### Proximity sensors, block design

### **FESTO**



### **Proximity sensors, block design** Product range overview



Measuring	Version	Туре	Mounting	Switching elen	nent function	Switching	Electrical connection		
principle				N/O contact	N/C contact	output	Cable	Plug	
Magneto-	Operating vo	ltage range 10 30 V	DC						
resistive		SMTO-1	Via accessories	•	-	PNP	3-wire	M8x1, 3-pin	
				-	-	NPN	3-wire	M8x1, 3-pin	
		SMTSO-1 Welding field immune		-	-	PNP	-	M12x1, 3-pin	
Magnetic	Operating vo	ltage range 0 30 V D	С		1		•	-	
reed		SMEO-1	Via accessories	•	-	Contacting	-	M8x1, 3-pin <sup>1)</sup>	
				-	-		3-wire	M8x1, 3-pin	
	Operating voltage range 0 250 V AC, 0 200 V DC								
		SMEO-1-B	Via accessories	•	_	Contacting	2-wire	-	
	S	SMEO-1		•	-		2-wire	-	
				•	-		2-wire	-	
		SMEO-1-S6-C Heat-resistant up to 120 °C		•	-		2-wire	-	
Magnetic	Dnoumatic n	oximity sensor, operat	ing proceure 2 6 ha	P					
Magnetic	rileumatic pi	SMPO-1	Via accessories			-	-	-	
				2)	_				
Magneto-	Operating vo	ltage range 10 30 V	DC						
inductive		SMT-C1	Clamped	•	-	PNP	3-wire	M8x1, 3-pin M12x1,	
	l'							3-pin	

The proximity sensor has 2 wires internally. One pin of the M8 plug is unused.
 3/2-way valve, normally closed

