

Sensors SOE..., opto-electronic



Sensors SOE..., opto-electronic

Product overview

Product overview						
Variant	Type	Operating voltage	Switch output	Analogue output	Design	→ Page/Internet
Diffuse sensor	SOEG-RT Basic version	10 ... 36 V DC 10 ... 30 V DC	PNP NPN	–	Round Block-shaped	4
	SOEG-RTZ With cylindrical light beam		PNP NPN	–	Round	6
Sensor with back-ground suppression	SOEG-RTH	10 ... 36 V DC 10 ... 30 V DC	PNP NPN	–	Round Block-shaped	8
Retro-reflective sensor	SOEG-RSP Basic version	10 ... 36 V DC 10 ... 30 V DC	PNP NPN	–	Round Block-shaped	10
	SOEG-RSG For transparent objects		PNP NPN	–	Block-shaped	12
Through-beam sensor	SOEG-S Transmitter	10 ... 36 V DC 10 ... 30 V DC	–	–	Round Block-shaped	14
	SOEG-E Receiver	10 ... 36 V DC 10 ... 30 V DC	PNP NPN	–	Round Block-shaped	14
Fibre-optic unit	SOEG-L Basic version	10 ... 30 V DC	PNP NPN	–	Block-shaped	16
Distance sensor	SOEG-RTD	15 ... 30 V DC	PNP	0 ... 10 V	Block-shaped	18
Laser diffuse sensor	SOEL-RT Contrast sensor	10 ... 30 V DC	PNP NPN	–	Block-shaped	20
Laser sensor with back-ground suppression	SOEL-RTH		PNP NPN	–	Block-shaped	20
Laser retro-reflective sensor	SOEL-RSP	10 ... 30 V DC	PNP NPN	–	Block-shaped	22
Laser distance sensor	SOEL-RTD	16 ... 30 V DC	2x PNP	4 ... 20 mA	Block-shaped	24
		18 ... 28 V DC	–	0 ... 10 V		
Colour sensor	SOEC-RT	10 ... 30 V DC	3x PNP	–	Block-shaped	26

Sensors SOE..., opto-electronic

Type codes

SOE - G - RSP - Q20 - PP - K - 2L - TI -

Type	
SOE	Opto-electronic sensors

Design	
G	Standard sensor
L	Laser sensor
C	Colour sensor

Function	
RT	Diffuse sensor
RSP	Retro-reflective sensor
S	Through-beam sensor, transmitter
E	Through-beam sensor, receiver
L	Fibre-optic unit
RTH	Sensor with background suppression
RTZ	Diffuse sensor with cylindrical light beam
RTD	Distance sensor
RSG	Retro-reflective sensor for transparent objects

Design, size, version	
4	Round, dia. 4 mm
M5	Round, M5
M12	Round, M12
M18	Round, M18, beam exit straight
M18W	Round, M18, beam exit angled
Q20	Block design, 20x32x12 mm
Q30	Block design, 30x30x15 mm
Q50	Block design, 50x50x17 mm

Switch output	
PS	PNP, normally open
NS	NPN, normally open
PA	PNP, antivalent
NA	NPN, antivalent
PP	PNP, switchable
NP	NPN, switchable
PU	Analogue 0 ... 10 V

Electrical connection	
K	Cable
S	Plug

Indication	
L	1 LED
2L	2 LEDs
3L	3 LEDs
7L	7 LEDs

Options	
	Standard version
TI	Teach-in by means of a button and via electrical connection

Position measuring range	
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Diffuse sensors SOEG-RT

Technical data

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General technical data							
Size	∅ 4 mm	M5	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm
Measuring variable	Position						
Measuring principle	Opto-electronic						
Working range [mm]	50	70 ... 300	40 ... 600	0 ... 600	10 ... 300	0 ... 600	
Light type	Infrared	Red			Red	Infrared	
Setting options	-		Potentiometer		Teach-in	Potentiometer	
					Teach-in via electrical connection		
Type of mounting	Clamped	Via lock nut			Via through-holes		
Tightening torque [Nm]	-	1.5	10	20	20	-	

Electrical data							
Size	∅ 4 mm	M5	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm
Electrical connection	Cable	3-wire		4-wire	3-wire	4-wire	3-wire
	Plug	M8x1, 3-pin		M12x1, 3-pin	M12x1, 4-pin	M12x1, 3-pin	M8x1, 4-pin M8x1, 3-pin
Operating voltage range [V DC]	10 ... 30		10 ... 36		10 ... 30		
Voltage drop [V]	≤2						
Residual ripple [%]	20						
Max. output current [mA]	100		200		100	200	
Idle current [mA]	15						
Max. switching frequency [Hz]	250		1000		1000		
Switching status display	Yellow LED						
Protection against short circuit	Pulsed						
Protection against polarity reversal	For all electrical connections						
Protection class	IP67		IP65, IP67		IP67	IP65	



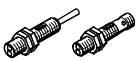




Operating and environmental conditions							
Size	∅ 4 mm	M5	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm Cable Plug	30x30x15 mm
Ambient temperature [°C]	0 ... 55		-25 ... +55		-20 ... +60		-25 ... +55
Ambient temperature with flexible cable installation [°C]	0 ... 55		-5 ... +55		-5 ... +60		-5 ... +55
CE mark (see declaration of conformity)	In accordance with EU EMC directive						
Conforms to	EN 60947-5-2						
Certification	c UL us - Listed (OL)						
	RCM trademark						
Corrosion resistance class CRC ¹⁾	4	4	2	2	1	4	2

- 1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
- Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 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, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Diffuse sensors SOEG-RT

Technical data

Materials							
Size	∅ 4 mm	M5	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm
Housing	High-alloy stainless steel		Brass, chrome-plated			ABS	PBT, reinforced
Cable sheath	TPE-U (PUR)						
Note on materials	Free of copper and PTFE						
	Contains PWIS (paint-wetting impairment substances)						

Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
∅ 4 mm							
	50	Light switching	PNP	537671	SOEG-RT-4-PS-K-L	537673	SOEG-RT-4-PS-S-L
			NPN	537674	SOEG-RT-4-NS-K-L	537676	SOEG-RT-4-NS-S-L
M5							
	50	Light switching	PNP	537677	SOEG-RT-M5-PS-K-L	537679	SOEG-RT-M5-PS-S-L
			NPN	537680	SOEG-RT-M5-NS-K-L	537682	SOEG-RT-M5-NS-S-L
M12							
	70 ... 300	Light switching	PNP	547908	SOEG-RT-M12-PS-K-2L	547909	SOEG-RT-M12-PS-S-2L
			NPN	547906	SOEG-RT-M12-NS-K-2L	547907	SOEG-RT-M12-NS-S-2L
M18, beam exit straight							
	40 ... 600	Antivalent	PNP	547912	SOEG-RT-M18-PA-K-2L	547913	SOEG-RT-M18-PA-S-2L
			NPN	547910	SOEG-RT-M18-NA-K-2L	547911	SOEG-RT-M18-NA-S-2L
M18, beam exit angled							
	0 ... 600	Light switching	PNP	537701	SOEG-RT-M18W-PS-K-2L	537702	SOEG-RT-M18W-PS-S-2L
			NPN	537717	SOEG-RT-M18W-NS-K-2L	537718	SOEG-RT-M18W-NS-S-2L
20x32x12 mm							
	10 ... 300	Switchable	PNP	537732	SOEG-RT-Q20-PP-K-2L-TI	537731	SOEG-RT-Q20-PP-S-2L-TI
			NPN	537734	SOEG-RT-Q20-NP-K-2L-TI	537733	SOEG-RT-Q20-NP-S-2L-TI
30x30x15 mm							
	0 ... 600	Light switching	PNP	165350	SOEG-RT-Q30-PS-K-2L	165351	SOEG-RT-Q30-PS-S-2L
			NPN	165348	SOEG-RT-Q30-NS-K-2L	165349	SOEG-RT-Q30-NS-S-2L

Diffuse sensors SOEG-RTZ, with cylindrical light beam

FESTO

Technical data

General technical data		
Size	∅ 4 mm	M5
Measuring variable	Position	
Measuring principle	Opto-electronic	
Working range	[mm]	10
Light type	Infrared	
Setting options	–	
Type of mounting	Via lock nut	
Tightening torque	[Nm]	1.5

Electrical data		
Size	∅ 4 mm	M5
Electrical connection	Cable, 3-wire	
Operating voltage range	[V DC]	10 ... 30
Voltage drop	[V]	≤2
Residual ripple	[%]	20
Max. output current	[mA]	100
Idle current	[mA]	15
Max. switching frequency	[Hz]	250
Switching status display	Yellow LED	
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class	IP67	



Operating and environmental conditions		
Size	∅ 4 mm	M5
Ambient temperature	[°C]	0 ... 55
Ambient temperature with flexible cable installation	[°C]	0 ... 55
CE mark (see declaration of conformity)	In accordance with EU EMC directive	
Conforms to	EN 60947-5-2	
Certification	c UL us - Listed (OL)	
	RCM trademark	
Corrosion resistance class	CRC ¹⁾	4

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, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Diffuse sensors SOEG-RTZ, with cylindrical light beam

Technical data

Materials		
Size	∅ 4 mm	M5
Housing	High-alloy stainless steel	
Cable sheath	TPE-U (PUR)	
Note on materials	Free of copper and PTFE	

Ordering data					
Size	Working range [mm]	Switching element function	Switch output	Electrical connection	
				Cable	
				Part No.	Type
∅ 4 mm					
	10	Light switching	PNP	537672	SOEG-RTZ-4-PS-K-L
			NPN	537675	SOEG-RTZ-4-NS-K-L
M5					
	10	Light switching	PNP	537678	SOEG-RTZ-M5-PS-K-L
			NPN	537681	SOEG-RTZ-M5-NS-K-L

Sensors SOEG-RTH, with background suppression



Technical data

General technical data					
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Measuring variable	Position				
Measuring principle	Opto-electronic				
Working range [mm]	10 ... 120	10 ... 120	25 ... 100	15 ... 150	30 ... 300
Light type	Red				
Setting options	Potentiometer		Teach-in Teach-in via electrical connection	Potentiometer	Potentiometer
Type of mounting	Via lock nut		Via through-holes		
Tightening torque [Nm]	20		-		

Electrical data					
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Electrical connection	Cable	3-wire	4-wire	3-wire	4-wire
	Plug	M12x1, 3-pin	M8x1, 4-pin	M8x1, 3-pin	M12x1, 4-pin
Operating voltage range [V DC]	10 ... 36		10 ... 30	10 ... 36	10 ... 30
Voltage drop [V]	≤2		≤2.4	≤2	≤2.4
Residual ripple [%]	20		10	20	10
Max. output current [mA]	200		100	200	
Idle current [mA]	25		35	25	35
Max. switching frequency [Hz]	500		1000	500	1000
Switching status display	Yellow LED				
Operating reserve display	Green LED				
Protection against short circuit	Pulsed				
Protection against polarity reversal	For all electrical connections				
Protection class	IP65, IP67		IP67	IP65	IP67


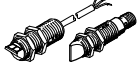
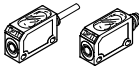
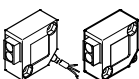

Operating and environmental conditions						
Size	M18x1, straight	M18x1, angled	20x32x12 mm		30x30x15 mm	50x50x17 mm
			Cable	Plug		
Ambient temperature [°C]	-25 ... +55		-20 ... +60		-25 ... +55	-20 ... +60
Ambient temperature with flexible cable installation [°C]	-5 ... +55		-5 ... +60		-5 ... +55	-5 ... +60
CE mark (see declaration of conformity)	In accordance with EU EMC directive					
Conforms to	EN 60947-5-2					
Certification	c UL us - Listed (OL)					
	RCM trademark					
Corrosion resistance class CRC ¹⁾	1	1	4	2	2	4

- 1) Corrosion resistance class CRC 1 to Festo standard FN 940070
 Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
 Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
 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, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Sensors SOEG-RTH, with background suppression

Technical data

Materials					
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Housing	Brass, chrome-plated		ABS	PBTP	ABS
Cable sheath	TPE-U (PUR)				
Note on materials	Free of copper and PTFE				

Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
M18, beam exit straight							
	10 ... 120	Light switching	PNP	537687	SOEG-RTH-M18-PS-K-2L	537689	SOEG-RTH-M18-PS-S-2L
			NPN	537705	SOEG-RTH-M18-NS-K-2L	537707	SOEG-RTH-M18-NS-S-2L
M18, beam exit angled							
	10 ... 120	Light switching	PNP	537688	SOEG-RTH-M18W-PS-K-2L	537690	SOEG-RTH-M18W-PS-S-2L
			NPN	537706	SOEG-RTH-M18W-NS-K-2L	537708	SOEG-RTH-M18W-NS-S-2L
20x32x12 mm							
	25 ... 100	Switchable	PNP	537724	SOEG-RTH-Q20-PP-K-2L-TI	537723	SOEG-RTH-Q20-PP-S-2L-TI
			NPN	537726	SOEG-RTH-Q20-NP-K-2L-TI	537725	SOEG-RTH-Q20-NP-S-2L-TI
30x30x15 mm							
	15 ... 150	Light switching	PNP	537719	SOEG-RTH-Q30-PS-K-2L	537720	SOEG-RTH-Q30-PS-S-2L
			NPN	537721	SOEG-RTH-Q30-NS-K-2L	537722	SOEG-RTH-Q30-NS-S-2L
50x50x17 mm							
	30 ... 300	Antivalent	PNP	537771	SOEG-RTH-Q50-PA-K-3L	537773	SOEG-RTH-Q50-PA-S-3L
			NPN	537772	SOEG-RTH-Q50-NA-K-3L	537774	SOEG-RTH-Q50-NA-S-3L

Retro-reflective sensors SOEG-RSP

Technical data

General technical data						
Size	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Measuring variable	Position					
Measuring principle	Opto-electronic					
Working range [mm]	1500	2000	2000	0 ... 2500	0 ... 2000	0 ... 5500
Light type	Red polarised					
Setting options	–			Teach-in	Potentiometer	
				Teach-in via electrical connection ¹⁾		
Type of mounting	Via lock nut			Via through-holes		
Tightening torque [Nm]	10	20	–			

1) Low-cost variants without the teach-in and programming functionality available

Electrical data						
Size	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Electrical connection	Cable	3-wire		4-wire	3-wire	4-wire
	Plug	M12x1, 3-pin		M8x1, 4-pin	M8x1, 3-pin	M12x1, 4-pin
Operating voltage range [V DC]	10 ... 36			10 ... 30		
Voltage drop [V]	≤2			≤2.4	≤2	≤2.4
Residual ripple [%]	20			10	20	10
Max. output current [mA]	200			100	200	
Idle current [mA]	15			35	25	30
Max. switching frequency [Hz]	1000					
Switching status display	Yellow LED					
Operating reserve display	Green LED					
Protection against short circuit	Pulsed					
Protection against polarity reversal	For all electrical connections					
Protection class	IP65, IP67			IP67	IP65	IP67

Operating and environmental conditions							
Size	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm		30x30x15 mm	50x50x17 mm
				Cable	Plug		
Ambient temperature [°C]	–25 ... +55			–20 ... +60	–25 ... +55	–20 ... +60	
Ambient temperature with flexible cable installation [°C]	–5 ... +55			–5 ... +60	–5 ... +55	–5 ... +60	
CE mark (see declaration of conformity)	In accordance with EU EMC directive						
Conforms to	EN 60947-5-2						
Certification	c UL us - Listed (OL)						
	RCM trademark						
Corrosion resistance class CRC ¹⁾	1	1	1	4	2	2	4

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

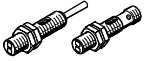


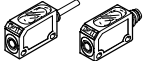
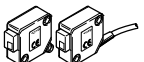

Corrosion resistance class CRC 4 to Festo standard FN 940070

Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Retro-reflective sensors SOEG-RSP

Technical data

Materials						
Size	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Housing	Brass, chrome-plated			ABS	PBT, reinforced	ABS
Cable sheath	TPE-U (PUR)					
Note on materials	Free of copper and PTFE					


Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
M12							
	1500	Dark switching	PNP	537683	SOEG-RSP-M12-PS-K-2L	537684	SOEG-RSP-M12-PS-S-2L
			NPN	537685	SOEG-RSP-M12-NS-K-2L	537686	SOEG-RSP-M12-NS-S-2L
M18, beam exit straight							
	2000	Dark switching	PNP	537697	SOEG-RSP-M18-PS-K-2L	537699	SOEG-RSP-M18-PS-S-2L
			NPN	537713	SOEG-RSP-M18-NS-K-2L	537715	SOEG-RSP-M18-NS-S-2L
M18, beam exit angled							
	2000	Dark switching	PNP	537698	SOEG-RSP-M18W-PS-K-2L	537700	SOEG-RSP-M18W-PS-S-2L
			NPN	537714	SOEG-RSP-M18W-NS-K-2L	537716	SOEG-RSP-M18W-NS-S-2L
20x32x12 mm							
	2500	Switchable	PNP	537750	SOEG-RSP-Q20-PP-K-2L-TI	537749	SOEG-RSP-Q20-PP-S-2L-TI
			NPN	537752	SOEG-RSP-Q20-NP-K-2L-TI	537751	SOEG-RSP-Q20-NP-S-2L-TI
	2500	Switchable	PNP	-	-	537784	SOEG-RSP-Q20-PS-S-2L ¹⁾
30x30x15 mm							
	0 ... 2000	Dark switching	PNP	165330	SOEG-RSP-Q30-PS-K-2L	165331	SOEG-RSP-Q30-PS-S-2L
			NPN	165328	SOEG-RSP-Q30-NS-K-2L	165329	SOEG-RSP-Q30-NS-S-2L
50x50x17 mm							
	0 ... 5500	Antivalent	PNP	537763	SOEG-RSP-Q50-PA-K-3L	537765	SOEG-RSP-Q50-PA-S-3L
			NPN	537764	SOEG-RSP-Q50-NA-K-3L	537766	SOEG-RSP-Q50-NA-S-3L

1) Low-cost variants without the teach-in and programming functionality

Retro-reflective sensors SOEG-RSG, for transparent objects

Technical data

Materials	
Size	20x32x12 mm
Housing	ABS
Cable sheath	TPE-U (PUR)
Note on materials	Free of copper and PTFE

Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
20x32x12 mm							
	5 ... 500	Switchable	PNP	537754	SOEG-RSG-Q20-PP-K-2L-TI	537753	SOEG-RSG-Q20-PP-S-2L-TI

