



- Light sensors and light barriers
- Light sensors with background fade-out
- Fibre-optic units
- Laser light sensors and light barriers
- Sensors for distance measurement
- Colour sensor
- Ranges up to 20,000 mm

## From standard to high end applications: Pure functionality

FESTO



The new generation of opto-electronic sensors stands out because of its combination of small dimensions with maximum functionality and reliability – whether for standard applications or for special requirements such as colour recognition or distance measurement using lasers. But this is not all. It also shines thanks to its large working range – irrespective of the format or the material involved and let us not forget its optimal price/performance ratio, which will put a smile on the face of even the most avid bargain hunter: everything under control, everything from a single source – with opto-electronic sensors SOE... from Festo.

### **Compact, high performance**

Massively reduced: the dimensions. SOEG-RT and the colour sensor SOEC-RT-Q50 are, in fact, the smallest of their type in the world. They are reliable and include all the important functions. Naturally, the electronic parameters also correspond to those of their larger counterparts.

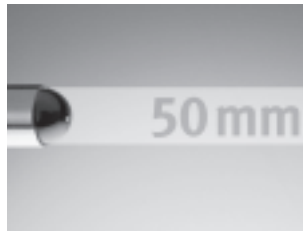
### **Simple and reliable**

For maximum productivity: The sensitive internal parts of the sensors are offered the best of protection in the form of a sturdy housing, generally to protection class IP67. The simple teach-in mode featured on many of the sensors ensures that you can start working as quickly as possible. They really are easy to use.

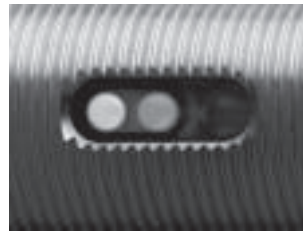
### **Innovative and economical**

Simple purchasing, quick installation, reliable operation: SOE... – this is where innovative, space-saving technology and an excellent cost/benefit ratio meet.

One principle – always the right variant: opto-electronic sensors SOE...



Compact & sturdy



Powerful & reliable



Economic

**At a glance – a whole world of opto-electronic sensors**

You will agree that it pays to take a closer look. SOE... – the right sensor for every application.

	Advantages for designers	Advantages for purchasers
<b>Compact and sturdy</b>	<ul style="list-style-type: none"> <li>■ IP67 for use in critical zones</li> <li>■ Small dimensions for installation in the tightest of spaces</li> <li>■ For highly-dynamic applications and maximum productivity</li> <li>■ Flexible mounting options</li> </ul>	<ul style="list-style-type: none"> <li>■ Greater system productivity possible</li> <li>■ IP67 for a longer service life</li> </ul>
<b>Reliable and simple</b>	<ul style="list-style-type: none"> <li>■ Reduced commissioning complexity thanks to simple design and teach-in mode</li> <li>■ Reliable object detection even at greater distances</li> <li>■ Reliable object detection with the most varied of formats and materials</li> <li>■ Reliable object detection even with very small objects</li> </ul>	<ul style="list-style-type: none"> <li>■ Easy-to-use feature saves time during installation</li> <li>■ Teach-in function for quick commissioning</li> </ul>
<b>Economic</b>	<ul style="list-style-type: none"> <li>■ Install it and forget it</li> <li>■ From standard through to special functions such as colour detection</li> <li>■ All functionalities in a smaller space reduces plant size</li> </ul>	<ul style="list-style-type: none"> <li>■ One standard worldwide</li> <li>■ Everything from a single source reduces the ordering complexity</li> </ul>

# Sensors SOE..., opto-electronic

Key features



### Method of measurement

Through-beam sensors	Retro-reflective sensors	Diffuse sensors
Through-beam sensors comprise two devices, the transmitter and the receiver. Large ranges are made possible due to their separated layout.	In retro-reflective sensors the transmitter and the receiver are located in the same housing. The light transmitted is thrown back to the receiver by means of a reflector.	Diffuse sensors evaluate the light reflected back by the object itself. Thus a reflector is not necessary. As bright and dark objects absorb different levels of light, these purely energy-based sensors can often experience

problems in critical applications. Here, sensors with background fade-out are used. These guarantee reliable operation practically independent of the color and surface of the object to be recorded.

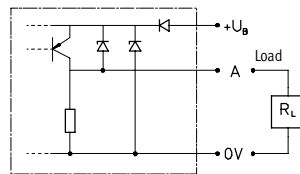
### Switching functions

Dark switching	Light switching	Parallel connection
A "dark switching" function means that the output concerned carries current (i.e. is activated), when no light is falling on the receiver. This is the equivalent of a normally closed function (NC).	A "light switching" function means that the output concerned carries current (i.e. is activated), once light falls on the receiver. This is the equivalent of a normally open function (NO).	It is possible to connect opto-electronic sensors in parallel to obtain any desired logical functions.

**Note**  
Current consumption will increase with parallel connection. The inverse currents are accumulative, with the result that an impermissibly large voltage drop may occur across the load even when the sensors are non-conductive.

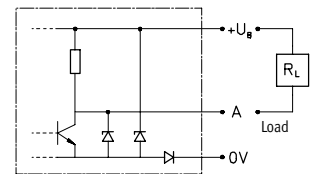
### PNP circuit

The output stage includes a PNP transistor which switches the load to the positive power supply (+U<sub>B</sub>). The load is connected between the output and ground (0 V).



### NPN circuit

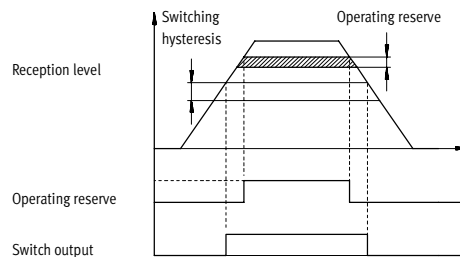
The output stage includes an NPN transistor which switches the load to ground (0 V). The load is connected between the output and the positive power supply (+U<sub>B</sub>).



### Operating reserve

The operating reserve is a measure of the excess radiant energy which falls on the light-gathering surface and is evaluated by the light receiver. Operating reserve may diminish over a period of time due to contamination, changing reflection factor of the object to be scanned and ageing of the transmitter diode, so that reliable operation is no longer assured. Certain sensors are equipped with a

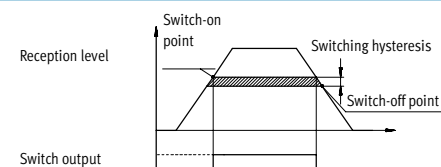
second LED which lights up, once approx. 80% of the sensor's available working range is being utilized. With certain other sensors, a yellow LED flashes or a red LED lights up when the available operating reserve is insufficient. This allows for prompt recognition of inadequate operating reliability.



### Switching hysteresis

Hysteresis causes a defined switching behaviour of a sensor. The specified range always relates to the switch-on point (as an object approaches).

Distance hysteresis is meaningful only for diffuse sensors and the corresponding fibre optic cable version.



# Sensors SOE..., opto-electronic

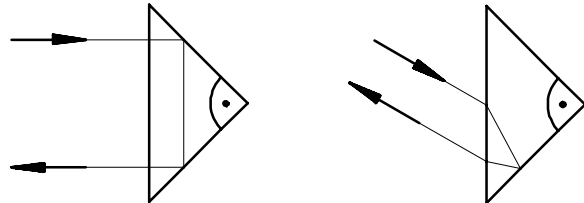
Key features

**Working range**

The working range is the maximum possible distance between the transmitter and receiver (through-beam sensor). To obtain this maximum, the potentiometer must be set to MAX and the specified reflector (retro-reflective sensor) must be used. Unless otherwise specified in the data sheet, the working ranges for diffuse sensors are determined using Kodak Grey Cards (90% grey) as a reference.

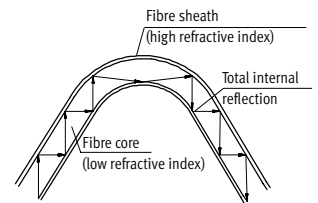
**Reflector**

Retro-reflective sensors are equipped with polarizing filters which ensure that they respond only to light thrown back by special reflectors. These are designed on the principle of triple mirrors. The choice of the most suitable reflector for a given application will be governed by the required working range and the available mounting facilities.



**Fibre optics**

A fibre optic cable can consist of a bundle of glass fibres, or one or more plastic fibres. The function of a fibre optic cable is to guide light from one place to another, even round corners. This is made possible by exploiting the phenomenon of total internal reflection. Total internal reflection occurs whenever light from a material with a high refractive index impinges on the boundary between this and a medium with a lower refractive index at an angle less than the maximum angle for total internal reflection. The fibres of a fibre optic cable consist of a core (with a high refractive index) and a sheath (with a low refractive index). Within this, the light is constantly reflected back and forth as the result of total internal reflection and is thus able to travel even curved paths.



**Laser Laser protection class 2**

All of the laser components currently offered by Festo correspond to laser protection class 2 according to EN 60825-1/94

- Maximum radiant energy 1 mW (cw). (cw = continuous wave)
- Beam only in the visible spectral range.
- Due to the high light intensity, the eye is protected by what is termed the lid shutting reflex ( $\leq 0.25$  s).
- Appropriate laser warning notices must be displayed on the device.
- No protective measures (covers, encapsulation etc.) are required.
- The user does not require a laser protection officer.
- Class 2 lasers are completely harmless to use. Consequently no safety precautions are required for sensors of laser protection class 2.

**Test input**

The transmitter of a through-beam sensor is equipped with a test input. This can be used to switch the transmitter light on and off. The operation of the sensor can be tested by periodically activating the test input and evaluating the reaction of the receiver.

**Installation**

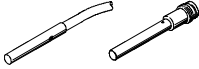




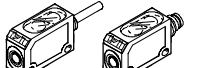
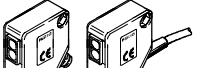
Opto-electronic sensors must not be allowed to interfere with each other during operation. A certain minimum distance must thus be maintained between sensors. This distance depends principally on the sensitivity to which the sensors have been set. For sensors fitted with fibre optic cables, the distance is heavily dependent on the type of fibre optic cable used. It is thus not possible to specify any general values.

**Alignment**

- | Through-beam sensors   | Retro-reflective sensors   | Diffuse sensors   |
|--|--|---|
| <ul style="list-style-type: none"> <li>■ First position the receiver as desired and secure it.</li> <li>■ Then align the transmitter as accurately as possible to the receiver.</li> </ul> | <ul style="list-style-type: none"> <li>■ First position the reflector as desired and secure it.</li> <li>■ Cover the reflector so that only the centre remains exposed (25% of reflector area).</li> </ul> | <ul style="list-style-type: none"> <li>■ Install the retro-reflective sensor in such a way that reliable switching operation is obtained.</li> <li>■ Finally, remove the cover from the reflector.</li> </ul>                               |
|  |  | <ul style="list-style-type: none"> <li>■ Align the sensor to the object to be scanned in such a way that reliable operation is obtained.</li> <li>■ In order to obtain reliable operation, the operating reserve must be active.</li> </ul> |

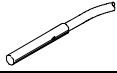



# Sensors SOE..., opto-electronic

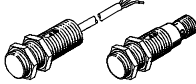



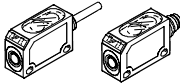

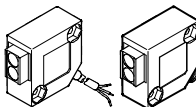

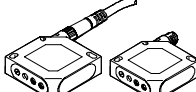

Product range overview

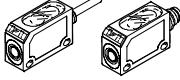

Function	Design	Type SOEG-...	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	→ Page
					Cable	Plug		
Diffuse sensor SOEG-RT	<b>Round design, Ø 4 mm</b>							
		RT-4 New	50	PNP, light switching	■	-	■	4 / 8.2-14
				NPN, light switching	-	■	■	
	<b>Round design, male thread M5</b>							
		RT-M5 New	50	PNP, light switching	■	-	■	4 / 8.2-14
				NPN, light switching	-	■	■	
	<b>Round design, male thread M12</b>							
		RT-M12	0 ... 200	PNP, light switching	■	-	-	4 / 8.2-14
				NPN, light switching	-	■	-	
	<b>Round design, male thread M18, beam exit straight</b>							
		RT-M18	0 ... 430	PNP, light switching	■	-	-	4 / 8.2-14
				NPN, light switching	-	■	-	
	<b>Round design, male thread M18, beam exit angled</b>							
		RT-M18W New	0 ... 600	PNP, light switching	■	-	■	4 / 8.2-14
				NPN, light switching	-	■	■	
	<b>Block design, 20x32x12 mm</b>							
		RT-Q20 New	10 ... 300	PNP, switchable	■	-	■	4 / 8.2-18
				NPN, switchable	-	■	■	
<b>Block design, 30x30x15 mm</b>								
	RT-Q30	0 ... 600	PNP, light switching	■	-	■	4 / 8.2-18	
			NPN, light switching	-	■	■		

# Sensors SOE..., opto-electronic

Product range overview

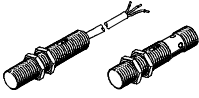

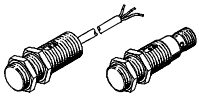

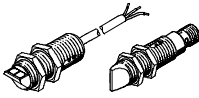

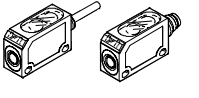

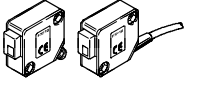
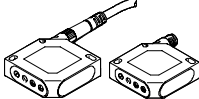

Function	Design	Type SOEG-...	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	→ Page
					Cable	Plug		
Diffuse sensor SOEG-RTZ with cylindrical light beam	Round design, Ø 4 mm							
		RTZ-4  New	10	PNP, light switching	■	-	■	4 / 8.2-21
				NPN, light switching	■	-	■	
	Round design, male thread M5							
	RTZ-M5  New	10	PNP, light switching	■	-	■	4 / 8.2-21	
			NPN, light switching	■	-	■		

Function	Design	Type SOEG-...	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	→ Page
					Cable	Plug		
Diffuse sensor SOEG-RTH with background fade-out	Round design, male thread M18, beam exit straight							
		RTH-M18  New	10 ... 120	PNP, light switching	■	-	■	4 / 8.2-23
					-	■	■	
				NPN, light switching	■	-	■	
					-	■	■	
	Round design, male thread M18, beam exit angled							
		RTH-M18W  New	10 ... 120	PNP, light switching	■	-	■	4 / 8.2-23
					-	■	■	
				NPN, light switching	■	-	■	
					-	■	■	
	Block design, 20x32x12 mm							
		RTH-Q20  New	25 ... 100	PNP, switchable	■	-	■	4 / 8.2-26
-					■	■		
NPN, switchable				■	-	■		
				-	■	■		
Block design, 30x30x15 mm								
	RTH-Q30  New	15 ... 150	PNP, light switching	■	-	■	4 / 8.2-26	
				-	■	■		
			NPN, light switching	■	-	■		
				-	■	■		
Block design, 50x50x17 mm								
	RTH-Q50  New	30 ... 300	PNP, antivalent	■	-	■	4 / 8.2-26	
				-	■	■		
			NPN, antivalent	■	-	■		
				-	■	■		

Function	Design	Type SOEG-...	Working range [mm]	Switch output, analogue output	Electrical connection		Free of copper, PTFE and silicone	→ Page
					Cable	Plug		
Diffuse sensor SOEG-RTD for distance measurement	Block design, 20x32x12 mm							
		RTD-Q20  New	20 ... 80	PNP, 0 ... 10 V DC	■	-	■	4 / 8.2-29
-					■	■		

# Sensors SOE..., opto-electronic

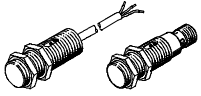


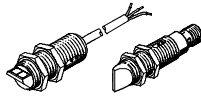


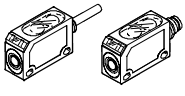


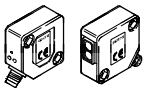


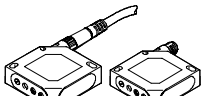


Product range overview

Function	Design	Type SOEG-...	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	→ Page
					Cable	Plug		
Retro-reflective sensors SOEG-RSP with polarised light	<b>Round design, male thread M12</b>							
		RSP-M12  New	1,500	PNP, dark switching	■	-	■	4 / 8.2-31
					-	■	■	
				NPN, dark switching	■	-	■	
					-	■	■	
	<b>Round design, male thread M18, beam exit straight</b>							
		RSP-M18  New	2,000	PNP, dark switching	■	-	■	4 / 8.2-31
					-	■	■	
				NPN, dark switching	■	-	■	
					-	■	■	
	<b>Round design, male thread M18, beam exit angled</b>							
		RSP-M18W  New	2,000	PNP, dark switching	■	-	■	4 / 8.2-31
					-	■	■	
				NPN, dark switching	■	-	■	
					-	■	■	
	<b>Block design, 20x32x12 mm</b>							
		RSP-Q20  New	0 ... 2,500	PNP, switchable	■	-	■	4 / 8.2-34
					-	■	■	
			NPN, switchable	■	-	■		
				-	■	■		
<b>Block design, 30x30x15 mm</b>								
	RSP-Q30	0 ... 2,000	PNP, dark switching	■	-	■	4 / 8.2-34	
				-	■	■		
			NPN, dark switching	■	-	■		
				-	■	■		
<b>Block design, 50x50x17 mm</b>								
	RSP-Q50  New	0 ... 5,500	PNP, antivalent	■	-	■	4 / 8.2-34	
				-	■	■		
			NPN, antivalent	■	-	■		
				-	■	■		



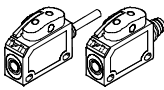

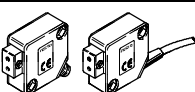
# Sensors SOE..., opto-electronic

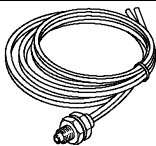
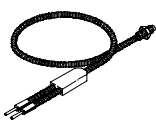
Product range overview