2

### **Proximity sensors, block design** Product range overview

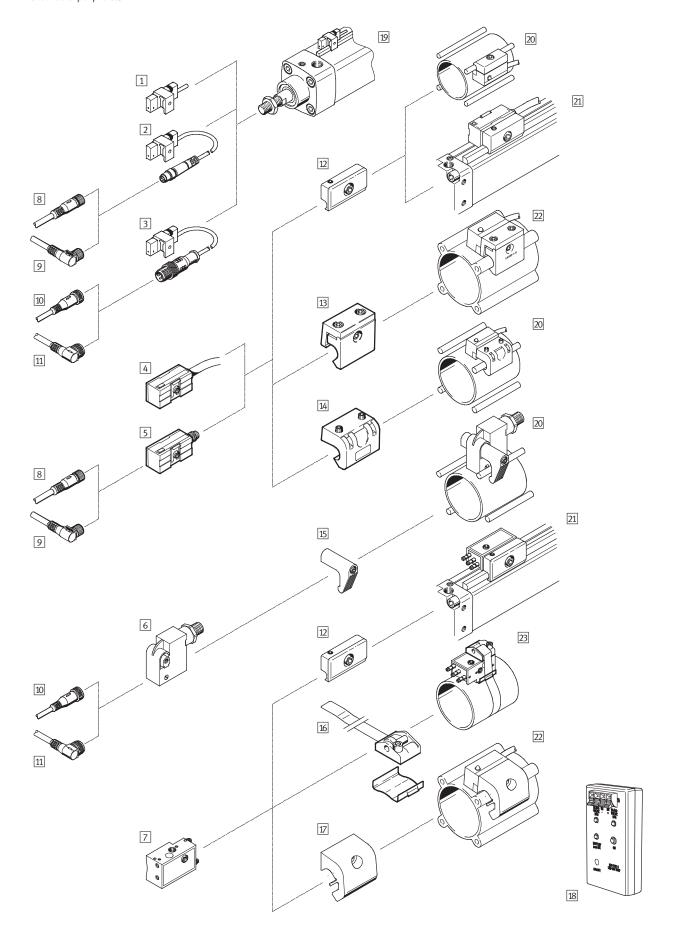
**FESTO** 

Туре	Connection directi	on	Replacement with-	Switching status	Free of copper and	→ Page/Internet
	In-line	Lateral	out re-adjustment	display via LED	PTFE	
Operating voltage	range 10 30 V DC	·				
SMTO-1		-	<b>1</b> )	•	•	7
	•	_	<b>1</b> )	•	_	-
SMTSO-1						9
Welding field						
immune	•	_	_	•	_	
Operating voltage	range 0 30 V DC	·		·		
SMEO-1	•	-	<b>1</b> )	-	•	11
	•	-	<b>1</b> )	•	•	
			•			•
	range 0 250 V DC, 0	200 V DC	+	+	_	Τ
SMEO-1-B	•	-	<b>1</b> )	-	-	11
SMEO-1	•	-	<b>1</b> )	•	-	
	•	-	<b>1</b> )	-	-	
SMEO-1-S6-C						
Heat-resistant up to 120 °C	•	-	<b>1</b> )	•	-	
Pneumatic provim	ity sensor, operating p	ressure 2 6 har				
SMPO-1	lty sensor, operating p	ressure 2 o bui	<u> </u>			14
	•	-	<b>1</b> )	_ 2)	-	
Onerating voltage	range 10 30 V DC		ı			
SMT-C1	55 20 50 7 50				1	16
		_	_			
					_	

Not in combination with mounting kit SMB-1 or SMBS-...
 Switching status is indicated via a pneumatic pin