Through-beam sensors SOEG-S/E

FESTO

Technical data

General technical data						
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm	
Measuring variable	Position					
Measuring principle	Opto-electronic					
Working range [mm]	20000	20000	6000	2000	15000	
Light type	Red			Infrared		
Setting options	-		Teach-in	Potentiometer		
			Teach-in via electrical connection			

Electrical data						
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm	
Electrical connection	Transmitter	Cable	3-wire	4-wire	3-wire	4-wire
		Plug	M12x1, 3-pin	M8x1, 4-pin	M8x1, 3-pin	M12x1, 4-pin
	Receiver	Cable	4-wire	4-wire	3-wire	4-wire
		Plug	M12x1, 4-pin	M8x1, 4-pin	M8x1, 3-pin	M12x1, 4-pin
Operating voltage range	[V DC]	10 ... 36		10 ... 30		
Voltage drop	[V]	≤2		≤2.4	≤2	≤2.4
Max. output current	[mA]	200		100	200	
Idle current	[mA]	30				
Max. switching frequency	[Hz]	1000		500	1000	
Protection against short circuit	Pulsed					
Protection against polarity reversal	For all electrical connections					
Protection class	IP65, IP67		IP67	IP65	IP67	

Operating and environmental conditions						
Size	M18x1, straight	M18x1, angled	20x32x12 mm		30x30x15 mm	50x50x17 mm
			Cable	Plug		
Ambient temperature [°C]	-25 ... +55		-20 ... +60		-25 ... +55	-20 ... +60
Ambient temperature with flexible cable installation [°C]	-5 ... +55		-5 ... +60		-5 ... +55	-5 ... +60
CE mark (see declaration of conformity)	In accordance with EU EMC directive					
Conforms to	EN 60947-5-2					
Certification	c UL us - Listed (OL)					
	RCM trademark					
Corrosion resistance class CRC ¹⁾	1	1	4	2	2	4

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.



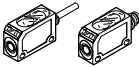
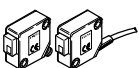

Corrosion resistance class CRC 4 to Festo standard FN 940070

Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Through-beam sensors SOEG-S/E

Technical data

Materials					
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Housing	Brass, chrome-plated		ABS	PBT, reinforced	ABS
Cable sheath	TPE-U (PUR)				
Note on materials	Free of copper and PTFE				

Ordering data								
Size	Working range [mm]	Function	Switching element function	Switch output	Electrical connection			
					Cable		Plug	
					Part No.	Type	Part No.	Type
M18, beam exit straight								
	20,000	Transmitter	–	–	537691	SOEG-S-M18-K-L	537703	SOEG-S-M18-S-L
		Receiver	Antivalent	PNP	537692	SOEG-E-M18-PA-K-2L	537704	SOEG-E-M18-PA-S-2L
				NPN	537709	SOEG-E-M18-NA-K-2L	537711	SOEG-E-M18-NA-S-2L
M18, beam exit angled								
	20,000	Transmitter	–	–	537693	SOEG-S-M18W-K-L	537695	SOEG-S-M18W-S-L
		Receiver	Antivalent	PNP	537694	SOEG-E-M18W-PA-K-2L	537696	SOEG-E-M18W-PA-S-2L
				NPN	537710	SOEG-E-M18W-NA-K-2L	537712	SOEG-E-M18W-NA-S-2L
20x32x12 mm								
	6,000	Transmitter	–	–	537744	SOEG-S-Q20-K-L-TI	537743	SOEG-S-Q20-S-L-TI
		Receiver	Switchable	PNP	537746	SOEG-E-Q20-PP-K-2L-TI	537745	SOEG-E-Q20-PP-S-2L-TI
				NPN	537748	SOEG-E-Q20-NP-K-2L-TI	537747	SOEG-E-Q20-NP-S-2L-TI
30x30x15 mm								
	2,000	Transmitter	–	–	165352	SOEG-S-Q30-K-L	165353	SOEG-S-Q30-S-L
		Receiver	Dark switching	PNP	165322	SOEG-E-Q30-PS-K-2L	165323	SOEG-E-Q30-PS-S-2L
				NPN	165320	SOEG-E-Q30-NS-K-2L	165321	SOEG-E-Q30-NS-S-2L
50x50x17 mm								
	15,000	Transmitter	–	–	537779	SOEG-S-Q50-K-L	537781	SOEG-S-Q50-S-L
		Receiver	Antivalent	PNP	537780	SOEG-E-Q50-PA-K-3L	537782	SOEG-E-Q50-PA-S-3L

Fibre-optic units SOEG-L

Technical data

General technical data		
Size	20x32x12 mm	30x30x15 mm
Measuring variable	Position	
Measuring principle	Opto-electronic	
Working range [mm]	0 ... 250	0 ... 120
Light type	Red	
Setting options	Teach-in	Potentiometer
	Teach-in via electrical connection	
Type of mounting	Via through-holes	

Electrical data		
Size	20x32x12 mm	30x30x15 mm
Electrical connection	Cable	4-wire
	Plug	M8x1, 4-pin
Operating voltage range [V DC]	10 ... 30	
Voltage drop [V]	≤2.4	
Residual ripple [%]	10	
Max. output current [mA]	100	200
Idle current [mA]	25	
Max. switching frequency [Hz]	1000	
Switching status display	Yellow LED	
Operating reserve display	Green LED	
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class	IP67	IP65

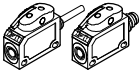
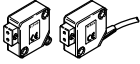
Operating and environmental conditions				
Size	20x32x12 mm		30x30x15 mm	
	Cable	Plug	Cable	Plug
Ambient temperature [°C]	0 ... 60		-25 ... +55	
Ambient temperature with flexible cable installation [°C]	0 ... 60		-5 ... +55	
CE mark (see declaration of conformity)	In accordance with EU EMC directive			
Conforms to	EN 60947-5-2			
Certification	c UL us - Listed (OL)			
	RCM trademark			
Corrosion resistance class CRC ¹⁾	4	2	2	2

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
 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, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Fibre-optic units SOEG-L

Technical data

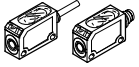
Materials		
Size	20x32x12 mm	30x30x15 mm
Housing	ABS	PBT, reinforced
Cable sheath	TPE-U (PUR)	
Note on materials	Free of copper and PTFE	

Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
20x32x12 mm							
	0 ... 250	Switchable	PNP	537740	SOEG-L-Q20-PP-K-2L-TI	537739	SOEG-L-Q20-PP-S-2L-TI
			NPN	537742	SOEG-L-Q20-NP-K-2L-TI	537741	SOEG-L-Q20-NP-S-2L-TI
30x30x15 mm							
	0 ... 120	Antivalent	PNP	165326	SOEG-L-Q30-P-A-K-2L	165327	SOEG-L-Q30-P-A-S-2L
			NPN	165324	SOEG-L-Q30-NA-K-2L	165325	SOEG-L-Q30-NA-S-2L

Distance sensors SOEG-RTD

Technical data

Materials	
Size	20x32x12 mm
Housing	ABS
Cable sheath	TPE-U (PUR)
Note on materials	Free of copper and PTFE

Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
20x32x12 mm							
	20 ... 80	Switchable	PNP	537758	SOEG-RTD-Q20-PP-K-2L-TI	537757	SOEG-RTD-Q20-PP-S-2L-TI

Laser sensors SOEL-RT...

Technical data

General technical data			
Method of measurement	Contrast sensor (diffuse)		With background suppression
Size	20x32x12 mm	20x32x12 mm	50x50x17 mm
Measuring variable	Position		
Measuring principle	Opto-electronic		
Working range [mm]	40 ... 150	30 ... 110	50 ... 300
Light type	Laser, red		Pulsed laser, red, 650 nm
Laser protection class	2		1
Setting options	Teach-in		Potentiometer
	Teach-in via electrical connection		

Electrical data				
Method of measurement	Contrast sensor (diffuse)		With background suppression	
Size	20x32x12 mm	20x32x12 mm	50x50x17 mm	
Electrical connection	Cable	4-wire	4-wire	4-wire
	Plug	M8x1, 4-pin	M8x1, 4-pin	M12x1, 4-pin
Operating voltage range [V DC]	10 ... 30			
Voltage drop [V]	≤2.4			
Residual ripple [%]	10			
Max. output current [mA]	100	100	200	
Idle current [mA]	25			
Max. switching frequency [Hz]	4000	1000	2500	
Switching status display	Yellow LED			
Operating reserve display	Green LED			
Protection against short circuit	Pulsed			
Protection against polarity reversal	For all electrical connections			
Protection class	IP67			

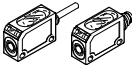
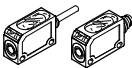

Operating and environmental conditions						
Method of measurement	Contrast sensor (diffuse)		With background suppression			
Size	20x32x12 mm		20x32x12 mm		50x50x17 mm	
	Cable	Plug	Cable	Plug	Cable	Plug
Ambient temperature [°C]	-20 ... +60		-20 ... +60		-20 ... +45	
Ambient temperature with flexible cable installation [°C]	-5 ... +60		-5 ... +60		-5 ... +45	
CE mark (see declaration of conformity)	In accordance with EU EMC directive					
Conforms to	EN 60947-5-2					
Certification	c UL us - Listed (OL)					
	RCM Mark					
Corrosion resistance class CRC ¹⁾	4	2	4	2	4	4

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
 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, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Laser sensors SOEL-RT...

Technical data

Materials	
Housing	ABS
Cable sheath	TPE-U (PUR)
Note on materials	Free of copper and PTFE

Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
20x32x12 mm, contrast sensor (diffuse)							
	40 ... 150	Switchable	PNP	537736	SOEL-RT-Q20-PP-K-2L-TI	537735	SOEL-RT-Q20-PP-S-2L-TI
			NPN	537738	SOEL-RT-Q20-NP-K-2L-TI	537737	SOEL-RT-Q20-NP-S-2L-TI
20x32x12 mm, with background suppression							
	30 ... 110	Switchable	PNP	537729	SOEL-RTH-Q20-PP-K-2L-TI	537727	SOEL-RTH-Q20-PP-S-2L-TI
			NPN	537730	SOEL-RTH-Q20-NP-K-2L-TI	537728	SOEL-RTH-Q20-NP-S-2L-TI
50x50x17 mm, with background suppression							
	50 ... 300	Antivalent	PNP	537777	SOEL-RTH-Q50-PA-K-3L	537775	SOEL-RTH-Q50-PA-S-3L
			NPN	537778	SOEL-RTH-Q50-NA-K-3L	537776	SOEL-RTH-Q50-NA-S-3L

Laser retro-reflective sensors SOEL-RSP

FESTO

Technical data

General technical data			
Size	20x32x12 mm		50x50x17 mm
Measuring variable	Position		
Measuring principle	Opto-electronic		
Working range	[mm]	70 ... 3000	20000
Light type	Red polarised		
Laser protection class	1		1
Setting options	Teach-in		Potentiometer
	Teach-in via electrical connection		

Electrical data			
Size	20x32x12 mm		50x50x17 mm
Electrical connection	Cable	4-wire	4-wire
	Plug	M8x1, 4-pin	M12x1, 4-pin
Operating voltage range	[V DC]	10 ... 30	
Voltage drop	[V]	≤2.4	
Residual ripple	[%]	10	
Max. output current	[mA]	100	200
Idle current	[mA]	25	
Max. switching frequency	[Hz]	4000	2500
Switching status display	Yellow LED		
Operating reserve display	Green LED		Red LED out
Protection against short circuit	Pulsed		
Protection against polarity reversal	For all electrical connections		
Protection class	IP67		

Operating and environmental conditions				
Size	20x32x12 mm		50x50x17 mm	
	Cable	Plug	Cable	Plug
Ambient temperature	[°C]	-20 ... +60		-20 ... +45
Ambient temperature with flexible cable installation	[°C]	-5 ... +60		-5 ... +45
CE mark (see declaration of conformity)	In accordance with EU EMC directive			
Conforms to	EN 60947-5-2			
Certification	c UL us - Listed (OL)			
	RCM trademark			
Corrosion resistance class	CRC ¹⁾	4	2	4

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

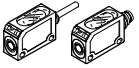

Corrosion resistance class CRC 4 to Festo standard FN 940070

Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Laser retro-reflective sensors SOEL-RSP