Function	Design	Type SOEG-...	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	→ Page	
					Cable	Plug			
Through-beam sensors SOEG-S/E	<b>Round design, male thread M18, beam exit straight</b>								
		Transmitter							
		<b>S-M18</b>	20,000	-	-	-	-	■	4 / 8.2-38
		 New						■	
		Receiver							
		<b>E-M18</b>	20,000	PNP, antivalent	■	-	■	4 / 8.2-38	
		 New			-	■	■		
			NPN, antivalent	■	-	■			
				-	■	■			
	<b>Round design, male thread M18, beam exit angled</b>								
		Transmitter							
		<b>S-M18W</b>	20,000	-	-	-	-	■	4 / 8.2-38
		 New						■	
		Receiver							
		<b>E-M18W</b>	20,000	PNP, antivalent	■	-	■	4 / 8.2-38	
		 New			-	■	■		
			NPN, antivalent	■	-	■			
				-	■	■			
	<b>Block design, 20x32x12 mm</b>								
		Transmitter							
		<b>S-Q20</b>	0 ... 6,000	-	-	-	-	■	4 / 8.2-41
		 New						■	
		Receiver							
		<b>E-Q20</b>	0 ... 6,000	PNP, switchable	■	-	■	4 / 8.2-41	
 New				-	■	■			
		NPN, switchable	■	-	■				
			-	■	■				
<b>Block design, 30x30x15 mm</b>									
	Transmitter								
	<b>S-Q30</b>	0 ... 6,000	-	-	-	-	■	4 / 8.2-41	
	 New						■		
	Receiver								
	<b>E-Q30</b>	0 ... 6,000	PNP, dark switching	■	-	■	4 / 8.2-41		
	 New			-	■	■			
		NPN, dark switching	■	-	■				
			-	■	■				
<b>Block design, 50x50x17 mm</b>									
	Transmitter								
	<b>S-Q50</b>	0 ... 15,000	-	-	-	-	■	4 / 8.2-41	
	 New						■		
	Receiver								
	<b>E-Q50</b>	0 ... 15,000	PNP, antivalent	■	-	■	4 / 8.2-41		
	 New			-	■	■			

# Sensors SOE..., opto-electronic

Product range overview

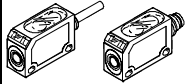
Function	Design	Type SOEG-...	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	→ Page	
					Cable	Plug			
Fibre-optic units SOEG-L	<b>Block design, 20x32x12 mm</b>								
		L-Q20  New	0 ... 250	PNP, switchable	■	-	■	4 / 8.2-45	
				NPN, switchable	■	-	■		
	<b>Block design, 30x30x15 mm</b>								
		L-Q30	0 ... 120	PNP, antivalent	■	-	■		4 / 8.2-45
				NPN, antivalent	■	-	■		

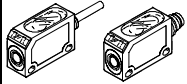
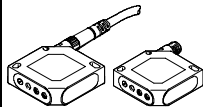
Function	Design	Use	Length [m]	Free of copper, PTFE and silicone	→ Page
Fibre optic cables	<b>Polymer fibre optic cable LLK</b>				
		Diffuse sensor	2	-	4 / 8.2-48
		Through-beam sensor	2	-	
	<b>Glass fibre optic cable LLG</b>				
		Diffuse sensor	0.5	-	4 / 8.2-48
		Through-beam sensor	0.5	-	
<b>Accessories</b>					
		Fibre-optic cutter for polymer fibre optic cable LLK		-	4 / 8.2-50


Sensors and monitoring devices  
Sensors  
8.2

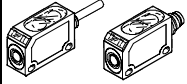
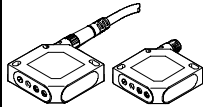
# Sensors SOE..., opto-electronic


Product range overview

Function	Design	Type SOEL-...	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	→ Page
					Cable	Plug		
Laser diffuse sensor SOEL-RT		RT-Q20 New	10 ... 150	PNP, switchable	■	-	■	4 / 8.2-51
					-	■	■	
				NPN, switchable	■	-	■	
					-	■	■	

Function	Design	Type SOEL-...	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	→ Page					
					Cable	Plug							
Laser diffuse sensor SOEL-RTH with background fade-out		RTH-Q20 New	30 ... 110	PNP, switchable	■	-	■	4 / 8.2-53					
					-	■	■						
				NPN, switchable	■	-	■						
					-	■	■						
				Block design, 50x50x17 mm									
					RTH-Q50 New	50 ... 300	PNP, antivalent		■	-	■	4 / 8.2-53	
-	■	■											
NPN, antivalent	■	-	■										
	-	■	■										

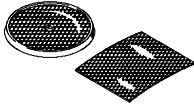


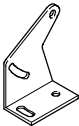


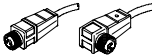
Function	Design	Type SOEL-...	Working range [mm]	Switch output, analogue output	Electrical connection		Free of copper, PTFE and silicone	→ Page
					Cable	Plug		
Laser diffuse sensor SOEL-RTD for distance measurement		RTD-Q50 New	80 ... 300	PNP, 4 ... 20 mA	-	■	■	4 / 8.2-56

Function	Design	Type SOEL-...	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	→ Page					
					Cable	Plug							
Laser retro- reflective sensors SOEL-RSP with polarised light		RSP-Q20 New	100 ... 1,000	PNP, switchable	■	-	■	4 / 8.2-58					
					-	■	■						
				NPN, switchable	■	-	■						
					-	■	■						
				Block design, 50x50x17 mm									
					RSP-Q50 New	0 ... 12,000	PNP, antivalent		■	-	■	4 / 8.2-58	
-	■	■											
NPN, antivalent	■	-	■										
	-	■	■										

Function	Design	Type SOEC-...	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	→ Page
					Cable	Plug		
Colour sensor SOEC-RT		RT-Q50 New	12 ... 32	PNP, light switching	-	■	■	4 / 8.2-61

# Sensors SOE..., opto-electronic

Product range overview – Accessories

Function	Design	Description	Free of copper, PTFE and silicone	→ Page
<b>Reflectors</b>	<b>for infra-red and red light</b>			
		Reflector, round Ø 20 mm	-	4 / 8.2-63
		Reflector, round Ø 40 mm	-	
		Reflector, round Ø 80 mm	-	
		Reflector foil, square 100 x 100 mm	-	
	<b>for laser light</b>			
	Reflector, rectangular 10x50 mm	■	4 / 8.2-63	
	Reflector, square 50x50 mm	■		
<b>Mounting components</b>		Mounting bracket for sensors 20x32x12 mm	■	4 / 8.2-64
		Mounting bracket for sensors 30x30x15 mm	-	
		Mounting bracket for sensors 50x50x17 mm	■	
<b>Plug socket with cable</b>		Plug socket with cable M8x1, 3-pin	-	4 / 8.2-65
		Plug socket with cable M8x1, 4-pin	■	
		Plug socket with cable M12x1, 3-pin	-	
		Plug socket with cable M12x1, 4-pin	-	
		Plug socket with cable M12x1, 8-pin	-	

# Sensors SOE..., opto-electronic

Type codes

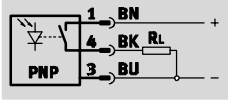
		SOE	G	RSP	Q20	PP	K	2L	TI
<b>Type</b>									
SOE	Opto-electronic sensor								
<b>Construction</b>									
G	Standard sensor								
L	Laser sensor								
C	Colour sensor								
<b>Function</b>									
RT	Diffuse sensor								
RSP	Retro-reflective sensor with polarised light								
S	Through-beam sensor, transmitter								
E	Through-beam sensor, receiver								
L	Fibre-optic unit								
RTH	Diffuse sensor with background fade-out								
RTZ	Diffuse sensor with cylindrical light beam								
RTD	Distance sensor								
RSG	Retro-reflective sensor for transparent objects								
<b>Design</b>									
4	Round, O.D. 4 mm								
M5	Round, male thread M5								
M12	Round, male thread M12								
M18	Round, male thread M18								
M18W	Round, male thread M18, beam outlet angled								
Q20	Block design, size 20x32x12								
Q30	Block design, size 30x30x15								
Q50	Block design, size 50x50x17								
<b>Switch output</b>									
PS	PNP, NO contact								
NS	NPN, NO contact								
PA	PNP, antivalent								
NA	NPN, antivalent								
PP	PNP, switchable								
NP	NPN, switchable								
PU	Analogue 0 ... 10 V								
<b>Electrical connection</b>									
K	Cable								
S	Plug								
<b>Display</b>									
L	1 LED								
2L	2 LEDs								
3L	3 LEDs								
7L	7 LEDs								
<b>Options</b>									
	Standard version								
TI	Teach-in by means of a button and via electrical connection								

# Diffuse sensor SOEG-RT

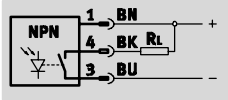
Technical data

Function

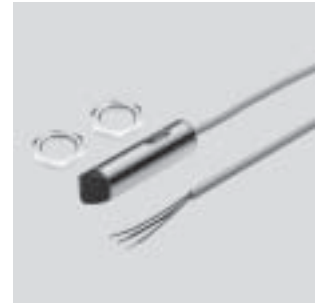
- Beam exit straight or angled
- Round design



PNP, NO contact, e.g. with plug



NPN, NO contact, e.g. with plug



## General technical data

Size	round Ø 4 mm	M5	M12	M18, straight	M18, angled
Method of measurement	Diffuse sensor				
Measured variable	Position				
Light type	infra-red	infra-red	infra-red	infra-red	red
Working range [mm]	50	50	0 ... 200	0 ... 430	0 ... 600
Setting range, lower limit [mm]	–	–	10	20	100
Setting range, upper limit [mm]	–	–	200	430	600
Setting options	–	–	Potentiometer	Potentiometer	Potentiometer
Switching status display	Yellow LED				
Operating reserve display	Yellow LED <sup>1)</sup>	Yellow LED <sup>1)</sup>	Yellow LED <sup>1)</sup>	Yellow LED <sup>1)</sup>	Green LED
Type of mounting	Clamped	Via lock nut	Via lock nut	Via lock nut	Via lock nut
Tightening torque [Nm]	–	1.5	10	20	20
Conforms to	DIN EN 60947-5-2				

1) LED flashes when available operating reserve is insufficient

## Electrical data

Size	round Ø 4 mm	M5	M12	M18, straight	M18, angled	
Switch output	PNP or NPN					
Switching element function	Light switching					
Electrical connection	Plug	M8 x 1, 3-pin	M8 x 1, 3-pin	M12 x 1, 3-pin	M12 x 1, 3-pin	M12 x 1, 3-pin
	Cable	3-wire	3-wire	3-wire	3-wire	3-wire
Cable length [m]	2.5	2.5	2.5	2.5	2.5	
Operating voltage range [V DC]	10 ... 30	10 ... 30	10 ... 30	10 ... 30	10 ... 36	
Residual ripple [%]	20	20	10	10	20	
Max. switching frequency [Hz]	250	250	250	250	1,000	
Max. output current [mA]	100	100	200	200	200	
Voltage drop [V]	≤ 2.0	≤ 2.0	1.8	1.8	≤ 2.0	
Idle current [mA]	15	15	30	35	15	
Protection against short circuit	Pulsed					
Protection against polarity reversal	For all electrical connections					
Protection class to EN 60 529	IP67	IP67	IP65	IP65	IP67	
CE symbol	89/336/EEC (EMC)					

# Diffuse sensor SOEG-RT

Technical data

Materials					
Size	round Ø 4 mm	M5	M12	M18, straight	M18, angled
Housing	High-alloy stainless steel		Brass, chrome-plated		Brass, nickel-plated
Union nut	–	High-alloy stainless steel	Brass, chrome-plated		Brass, nickel-plated
Cable sheath	Polyurethane				
Material note	Free of copper, PTFE and silicone		–		Free of copper, PTFE and silicone

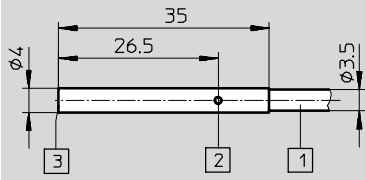
Operating and environmental conditions										
Size	round Ø 4 mm		M5		M12		M18, straight		M18, angled	
Cable installation	fixed	flexible	fixed	flexible	fixed	flexible	fixed	flexible	fixed	flexible
Ambient temperature [°C]	0 ... 55		0 ... 55		–5 ... +55		–5 ... +55		–25 ... +55	–5 ... +50
Corrosion resistance class CRC <sup>1)</sup>	4		4		2		2		2	

- 1) Corrosion resistance class 2 according to Festo standard 940 070  
 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 or lubricating agents.
- Corrosion resistance class 4 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.

Weight [g]					
Size	round Ø 4 mm	M5	M12	M18, straight	M18, angled
Cable version	33	35	100	110	123
Plug version	3	4	32	85	56

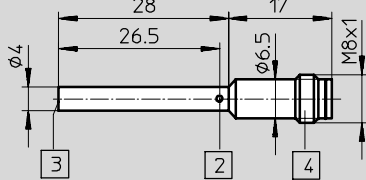
**Dimensions – Ø 4 mm** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

**Cable version**



1 Connecting cable      2 Light emitting diode (LED)      3 Light exit

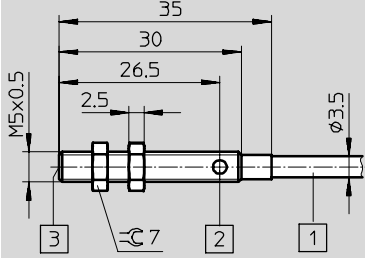
**Plug version**



3 Light exit      4 Plug suitable for plug socket with cable SIM-M8...

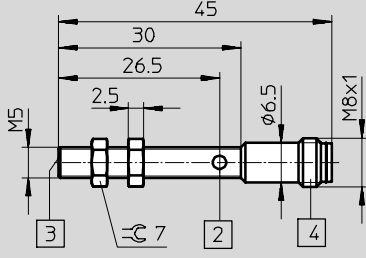
**Dimensions – M5** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

**Cable version**



1 Connecting cable      2 Light emitting diode (LED)      3 Light exit

**Plug version**



3 Light exit      4 Plug suitable for plug socket with cable SIM-M8...

# Diffuse sensor SOEG-RT

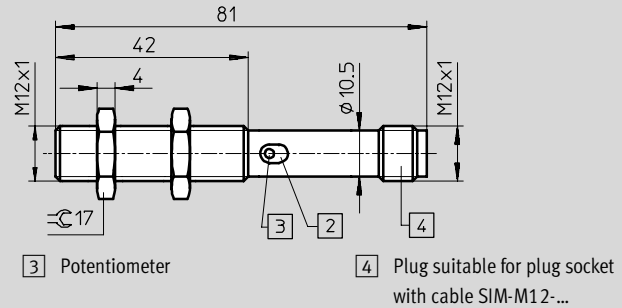
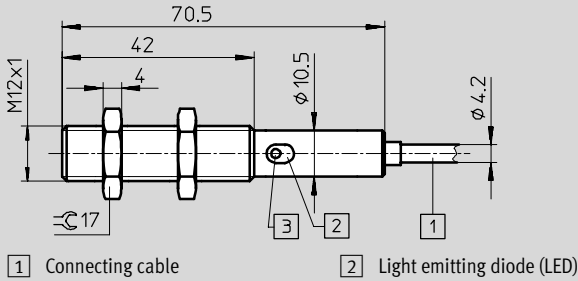
Technical data

## Dimensions – M12

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

Cable version

Plug version



- 1 Connecting cable
- 2 Light emitting diode (LED)

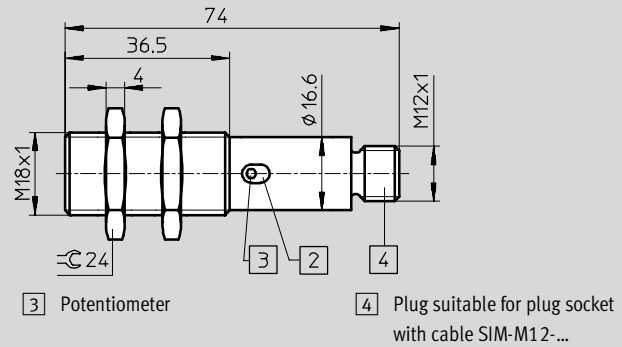
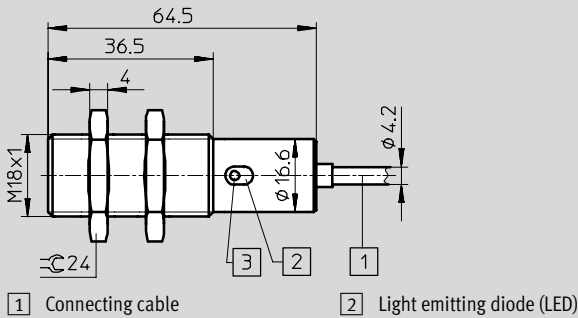
- 3 Potentiometer
- 4 Plug suitable for plug socket with cable SIM-M12-...

## Dimensions – M18, beam exit straight

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

Cable version

Plug version



- 1 Connecting cable
- 2 Light emitting diode (LED)

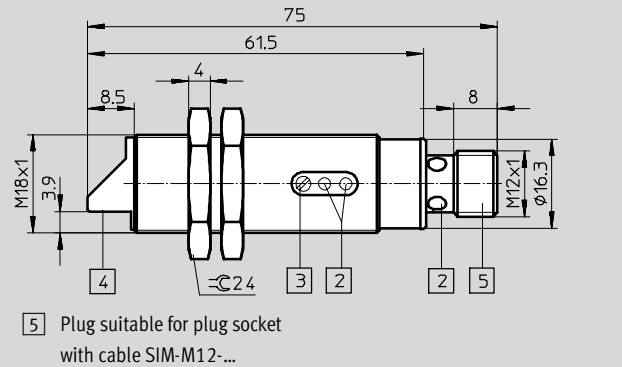
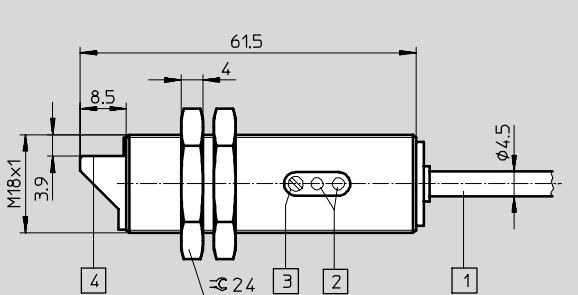
- 3 Potentiometer
- 4 Plug suitable for plug socket with cable SIM-M12-...