### **Proximity sensors, block design** Overview of peripherals





# Proximity sensors, block design Overview of peripherals

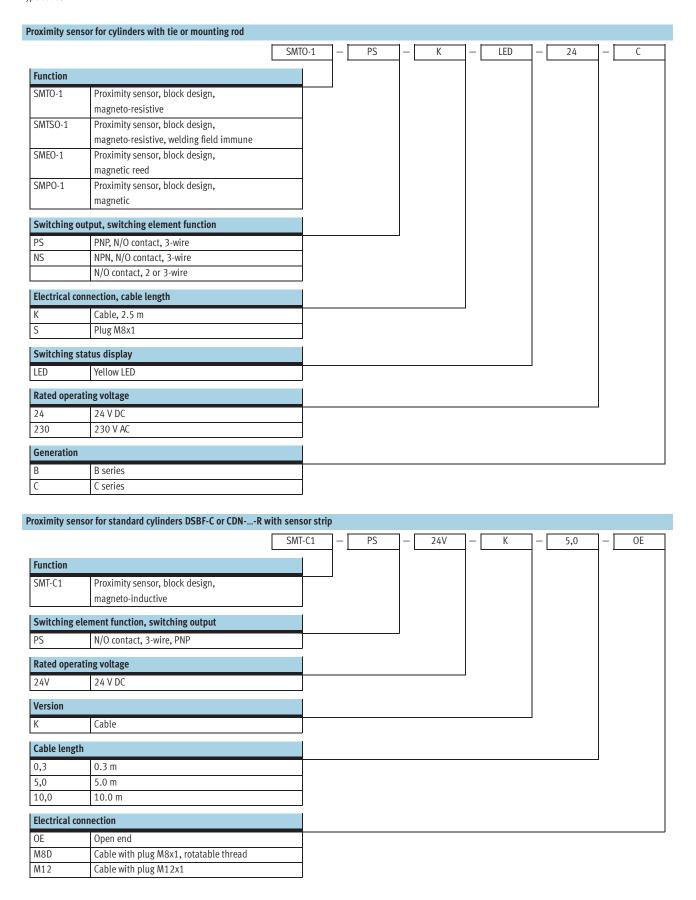


Mo	inting attachments and accessories		
	_	Brief description	→ Page/Internet
Pro	cimity sensors		
1	SMT-C1	Magneto-inductive, with cable and clamping component	16
2	SMT-C1	Magneto-inductive, with cable and plug M8x1 and clamping component	16
3	SMT-C1	Magneto-inductive, with cable and plug M12x1 and clamping component	16
4	SMTO-1	Magneto-resistive, with cable	7
	SMEO-1	Magnetic reed, with cable	11
5	SMTO-1	Magneto-resistive, with plug M8x1	7
	SMEO-1	Magnetic reed, with plug M8x1	11
6	SMTSO-1	Magneto-resistive, welding field immune, with plug M12x1	9
7	SMPO-1	Pneumatic	14
			•
Acc	essories		
8	Connecting cable NEBU-M8G3	Straight socket, M8x1, 3-pin	21
9	Connecting cable NEBU-M8W3	Angled socket, M8x1, 3-pin	
10	Connecting cable NEBU-M12G5	Straight socket, M12x1, 3-pin	
11	Connecting cable NEBU-M12W5	Angled socket, M12x1, 3-pin	
12	Mounting kit SMB-1	For drives with tie rod $\varnothing$ 6 mm or mounting rail	19
		For standard cylinders DSBG	
13	Mounting kit SMBU-1-B	For standard cylinders DNU	19
14	Mounting kits SMB-2-B, SMB-3-B	For standard cylinders DSBG	19
15	Mounting kit SMBT-1	For standard cylinders DSBG	20
16	Mounting kit SMBS	For round cylinders	20
17	Mounting kit SMBU-1-H-32	For standard cylinders DNU	20
18	Sensor tester SM-TEST-1		sm-test-1
Dri۱			
19	Standard cylinder DSBF-C or CDNR with	Ø 32 100 mm	-
	sensor rail		
20	Standard cylinder DSBG	Ø 32 125 mm	-
21	Flat cylinder DZH	Ø 32 63 mm	-
	Semi-rotary drive DRQ	Ø 40 100 mm	
22	Standard cylinder DNU	Ø 32 125 mm	
23	Round cylinder	Ø 8 100 mm	

### Proximity sensors, block design



Type code:

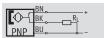


### Proximity sensors SMTO-1, block design, magneto-resistive



Technical data

Function e.g. PNP, N/O contact, with cable

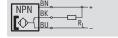


• Magneto-resistive measuring principle





e.g. NPN, N/O contact, with cable



Design	
Constructional design	Block design
Type of mounting	Via accessories
Connection direction	In-line
Reproducibility of switching point <sup>1)</sup> [mm]	±0.1
Switching status display	Yellow LED

1) Only applicable to drives secured against rotation.

Technical data – N/O contact					
Switch output		PNP			
		NPN			
Electrical connection		Cable, 3-wire		Plug M8x1, 3-pin	
Cable length	[m]	2.5		-	
Operating voltage range	[V DC]	10 30			
Max. switching current	[mA]	200			
Max. switching capacity	[W]	6			
Voltage drop	[V]	3			
Residual current	[mA]	≤0.01			
Switch-on time	[ms]	≤1			
Switch-off time	[ms]	≤1			
Protection against short circuit		Yes			
Protection against polarity reversal		For all electrical connections			
Protection class		IP67			

Operating and environmental conditions							
Electrical connection	Cable		Plug				
Cable installation	Fixed	Flexible					
Ambient temperature [°C]	-25 +70	-5 +70	-25 +70				
Corrosion resistance class CRC <sup>1)</sup>	4 2						
CE symbol (declaration of conformity)	In accordance with EU EMC directive <sup>2)</sup>						
Certification	C-Tick						

<sup>1)</sup> Corrosion resistance class 2 according to Festo standard 940 070

Components requiring higher corrosion resistance. Parts used with aggressive media, e.g. food or chemical industry. These applications should be supported with special tests with the media if required.

2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com 

Support 

User documentation.

If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Materials				
Housing	Die-cast zinc, polyester			
Cable sheath	Polyvinyl chloride			
Note on materials	Free of copper and PTFE			

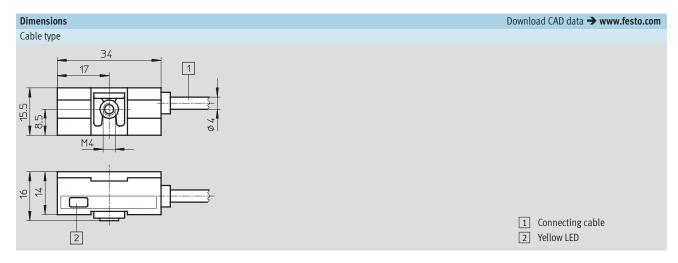
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants

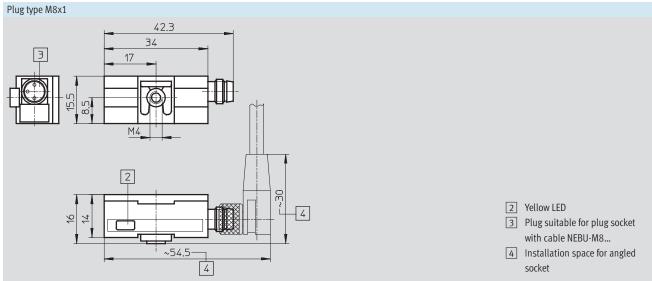
Corrosion resistance class 4 according to Festo standard 940 070

## **Proximity sensors SMTO-1, block design, magneto-resistive** Technical data

**FESTO** 

Product weights [g]						
Electrical connection Cable Plug						
N/O contact						
PNP	85	20				
NPN	85	20				



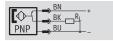


Ordering data								
	Switch output	Electrical connection		Cable length	Part No.	Туре		
		Cable	Plug M8x1	[m]				
	N/O contact	N/O contact						
	PNP	3-wire	-	2.5	151683	SMTO-1-PS-K-LED-24-C		
		_	3-pin	_	151685	SMTO-1-PS-S-LED-24-C		
	NPN	3-wire	-	2.5	151684	SMTO-1-NS-K-LED-24-C		
		_	3-pin	-	151686	SMTO-1-NS-S-LED-24-C		

# **Proximity sensors SMTSO-1, block design, magneto-resistive** Technical data

**FESTO** 

Function PNP, N/O contact, with plug



- Welding field immune
- Magneto-resistive measuring principle



Design Control of the						
Constructional design	Block design					
Type of mounting	Via accessories					
Connection direction	In-line					
Reproducibility of switching point <sup>1)</sup> [mm]	±0.1					
Switching status display	Yellow LED					
Ready status display	Green LED					

1) Only applicable to drives secured against rotation

Technical data – PNP, N/O contact	Technical data – PNP, N/O contact					
Electrical connection		Plug M12x1, 3-pin				
Operating voltage range	[V DC]	10 30				
Max. switching current	[mA]	200				
Max. switching capacity	[W]	6				
Voltage drop	[V]	3				
Residual current	[mA]	0.01				
Switch-on time	[ms]	≤35				
Switch-off time	[ms]	≤20				
Resistance to interference from magnetic fields		Alternating magnetic field 50 60 Hz				
Protection against short circuit		Yes				
Protection against polarity reversal		For all electrical connections				
Protection class		IP65/IP67				

Operating and environmental conditions						
Ambient temperature [°C]	-25 +70					
Corrosion resistance class CRC <sup>1)</sup>	1					
CE symbol (declaration of conformity)	In accordance with EU EMC directive <sup>2)</sup>					
Certification	C-Tick					

<sup>1)</sup> Corrosion resistance class 1 according to Festo standard 940 070

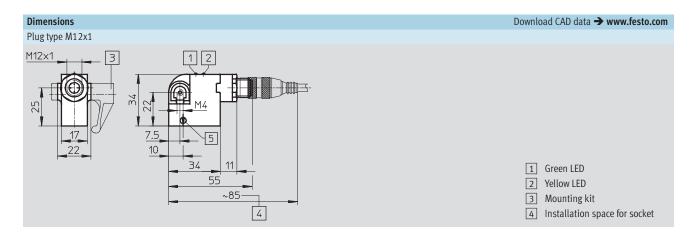
Materials	
Housing	Die-cast zinc

Product weights [g]	
N/O contact	
PNP	70

Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

# **Proximity sensors SMTSO-1, block design, magneto-resistive** Technical data





Ordering data				
	Switch output	Electrical connection	Part No.	Туре
	N/O contact Welding field immune			
	PNP	Plug M12x1, 3-pin	30441	SMTSO-1-PS-S-LED-24

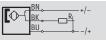
# **Proximity sensors SMEO-1, block design, magnetic reed** Technical data

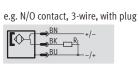


Function e.g. N/O contact, 3-wire, with cable



• Magnetic reed measuring principle









Technical data		
Electrical connection	3-wire	2-wire
Туре	SMEO-124	SMEO-1-LED-230 SMEO-1-B SMEO-1-S6, heat-resistant
Design	Block design	Block design
Conforms to	-	EN 60947-5-2
Certification	C-Tick	C-Tick
CE mark	To EU EMC Directive <sup>1)</sup>	To EU EMC Directive <sup>1)</sup>
(see declaration of conformity)	-	To EU Low Voltage Directive
Note on materials	Free of copper and PTFE	Free of copper and PTFE

<sup>1)</sup> For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com 
Support 
User documentation.