Technical data

Materials		
Size	20x32x12 mm	50x50x17 mm
Housing	ABS	
Cable sheath	TPE-U (PUR)	
Note on materials	Free of copper and PTFE	

Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
20x32x12 mm							
	70 ... 3000	Switchable	PNP	537760	SOEL-RSP-Q20-PP-K-2L-TI	537759	SOEL-RSP-Q20-PP-S-2L-TI
			NPN	537762	SOEL-RSP-Q20-NP-K-2L-TI	537761	SOEL-RSP-Q20-NP-S-2L-TI
50x50x17 mm							
	20000	Antivalent	PNP	537769	SOEL-RSP-Q50-PA-K-3L	537767	SOEL-RSP-Q50-PA-S-3L
			NPN	537770	SOEL-RSP-Q50-NA-K-3L	537768	SOEL-RSP-Q50-NA-S-3L

Laser distance sensors SOEL-RTD

FESTO

Technical data

General technical data				
Size	50x50x17 mm			
Working range	[mm]	38 ... 58	44 ... 84	80 ... 300
Measuring variable	Distance			
Measuring principle	Opto-electronic			
Position measuring range	[mm]	20	40	–
Displacement resolution	[mm]	0.007	0.02	0.3
Light type	Laser, red			
Laser protection class	1			
Setting options	–	–	Teach-in	Teach-in via electrical connection

Electrical data				
Size	50x50x17 mm			
Working range	[mm]	38 ... 58	44 ... 84	80 ... 300
Analogue output	[mA]	–	–	4 ... 20
	[V]	0 ... 10	0 ... 10	–
Electrical connection	Plug M12x1, 4-pin		Plug M12x1, 4-pin	Plug M12x1, 8-pin
Operating voltage range	[V DC]	18 ... 28	18 ... 28	16 ... 30
Voltage drop	[V]	–	–	≤2.4
Residual ripple	[%]	10		
Max. load current on the analogue voltage output	[mA]	3,0	3,0	–
Max. output current	[mA]	–	–	100
Idle current	[mA]	35	35	40
Measuring frequency	[Hz]	40	40	–
Max. switching frequency	[Hz]	–	–	1000
Protection against short circuit	Pulsed			
Protection against polarity reversal	For operating voltage		For operating voltage	For all electrical connections
Protection class	IP67			

Operating and environmental conditions	
Size	50x50x17 mm
Ambient temperature	[°C] 0 ... 45
CE mark (see declaration of conformity)	In accordance with EU EMC directive
Certification	c UL us - Listed (OL)
	RCM Mark
Corrosion resistance class	CRC ¹⁾ 4


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, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Laser distance sensors SOEL-RTD

Technical data

Materials	
Size	50x50x17 mm
Housing	ABS
Note on materials	Free of copper and PTFE

Ordering data						
Size	Working range [mm]	Switching element function	Switch output	Analogue output	Electrical connection	
					Plug	Part No. Type
50x50x17 mm						
	38 ... 58	–	–	0 ... 10 V	549315	SOEL-RTD-Q50-PU-S-2L-20
	44 ... 84	–	–	0 ... 10 V	549316	SOEL-RTD-Q50-PU-S-2L-40
	80 ... 300	Antivalent	2x PNP	4 ... 20 mA	537823	SOEL-RTD-Q50-PP-S-7L

Colour sensors SOEC

Technical data


General technical data	
Size	50x50x17 mm
Measuring variable	Position
Measuring principle	Opto-electronic
Working range [mm]	12 ... 32
Light type	White
Setting options	Teach-in Teach-in via electrical connection
Type of mounting	Via through-holes

Electrical data	
Size	50x50x17 mm
Electrical connection	Plug M12x1, 8-pin
Operating voltage range [V DC]	10 ... 30
Voltage drop [V]	≤2.4
Residual ripple [%]	10
Max. output current [mA]	100
Idle current [mA]	40
Max. switching frequency [Hz]	500
Switching status display	LED
Protection against short circuit	Pulsed
Protection against polarity reversal	For all electrical connections
Protection class	IP67

Operating and environmental conditions	
Size	50x50x17 mm
Ambient temperature [°C]	-10 ... +55
CE mark (see declaration of conformity)	In accordance with EU EMC directive
Certification	c UL us - Listed (OL) RCM trademark
Corrosion resistance class CRC ¹⁾	4

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, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials	
Size	50x50x17 mm
Housing	ABS
Note on materials	Free of copper and PTFE

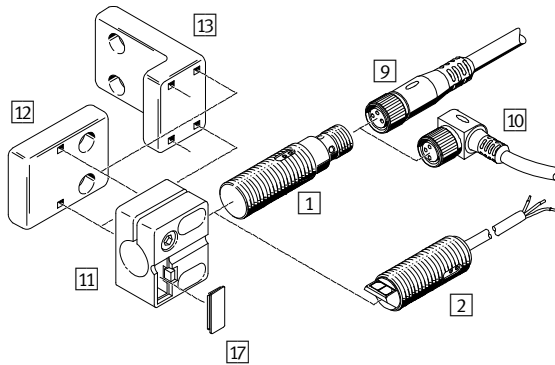
Ordering data					
Size	Working range [mm]	Switching element function	Switch output	Electrical connection	
				Plug	Part No. Type
50x50x17 mm					
	12 ... 32	Light switching	3x PNP	538236	SOEC-RT-Q50-PS-S-7L