## Dimensions – M18, beam exit angled

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

Cable version

Plug version



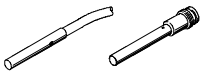
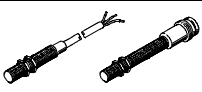
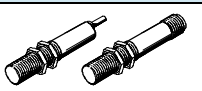
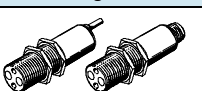
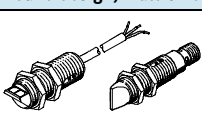
- 1 Connecting cable
- 2 Light emitting diode (LED)
- 3 Potentiometer
- 4 Light exit

- 5 Plug suitable for plug socket with cable SIM-M12-...



# Diffuse sensor SOEG-RT

Technical data

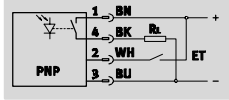
Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>Round design, Ø 4 mm</b>							
	50	PNP, light switching	■	-	■	537 671	SOEG-RT-4-PS-K-L
			-	■	■	537 673	SOEG-RT-4-PS-S-L
		NPN, light switching	■	-	■	537 674	SOEG-RT-4-NS-K-L
			-	■	■	537 676	SOEG-RT-4-NS-S-L
<b>Round design, male thread M5</b>							
	50	PNP, light switching	■	-	■	537 677	SOEG-RT-M5-PS-K-L
			-	■	■	537 679	SOEG-RT-M5-PS-S-L
		NPN, light switching	■	-	■	537 680	SOEG-RT-M5-NS-K-L
			-	■	■	537 682	SOEG-RT-M5-NS-S-L
<b>Round design, male thread M12</b>							
	0 ... 200	PNP, light switching	■	-	-	165 338	SOEG-RT-M12-PS-K-L
			-	■	-	165 339	SOEG-RT-M12-PS-S-L
		NPN, light switching	■	-	-	165 336	SOEG-RT-M12-NS-K-L
			-	■	-	165 337	SOEG-RT-M12-NS-S-L
<b>Round design, male thread M18, beam exit straight</b>							
	0 ... 430	PNP, light switching	■	-	-	165 342	SOEG-RT-M18-PS-K-L
			-	■	-	165 343	SOEG-RT-M18-PS-S-L
		NPN, light switching	■	-	-	165 340	SOEG-RT-M18-NS-K-L
			-	■	-	165 341	SOEG-RT-M18-NS-S-L
<b>Round design, male thread M18, beam exit angled</b>							
	0 ... 600	PNP, light switching	■	-	■	537 701	SOEG-RT-M18W-PS-K-2L
			-	■	■	537 702	SOEG-RT-M18W-PS-S-2L
		NPN, light switching	■	-	■	537 717	SOEG-RT-M18W-NS-K-2L
			-	■	■	537 718	SOEG-RT-M18W-NS-S-2L

# Diffuse sensor SOEG-RT

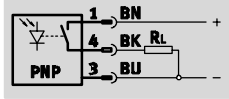
Technical data

Function

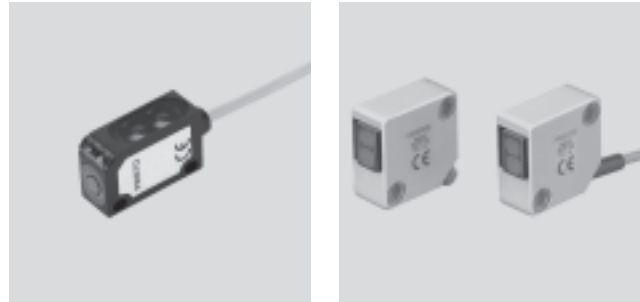
- Beam exit straight
- Block design



e.g. 20x32x12 mm  
PNP, switchable, with plug



e.g. 30x30x15 mm,  
PNP, NO contact, with plug



General technical data		
Size	20x32x12 mm	30x30x15 mm
Method of measurement	Diffuse sensor	
Measured variable	Position	
Light type	red	infra-red
Working range [mm]	10 ... 300	0 ... 600
Setting range, lower limit [mm]	10	0
Setting range, upper limit [mm]	300	600
Setting options	Teach-in via button Teach-in via electrical connection	Potentiometer
Max. light spot [mm]	12x12 mm at a sensing range of 160 mm	–
Switching status display	Yellow LED	
Operating reserve display	Green LED	
Type of mounting	Via through-holes	
Conforms to	DIN EN 60947-5-2	

Electrical data		
Size	20x32x12 mm	30x30x15 mm
Switch output	PNP or NPN	
Switching element function	Switchable	Light switching
Electrical connection	Plug	M8 x 1, 4-pin
	Cable	M8 x 1, 3-pin
Cable length [m]	4-wire	3-wire
	2.0	2.5
Operating voltage range [V DC]	10 ... 30	10 ... 30
Residual ripple [%]	10	20
Max. switching frequency [Hz]	1,000	1,000
Max. output current [mA]	100	200
Voltage drop [V]	≤ 2.4	2.0
Idle current [mA]	35	25
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class to EN 60 529	IP67	IP65
CE symbol	89/336/EEC (EMC)	89/336/EEC (EMC)
	73/23/EEC (low voltage)	
Certification	c UL us - Listed (OL)	–

# Diffuse sensor SOEG-RT

Technical data

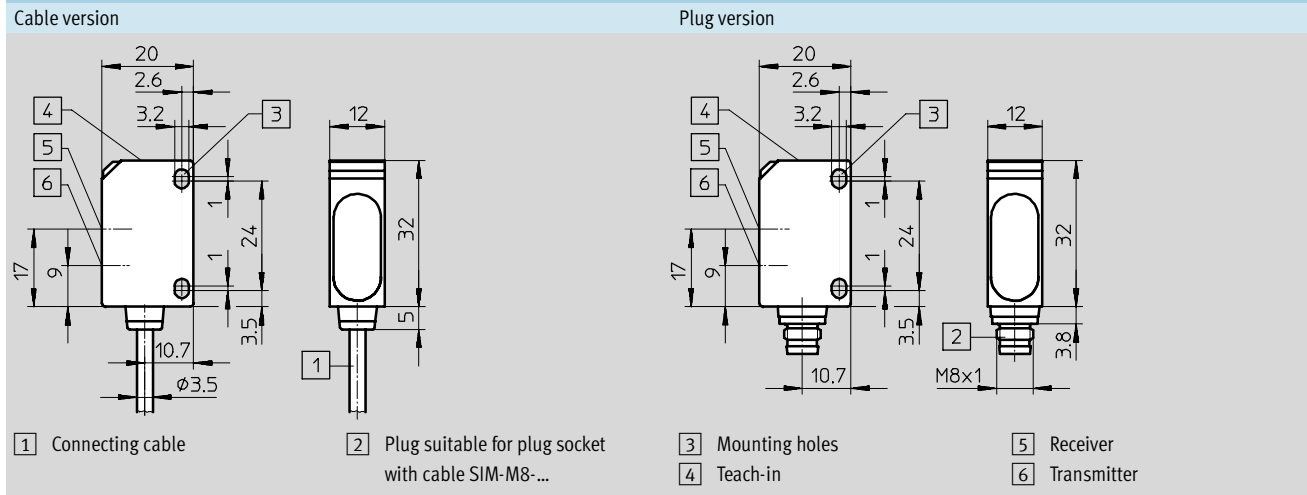
Materials		
Size	20x32x12 mm	30x30x15 mm
Housing	Acrylic butadiene styrene	Polybutylene terephthalate, reinforced
Cable sheath	Polyurethane	Polyurethane
Material note	Free of copper, PTFE and silicone	

Operating and environmental conditions				
Size	20x32x12 mm		30x30x15 mm	
Cable installation	fixed	flexible	fixed	flexible
Ambient temperature [°C]	-20 ... +60	-5 ... +60	-25 ... +55	-5 ... +55
Corrosion resistance class CRC <sup>1)</sup>	4 <sup>2)</sup> / 2 <sup>3)</sup>		2	

- 1) Corrosion resistance class 2 according to Festo standard 940 070  
 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 or lubricating agents.  
 Corrosion resistance class 4 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) Cable version  
 3) Plug version

Weight [g]		
Size	20x32x12 mm	30x30x15 mm
Cable version	36	85
Plug version	7	18

**Dimensions – 20x32x12 mm** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)



# Diffuse sensor SOEG-RT

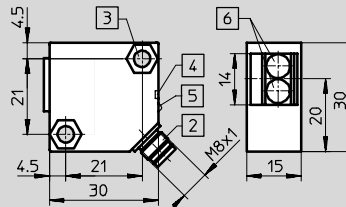
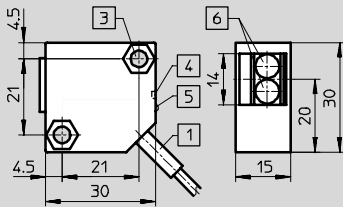
Technical data

**Dimensions – 30x30x15 mm**

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

**Cable version**

**Plug version**



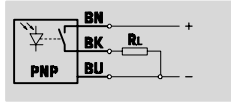
- 1 Connecting cable
- 2 Plug suitable for plug socket with cable SIM-M8-...
- 3 Mounting holes
- 4 Potentiometer
- 5 Light emitting diode (LED)
- 6 Centre of optical beam

Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>20x32x12 mm</b>							
	10 ... 300	PNP, switchable	■	-	■	537 732	SOEG-RT-Q20-PP-K-2L-TI
			-	■	■	537 731	SOEG-RT-Q20-PP-S-2L-TI
		NPN, switchable	■	-	■	537 734	SOEG-RT-Q20-NP-K-2L-TI
			-	■	■	537 733	SOEG-RT-Q20-NP-S-2L-TI
<b>30x30x15 mm</b>							
	0 ... 600	PNP, light switching	■	-	■	165 350	SOEG-RT-Q30-PS-K-2L
			-	■	■	165 351	SOEG-RT-Q30-PS-S-2L
		NPN, light switching	■	-	■	165 348	SOEG-RT-Q30-NS-K-2L
			-	■	■	165 349	SOEG-RT-Q30-NS-S-2L

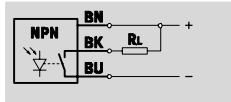
# Diffuse sensor SOEG-RTZ

Technical data

Function

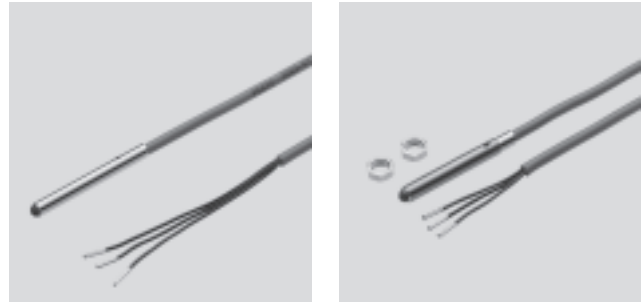


PNP, NO contact



NPN, NO contact

- Cylindrical light beam
- Beam exit straight
- Round design



General technical data		
Size	round Ø 4 mm	M5
Method of measurement	Diffuse sensor with cylindrical light beam	
Measured variable	Position	
Light type	infra-red	infra-red
Working range [mm]	10	10
Setting options	-	
Switching status display	Yellow LED	
Operating reserve display	Yellow LED <sup>1)</sup>	
Type of mounting	Clamped	Via lock nut
Tightening torque [Nm]	-	1.5
Conforms to	DIN EN 60947-5-2	DIN EN 60947-5-2

1) LED flashes when available operating reserve is insufficient

Electrical data		
Size	round Ø 4 mm	M5
Switch output	PNP or NPN	
Switching element function	Light switching	
Electrical connection	Cable	3-wire
Cable length [m]	2.5	
Operating voltage range [V DC]	10 ... 30	
Residual ripple [%]	20	
Max. switching frequency [Hz]	250	
Max. output current [mA]	100	
Voltage drop [V]	≤ 2.0	
Idle current [mA]	15	
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class to EN 60 529	IP67	
CE symbol	89/336/EEC (EMC)	

# Diffuse sensor SOEG-RTZ

Technical data

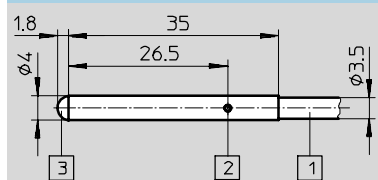
Materials		
Size	round Ø 4 mm	M5
Housing	High-alloy stainless steel	High-alloy stainless steel
Union nut	–	High-alloy stainless steel
Cable sheath	Polyurethane	Polyurethane
Material note	Free of copper, PTFE and silicone	Free of copper, PTFE and silicone

Operating and environmental conditions				
Size	round Ø 4 mm		M5	
Cable installation	fixed	flexible	fixed	flexible
Ambient temperature [°C]	0 ... 55		0 ... 55	
Corrosion resistance class CRC <sup>1)</sup>	4		4	

1) Corrosion resistance class 4 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.

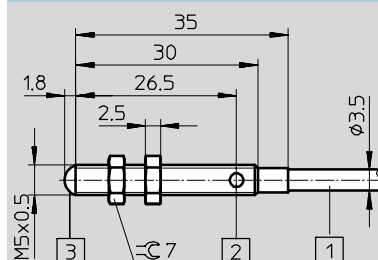
Weight [g]		
Size	round Ø 4 mm	M5
	28	30

**Dimensions – Ø 4 mm** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)





- 1 Connecting cable
- 2 Light emitting diode (LED)
- 3 Light exit

**Dimensions – M5** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)



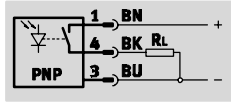
- 1 Connecting cable
- 2 Light emitting diode (LED)
- 3 Light exit

Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>Round design, Ø 4 mm</b>							
	10	PNP, light switching	■	–	■	537 672	SOEG-RTZ-4-PS-K-L
		NPN, light switching	■	–	■	537 675	SOEG-RTZ-4-NS-K-L
<b>Round design, male thread M5</b>							
	10	PNP, light switching	■	–	■	537 678	SOEG-RTZ-M5-PS-K-L
		NPN, light switching	■	–	■	537 681	SOEG-RTZ-M5-NS-K-L

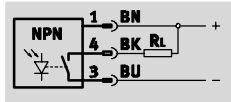
# Diffuse sensor SOEG-RTH

Technical data

Function



PNP, NO contact, e.g. with plug



NPN, NO contact, e.g. with plug

- With background fade-out
- Beam exit straight or angled
- Round design



General technical data		
Size	M18, straight	M18, angled
Method of measurement	Diffuse sensor with background fade-out	
Measured variable	Position	
Light type	red	
Working range	[mm]	10 ... 120
Setting range, lower limit	[mm]	10
Setting range, upper limit	[mm]	120
Setting options	Potentiometer	
Switching status display	Yellow LED	
Operating reserve display	Green LED	
Type of mounting	Via lock nut	
Tightening torque	[Nm]	20
Conforms to	DIN EN 60947-5-2	

Electrical data		
Size	M18, straight	M18, angled
Switch output	PNP or NPN	
Switching element function	Light switching	
Electrical connection	Plug	M12 x 1, 3-pin
	Cable	3-wire
Cable length	[m]	2.5
Operating voltage range	[V DC]	10 ... 36
Residual ripple	[%]	20
Max. switching frequency	[Hz]	500
Max. output current	[mA]	200
Voltage drop	[V]	≤ 2.0
Idle current	[mA]	25
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class to EN 60 529	IP67	
CE symbol	89/336/EEC (EMC)	

Materials		
Size	M18, straight	M18, angled
Housing	Brass, nickel-plated	
Union nut	Brass, nickel-plated	
Cable sheath	Polyurethane	
Material note	Free of copper, PTFE and silicone	

# Diffuse sensor SOEG-RTH

Technical data

Operating and environmental conditions				
Size	M18, straight		M18, angled	
Cable installation	fixed	flexible	fixed	flexible
Ambient temperature [°C]	-25 ... +55		-25 ... +55	
Corrosion resistance class CRC <sup>1)</sup>	2		2	

1) Corrosion resistance class 2 according to Festo standard 940 070

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 or lubricating agents.