If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Input signal/measuring element					
Type SMEO-1 SMEO-1-S6, heat-resistant					
Measuring principle		Magnetic reed	Magnetic reed		
Ambient temperature [	[°C]	-20 +70	−50 +120		

Switching output						
Electrical connection		3-wire	2-wire	2-wire		
Туре		SMEO-124	SMEO-1-LED-230	SMEO-1-B	SMEO-1-S6,	
					heat-resistant	
Switching output		Contacting, bipolar	Contacting, bipol	ar		
Switching element function		N/O contact	N/O contact			
Reproducibility of switching point <sup>1)</sup>	[mm]	±0.1	±0.1	±0.1		
Switch-on time	[ms]	≤0.5	≤0.5	≤0.5		
Switch-off time	[ms]	≤0.03	≤0.03	≤0.03		
Max. switching frequency	[Hz]	_	500	500		
Max. output current	[mA]	1,000	-	1,000		
Max. output current DC	[mA]	_	120	1,000	-	
Max. output current AC	[mA]	_	250	1,000	_	
Max. switching capacity DC	[W]	27	40	40		
Max. switching capacity AC	[VA]	_	40	40		
Voltage drop	[V]	_	0 4.5	0 4.5		
Residual current	[mA]	_	0			

<sup>1)</sup> Only applicable to drives secured against rotation.

Output, additional data			
Protection against short circuit	No		
Protection against overloading	No		

# Proximity sensors SMEO-1, block design, magnetic reed Technical data



Electronic components						
Electrical connection 3-wire				2-wire		
Туре		SMEO-1LED-24	SMEO-1-S-24-B	SMEO-1-LED-230	SMEO-1-B	SME0-1-S6,
						heat-resistant
Operating voltage range DC	[V]	12 27	0 30	5 200	0 200	
Operating voltage range AC	[V]	-	-	5 250	0 250	
Reverse polarity protection		No		No		

Electromechanical components							
Electrical connection		3-wire	3-wire		2-wire		
Туре		SMEO-1-LED-24	SMEO-1-SB	SMEO-1-LED-230	SMEO-1-B	SMEO-1-S6,	
						heat-resistant	
Electrical connection		Cable, 3-wire	Plug M8x1, 3-pin	Cable, 2-wire			
Connection direction		In-line	•	•			
Cable length	[m]	2.5	-	2.5	2.5	2.5	
		5	]	5	-	-	
Cable sheath materials		TPE-U (PUR)	-	PVC	PVC	TPE-S	

Mechanical components			
Electrical connection		3-wire	2-wire
Type of mounting		Via accessories	
Tightening torque	[Nm]	-	2.9
Product weight	[g]		
Housing materials		Die-cast zinc	Die-cast zinc
		-	Epoxy resin
			TPE-O
			Steel
			PET
			PC

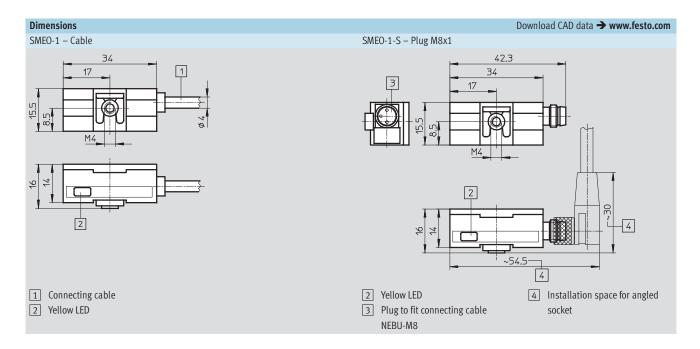
Display/operation					
Electrical connection	3-wire		2-wire		
Туре	SMEO-1LED-24	SMEO-1-S-24-B	SMEO-1-LED-230		SMEO-1-S6, heat-resistant
Switching status display	Yellow LED	-	Yellow LED	-	-

