

## Sensors SOE..., optoelectronic

**FESTO**



## Product range overview and type codes

Version	Type	Operating voltage	Switching output	Design	→ Page/Internet
Diffuse sensor	SOEG-RT Basic type	10 ... 36 V DC 10 ... 30 V DC	PNP NPN	Round	3
	SOEG-RTZ with cylindrical light beam		PNP NPN	Round	5
	SOEG-RTH with background suppression		PNP NPN	Round	6
Retro-reflective sensor	SOEG-RSP	10 ... 36 V DC	PNP NPN	Round	7
Through-beam sensor	SOEG-S Transmitter	10 ... 36 V DC	–	Round	9
	SOEG-E Receiver		PNP NPN	Round	9
Colour sensor	SOEC-RT	10 ... 30 V DC	3x PNP	Block design	10

## Type codes SOEG-R

001	Series
SOE	Sensor, optoelectronic
002	Sensor characteristic
G	Standard sensor
003	Sensor function
RT	Diffuse sensor
RTZ	Diffuse sensor with cylindrical light beam
RTH	Diffuse sensor with background suppression
RSP	Retro-reflective sensor
004	Design type
4	Round, diameter 4 mm
M5	Round, M5
M12	Round, M12
M18	Round, M18, beam exit straight
M18W	Round, M18, beam exit angled

005	Switching output
NS	3-wire NPN N/O contact
NA	NPN, antivalent
PS	3-wire PNP N/O contact
PA	PNP, antivalent
006	Electrical connection
K	Cable
S	Plug
007	Display
L	1 light emitting diode
2L	2 light emitting diodes

## Type codes SOEG-ES

001	Series
SOE	Sensor, optoelectronic
002	Sensor characteristic
G	Standard sensor
003	Sensor function
S	Through-beam sensor, transmitter
E	Through-beam sensor, receiver
004	Design type
M18	Round, M18, beam exit straight
M18W	Round, M18, beam exit angled

005	Switching output
NA	NPN, antivalent
PA	PNP, antivalent
	None
006	Electrical connection
K	Cable
S	Plug
007	Display
L	1 light emitting diode
2L	2 light emitting diodes

## Data sheet

General technical data					
Size	Ø 4 mm	M5	M12x1	M18x1, straight	M18x1, angled
Measured variable	Position				
Measuring principle	Optoelectronic				
Working range [mm]	50		70 ... 300	40 ... 600	0 ... 600
Type of light	Infrared		Red		
Setting options	–		Potentiometer		
Type of mounting	Clamped	With lock nut	With lock nut		
Tightening torque [Nm]	–	1.5	10	20	20

Electrical data						
Size		∅ 4 mm	M5	M12x1	M18x1, straight	M18x1, angled
Electrical connection		Cable, 3-wire		Cable, 3-wire	Cable, 4-wire	Cable, 3-wire
		Plug M8x1, 3-pin		Plug, M12x1, 3-pin	Plug, M12x1, 4-pin	Plug, M12x1, 3-pin
Operating voltage range	[V DC]	10 ... 30		10 ... 36		
Voltage drop	[V]	≤ 2		≤ 2		
Residual ripple	[%]	20		20		
Max. output current	[mA]	100		200		
No-load supply current	[mA]	15		15		
Max. switching frequency	[Hz]	250		1000		
Switching status indication		LED yellow				
Short circuit current rating		Pulsed				
Reverse polarity protection		For all electrical connections				
Degree of protection		IP67		IP65, IP67		

Operating and environmental conditions					
Size	Ø 4	M5	M12x1	M18x1, straight	M18x1, angled
Ambient temperature [°C]	0 ... +55		−25 ... +55		
Ambient temperature with flexible cable installation [°C]	0 ... +55		−5 ... +55		
CE marking (see declaration of conformity)	To EU EMC Directive				
Conforms to	EN 60947-5-2				
Certification	c UL us listed (OL)				
	RCM compliance mark				
Corrosion resistance class CRC <sup>1)</sup>	4	4	2	2	1

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

Low corrosion stress. Dry internal application 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 can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

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 tests


(→ also FN 940082), using appropriate media.