Weight [g]		
Size	M18, straight	M18, angled
Cable version	121	124
Plug version	53	57

## Dimensions – M18, beam exit straight

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

Cable version

Plug version

1 Connecting cable  
2 Light emitting diode (LED)  
3 Potentiometer  
4 Light exit

5 Plug suitable for plug socket with cable SIM-M12-...

## Dimensions – M18, beam exit angled

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

Cable version

Plug version

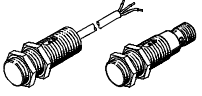
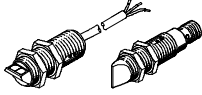
1 Connecting cable  
2 Light emitting diode (LED)  
3 Potentiometer  
4 Light exit

5 Plug suitable for plug socket with cable SIM-M12-...



# Diffuse sensor SOEG-RTH

Technical data

Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>Round design, male thread M18, beam exit straight</b>							
	10 ... 120	PNP, light switching	■	-	■	537 687	SOEG-RTH-M18-PS-K-2L
			-	■	■	537 689	SOEG-RTH-M18-PS-S-2L
		NPN, light switching	■	-	■	537 705	SOEG-RTH-M18-NS-K-2L
			-	■	■	537 707	SOEG-RTH-M18-NS-S-2L
<b>Round design, male thread M18, beam exit angled</b>							
	10 ... 120	PNP, light switching	■	-	■	537688	SOEG-RTH-M18W-PS-K-2L
			-	■	■	537690	SOEG-RTH-M18W-PS-S-2L
		NPN, light switching	■	-	■	537 706	SOEG-RTH-M18W-NS-K-2L
			-	■	■	537708	SOEG-RTH-M18W-NS-S-2L

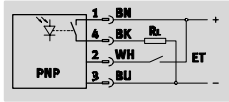
# Diffuse sensor SOEG-RTH

Technical data

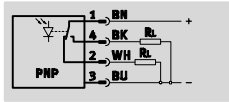


Function

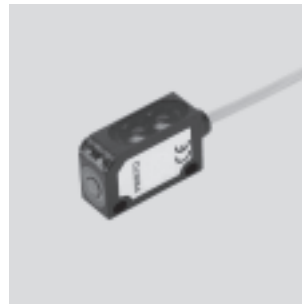
- With background fade-out
- Beam exit straight
- Block design



e.g. 20x32x12 mm  
PNP, switchable, with plug



e.g. 50x50x17 mm,  
PNP, antivalent, with plug



General technical data			
Size	20x32x12 mm	30x30x15 mm	50x50x17 mm
Method of measurement	Diffuse sensor with background fade-out		
Measured variable	Position		
Light type	red		
Working range [mm]	25 ... 100	15 ... 150	30 ... 300
Reference material	18%	90%	18%
Setting range, lower limit [mm]	25	15	30
Setting range, upper limit [mm]	100	150	300
Setting options	Teach-in via button Teach-in via electrical connection	Potentiometer	Potentiometer
Max. light spot [mm]	5x5 mm at a sensing range of 60 mm	–	8x8 mm at a sensing range of 200 mm
Ready status display	–	–	Green LED
Switching status display	Yellow LED		
Operating reserve display	Green LED	Green LED	Red LED <sup>1)</sup>
Type of mounting	Via through-holes		
Conforms to	DIN EN 60947-5-2		

1) LED lights up when available operating reserve is insufficient

Electrical data			
Size	20x32x12 mm	30x30x15 mm	50x50x17 mm
Switch output	PNP or NPN		
Switching element function	Switchable	Light switching	Antivalent
Electrical connection	Plug	M8 x 1, 4-pin	M12 x 1, 4-pin
	Cable	4-wire	3-wire
Cable length [m]	2.0	2.5	3.0
Operating voltage range [V DC]	10 ... 30	10 ... 36	10 ... 30
Residual ripple [%]	10	20	10
Max. switching frequency [Hz]	1,000	500	1,000
Max. output current [mA]	100	200	200
Voltage drop [V]	≤ 2.4	≤ 2.0	≤ 2.4
Idle current [mA]	35	25	35
Protection against short circuit	Pulsed		
Protection against polarity reversal	For all electrical connections		
Protection class to EN 60 529	IP67	IP65	IP67
CE symbol	89/336/EEC (EMC)		
Certification	c UL us - Listed (OL)	–	c UL us - Listed (OL)

# Diffuse sensor SOEG-RTH

Technical data

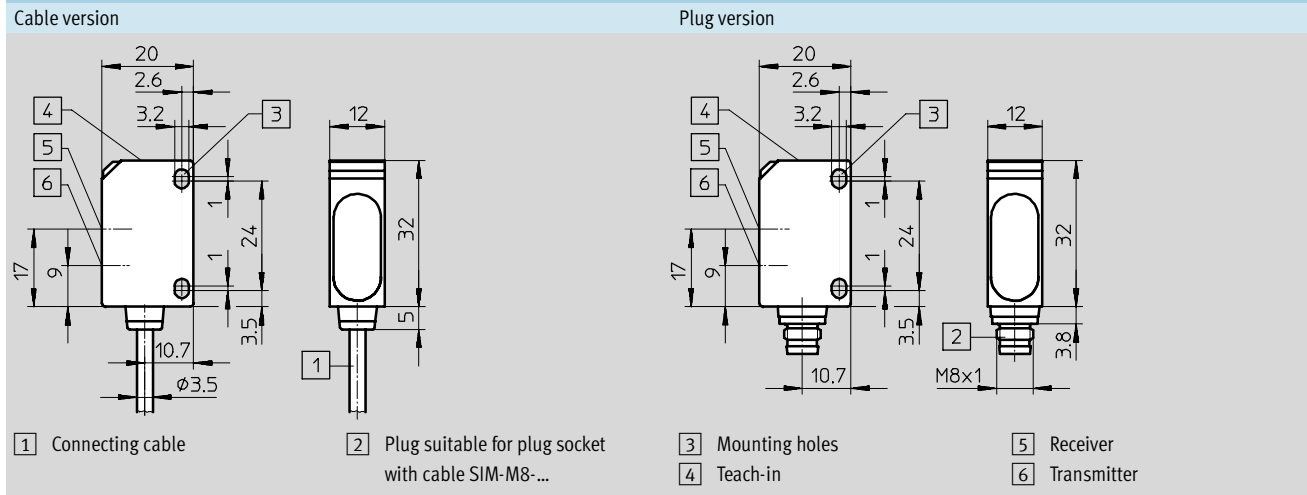
Materials			
Size	20x32x12 mm	30x30x15 mm	50x50x17 mm
Housing	Acrylic butadiene styrene	Polybutylene terephthalate	Acrylic butadiene styrene
Cable sheath	Polyurethane		
Material note	Free of copper, PTFE and silicone		

Operating and environmental conditions						
Size	20x32x12 mm		30x30x15 mm		50x50x17 mm	
Cable installation	fixed	flexible	fixed	flexible	fixed	flexible
Ambient temperature [°C]	-20 ... +60	-5 ... +60	-25 ... +55	-5 ... +55	-20 ... +60	-5 ... +60
Corrosion resistance class CRC <sup>1)</sup>	4 <sup>2)</sup> / 2 <sup>3)</sup>		2		4	

- 1) Corrosion resistance class 2 according to Festo standard 940 070  
 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 or lubricating agents.  
 Corrosion resistance class 4 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) Cable version  
 3) Plug version

Weight [g]			
Size	20x32x12 mm	30x30x15 mm	50x50x17 mm
Cable version	36	75	122
Plug version	7	17	32

**Dimensions – 20x32x12 mm** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)



# Diffuse sensor SOEG-RTH

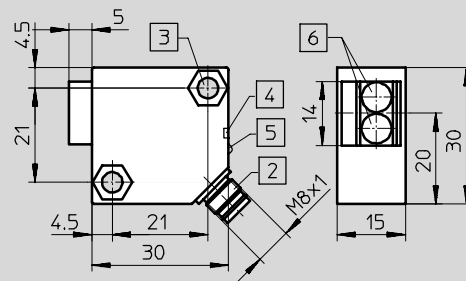
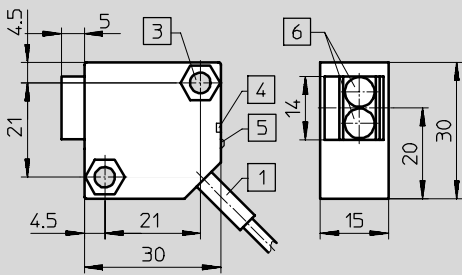
Technical data

## Dimensions – 30x30x15 mm

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

Cable version

Plug version



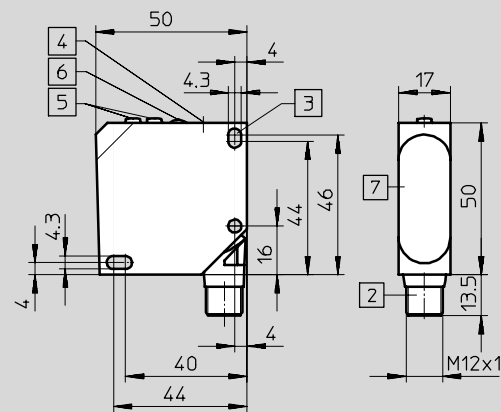
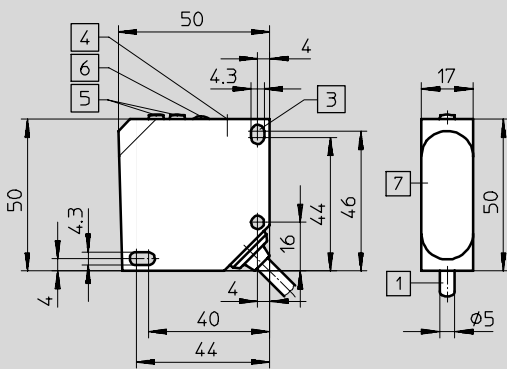
- 1 Connecting cable
- 2 Plug suitable for plug socket with cable SIM-M8-...
- 3 Mounting holes
- 4 Potentiometer
- 5 Light emitting diode (LED)
- 6 Centre of optical beam

## Dimensions – 50x50x17 mm

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

Cable version

Plug version



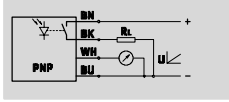
- 1 Connecting cable
- 2 Plug suitable for plug socket with cable SIM-M12-...
- 3 Mounting holes
- 4 Potentiometer
- 5 Light emitting diode (LED)
- 6 Numerical display
- 7 Light exit

Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>20x32x12 mm</b>							
	25 ... 100	PNP, switchable	■	-	■	537 724	SOEG-RTH-Q20-PP-K-2L-TI
			-	■	■	537 723	SOEG-RTH-Q20-PP-S-2L-TI
		NPN, switchable	■	-	■	537 726	SOEG-RTH-Q20-NP-K-2L-TI
			-	■	■	537 725	SOEG-RTH-Q20-NP-S-2L-TI
<b>30x30x15 mm</b>							
	15 ... 150	PNP, light switching	■	-	■	537 719	SOEG-RTH-Q30-PS-K-2L
			-	■	■	537 720	SOEG-RTH-Q30-PS-S-2L
		NPN, light switching	■	-	■	537 721	SOEG-RTH-Q30-NS-K-2L
			-	■	■	537 722	SOEG-RTH-Q30-NS-S-2L
<b>50x50x17 mm</b>							
	30 ... 300	PNP, antivalent	■	-	■	537 771	SOEG-RTH-Q50-PA-K-3L
			-	■	■	537 773	SOEG-RTH-Q50-PA-S-3L
		NPN, antivalent	■	-	■	537 772	SOEG-RTH-Q50-NA-K-3L
			-	■	■	537 774	SOEG-RTH-Q50-NA-S-3L

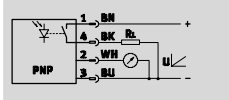
# Diffuse sensor SOEG-RTD

Technical data

Function

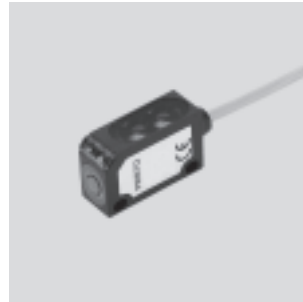


PNP and analogue output with cable



PNP and analogue output with plug

- Sensor for distance measurement
- Beam exit straight
- Block design



General technical data	
Size	20x32x12 mm
Method of measurement	Diffuse sensor for distance measurement
Measured variable	Displacement
Light type	red
Working range [mm]	20 ... 80
Setting range, lower limit [mm]	20
Setting range, upper limit [mm]	80
Setting options	Teach-in via button Teach-in via electrical connection
Switching status display	Yellow LED
Operating reserve display	Green LED
Type of mounting	Via through-holes
Conforms to	-

Electrical data		
Size	20x32x12 mm	
Analogue output [V]	0 ... 10	
Switch output	PNP	
Electrical connection	Plug	M8 x 1, 4-pin
	Cable	4-wire
Cable length [m]	2.0	
Operating voltage range [V DC]	15 ... 30	
Residual ripple [%]	10	
Max. switching frequency [Hz]	200	
Max. output current [mA]	100	
Voltage drop [V]	≤ 2.4	
Idle current [mA]	25	
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class to EN 60 529	IP67	
CE symbol	89/336/EEC (EMC)	
Certification	c UL us - Listed (OL)	

Materials	
Size	20x32x12 mm
Housing	Acrylic butadiene styrene
Cable sheath	Polyurethane
Material note	Free of copper, PTFE and silicone

# Diffuse sensor SOEG-RTD

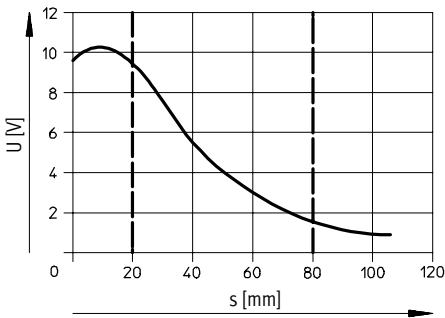
Technical data

Operating and environmental conditions		
Size	20x32x12 mm	
Ambient temperature	[°C]	0 ... 60
Corrosion resistance class CRC <sup>1)</sup>	4 <sup>2)</sup> / 2 <sup>3)</sup>	

- 1) Corrosion resistance class 2 according to Festo standard 940 070  
 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 or lubricating agents.  
 Corrosion resistance class 4 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) Cable version  
 3) Plug version

Weight [g]	
Size	20x32x12 mm
Cable version	37
Plug version	7

## Response curve



s Distance  
 U Output voltage



## Dimensions – 20x32x12 mm Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

**Cable version**

**Plug version**

1) Connecting cable      2) Plug suitable for plug socket with cable SIM-M8-...

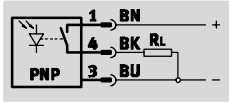
3) Mounting holes      4) Teach-in      5) Receiver      6) Transmitter

Design	Working range [mm]	Switch output, analogue output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>20x32x12 mm</b>							
	20 ... 80	PNP, 0 ... 10 V	■	-	■	537 758	SOEG-RTD-Q20-PP-K-2L-TI
			-	■	■		

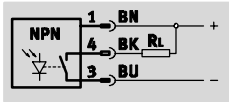
# Retro-reflective sensors SOEG-RSP

Technical data

Function

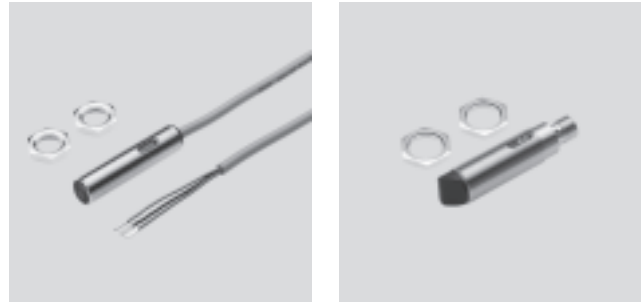


PNP, NO contact, e.g. with plug



NPN, NO contact, e.g. with plug

- With polarised light
- Beam exit straight or angled
- Round design



General technical data			
Size	M12	M18, straight	M18, angled
Method of measurement	Retro-reflective sensor		
Measured variable	Position		
Light type	red		
Working range [mm]	1,500	2,000	2,000
Setting options	–	–	–
Switching status display	Yellow LED		
Operating reserve display	Green LED		
Type of mounting	Via lock nut		
Tightening torque [Nm]	10	20	20
Conforms to	DIN EN 60947-5-2		

Electrical data			
Size	M12	M18, straight	M18, angled
Switch output	PNP or NPN		
Switching element function	Dark switching		
Electrical connection	Plug	M12 x 1, 3-pin	
	Cable	3-wire	
Cable length [m]	2.5		
Operating voltage range [V DC]	10 ... 36		
Residual ripple [%]	20		
Max. switching frequency [Hz]	1,000		
Response time [ms]	0.5		
Max. output current [mA]	200		
Voltage drop [V]	≤ 2.0		
Idle current [mA]	15		
Protection against short circuit	Pulsed		
Protection against polarity reversal	For all electrical connections		
Protection class to EN 60 529	IP67		
CE symbol	89/336/EEC (EMC)		
Certification	–		

# Retro-reflective sensors SOEG-RSP

Technical data

Materials			
Size	M12	M18, straight	M18, angled
Housing	Brass, nickel-plated		
Union nut	Brass, nickel-plated		
Cable sheath	Polyurethane		
Material note	Free of copper, PTFE and silicone		

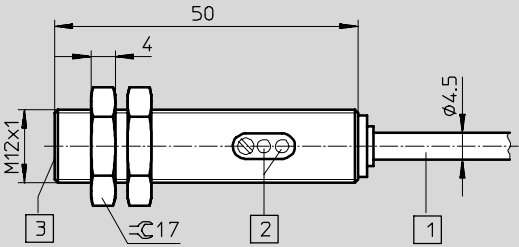
Operating and environmental conditions						
Size	M12		M18, straight		M18, angled	
Cable installation	fixed	flexible	fixed	flexible	fixed	flexible
Ambient temperature [°C]	-25 ... +55	-5 ... +55	-25 ... +55	-5 ... +55	-25 ... +55	-5 ... +55
Corrosion resistance class CRC <sup>1)</sup>	2		2		2	

1) Corrosion resistance class 2 according to Festo standard 940 070  
 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 or lubricating agents.

Weight [g]			
Size	M12	M18, straight	M18, angled
Cable version	100	121	125
Plug version	20	53	56

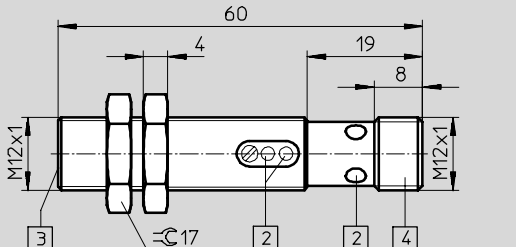
**Dimensions – M12** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

**Cable version**



1 Connecting cable      2 Light emitting diode (LED)

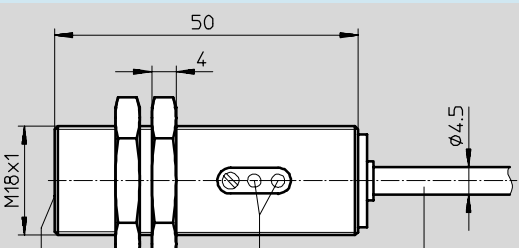
**Plug version**



1 Connecting cable      2 Light emitting diode (LED)  
 3 Light exit      4 Plug suitable for plug socket with cable SIM-M12...

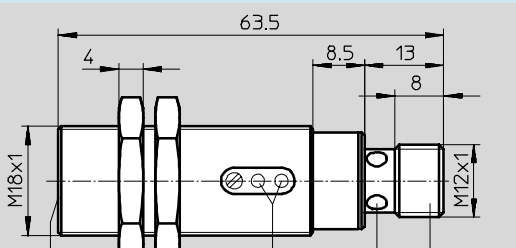
**Dimensions – M18, beam exit straight** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

**Cable version**



1 Connecting cable      2 Light emitting diode (LED)

**Plug version**



1 Connecting cable      2 Light emitting diode (LED)  
 3 Light exit      4 Plug suitable for plug socket with cable SIM-M12...