Immissions/emissions						
·		1		1		
Electrical connection		3-wire		2-wire		
Туре		SMEO-1LED-24	SMEO-1-S-24-B	SMEO-1-LED-230	SMEO-1-B	SMEO-1-S6,
						heat-resistant
Ambient temperature with flexible	[°C]	-5 +70	-	-5 +70	-5 +70	-40 +120
cable installation						
Protection class		IP67		IP67	•	
Surge capacity	[kV]	-		4		
Degree of contamination		-		3		

Pin allocation to EN 60947-5-2					
M8x1, 3-pin	M8x1, 3-pin				
N/O contact	N/O contact				
	Pin	Wire colour	Allocation		
1	1	Brown	+		
(+ <sub>+</sub> ) &	3	Blue	-		
	4	Black	Output		
3					

# **Proximity sensors SMEO-1, block design, magnetic reed** Technical data





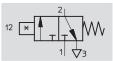
Ordering data									
	Electrical connec	tion	Cable length	Switching status	Product weight	Part No.	Туре		
	Cable	Plug M8x1	[m]	display	[g]				
	N/O contact								
	Operating voltage	e range 12 27 V D	С						
0	3-wire	-	2.5		85	30459	SMEO-1-LED-24-B		
			5.0	•	130	151672	SMEO-1-LED-24-K5-B		
	-	3-pin	-	•	20	150848	SMEO-1-S-LED-24-B		
	Operating voltage range 0 30 V DC								
	-	3-pin <sup>1)</sup>	-	-	20	150847	SMEO-1-S-24-B		
	Operating voltage range 0 250 V AC, 0 200 V DC								
	2-wire –	-	2.5	•	100	151671	SMEO-1-LED-230-B		
			5.0		130	160998	SMEO-1-LED-230-K5-B		
			2.5	_	100	30457	SMEO-1-B		
	Heat-resistant up to 120 °C								
l	2-wire	_	2.5		100	151673	SMEO-1-S6-C		

<sup>1)</sup> The proximity sensor has 2 wires internally. One pin of the M8 plug is unused.

# **Proximity sensors SMPO-1, block design, pneumatic** Technical data

**FESTO** 

Function 3/2-way valve, normally closed



- Pneumatic proximity sensor
- Magnetic measuring principle



Design				
Constructional design	Block design			
Type of mounting	Via accessories			
Connection direction	In-line			
Reproducibility of switching point <sup>1)</sup> [mm]	±0.1			
Switching status display	Optical			

1) Only applicable to drives secured against rotation.

Technical data		
Switching element function		3/2-way valve, normally closed
Operating medium		Filtered, unlubricated compressed air
Operating pressure	[bar]	2 6
Switch-on time	[ms]	12
Switch-off time	[ms]	30
Pneumatic connection		Barbed connector for tubing, nominal diameter 3 mm
Protection class		IP65

Operating and environmental conditions		
Ambient temperature [°C	[]	-15 +60
Corrosion resistance class CRC <sup>1)</sup>		1

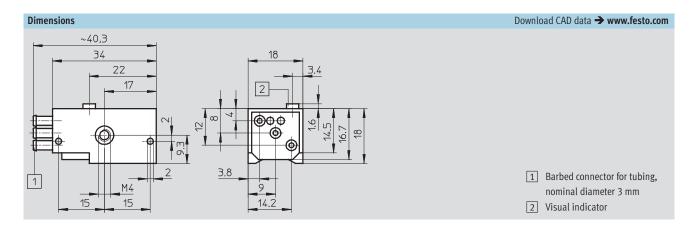
1) Corrosion resistance class 1 according to Festo standard 940 070 Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Materials		
Housing	Polyamide	
Barbed connector	Brass	
Note on materials	Free of copper and PTFE	