## Diffuse sensor SOEG-RT


## Data sheet


Materials							
Size	Ø 4 mm	M5	M12x1	M18x1, straight	M18x1, angled		
Housing	High-alloy stainless steel			Chrome-plated brass			
Cable sheath	TPE-U (PUR)						
Note on materials	Free of copper and PTFE						
	Contains paint-wetting impairment substances						


Ordering data							
Size	Working range [mm]	Switching element function	Switching output	Electrical connection			
				Cable		Plug	
				Part no.	Type	Part no.	Type

Ø 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

## Data sheet

General technical data		
Size	Ø 4 mm	M5
Measured variable	Position	
Measuring principle	Optoelectronic	
Working range [mm]	10	
Type of light	Infrared	
Type of mounting	With lock nut	
Tightening torque [Nm]	1.5	



Electrical data		
Size	Ø 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	
No-load supply current [mA]	15	
Max. switching frequency [Hz]	250	
Switching status indication	LED yellow	
Short circuit current rating	Pulsed	
Reverse polarity protection	For all electrical connections	
Degree of protection	IP67	

Operating and environmental conditions		
Size	Ø 4 mm	M5
Ambient temperature [°C]	0 ... 55	
Ambient temperature with flexible cable installation [°C]	0 ... 55	
CE marking (see declaration of conformity)	To EU EMC Directive	
Conforms to	EN 60947-5-2	
Certification	c UL us listed (OL)	
	RCM compliance mark	
Corrosion resistance class CRC <sup>1)</sup>	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, e.g. in the chemical or food industries. Such applications may need to be safeguarded by special tests (→ also FN 940082), using appropriate media.

Materials		
Size	Ø 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	Switching output	Electrical connection	
				Cable	
				Part no.	Type
Ø 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

## Data sheet

General technical data		
Size	M18x1, straight	M18x1, angled
Measured variable	Position	
Measuring principle	Optoelectronic	
Working range	[mm]	10 ... 120
Type of light	Red	
Setting options	Potentiometer	
Type of mounting	With lock nut	
Tightening torque	[Nm]	20


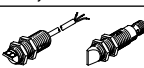
Electrical data		
Size	M18x1, straight	M18x1, angled
Electrical connection	Cable, 3-wire	
	Plug M12x1, 3-pin	
Operating voltage range	[V DC]	10 ... 36
Voltage drop	[V]	≤ 2
Residual ripple	[%]	20
Max. output current	[mA]	200
No-load supply current	[mA]	25
Max. switching frequency	[Hz]	500
Switching status indication	LED yellow	
Function reserve indication	LED green	
Short circuit current rating	Pulsed	
Reverse polarity protection	For all electrical connections	
Degree of protection	IP65, IP67	

Operating and environmental conditions		
Size	M18x1, straight	M18x1, angled
Ambient temperature	[°C]	−25 ... +55
Ambient temperature with flexible cable installation	[°C]	−5 ... +55
CE marking (see declaration of conformity)	To EU EMC Directive	
Conforms to	EN 60947-5-2	
Certification	c UL us listed (OL)	
	RCM compliance mark	
Corrosion resistance class CRC <sup>1)</sup>	1	

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

Low corrosion stress. Dry internal application 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).

Materials		
Size	M18x1, straight	M18x1, angled
Housing	Chrome-plated brass	
Cable sheath	TPE-U (PUR)	
Note on materials	Free of copper and PTFE	

Ordering data							
Size	Working range [mm]	Switching element function	Switching 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

## Data sheet

General technical data			
Size	M12x1	M18x1, straight	M18x1, angled
Measured variable	Position		
Measuring principle	Optoelectronic		
Working range [mm]	1500	2000	2000
Type of light	Red polarised		
Type of mounting	With lock nut		
Tightening torque [Nm]	10	20	

Electrical data			
Size	M12x1	M18x1, straight	M18x1, angled
Electrical connection	Cable, 3-wire Plug M12x1, 3-pin		
Operating voltage range [V DC]	10 ... 36		
Voltage drop [V]	≤ 2		
Residual ripple [%]	20		
Max. output current [mA]	200		
No-load supply current [mA]	15		
Max. switching frequency [Hz]	1000		
Switching status indication	LED yellow		
Function reserve indication	LED green		
Short circuit current rating	Pulsed		
Reverse polarity protection	For all electrical connections		
Degree of protection	IP65, IP67		




  

Operating and environmental conditions			
Size	M12x1	M18x1, straight	M18x1, angled
Ambient temperature [°C]	-25 ... +55		
Ambient temperature with flexible cable installation [°C]	-5 ... +55		
CE marking (see declaration of conformity)	To EU EMC Directive		
Conforms to	EN 60947-5-2		
Certification	c UL us listed (OL)		
	RCM compliance mark		
Corrosion resistance class CRC <sup>1)</sup>	1		

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



Low corrosion stress. Dry internal application 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).