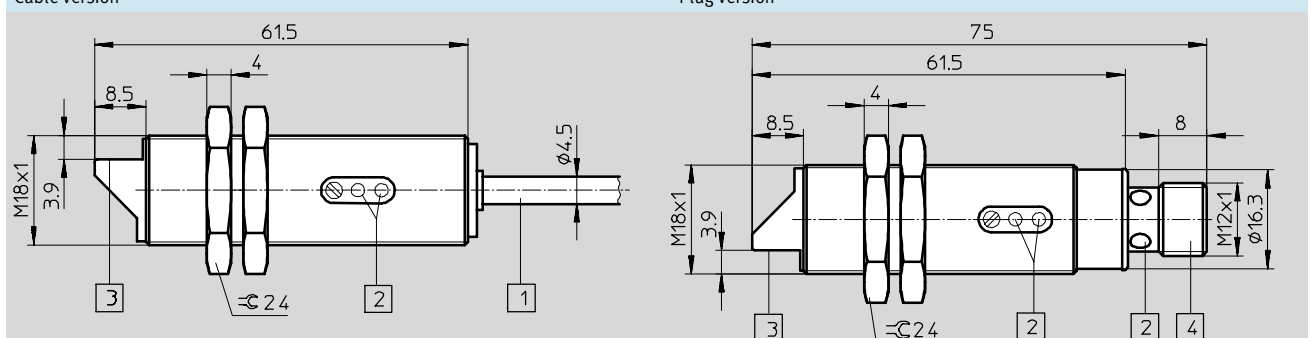


# Retro-reflective sensors SOEG-RSP

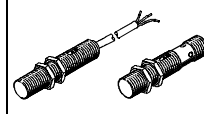
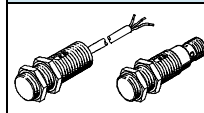
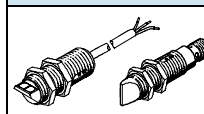
Technical data

**Dimensions – M18, beam exit angled** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

Cable version Plug version



1 Connecting cable     
 2 Light emitting diode (LED)     
 3 Light exit     
 4 Plug suitable for plug socket with cable SIM-M12...

Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>Round design, male thread M12</b>							
	1,500	PNP, dark switching	■	–	■	537 683	SOEG-RSP-M12-PS-K-2L
			–	■	■	537 684	SOEG-RSP-M12-PS-S-2L
		NPN, dark switching	■	–	■	537 685	SOEG-RSP-M12-NS-K-2L
			–	■	■	537 686	SOEG-RSP-M12-NS-S-2L
<b>Round design, male thread M18, beam exit straight</b>							
	2,000	PNP, dark switching	■	–	■	537 697	SOEG-RSP-M18-PS-K-2L
			–	■	■	537 699	SOEG-RSP-M18-PS-S-2L
		NPN, dark switching	■	–	■	537 713	SOEG-RSP-M18-NS-K-2L
			–	■	■	537 715	SOEG-RSP-M18-NS-S-2L
<b>Round design, male thread M18, beam exit angled</b>							
	2,000	PNP, dark switching	■	–	■	537 698	SOEG-RSP-M18W-PS-K-2L
			–	■	■	537 700	SOEG-RSP-M18W-PS-S-2L
		NPN, dark switching	■	–	■	537 714	SOEG-RSP-M18W-NS-K-2L
			–	■	■	537 716	SOEG-RSP-M18W-NS-S-2L

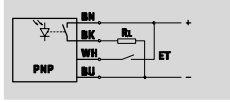
# Retro-reflective sensors SOEG-RSP

Technical data

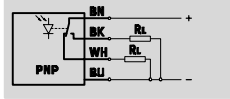


Function

- With polarised light
- Beam exit straight
- Block design



e.g. 20x32x12 mm  
PNP, switchable, with plug



e.g. 50x50x17 mm,  
PNP, antivalent, with plug



General technical data			
Size	20x32x12 mm	30x30x15 mm	50x50x17 mm
Method of measurement	Retro-reflective sensor		
Measured variable	Position		
Light type	red polarised		
Working range [mm]	0 ... 2,500 <sup>1)</sup>	0 ... 2,000	0 ... 5,000 <sup>1)</sup>
Reference material	Laser reflector 51x51 mm	Reflector Ø 80 mm	Reflector Ø 80 mm
Setting range, lower limit [mm]	0	0	0
Setting range, upper limit [mm]	2,500	2,000	5,000
Setting options	Teach-in via electrical connection	Potentiometer	Potentiometer
Max. light spot [mm]	75x75 mm at a sensing range of 2 m	-	-
Ready status display	-	-	Green LED
Switching status display	Yellow LED		
Operating reserve display	Green LED	Green LED	Red LED <sup>2)</sup>
Type of mounting	Via through-holes		
Conforms to	DIN EN 60947-5-2		

- 1) independent of the reflector used → Table  
2) LED lights up when available operating reserve is insufficient

Working range <sup>1)</sup>			
Size	20x32x12 mm	30x30x15 mm	50x50x17 mm
Reflector, rectangular 10x50 mm	-	-	-
Reflector, round Ø 20 mm	1,200	800	1,200
Reflector, round Ø 40 mm	2,000	1,200	3,000
Reflector, square 50x50 mm	2,500	1,200	3,000
Reflector, round Ø 80 mm	2,500	2,000	5,500
Reflector foil, 100 x 100 mm	1,000	1,000	1,000

- 1) Reflectors → 4 / 8.2-63

# Retro-reflective sensors SOEG-RSP

Technical data

Electrical data							
Size	20x32x12 mm		30x30x15 mm		50x50x17 mm		
Switch output	PNP or NPN						
Switching element function	Switchable		Dark switching		Antivalent		
Electrical connection	Plug	M8 x 1, 4-pin		M8 x 1, 3-pin		M12 x 1, 4-pin	
	Cable	4-wire		3-wire		4-wire	
Cable length	[m]	2.0		2.5		3.0	
Operating voltage range	[V DC]	10 ... 30					
Residual ripple	[%]	10		20		10	
Max. switching frequency	[Hz]	1,000		1,000		1,000	
Max. output current	[mA]	100		200		200	
Voltage drop	[V]	≤ 2.4		2.0		≤ 2.4	
Idle current	[mA]	35		25		30	
Protection against short circuit	Pulsed						
Protection against polarity reversal	For all electrical connections						
Protection class to EN 60 529	IP67		IP65		IP67		
CE symbol	89/336/EEC (EMC)		89/336/EEC (EMC)		89/336/EEC (EMC)		
	73/23/EEC (low voltage)				73/23/EEC (low voltage)		
Certification	c UL us - Listed (OL)		-		c UL us - Listed (OL)		

Materials						
Size	20x32x12 mm		30x30x15 mm		50x50x17 mm	
Housing	Acrylic butadiene styrene		Polybutylene terephthalate, reinforced		Acrylic butadiene styrene	
Cable sheath	Polyurethane					
Material note	Free of copper, PTFE and silicone					

Operating and environmental conditions							
Size	20x32x12 mm		30x30x15 mm		50x50x17 mm		
Cable installation	fixed	flexible	fixed	flexible	fixed	flexible	
	Ambient temperature	[°C]	-20 ... +60	-5 ... +60	-25 ... +55	-5 ... +55	-20 ... +60
Corrosion resistance class CRC <sup>1)</sup>	4 <sup>2)</sup> / 2 <sup>3)</sup>		2		4		

- 1) Corrosion resistance class 2 according to Festo standard 940 070  
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 or lubricating agents.  
Corrosion resistance class 4 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) Cable version
- 3) Plug version

Weight [g]						
Size	20x32x12 mm		30x30x15 mm		50x50x17 mm	
Cable version	37		85		122	
Plug version	7		18		32	

# Retro-reflective sensors SOEG-RSP

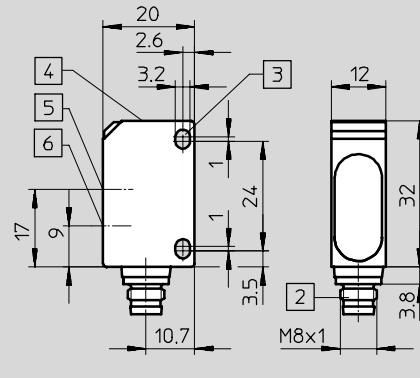
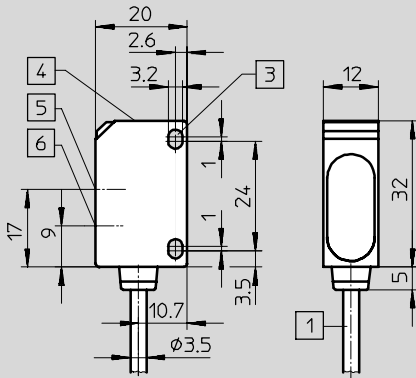
Technical data

## Dimensions – 20x32x12 mm

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

Cable version

Plug version



1 Connecting cable

2 Plug suitable for plug socket with cable SIM-M8-...

3 Mounting holes  
4 Teach-in

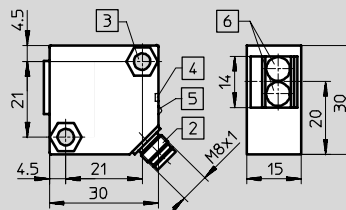
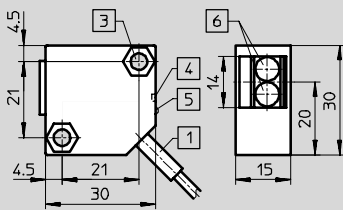
5 Receiver  
6 Transmitter

## Dimensions – 30x30x15 mm

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

Cable version

Plug version



1 Connecting cable

2 Plug suitable for plug socket with cable SIM-M8-...

3 Mounting holes

4 Potentiometer  
5 Light emitting diode (LED)

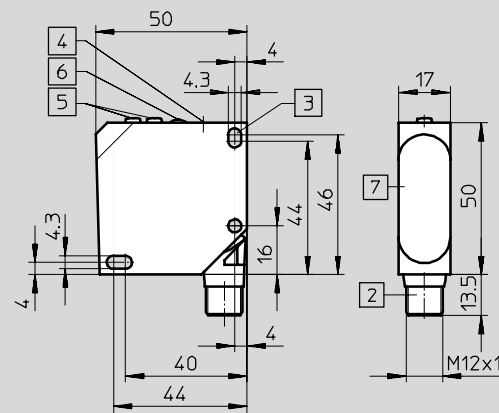
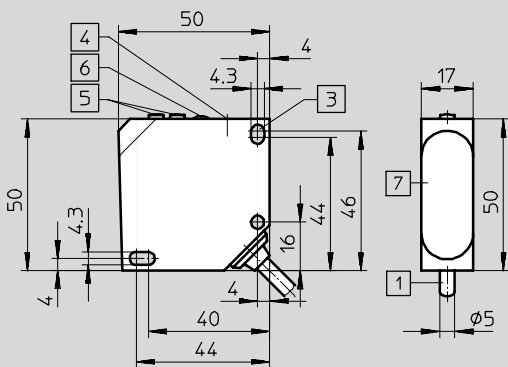
6 Centre of optical beam

## Dimensions – 50x50x17 mm

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

Cable version

Plug version



1 Connecting cable

2 Plug suitable for plug socket with cable SIM-M12-...

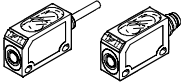
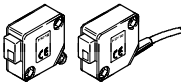
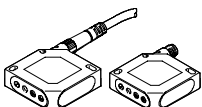
3 Mounting holes

4 Potentiometer  
5 Light emitting diode (LED)

6 Numerical display  
7 Light exit

## Retro-reflective sensors SOEG-RSP

Technical data

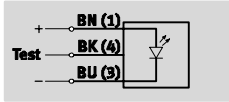
Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>20x32x12 mm</b>							
	0 ... 2,500	PNP, switchable	■	-	■	537 750	SOEG-RSP-Q20-PP-K-2L-TI
			-	■	■	537 749	SOEG-RSP-Q20-PP-S-2L-TI
		NPN, switchable	■	-	■	537 752	SOEG-RSP-Q20-NP-K-2L-TI
			-	■	■	537 751	SOEG-RSP-Q20-NP-S-2L-TI
<b>30x30x15 mm</b>							
	0 ... 2,000	PNP, dark switching	■	-	■	165 330	SOEG-RSP-Q30-PS-K-2L
			-	■	■	165 331	SOEG-RSP-Q30-PS-S-2L
		NPN, dark switching	■	-	■	165 328	SOEG-RSP-Q30-NS-K-2L
			-	■	■	165 329	SOEG-RSP-Q30-NS-S-2L
<b>50x50x17 mm</b>							
	0 ... 5,500	PNP, antivalent	■	-	■	537 763	SOEG-RSP-Q50-PA-K-3L
			-	■	■	537 765	SOEG-RSP-Q50-PA-S-3L
		NPN, antivalent	■	-	■	537 764	SOEG-RSP-Q50-NA-K-3L
			-	■	■	537 766	SOEG-RSP-Q50-NA-S-3L

# Through-beam sensors SOEG-S/E

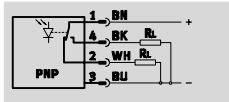
Technical data

Function

- Beam exit straight or angled
- Round design



Transmitter, e.g. with plug



Receiver, e.g. PNP, antivalent, with plug



General technical data		
Size	M18, straight	M18, angled
Method of measurement	Through-beam sensor	
Measured variable	Position	
Light type	red	
Working range [mm]	20,000	
Setting options	-	
Switching status display	Yellow LED	
Operating reserve display	Green LED	
Type of mounting	Via lock nut	
Tightening torque [Nm]	20	
Conforms to	DIN EN 60947-5-2	

Electrical data		
Size	M18, straight	M18, angled
Switch output	PNP or NPN	
Switching element function	Antivalent	
Electrical connection	Plug	M12x1, 3-pin <sup>1)</sup> or 4-pin <sup>2)</sup>
	Cable	3-wire
Cable length [m]	2.5	
Operating voltage range [V DC]	10 ... 36	
Residual ripple [%]	20	
Max. switching frequency <sup>2)</sup> [Hz]	1,000	
Max. output current <sup>2)</sup> [mA]	200	
Voltage drop [V]	≤ 2.0	
Idle current [mA]	15 <sup>1)</sup> / 10 <sup>2)</sup>	
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class to EN 60 529	IP67	
CE symbol	89/336/EEC (EMC)	

1) at the transmitter

2) at the receiver

# Through-beam sensors SOEG-S/E

Technical data

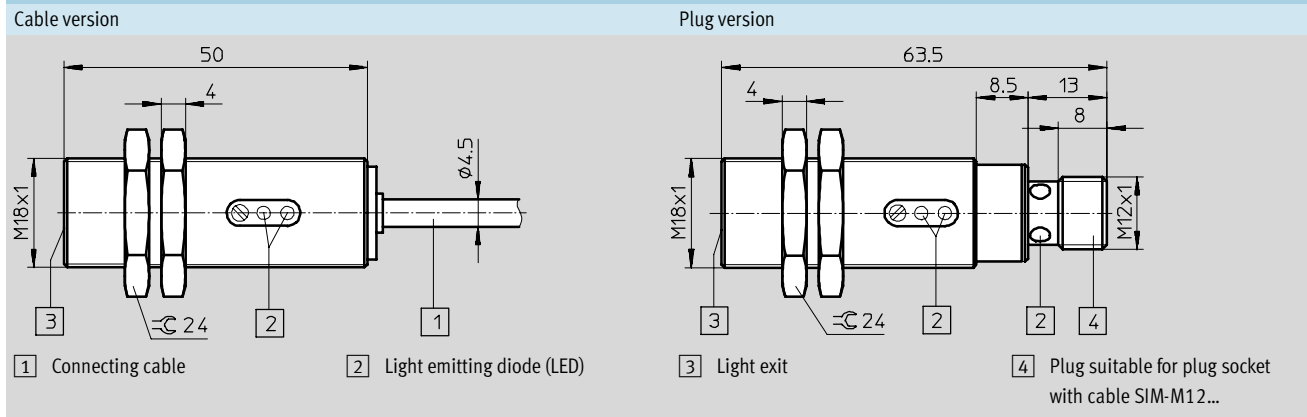
Materials		
Size	M18, straight	M18, angled
Housing	Brass, nickel-plated	
Union nut	Brass, nickel-plated	
Cable sheath	Polyurethane	
Material note	Free of copper, PTFE and silicone	

Operating and environmental conditions				
Size	M18, straight		M18, angled	
Cable installation	fixed	flexible	fixed	flexible
Ambient temperature [°C]	-25 ... +55	-5 ... +55	-25 ... +55	-5 ... +55
Corrosion resistance class CRC <sup>1)</sup>	2		2	

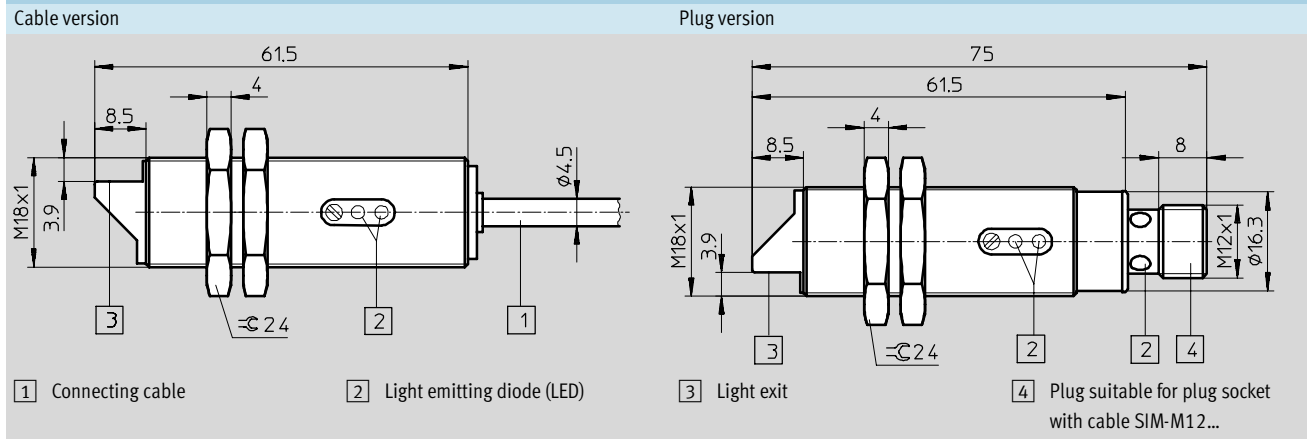
1) Corrosion resistance class 2 according to Festo standard 940 070  
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weight [g]		
Size	M18, straight	M18, angled
Cable version	115	124
Plug version	40	57

