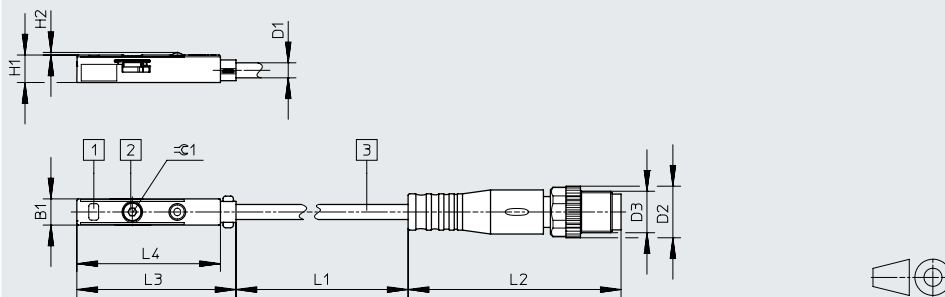
- [1] Yellow and green LED
- [2] Retaining screw with internal hexagon
- [3] Connecting cable

Type	B1	D1 ∅	H1	H2	L1	L2	L3	L4	L5	⌀ 1
SDBT-MSX-1L-PU-E-2.5-N-LE	5.1	2.9	5.3	0.5	2500	41.1	50	27.7	7	1.5
SDBT-MSX-1L-PU-E-5-N-LE					5000					
SDBT-MSX-1L-NU-E-2.5-N-LE					2500					
SDBT-MSX-1L-NU-E-5-N-LE					5000					

**Dimensions with plug**

Download CAD data → [www.festo.com](http://www.festo.com)

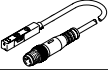

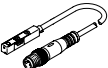

SDBT-MSX-1L-...-U-E-0.3-N-M8



- [1] Yellow and green LED
- [2] Allen key
- [3] Connecting cable

Type	B1	D1 ∅	D2 ∅	D3	H1	H2	L1	L2	L3	L4	⌀ 1
SDBT-MSX-1L-PU-E-0.3-N-M8	5.1	2.9	10	M8x1	5.3	0.5	300	41.1	30.7	27.7	1.5
SDBT-MSX-1L-NU-E-0.3-N-M8											

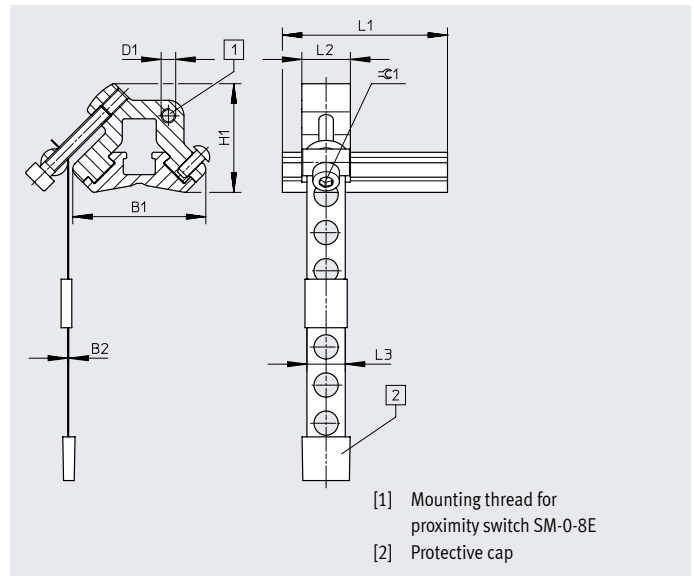
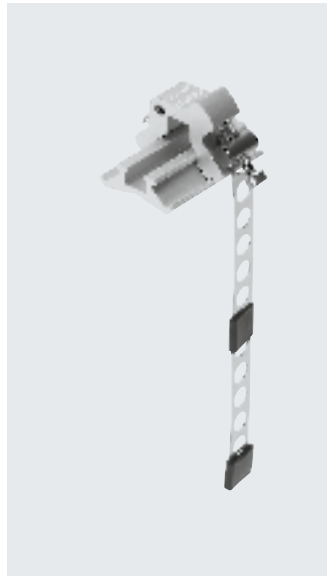
## Datasheet – Magnetic Hall

Ordering data		Cable length	Weight	Part no.	Type
	Switching output	[m]	[g]		
<b>N/O</b>					
	3-wire N/O contact, PNP	0.3	10	★ 8059120	SDBT-MSX-1L-PU-E-0.3-N-M8
	3-wire N/O contact, PNP	2.5	29	★ 8059121	SDBT-MSX-1L-PU-E-2.5-N-LE
		5	56	★ 8059122	SDBT-MSX-1L-PU-E-5-N-LE
	3-wire N/O contact, NPN	0.3	10	★ 8059123	SDBT-MSX-1L-NU-E-0.3-N-M8
	3-wire N/O contact, NPN	2.5	29	★ 8059124	SDBT-MSX-1L-NU-E-2,5-N-LE
		5	56	★ 8059125	SDBT-MSX-1L-NU-E-5-N-LE