Product weights [g]	
PNP	14

# **Proximity sensors SMPO-1, block design, pneumatic** Technical data



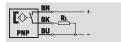


Ordering data			
	Pneumatic connection	Part No.	Туре
	3/2-way valve, normally closed		
	Barbed connector for 3 mm I.D. tubing	31008	SMPO-1-H-B

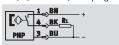
## **Proximity sensors SMT-C1, block design, magneto-inductive** Technical data



Function PNP, N/O contact, with cable



Function PNP, N/O contact, with plug



- Magneto-inductive measuring principle
- For standard cylinders DSBF-C or CDN-...-R with sensor strip





Technical data	
Design	Block design
Based on standard	EN 60947-5-2
Certification	C-Tick
Suitability for use in the food industry	As per manufacturer's declaration
CE mark	To EU EMC Directive <sup>1)</sup>
(see declaration of conformity)	
Note on materials	Cable free of halogen
	Free of copper and PTFE

1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com  $\Rightarrow$  Support  $\Rightarrow$  User documentation. If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Input signal/measuring element				
Measuring principle		Magneto-inductive		
Ambient temperature	[°C]	-20 +70		

Switching output				
Switching output		PNP		
Switching element function		N/O contact		
Switch-on time	[ms]	0 0.5		
Switch-off time	[ms]	0 0.5		
Max. output current	[mA]	200		
Max. switching capacity DC	[W]	6		
Voltage drop	[V]	0 1.8		

Output, additional data	
Protection against short circuit	Pulsed
Protection against overloading	Yes

# **Proximity sensors SMT-C1, block design, magneto-inductive** Technical data



Electronic components				
Operating voltage range DC	[V]	10 30		
Residual ripple	[%]	10		
Reverse polarity protection		For all electrical connections		

Electromechanical component	:s						
Туре		SMT-C1OE	SMT-C1M8D	SMT-C1M12			
Electrical connection		Cable, 3-wire Cable with plug M8x1, 3-pin, rotatable thread		Cable with plug M12x1, 3-pin			
Connection direction		In-line	In-line				
Cable length [m]		-	0.3	0.3			
			-	-			
		10					
Cable sheath materials		TPE-0					
Wire ends		Wire end sleeve					

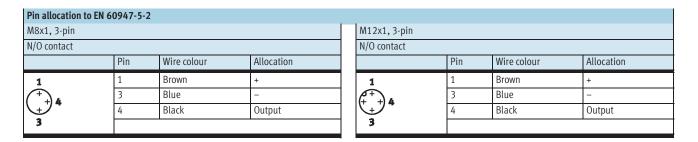
Mechanical components	Aechanical components					
Type of mounting		Clamped				
Tightening torque	[Nm]	1.2				
Mounting position		Any				
Housing materials		High-alloy stainless steel				
		Wrought aluminium alloy				
		Nickel-plated brass				
		PP				
		TPE-0				
		TPE-U(PU)				

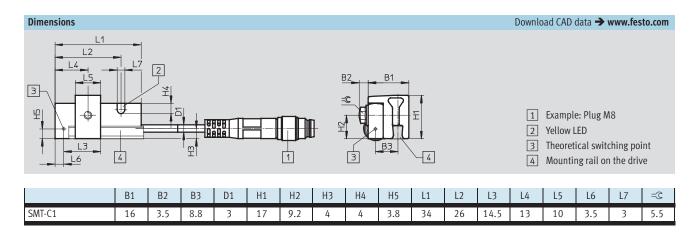
Display/operation	
Switching status display	Yellow LED

Immissions/emissions	
Ambient temperature with flexible [°C]	-20 +70
cable installation	
Protection class	To IEC 60529
	IP65
	IP68

## **Proximity sensors SMT-C1, block design, magneto-inductive** Technical data

**FESTO** 





Ordering data								
	Switching	Electrical conn	ection		Cable length	Weight	Part No.	Type
	output	Cable	Cable with plug					
			M8x1, rotatable	M12x1				
			thread		[m]	[g]		
	N/O contact							
5	PNP	3-wire	-	-	5	65.9	571339	SMT-C1-PS-24V-K-5,0-OE
P					10	114.5	571340	SMT-C1-PS-24V-K-10,0-OE
		-	3-pin	-	0.3	24.4	571342	SMT-C1-PS-24V-K-0,3-M8D
		-	-	3-pin	0.3	32.6	571341	SMT-C1-PS-24V-K-0,3-M12