## Data sheet

Materials							
Size	M12x1		M18x1, straight			M18x1, angled	
Housing	Chrome-plated brass						
Cable sheath	TPE-U (PUR)						
Note on materials	Free of copper and PTFE						
Ordering data							
Size	Working range [mm]	Switching element function	Switching 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



## Data sheet

General technical data									
Size		M18x1, straight				M18x1, angled			
Measured variable		Position							
Measuring principle		Optoelectronic							
Working range		[mm]	20000						
Type of light		Red							
Electrical data									
Size		M18x1, straight				M18x1, angled			
Electrical connection	Transmitter	Cable, 3-wire							
		Plug M12x1, 3-pin							
	Receiver	Cable, 4-wire							
		Plug M12x1, 4-pin							
Operating voltage range		[V DC]	10 ... 36						
Voltage drop		[V]	≤ 2						
Max. output current		[mA]	200						
No-load supply current		[mA]	30						
Max. switching frequency		[Hz]	1000						
Short circuit current rating		Pulsed							
Reverse polarity protection		For all electrical connections							
Degree of protection		IP65, IP67							
Operating and environmental conditions									
Size		M18x1, straight				M18x1, angled			
Ambient temperature		[°C]	−25 ... +55						
Ambient temperature with flexible cable installation		[°C]	−5 ... +55						
CE marking (see declaration of conformity)		To EU EMC Directive							
Conforms to		EN 60947-5-2							
Certification		c UL us listed (OL) RCM compliance mark							
Corrosion resistance class CRC <sup>1)</sup>		1							
1) Corrosion resistance class CRC 1 to Festo standard FN 940070 Low corrosion stress. Dry internal application 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).									
Materials									
Size		M18x1, straight				M18x1, angled			
Housing		Chrome-plated brass							
Cable sheath		TPE-U (PUR)							
Note on materials		Free of copper and PTFE							
Ordering data									
Size		Working range [mm]	Function	Switching element function	Switching output	Electrical connection			
						Cable		Plug	
						Part no.	Type	Part no.	Type
M18, beam exit straight									
	20000	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									
	20000	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	

# Data sheet


General technical data	
Size	50x50x17 mm
Measured variable	Position
Measuring principle	Optoelectronic
Working range [mm]	12 ... 32
Type of light	White
Setting options	Teach-in Teach-in via electrical connection
Type of mounting	With through-hole

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
No-load supply current [mA]	40
Switching status indication	LED
Max. switching frequency [Hz]	500
Short circuit current rating	Pulsed
Reverse polarity protection	For all electrical connections
Degree of protection	IP67

Operating and environmental conditions	
Size	50x50x17 mm
Ambient temperature [°C]	−10 ... +55
CE marking (see declaration of conformity)	To EU EMC Directive
Certification	c UL us listed (OL) RCM compliance mark
Corrosion resistance class CRC <sup>1)</sup>	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, e.g. in the chemical or food industries. Such applications may need to be safeguarded by special tests (→ also FN 940082), using appropriate media.

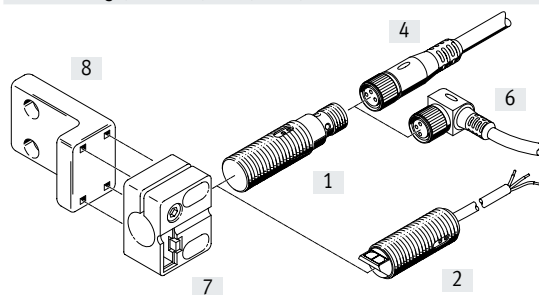
Materials	
Size	50x50x17 mm
Housing	ABS
Note on materials	Free of copper and PTFE

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

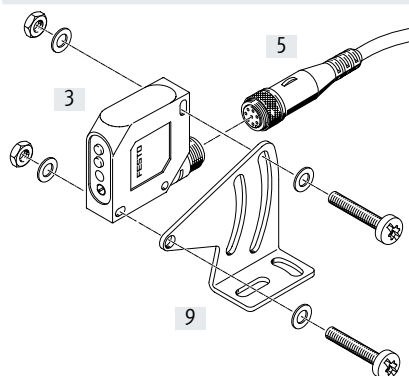
## Peripherals overview

### Peripherals overview

Round design, Ø 4 mm, M12, M18, M18W



Block design, 50x50x17 mm



### Mounting components and accessories

#### Sensors

[1]	Round design, Ø 4 mm, M12, M18..., with plug
[2]	Same, with cable
[3]	Block design, 50x50x17 mm, with plug

#### Connecting cables

[4]	NEBU-M...G...
[5]	SIM-M12-8GD
[6]	NEBU-M...W...

#### Sensor bracket

[7]	SIEZ-NB
[8]	SIEZ-UH

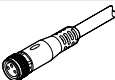
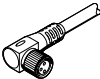
#### Mounting bracket

[9]	SOEZ-HW-Q50
-----	-------------

## Accessories

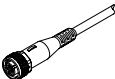

## Ordering data – Connecting cables M8x1

Data sheets → 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

Data sheets → 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
	8	2	525616	SIM-M12-8GD-2-PU
		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
<b>Mounting bracket</b>			
	Q50	537786	SOEZ-HW-Q50
<b>Sensor bracket</b>			
	4	538343	SIEZ-NB-4
	M12	538347	SIEZ-NB-12
	M18, M18W	538349	SIEZ-NB-18
	M12, M18, M18W	538354	SIEZ-UH