Sensors SOE..., opto-electronic

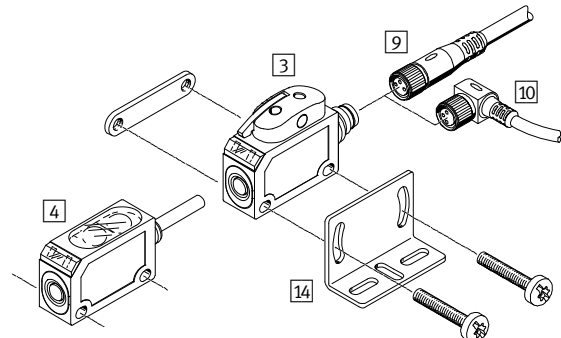
Peripherals overview

Peripherals overview

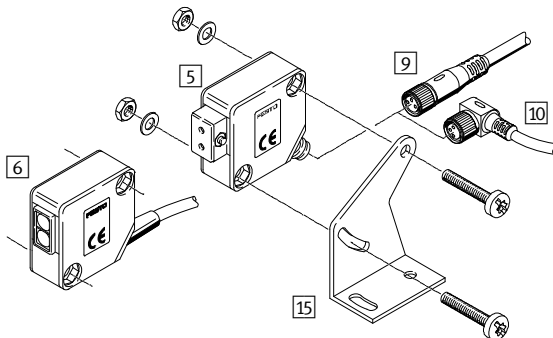
Round design, Ø 4 mm, M12, M18, M18W



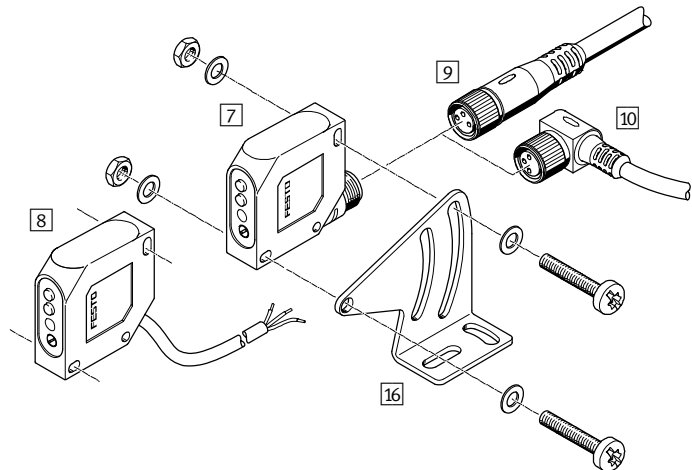
Block design, 20x32x12 mm



Block design, 30x30x15 mm



Block design, 50x50x17 mm



Mounting attachments and accessories

Sensors

- 1 Round design, Ø 4 mm, M12, M18..., with plug
- 2 Same, with cable
- 3 Block design, 20x32x12 mm, with plug
- 4 Same, with cable
- 5 Block design, 30x30x15 mm, with plug
- 6 Same, with cable
- 7 Block design, 50x50x17 mm, with plug
- 8 Same, with cable

Connecting cables

- 9 NEBU-M...G...
SIM-M...-...G
- 10 NEBU-M...W...
SIM-M...-...W

Sensor brackets

- 11 SIEZ-NB...
- 12 SIEZ-UV
- 13 SIEZ-UH

Mounting attachments and accessories

Mounting brackets

- 14 SOEZ-HW-Q20
- 15 SOEZ-HW-Q30
- 16 SOEZ-HW-Q50

Inscription label

- 17 SIEZ-LB

Fibre-optic cables, polymer

- SOEZ-LLK-RT, diffuse sensor
- SOEZ-LLK-SE, through-beam sensor

Fibre-optic cables, glass fibre

- SOEZ-LLG-RT, diffuse sensor
- SOEZ-LLG-SE, through-beam sensor

Reflectors

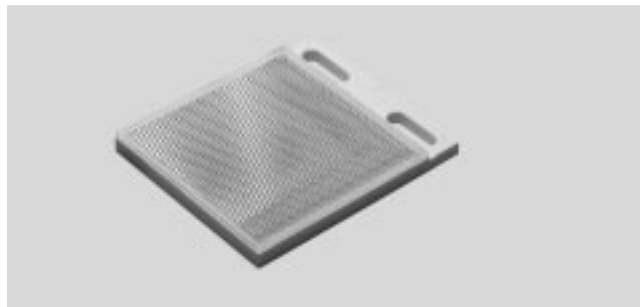
- Reflector
- Reflector foil
- Reflector for laser light

Sensors SOE..., opto-electronic

Accessories



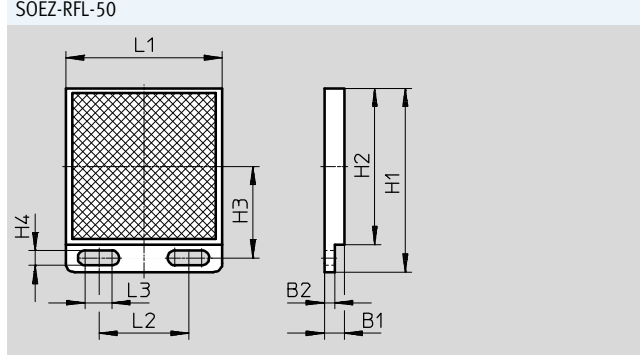
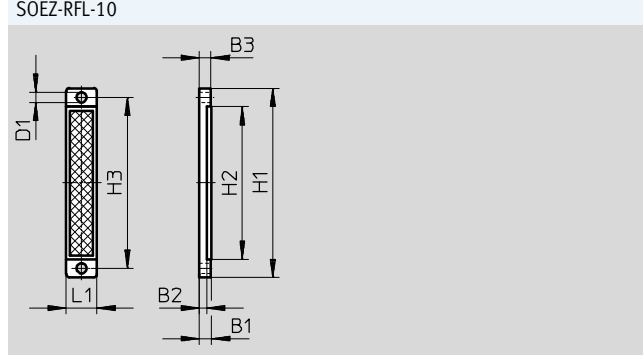
Reflector for laser light



General technical data		
Type	SOEZ-RFL-10	SOEZ-RFL-50
Method of measurement	Reflector for retro-reflective sensors	
Type of mounting	Via through-hole	
Ambient temperature [°C]	-40 ... +70	
Product weight [g]	2	15
Note on materials	RoHS-compliant	
	Free of copper and PTFE	
Information on housing materials	PMMA, ABS	
Corrosion resistance ¹⁾	4	

1) Corrosion resistance class 4 to Festo standard 940 070
Components subject to high corrosion stress. Parts used with aggressive media, e.g. in the food or chemical industry. These applications should be supported with special tests with the media if required.