## Accessories

### Mounting kit SMBR-8-8/100-S6

Material:  
Rail: Anodised wrought aluminium alloy  
Clamping strap, screws: High-alloy stainless steel  
Free of copper and PTFE  
RoHS-compliant

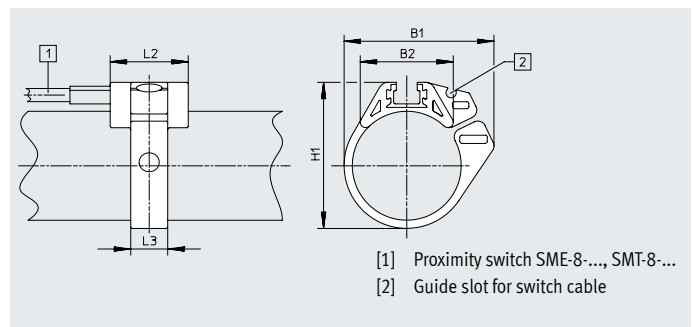


Dimensions and ordering data											
For piston $\varnothing$	B1	B2	D1	H1	L1	L2	L3	$\pm$ 1	CRC <sup>1)</sup>	Part no.	Type
8 ... 100	27.4	0.2	M3	22.4	34	10	7.9	2.5	4	★ 538937	SMBR-8-8/100-S6

1) Corrosion resistance class CRC 4 to Festo standard FN 940070  
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, e.g. in the chemical or food industries. Such applications may need to be safeguarded by special testing (→ also FN 940082), using appropriate media.

### Mounting kit SMBR

Material:  
Polyacetal  
RoHS-compliant

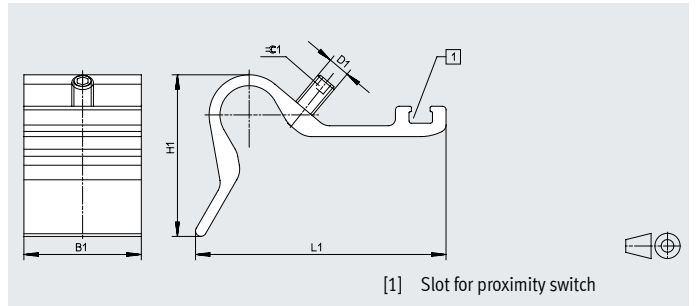


Dimensions and ordering data							
For piston $\varnothing$	B1	B2	H1	L2	L3	Part no.	Type
8	18.9	12.3	17.5	19	7	175091	SMBR-8-8
10	20.4	13.7	19.9	19	7	175092	SMBR-8-10
12	22.7	14.3	21.9	19	7	★ 175093	SMBR-8-12
16	28.2	16.9	25.7	19	8	★ 175094	SMBR-8-16
20	34.5	20.8	30.4	19	9	★ 175095	SMBR-8-20
25	36.7	22.7	35.6	19	9	★ 175096	SMBR-8-25
32	41.7	24.6	42.7	19	9	175097	SMBR-8-32
40	47.1	26.5	50.7	19	9	175098	SMBR-8-40
50	56.4	28.6	61.5	19	9	175099	SMBR-8-50
63	69.4	32	74.5	19	9	175100	SMBR-8-63

## Accessories

### Sensor bracket DASP-M4-...-A

Material:  
Anodised wrought aluminium alloy  
Screws: High-alloy stainless steel  
RoHS-compliant



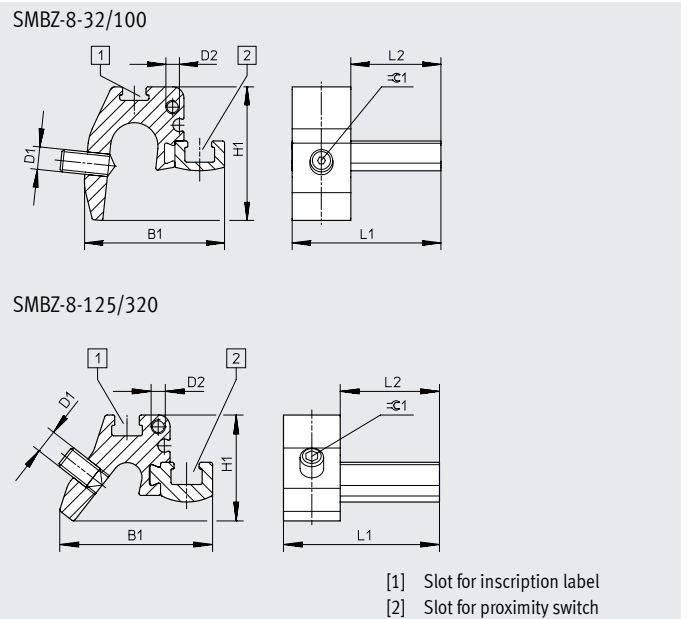
[1] Slot for proximity switch

Dimensions and ordering data											
Type	B1	D1	H1	L1	$\approx 1$	Tightening torque [Nm]	CRC <sup>1)</sup>	Weight [g]	Part no.	Type	
DASP-M4-125-A	32.5	M5	28	45.4	2.5	1	3	26.5	1451483	DASP-M4-125-A	
DASP-M4-160-A	32.5	M6	44.7	69.4	3	1	3	41.5	1553813	DASP-M4-160-A	
DASP-M4-250-A	32.5	M6	56.3	88	3	1	3	60	1456781	DASP-M4-250-A	
DASP-M4-320-A	32.5	M6	56.3	88	3	1	3	60	3015256	DASP-M4-320-A	