**Dimensions – M18, beam exit straight** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

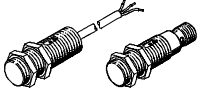
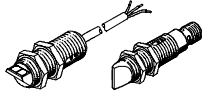


**Dimensions – M18, beam exit angled** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)



# Through-beam sensors SOEG-S/E

Technical data

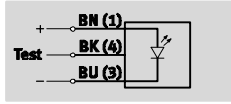
Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>Round design, male thread M18, beam exit straight</b>							
	Transmitter						
	20,000	-	■	-	■	537 691	SOEG-S-M18-K-L
			-	■	■	537 703	SOEG-S-M18-S-L
	Receiver						
	20,000	PNP, antivalent	■	-	■	537 692	SOEG-E-M18-PA-K-2L
			-	■	■	537 704	SOEG-E-M18-PA-S-2L
NPN, antivalent		■	-	■	537 709	SOEG-E-M18-NA-K-2L	
		-	■	■	537 711	SOEG-E-M18-NA-S-2L	
<b>Round design, male thread M18, beam exit angled</b>							
	Transmitter						
	20,000	-	■	-	■	537 693	SOEG-S-M18W-K-L
			-	■	■	537 695	SOEG-S-M18W-S-L
	Receiver						
	20,000	PNP, antivalent	■	-	■	537 694	SOEG-E-M18W-PA-K-2L
			-	■	■	537 696	SOEG-E-M18W-PA-S-2L
NPN, antivalent		■	-	■	537 710	SOEG-E-M18W-NA-K-2L	
		-	■	■	537 712	SOEG-E-M18W-NA-S-2L	



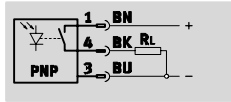
# Through-beam sensors SOEG-S/E

Technical data

Function

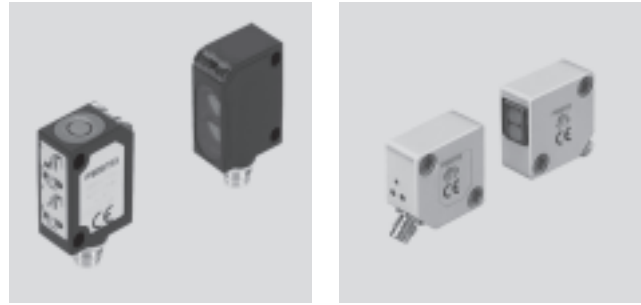


e.g. 30x30x15 mm,  
Transmitter, with plug



e.g. 30x30x15 mm,  
Receiver, PNP, with plug

- Beam exit straight
- Block design
- Transmitter with test input



General technical data			
Size	20x32x12 mm	30x30x15 mm	50x50x17 mm
Method of measurement	Through-beam sensor		
Measured variable	Position		
Light type	red	infra-red	infra-red
Working range [mm]	0 ... 6,000	0 ... 6,000	0 ... 15,000
Setting options	Teach-in via button Teach-in via electrical connection	Potentiometer	Potentiometer
Ready status display	–	–	Green LED
Switching status display	Yellow LED		
Operating reserve display	Green LED	Green LED	Red LED <sup>1)</sup>
Type of mounting	Via through-holes		
Conforms to	DIN EN 60947-5-2		

1) LED lights up when available operating reserve is insufficient

Electrical data			
Size	20x32x12 mm	30x30x15 mm	50x50x17 mm
Switch output	PNP or NPN		
Switching element function	Switchable	Dark switching	Antivalent
Electrical connection	Plug	M8 x 1, 4-pin	M12 x 1, 4-pin
	Cable	4-wire	3-wire
Cable length [m]	2.0	2.5	3.0
Operating voltage range [V DC]	10 ... 30		
Residual ripple [%]	10	20	10
Max. switching frequency [Hz]	500	1,000	1,000
Max. output current <sup>1)</sup> [mA]	100	200	200
Voltage drop [V]	≤ 2.4	2.0	≤ 2.4
Idle current [mA]	20	25 <sup>1)</sup> / 30 <sup>2)</sup>	30
Protection against short circuit	Pulsed		
Protection against polarity reversal	For all electrical connections		
Protection class to EN 60 529	IP67	IP65	IP67
CE symbol	89/336/EEC (EMC)	89/336/EEC (EMC)	89/336/EEC (EMC)
	73/23/EEC (low voltage)	73/23/EEC (low voltage)	73/23/EEC (low voltage)
Certification	c UL us - Listed (OL)	–	c UL us - Listed (OL)

1) at the transmitter  
2) at the receiver

# Through-beam sensors SOEG-S/E

Technical data

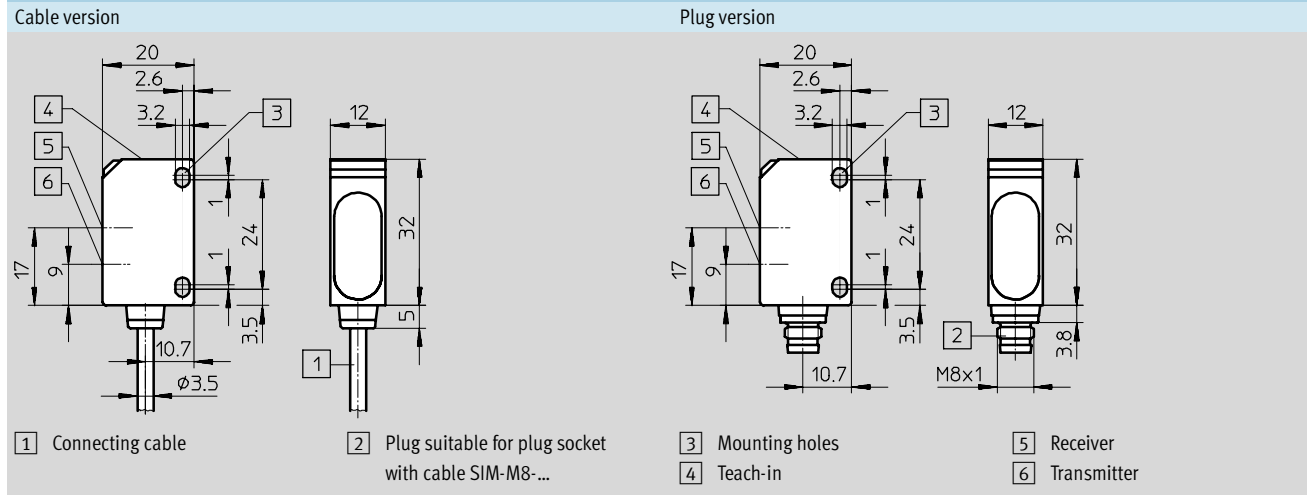
Materials			
Size	20x32x12 mm	30x30x15 mm	50x50x17 mm
Housing	Acrylic butadiene styrene	Polybutylene terephthalate, reinforced	Acrylic butadiene styrene
Cable sheath	Polyurethane		
Material note	Free of copper, PTFE and silicone		

Operating and environmental conditions						
Size	20x32x12 mm		30x30x15 mm		50x50x17 mm	
Cable installation	fixed	flexible	fixed	flexible	fixed	flexible
Ambient temperature [°C]	-20 ... +60	-5 ... +60	-25 ... +55	-5 ... +55	-20 ... +60	-5 ... +60
Corrosion resistance class CRC <sup>1)</sup>	4 <sup>2)</sup> / 2 <sup>3)</sup>		2		4	

- 1) Corrosion resistance class 2 according to Festo standard 940 070  
 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 or lubricating agents.  
 Corrosion resistance class 4 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) Cable version  
 3) Plug version

Weight [g]			
Size	20x32x12 mm	30x30x15 mm	50x50x17 mm
Cable version	37	85	121
Plug version	7	18	31

Dimensions – 20x32x12 mm Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)



Sensors and monitoring devices  
Sensors

8.2

# Through-beam sensors SOEG-S/E

Technical data

**Dimensions – 30x30x15 mm** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

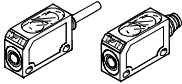
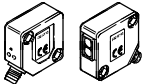
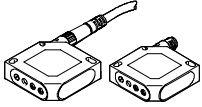
<p><b>Cable version</b></p>	<p><b>Plug version</b></p>
<p>1 Connecting cable</p> <p>2 Plug suitable for plug socket with cable SIM-M8-...</p> <p>3 Mounting holes</p>	<p>4 Potentiometer</p> <p>5 Light emitting diode (LED)</p> <p>6 Centre of optical beam</p>

**Dimensions – 50x50x17 mm** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

<p><b>Cable version</b></p>	<p><b>Plug version</b></p>
<p>1 Connecting cable</p> <p>2 Plug suitable for plug socket with cable SIM-M12-...</p> <p>3 Mounting holes</p>	<p>4 Potentiometer</p> <p>5 Light emitting diode (LED)</p> <p>6 Numerical display</p> <p>7 Light exit</p>

# Through-beam sensors SOEG-S/E

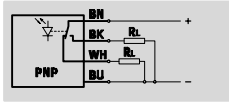
Technical data

Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>20x32x12 mm</b>							
	Transmitter						
	0 ... 6,000	-	■	-	■	537 744	SOEG-S-Q20-K-L-TI
			-	■	■	537 743	SOEG-S-Q20-S-L-TI
	Receiver						
	0 ... 6,000	PNP, switchable	■	-	■	537 746	SOEG-E-Q20-PP-K-2L-TI
			-	■	■	537 745	SOEG-E-Q20-PP-S-2L-TI
		NPN, switchable	■	-	■	537 748	SOEG-E-Q20-NP-K-2L-TI
-			■	■	537 747	SOEG-E-Q20-NP-S-2L-TI	
<b>30x30x15 mm</b>							
	Transmitter						
	0 ... 6,000	-	■	-	■	165 352	SOEG-S-Q30-K-L
			-	■	■	165 353	SOEG-S-Q30-S-L
	Receiver						
	0 ... 6,000	PNP, dark switching	■	-	■	165 322	SOEG-E-Q30-PS-K-2L
			-	■	■	165 323	SOEG-E-Q30-PS-S-2L
		NPN, dark switching	■	-	■	165 320	SOEG-E-Q30-NS-K-2L
-			■	■	165 321	SOEG-E-Q30-NS-S-2L	
<b>50x50x17 mm</b>							
	Transmitter						
	0 ... 15,000	-	■	-	■	537 779	SOEG-S-Q50-K-L
			-	■	■	537 780	SOEG-E-Q50-PA-K-3L
	Receiver						
	0 ... 15,000	PNP, antivalent	■	-	■	537 781	SOEG-S-Q50-S-L
-			■	■	537 782	SOEG-E-Q50-PA-S-3L	

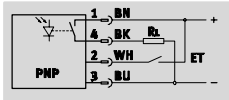
# Fibre-optic units SOEG-L

Technical data

Function



e.g. 30x30x15 mm  
PNP, NO contact, with plug



e.g. 20x32x12 mm  
PNP, switchable, with plug

- For polymer and glass fibre optic cable
- Beam exit straight
- Block design



General technical data		
Size	20x32x12 mm	30x30x15 mm
Method of measurement	Fibre-optic unit	
Measured variable	Position	
Light type	red	
Working range	[mm] 0 ... 250 <sup>1)</sup>	0 ... 400 <sup>2)</sup>
Setting range, lower limit	[mm] 0	0
Setting range, upper limit	[mm] 100 ... 250 <sup>1)</sup>	100 ... 400 <sup>2)</sup>
Setting options	Teach-in via button Teach-in via electrical connection	Potentiometer
Switching status display	Yellow LED	
Operating reserve display	Green LED	
Type of mounting	Via through-holes	
Conforms to	DIN EN 60947-5-2	

1) depending on the fibre optic cable used → 4 / 8.2-48:  
 100 mm at SOEZ-LLG-RT-0,5-M6 and  
 SOEZ-LLK-RT-2,0-M6  
 150 mm at SOEZ-LLG-SE-0,5-M4  
 250 mm at SOEZ-LLK-SE-2,0-M4

2) depending on the fibre optic cable used → 4 / 8.2-48:  
 100 mm at SOEZ-LLG-RT-0,5-M6  
 120 mm at SOEZ-LLK-RT-2,0-M6  
 280 mm at SOEZ-LLG-SE-0,5-M4  
 400 mm at SOEZ-LLK-SE-2,0-M4

Electrical data		
Size	20x32x12 mm	30x30x15 mm
Switch output	PNP or NPN	
Switching element function	Switchable	Antivalent
Electrical connection	Plug	M8 x 1, 4-pin
	Cable	4-wire
Cable length	[m] 2.0	2.5
Operating voltage range	[V DC] 10 ... 30	
Residual ripple	[%] 10	20
Max. switching frequency	[Hz] 1,000	1,000
Max. output current <sup>1)</sup>	[mA] 100	200
Voltage drop	[V] ≤ 2.4	2.0
Idle current	[mA] 25	25
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class to EN 60 529	IP67	IP65
CE symbol	89/336/EEC (EMC)	89/336/EEC (EMC)
	73/23/EEC (low voltage)	
Certification	c UL us - Listed (OL)	-

# Fibre-optic units SOEG-L

Technical data

Materials		
Size	20x32x12 mm	30x30x15 mm
Housing	Acrylic butadiene styrene	Polybutylene terephthalate, reinforced
Cable sheath	Polyurethane	
Material note	Free of copper, PTFE and silicone	

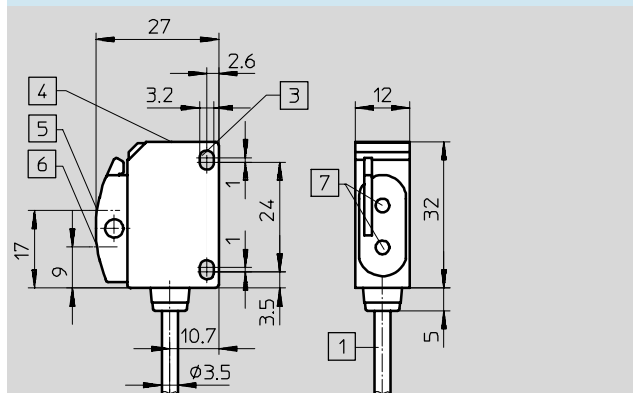
Operating and environmental conditions				
Size	20x32x12 mm		30x30x15 mm	
Cable installation	fixed	flexible	fixed	flexible
Ambient temperature [°C]	0 ... +60	0 ... +60	-25 ... +55	-5 ... +55
Corrosion resistance class CRC <sup>1)</sup>	4 <sup>2)</sup> / 2 <sup>3)</sup>		2	

- Corrosion resistance class 2 according to Festo standard 940 070  
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 or lubricating agents.  
Corrosion resistance class 4 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.
- Cable version
- Plug version

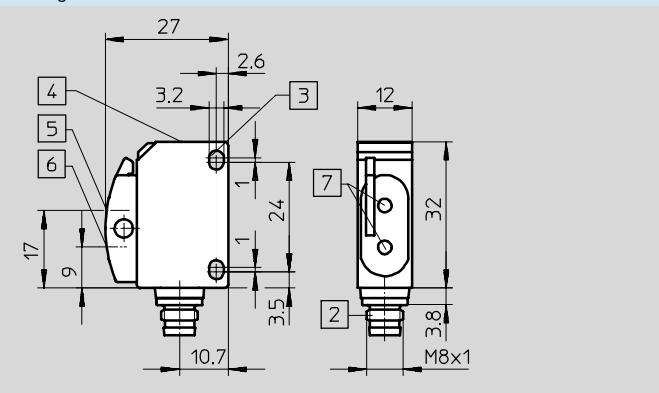
Weight [g]		
Size	20x32x12 mm	30x30x15 mm
Cable version	37	88
Plug version	8	18

**Dimensions – 20x32x12 mm** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

Cable version



Plug version



1 Connecting cable

2 Plug suitable for plug socket with cable SIM-M8-...

4 Teach-in

6 Transmitter

3 Mounting holes

5 Receiver

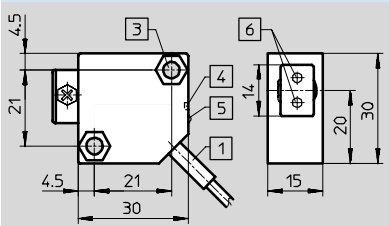
7 Mounting holes for fibre optic cable

# Fibre-optic units SOEG-L

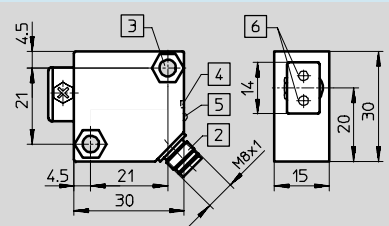
Technical data

**Dimensions – 30x30x15 mm** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

**Cable version**



**Plug version**



**1** Connecting cable

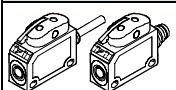
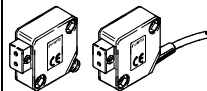
**2** Plug suitable for plug socket with cable SIM-M8-...