Dimensions Download CAD data → www.festo.com



Type	B1	B2	B3	D1 ∅	H1	H2	H3	H4	L1	L2	L3
SOEZ-RFL-10	4 ^{+0.3}	2.3	3.7	3.4	62	47.4	36	-	10	-	-
SOEZ-RFL-50	6.5 ^{+0.5}	3.4	-	-	60.3	51.25	30	4.8	51.4	29.5	8.8

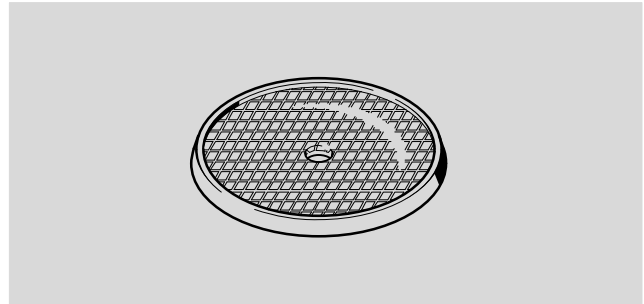
Ordering data – Reflector for laser light		
	[mm]	Part No. Type
	10 x 50	537787 SOEZ-RFL-10
	50 x 50	537788 SOEZ-RFL-50

Sensors SOE..., opto-electronic

Accessories



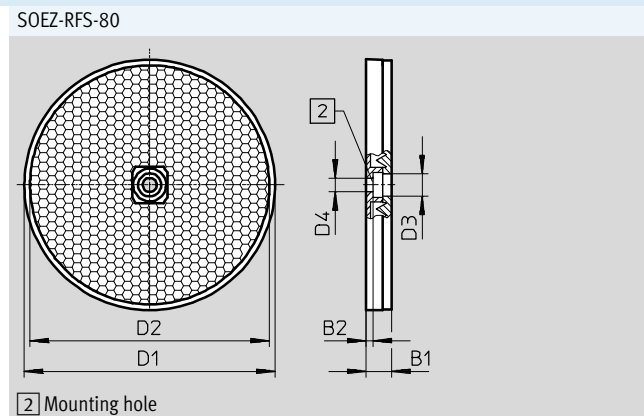
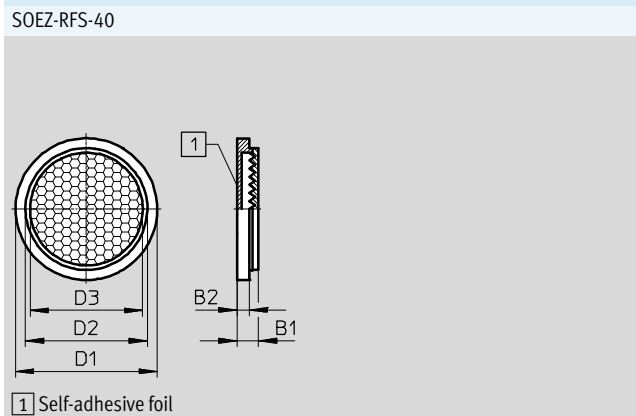
Reflector



General technical data			
Type	SOEZ-RFS-20	SOEZ-RFS-40	SOEZ-RFS-80
Method of measurement	Reflector		
Type of mounting	Bonded		Via through-hole
Ambient temperature [°C]	-40 ... +70		
Product weight [g]	3	9	30
Note on materials	Free of copper and PTFE		
Information on housing materials	PMMA		
Corrosion resistance ¹⁾	4		

1) Corrosion resistance class 4 to Festo standard 940 070
 Components subject to high corrosion stress. Parts used with aggressive media, e.g. in the food or chemical industry. These applications should be supported with special tests with the media if required.

Dimensions Download CAD data → www.festo.com



Type	B1	B2	D1	D2	D3	D4
SOEZ-RFS-40	7±0.3	4	∅ 46.5	∅ 40	∅ 37	-
SOEZ-RFS-80	8.5	2.5	∅ 82.1	∅ 78.3	∅ 7.5	∅ 4.6



Ordering data – Reflector



	[mm]	Part No.	Type
	20	165363	SOEZ-RFS-20
	40	165364	SOEZ-RFS-40
	80	165365	SOEZ-RFS-80





Sensors SOE..., opto-electronic



Accessories

FESTO


Ordering data – Connecting cables M8x1				
Technical data → Internet: nebu				
	Number of wires	Cable length [m]	Part No.	Type
Straight socket				
	3	2.5	541333	NEBU-M8G3-K-2.5-LE3
		5	541334	NEBU-M8G3-K-5-LE3
	4	2.5	541342	NEBU-M8G4-K-2.5-LE4
		5	541343	NEBU-M8G4-K-5-LE4
Angled socket				
	3	2.5	541338	NEBU-M8W3-K-2.5-LE3
		5	541341	NEBU-M8W3-K-5-LE3
	4	2.5	541344	NEBU-M8W4-K-2.5-LE4
		5	541345	NEBU-M8W4-K-5-LE4

Ordering data – Connecting cables M12x1				
Technical data → Internet: nebu, sim				
	Number of wires	Cable length [m]	Part No.	Type
Straight socket				
	3	2.5	541363	NEBU-M12G5-K-2.5-LE3
		5	541364	NEBU-M12G5-K-5-LE3
	4	5	541328	NEBU-M12G5-K-5-LE4
		2	525616	SIM-M12-8GD-2-PU
	8	5	525618	SIM-M12-8GD-5-PU
Angled socket				
	3	2.5	541367	NEBU-M12W5-K-2.5-LE3
		5	541370	NEBU-M12W5-K-5-LE3
	4	5	541329	NEBU-M12W5-K-5-LE4

Ordering data – Mounting attachments			
	For design	Part No.	Type
Mounting bracket			
	Q20	537785	SOEZ-HW-Q20
	Q30	165355	SOEZ-HW-Q30
	Q50	537786	SOEZ-HW-Q50
Sensor bracket			
	4	538343	SIEZ-NB-4
	M12	538347	SIEZ-NB-12
	M18, M18W	538349	SIEZ-NB-18
	M12, M18, M18W	538354	SIEZ-UH

Ordering data – Fibre-optic cables			
	Use	Part No.	Type
Polymer			
	RT ¹⁾	165358	SOEZ-LLK-RT-2,0-M6
	S/E ²⁾	165360	SOEZ-LLK-SE-2,0-M4
Glass fibre			
	RT ¹⁾	165356	SOEZ-LLG-RT-0,5-M6
	S/E ²⁾	165357	SOEZ-LLG-SE-0,5-M4

- 1) Diffuse sensor
- 2) Through-beam sensor

Ordering data – Reflector foil			
	Size [mm]	Part No.	Type
	100 x 100	165362	SOEZ-RFF-100