1) Corrosion resistance class CRC 3 to Festo standard FN 940070  
High corrosion stress. Outdoor exposure under moderate corrosive conditions. Externally visible parts with primarily functional surface requirements which are in direct contact with a normal industrial environment.

### Mounting SMBZ-8-...

Design: For tie rods  
Mounting position: Any  
Type of mounting: Clamped  
Tightening torque:  $\leq 0.5$  Nm  
Ambient temperature:  
-40 ... +120°C  
PWIS conformity:  
VDMA24364-B2-L



[1] Slot for inscription label  
[2] Slot for proximity switch

Dimensions and ordering data											
For piston $\varnothing$	B1	D1	D2	H1	L1	L2	$\approx 1$	Weight [g]	CRC <sup>1)</sup>	Part no.	Type
32 ... 100	31	M5	M3	30	33	20	1.5	14	2	537806	SMBZ-8-32/100
125 ... 320	32.3			22			2.5			537808	SMBZ-8-125/320

1) Corrosion resistance class CRC 2 to Festo standard FN 940070  
Moderate corrosion stress. Indoor application where condensation is allowed to occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

## Accessories

### Positioning element SMM

Inserted into slot from the side

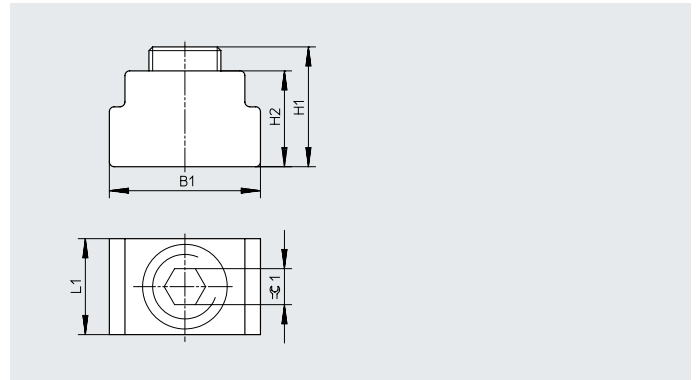
Ambient temperature: -40 ... +120°C

Materials:

Housing: Anodised wrought aluminium alloy

Screws: High-alloy stainless steel

Note on materials: RoHS-compliant












Dimensions and ordering data									
B1	H1	H2	L1	∅1	CRC <sup>1)</sup>	Part no.	Type	PU <sup>2)</sup>	
6.3	5.0	4.0	4.0	1.5	3	547941	SMM-8	10	

1) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. Externally visible parts with primarily functional surface requirements which are in direct contact with a normal industrial environment.

2) Packaging unit

## Accessories

Ordering data – Connecting cables		Number of wires	Cable length [m]	Part no.	Type	Datasheets → Internet: nebu/sim
<b>Socket M8x1, 3-pin</b>						
	For SMT/SME-8... and SMT0/SMTSO/SME0-8E	3	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3	
			5	★ 541334	NEBU-M8G3-K-5-LE3	
	For SMT/SME-8... and SMT0/SMTSO/SME0-8E	3	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3	
			5	★ 541341	NEBU-M8W3-K-5-LE3	
<b>Socket M12x1, 5-pin</b>						
	For SMT/SME-8M and SMT0/SMTSO/SME0-8E	3	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3	
			5	★ 541364	NEBU-M12G5-K-5-LE3	
	For SMT/SME-8M and SMT0/SMTSO/SME0-8E	3	2.5	541367	NEBU-M12W5-K-2.5-LE3	
			5	541370	NEBU-M12W5-K-5-LE3	
<b>Socket M12x1, resistant to welding spatter</b>						
	For SDBT and SMTSO	3	3	30450	SIM-M12-RS-3GD-3	
	For SDBT and SMTSO	3	3	30451	SIM-M12-RS-3WD-3	
<b>Ordering data – Mounting components</b>						
	Description			Part no.	Type	
	For fixing connecting cables in place			534254	SMBK-8	
<b>Ordering data – Sensor tester</b>						
	Description			Part no.	Type	
	<ul style="list-style-type: none"> <li>Testing the functionality of proximity switches using the integrated voltage supply</li> <li>Adjusting proximity switches on the cylinder</li> </ul>			158481	SM-TEST-1	
<b>Ordering data – Inscription labels</b>						
	Size			Part no.	Type	PU <sup>1)</sup>
	23x4 mm			541598	ASLR-L-423	34

1) Packaging unit