**4** Potentiometer

**6** Mounting holes for fibre optic cable

**3** Mounting holes

**5** Light emitting diode (LED)

Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>20x32x12 mm</b>							
	0 ... 250	PNP, switchable	■	-	■	537 740	SOEG-L-Q20-PP-K-2L-TI
			-	■	■	537 739	SOEG-L-Q20-PP-S-2L-TI
		NPN, switchable	■	-	■	537 742	SOEG-L-Q20-NP-K-2L-TI
			-	■	■	537 741	SOEG-L-Q20-NP-S-2L-TI
<b>30x30x15 mm</b>							
	0 ... 120	PNP, antivalent	■	-	■	165 324	SOEG-L-Q30-NA-K-2L
			-	■	■	165 325	SOEG-L-Q30-NA-S-2L
		NPN, antivalent	■	-	■	165 326	SOEG-L-Q30-P-A-K-2L
			-	■	■	165 327	SOEG-L-Q30-P-A-S-2L

# Fibre-optic units SOEG-L

Accessories

Polymer fibre optic cable LLK,  
Glass fibre optic cable LLG



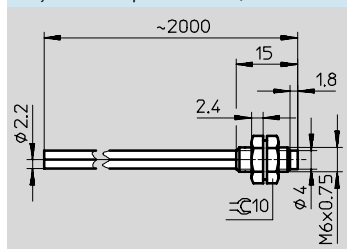
General technical data				
Type	Polymer fibre optic cable LLK		Glass fibre optic cable LLG	
Setting range, upper limit				
Use	Diffuse sensor	[mm]	100 <sup>1)</sup> / 120 <sup>2)</sup>	100 <sup>1)</sup> / 100 <sup>2)</sup>
	Through-beam sensor	[mm]	250 <sup>1)</sup> / 400 <sup>2)</sup>	150 <sup>1)</sup> / 280 <sup>2)</sup>
Min. bending radius	[mm]	25	25	
Temperature range	[°C]	-40 ... +70	-20 ... +250	
Weights	[g]	20	50	

- 1) with SOEG-L-Q20
- 2) with SOEG-L-Q30

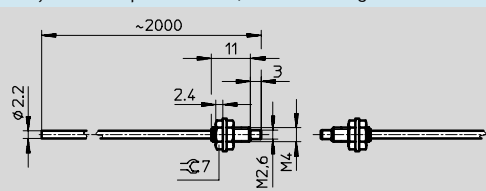
Materials		
Type	Polymer fibre optic cable LLK	Glass fibre optic cable LLG
Fibre optics	Polymethylmethacrylate	Glass fibre
Sheath	Polyethylene	Brass, chrome-plated
Probe	Brass, nickel-plated	Brass, nickel-plated

**Dimensions** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

Polymer fibre optic cable LLK, use as a diffuse sensor



Polymer fibre optic cable LLK, use as a through-beam sensor





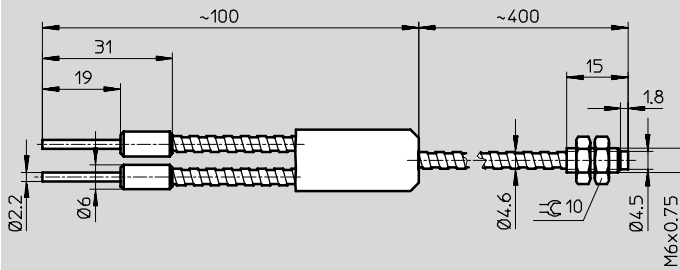
# Fibre-optic units SOEG-L

Accessories

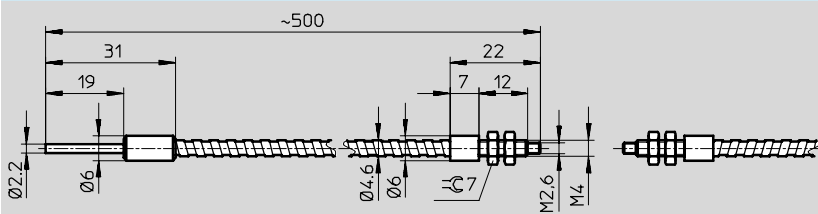
**Dimensions**

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

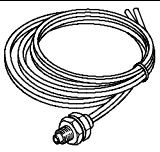
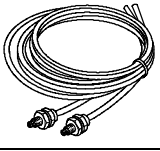
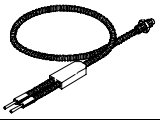

Glass fibre optic cable LLG, use as a diffuse sensor



Glass fibre optic cable LLK, use as a through-beam sensor



**Ordering data**

Design	Use	Length [m]	Part No.	Type
<b>Polymer fibre optic cable LLK</b>				
	Diffuse sensor	2	165 358	SOEZ-LLK-RT-2,0-M6
	Through-beam sensor	2	165 360	SOEZ-LLK-SE-2,0-M4
<b>Glass fibre optic cable LLG</b>				
	Diffuse sensor	0.5	165 356	SOEZ-LLG-RT-0,5-M6
	Through-beam sensor	0.5	165 357	SOEZ-LLG-SE-0,5-M4


## Fibre-optic units SOEG-L

Accessories

### Fibre-optic cutter for polymer fibre optic cable

The fibre optic cable is guided within the cutter to ensure a clean cut surface at a right angle to the conductor surface, thus keeping light losses to a minimum.



 **Note**  
In order to obtain the highest-quality cuts, each hole should be used once only.

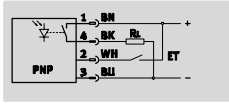
Ordering data		
	Part No.	Type
Fibre-optic cutter for polymer fibre optic cable	<b>36 479</b>	<b>SOE-LKS</b>

## Laser diffuse sensor SOEL-RT

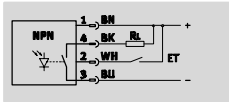
Technical data

Function

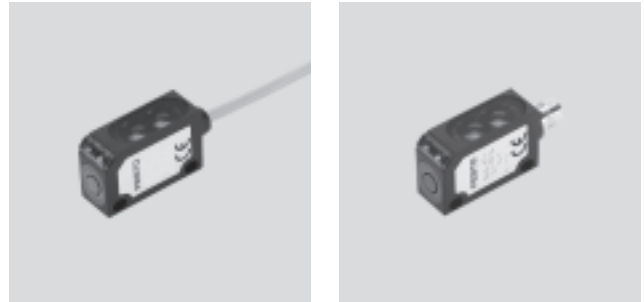
- With laser light
- Beam exit straight
- Block design



PNP, switchable, e.g. with plug



NPN, switchable, e.g. with plug



General technical data	
Size	20x32x12 mm
Method of measurement	Diffuse sensor
Measured variable	Position
Light type	Laser, red
Laser protection class	2
Working range	[mm] 10 ... 150
Setting range, lower limit	[mm] 10
Setting range, upper limit	[mm] 150
Setting options	Teach-in via button Teach-in via electrical connection
Max. light spot	[mm] 0.7 mm in focus
Switching status display	Yellow LED
Operating reserve display	Green LED
Type of mounting	Via through-holes
Conforms to	DIN EN 60947-5-2

Electrical data		
Size	20x32x12 mm	
Switch output	PNP or NPN	
Switching element function	Switchable	
Electrical connection	Plug	M8 x 1, 4-pin
	Cable	4-wire
Cable length	[m] 2.0	
Operating voltage range	[V DC] 10 ... 30	
Residual ripple	[%] 10	
Max. switching frequency	[Hz] 1,000	
Max. output current	[mA] 100	
Voltage drop	[V] ≤ 2.4	
Idle current	[mA] 25	
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class to EN 60 529	IP67	
CE symbol	89/336/EEC (EMC)	
	73/23/EEC (low voltage)	
Certification	c UL us - Listed (OL)	

# Laser diffuse sensor SOEL-RT

Technical data

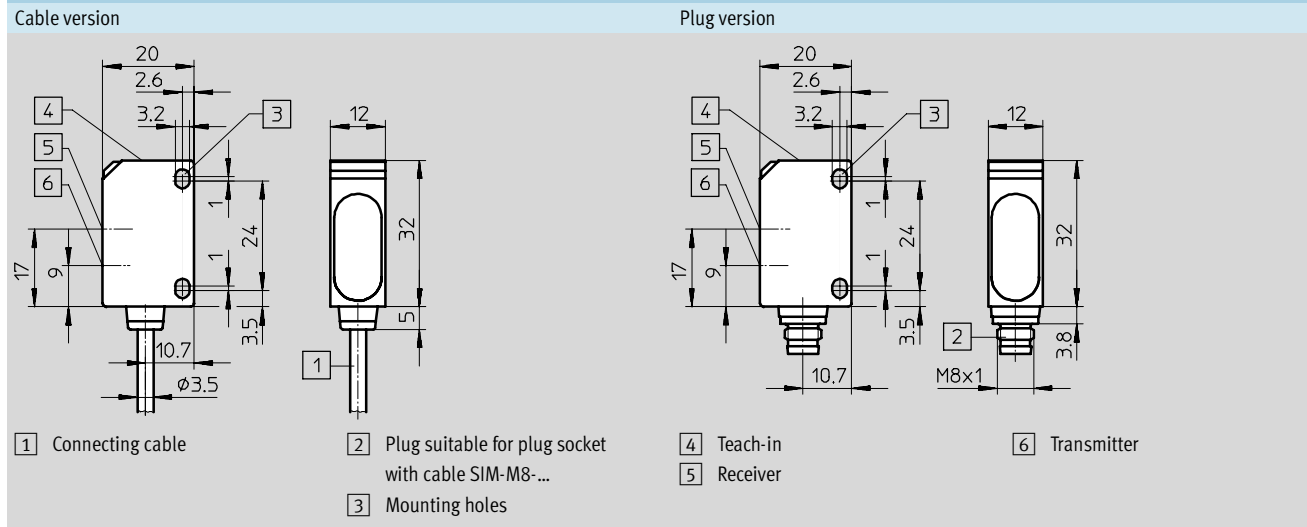
Materials	
Size	20x32x12 mm
Housing	Acrylic butadiene styrene
Cable sheath	Polyurethane
Material note	Free of copper, PTFE and silicone

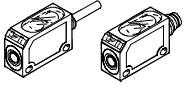
Operating and environmental conditions		
Size	20x32x12 mm	
Cable installation	fixed	flexible
Ambient temperature [°C]	-20 ... +60	-5 ... +60
Corrosion resistance class CRC <sup>1)</sup>	4 <sup>2)</sup> / 2 <sup>3)</sup>	

- 1) Corrosion resistance class 2 according to Festo standard 940 070  
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 or lubricating agents.  
Corrosion resistance class 4 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) Cable version  
3) Plug version

Weight [g]	
Size	20x32x12 mm
Cable version	36
Plug version	8

**Dimensions – 20x32x12 mm** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

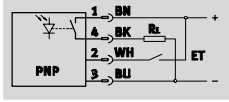


Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>20x32x12 mm</b>							
	10 ... 150	PNP, switchable	■	-	■	537 736	SOEL-RT-Q20-PP-K-2L-TI
			-	■	■	537 735	SOEL-RT-Q20-PP-S-2L-TI
		NPN, switchable	■	-	■	537 738	SOEL-RT-Q20-NP-K-2L-TI
			-	■	■	537 737	SOEL-RT-Q20-NP-S-2L-TI

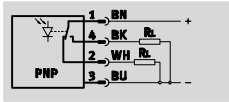
# Laser diffuse sensor SOEL-RTH

Technical data

Function



e.g. 20x32x12 mm  
PNP, switchable, with plug



e.g. 50x50x17 mm,  
PNP, antivalent, with plug

- With laser light
- With background fade-out
- Beam exit straight
- Block design



General technical data		
Size	20x32x12 mm	50x50x17 mm
Method of measurement	Laser diffuse sensor with background fade-out	
Measured variable	Position	
Light type	Laser, red	
Laser protection class	2	
Working range [mm]	30 ... 110	50 ... 300
Reference material	18%	
Setting range, lower limit [mm]	30	50
Setting range, upper limit [mm]	110	300
Setting options	Teach-in via button Teach-in via electrical connection	Potentiometer
Max. light spot [mm]	0.7 mm in focus	–
Ready status display	–	Green LED
Switching status display	Yellow LED	
Operating reserve display	Green LED	Red LED <sup>1)</sup>
Type of mounting	Via through-holes	
Conforms to	DIN EN 60947-5-2	

1) LED lights up when available operating reserve is insufficient

Electrical data		
Size	20x32x12 mm	50x50x17 mm
Switch output	PNP or NPN	
Switching element function	Switchable	Antivalent
Electrical connection	Plug	M8 x 1, 4-pin
	Cable	4-wire
Cable length [m]	2.0	3.0
Operating voltage range [V DC]	10 ... 30	
Residual ripple [%]	10	
Max. switching frequency [Hz]	1,000	2,500
Max. output current [mA]	100	200
Voltage drop [V]	≤ 2.4	
Idle current [mA]	30	50
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class to EN 60 529	IP67	
CE symbol	89/336/EEC (EMC)	
	73/23/EEC (low voltage)	
Certification	c UL us - Listed (OL)	

# Laser diffuse sensor SOEL-RTH

Technical data

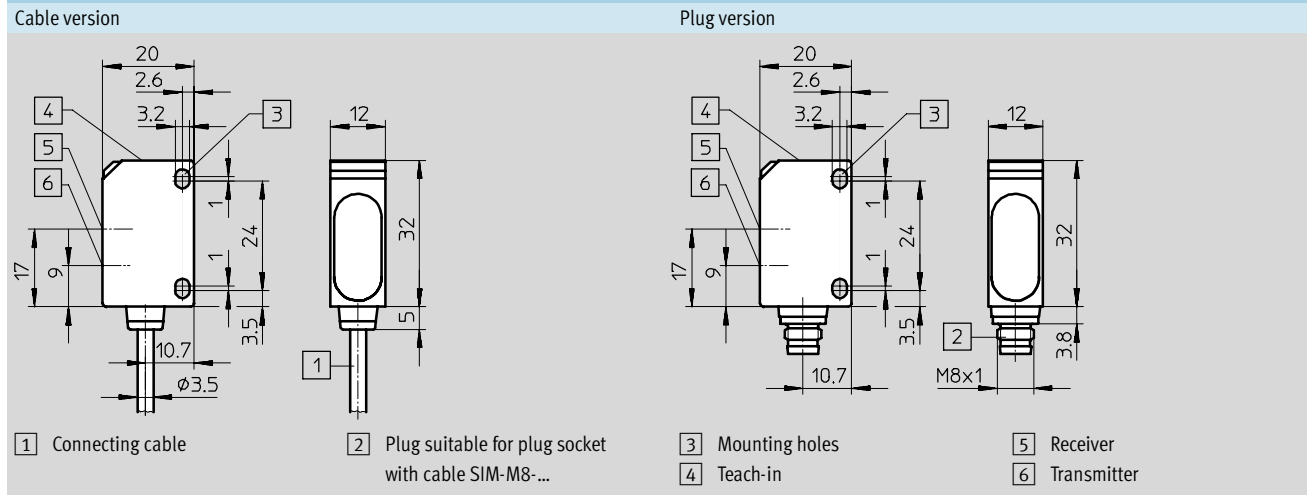
Materials		
Size	20x32x12 mm	50x50x17 mm
Housing	Acrylic butadiene styrene	
Cable sheath	Polyurethane	
Material note	Free of copper, PTFE and silicone	

Operating and environmental conditions				
Size	20x32x12 mm	50x50x17 mm		
Cable installation	fixed	flexible	fixed	flexible
Ambient temperature [°C]	-20 ... +60	-5 ... +60	-20 ... +45	-5 ... +45
Corrosion resistance class CRC <sup>1)</sup>	4 <sup>2)</sup> / 2 <sup>3)</sup>		4	

- 1) Corrosion resistance class 2 according to Festo standard 940 070  
 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 or lubricating agents.  
 Corrosion resistance class 4 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) Cable version  
 3) Plug version

Weight [g]		
Size	20x32x12 mm	50x50x17 mm
Cable version	36	122
Plug version	7	32

**Dimensions – 20x32x12 mm** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

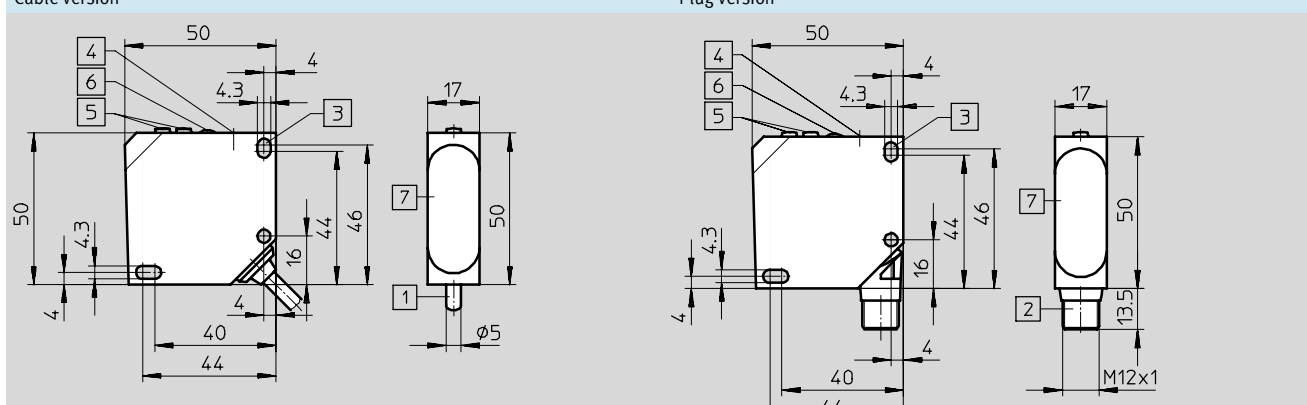


# Laser diffuse sensor SOEL-RTH

Technical data

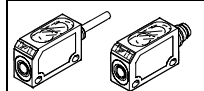
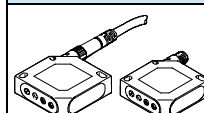
**Dimensions – 50x50x17 mm** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

Cable version Plug version



1 Connecting cable      2 Plug suitable for plug socket with cable SIM-M12-...      4 Potentiometer      6 Numerical display