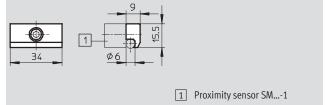
## **Proximity sensors, block design** Accessories

**FESTO** 

### Mounting kit SMB-1

Material: Die-cast zinc





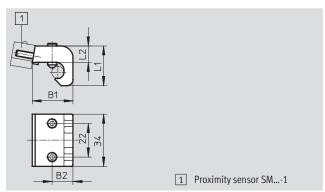
Dimensions and ordering data		
For piston $\varnothing$	Part No.	Туре
32 100	11886	SMB-1

### Mounting kit SMB-2-B/SMB-3-B

Material:

Die-cast aluminium





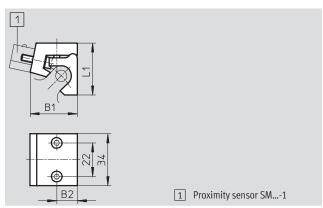
Dimensions and ordering data							
For piston $\varnothing$	B1	B2	L1	L2	Part No.	Туре	
32 50	18	11	23	11.6	36162	SMB-2-B	
63 100	26.8	13.7	26	10.8	36163	SMB-3-B	

#### Mounting kit SMBU

Material:

Die-cast aluminium





Dimensions and ordering data						
For piston $\varnothing$	B1	B2	L1	Part No.	Туре	
32 50	19	8.5	30	36173	SMBU-1-B <sup>1)</sup>	
63 100	31	13.5	34	36174	SMBU-2-B <sup>1)</sup>	
125	31	13.5	37	125828	SMBU-3-B	

1) Free of copper and PTFE

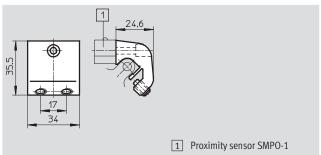
# **Proximity sensors, block design** Accessories

**FESTO** 

### Mounting kit SMBU-1-H-32

Material: Aluminium



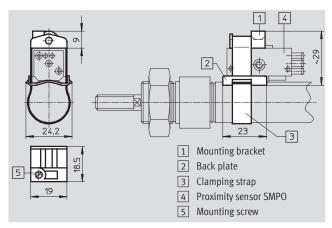


Dimensions and ordering data		
For piston $\varnothing$	Part No.	Туре
32	150216	SMBU-1-H-32

#### Mounting kit SMBS

Material: Brass, plastic



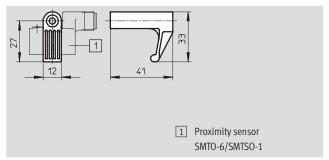


Dimensions and ordering data	
For piston $\varnothing$	Part No. Type
8 25	151225 SMBS-1
32 100	151226 SMBS-2

### Mounting kit SMBT-1

Material: Die-cast zinc





Dimensions and ordering data		
For piston $\varnothing$	Part No.	Туре
32 200	150002	SMBT-1

# **Proximity sensors, block design** Accessories



Ordering data − Connecting cables Technical data → Internet: nebu					
		Number of wires	Cable length [m]	Part No.	Туре
Socket M8x1, 3-pin					
	For SMT-C1 and	3	2.5	541333	NEBU-M8G3-K-2.5-LE3
	SMTO/SMEO-1		5	541334	NEBU-M8G3-K-5-LE3
	For SMT-C1 and	3	2.5	541338	NEBU-M8W3-K-2.5-LE3
	SMTO/SMEO-1		5	541341	NEBU-M8W3-K-5-LE3
Socket M12x1, 5-pin					
	For SMT-C1 and	3	2.5	541363	NEBU-M12G5-K-2.5-LE3
(S)	SMTO-6, SMTSO-1		5	541364	NEBU-M12G5-K-5-LE3
1	For SMT-C1 and	3	2.5	541367	NEBU-M12W5-K-2.5-LE3
<b>8</b>	SMTO-6, SMTSO-1		5	541370	NEBU-M12W5-K-5-LE3