3 Mounting holes      5 Light emitting diode (LED)      7 Light exit

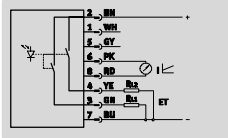
Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	
			Cable	Plug		
<b>20x32x12 mm</b>						
	30 ... 110	PNP, switchable	■	-	■	537 729 SOEL-RTH-Q20-PP-K-2L-TI
			-	■	■	537 727 SOEL-RTH-Q20-PP-S-2L-TI
		NPN, switchable	■	-	■	537 730 SOEL-RTH-Q20-NP-K-2L-TI
			-	■	■	537 728 SOEL-RTH-Q20-NP-S-2L-TI
<b>50x50x17 mm</b>						
	50 ... 300	PNP, antivalent	■	-	■	537 777 SOEL-RTH-Q50-PA-K-3L
			-	■	■	537 775 SOEL-RTH-Q50-PA-S-3L
		NPN, antivalent	■	-	■	537 778 SOEL-RTH-Q50-NA-K-3L
			-	■	■	537 776 SOEL-RTH-Q50-NA-S-3L

# Laser diffuse sensor SOEL-RTD

Technical data



## Function



- With laser light
- Sensor for distance measurement
- Beam exit straight
- Block design



Analogue output

General technical data	
Size	50x50x17 mm
Method of measurement	Distance sensor
Measured variable	Displacement
Light type	Laser, red
Laser protection class	2
Working range [mm]	80 ... 300
Reference material	18%
Setting range, lower limit [mm]	80
Setting range, upper limit [mm]	300
Setting options	Teach-in via button Teach-in via electrical connection
Max. light spot [mm]	2x4
Resolution [mm]	0.3
Ready status display	Green LED
Switching status display	Yellow LED
Operating reserve display	Green LED
Type of mounting	Via through-holes

Electrical data	
Size	50x50x17 mm
Analogue output [mA]	4 ... 10
Switch output	Switchable
Electrical connection	Plug M12 x 1, 8-pin
Operating voltage range [V DC]	16 ... 30
Residual ripple [%]	10
Max. switching frequency [Hz]	1,000
Max. output current [mA]	100
Voltage drop [V]	≤ 2.4
Idle current [mA]	40
Protection against short circuit	Pulsed
Protection against polarity reversal	For all electrical connections
Protection class to EN 60 529	IP67
CE symbol	89/336/EEC (EMC) 73/23/EEC (low voltage)
Certification	c UL us - Listed (OL)



# Laser diffuse sensor SOEL-RTD

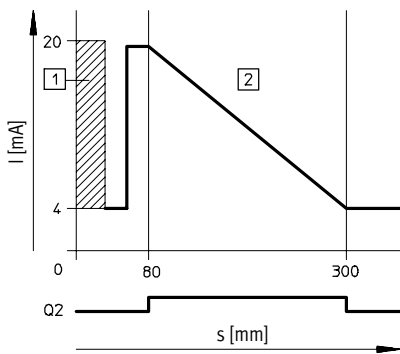
Technical data

Materials	
Size	50x50x17 mm
Housing	Acrylic butadiene styrene
Material note	Free of copper, PTFE and silicone

Operating and environmental conditions	
Size	50x50x17 mm
Ambient temperature [°C]	-10 ... +55
Corrosion resistance class CRC	4

Weight [g]	
Size	50x50x17 mm
Cable version	42

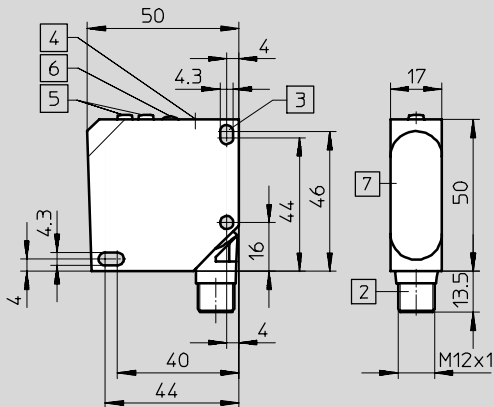
### Response curve (condition upon delivery)



- s Distance
- I Output current
- Q2 Digital output
- 1 Undefined range
- 2 Operating range

### Dimensions – 50x50x17 mm

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



- 2 Plug suitable for plug socket with cable SIM-M12-...
- 3 Mounting holes
- 4 Teach-in
- 5 Light emitting diode (LED)
- 6 Numerical display
- 7 Light exit

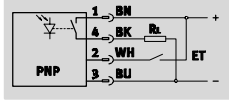
Design	Working range [mm]	Switch output, analogue output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
50x50x17 mm							
	80 ... 300	PNP, 4 ... 20 mA	-	■	■	537 823	SOEL-RTD-Q50-PP-S-7L

# Laser retro-reflective sensors SOEL-RSP

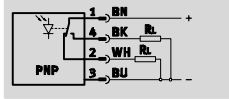
Technical data

Function

- With polarised laser light
- Beam exit straight
- Block design



e.g. 20x32x12 mm  
PNP, switchable, with plug



e.g. 50x50x17 mm,  
PNP, antivalent, with plug



General technical data		
Size	20x32x12 mm	50x50x17 mm
Method of measurement	Retro-reflective sensor	
Measured variable	Position	
Light type	Laser, red	
Laser protection class	2	
Working range [mm]	100 ... 1,000 <sup>1)</sup>	0 ... 12,000 <sup>1)</sup>
Reference material	Laser reflector 51x51 mm	Reflector Ø 80 mm
Setting range, lower limit [mm]	100	0
Setting range, upper limit [mm]	1,000	12,000
Setting options	Teach-in via electrical connection	Potentiometer
Max. light spot [mm]	1 mm at a sensing range of 300 mm	15 mm at a sensing range of 8 mm
Ready status display	–	Green LED
Switching status display	Yellow LED	
Operating reserve display	Green LED	Red LED <sup>2)</sup>
Type of mounting	Via through-holes	
Conforms to	DIN EN 60947-5-2	

1) independent of the reflector used → Table below  
2) LED lights up when available operating reserve is insufficient

Working range <sup>1)</sup>		
Size	20x32x12 mm	50x50x17 mm
Reflector, rectangular 10x50 mm	10 ... 1,000	5,000
Reflector, round Ø 20 mm	2,500 <sup>2)</sup>	6,000 <sup>3)</sup>
Reflector, round Ø 40 mm	2,500 <sup>2)</sup>	12,000 <sup>3)</sup>
Reflector, square 50x50 mm	10 ... 1,000	12,000 <sup>3)</sup>
Reflector, round Ø 80 mm	2,500 <sup>2)</sup>	12,000 <sup>3)</sup>

1) Reflectors → 4 / 8.2-63  
2) to be used only for sensing ranges > 1,000 mm  
3) to be used only for sensing ranges > 5,000 mm

# Laser retro-reflective sensors SOEL-RSP

Technical data

Electrical data			
Size	20x32x12 mm		50x50x17 mm
Switch output	PNP or NPN		
Switching element function	Switchable		Antivalent
Electrical connection	Plug	M8 x 1, 4-pin	M12 x 1, 4-pin
	Cable	4-wire	
Cable length	[m]	2.0	3.0
Operating voltage range	[V DC]	10 ... 30	
Residual ripple	[%]	10	
Max. switching frequency	[Hz]	1,000	2,500
Max. output current	[mA]	100	200
Voltage drop	[V]	≤ 2.4	
Idle current	[mA]	25	40
Protection against short circuit	Pulsed		
Protection against polarity reversal	For all electrical connections		
Protection class to EN 60 529	IP67		
CE symbol	89/336/EEC (EMC)		
	73/23/EEC (low voltage)		
Certification	c UL us - Listed (OL)		

Materials			
Size	20x32x12 mm		50x50x17 mm
Housing	Acrylic butadiene styrene		
Cable sheath	Polyurethane		
Material note	Free of copper, PTFE and silicone		

Operating and environmental conditions				
Size	20x32x12 mm		50x50x17 mm	
Cable installation	fixed	flexible	fixed	flexible
Ambient temperature	[°C]	-20 ... +60	-5 ... +60	-20 ... +45 -5 ... +45
Corrosion resistance class CRC <sup>1)</sup>	4 <sup>2)</sup> / 2 <sup>3)</sup>		4	

- 1) Corrosion resistance class 2 according to Festo standard 940 070  
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 or lubricating agents.  
Corrosion resistance class 4 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) Cable version
- 3) Plug version

Weight [g]		
Size	20x32x12 mm	50x50x17 mm
Cable version	37	122
Plug version	7	32

# Laser retro-reflective sensors SOEL-RSP

Technical data

Dimensions – 20x32x12 mm Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

Cable version	Plug version
<p>1 Connecting cable</p> <p>3 Mounting holes</p>	<p>2 Plug suitable for plug socket with cable SIM-M8-...</p> <p>4 Teach-in</p> <p>5 Receiver</p> <p>6 Transmitter</p>

Dimensions – 50x50x17 mm Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

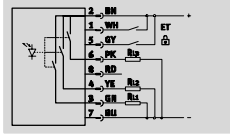
Cable version	Plug version
<p>1 Connecting cable</p> <p>3 Mounting holes</p>	<p>2 Plug suitable for plug socket with cable SIM-M12-...</p> <p>4 Potentiometer</p> <p>5 Light emitting diode (LED)</p> <p>6 Numerical display</p> <p>7 Light exit</p>

Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type	
			Cable	Plug				
<b>20x32x12 mm</b>								
	100 ... 1,000	PNP, switchable	■	-	■	537 760	SOEL-RSP-Q20-PP-K-2L-TI	
			-	■	■	537 759	SOEL-RSP-Q20-PP-S-2L-TI	
		NPN, switchable	■	-	■	■	537 762	SOEL-RSP-Q20-NP-K-2L-TI
			-	■	■	■	537 761	SOEL-RSP-Q20-NP-S-2L-TI
<b>50x50x17 mm</b>								
	0 ... 12,000	PNP, antivalent	■	-	■	537 769	SOEL-RSP-Q50-PA-K-3L	
			-	■	■	537 767	SOEL-RSP-Q50-PA-S-3L	
		NPN, antivalent	■	-	■	■	537 770	SOEL-RSP-Q50-NA-K-3L
			-	■	■	■	537 768	SOEL-RSP-Q50-NA-S-3L

# Colour sensor SOEC-RT

Technical data

Function



3x PNP, NO contact, with plug

- Sensor for measuring colour
- Beam exit straight
- Block design



General technical data	
Size	50x50x17 mm
Method of measurement	Colour sensor
Measured variable	Position
Light type	white
Working range [mm]	12 ... 32
Reference material	18%
Setting options	Teach-in via button Teach-in via electrical connection
Max. light spot [mm]	∅ 4 mm at a sensing range of 22 mm
Ready status display	Green LED
Switching status display	LED
Operating reserve display	Green LED
Type of mounting	Via through-holes
Conforms to	DIN EN 60947-5-2

Electrical data	
Size	50x50x17 mm
Switch output	3x PNP
Switching element function	Light switching
Electrical connection Plug	M12 x 1, 8-pin
Operating voltage range [V DC]	16 ... 30
Residual ripple [%]	10
Max. switching frequency [Hz]	500
Max. output current [mA]	100
Voltage drop [V]	≤ 2.4
Idle current [mA]	40
Protection against short circuit	Pulsed
Protection against polarity reversal	For all electrical connections
Protection class to EN 60 529	IP67
CE symbol	89/336/EEC (EMC) 73/23/EEC (low voltage)
Certification	c UL us - Listed (OL)

# Colour sensor SOEC-RT

Technical data

Materials	
Size	50x50x17 mm
Housing	Acrylic butadiene styrene
Material note	Free of copper, PTFE and silicone

Operating and environmental conditions	
Size	50x50x17 mm
Cable installation	fixed
Ambient temperature [°C]	-10 ... +55
Corrosion resistance class CRC <sup>1)</sup>	4

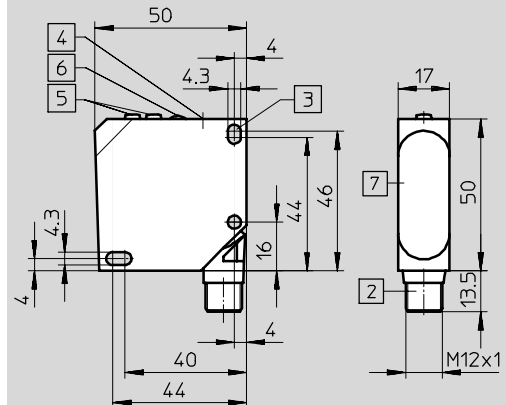
1) Corrosion resistance class 4 according to Festo standard 940 070  
Components requiring higher corrosion resistance. Parts used with aggressive media, e.g. food or chemical industry. These applications should be supported with special tests with the media if required.

Weight [g]	
Size	50x50x17 mm
Cable version	38


**8.2**

**Dimensions – 50x50x17 mm** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

Plug version



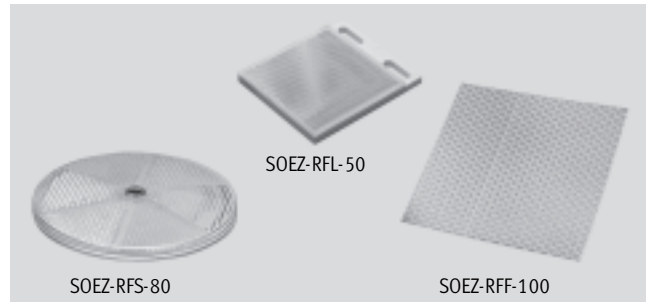
- 2 Plug suitable for plug socket with cable SIM-M12-...
- 3 Mounting holes
- 4 Teach-in
- 5 Light emitting diode (LED)
- 6 Numerical display
- 7 Light exit

Design	Working range [mm]	Switch output	Electrical connection		Free of copper, PTFE and silicone	Part No.	Type
			Cable	Plug			
<b>50x50x17 mm</b>							
	12 ... 32	PNP, light switching	-	■	■	538 236	SOEC-RT-Q50-PS-S-7L

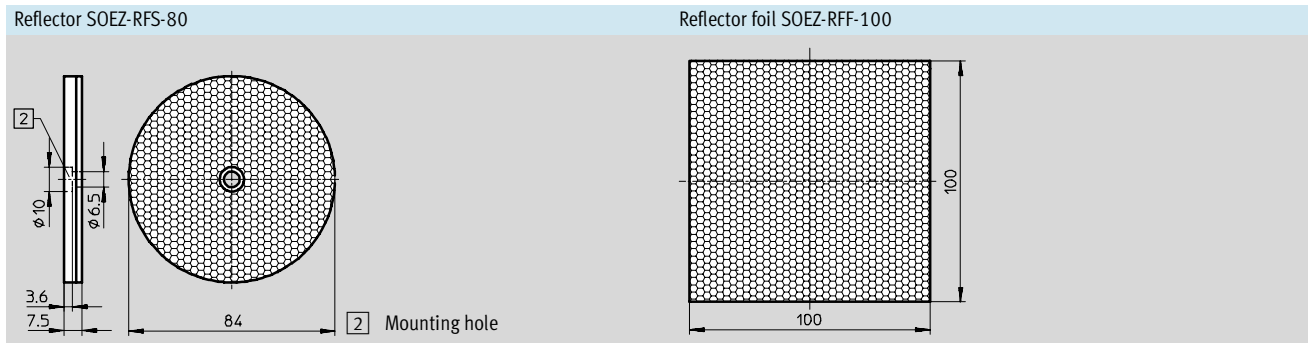
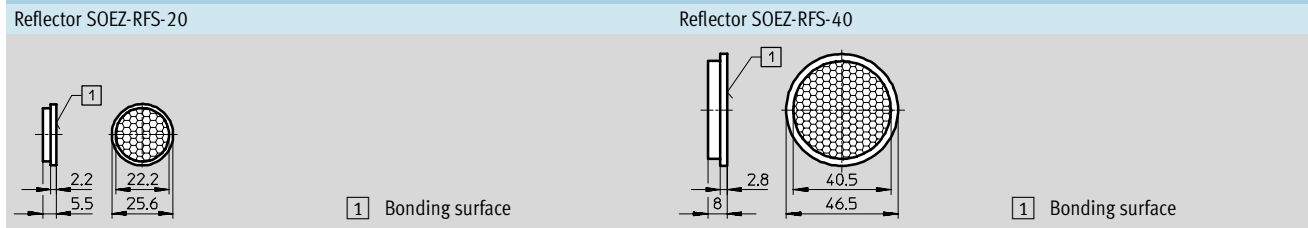
# Sensors SOE..., opto-electronic

Accessories

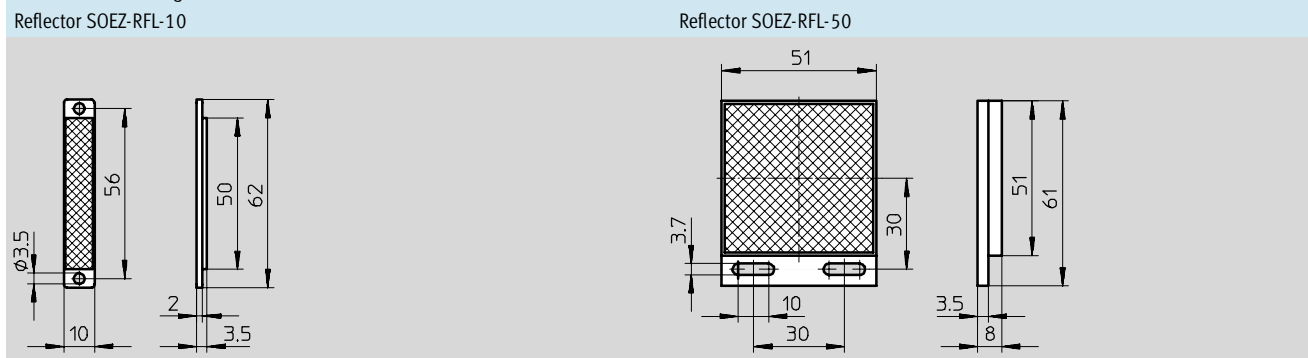
## Reflectors



**Dimensions** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)



**Reflectors for laser light**



Ordering data					
Designation	Description	Material	Free of copper, PTFE and silicone	Part No.	Type
Reflector	∅ 20 mm		–	165 363	SOEZ-RFS-20
	∅ 40 mm		–	165 364	SOEZ-RFS-40
	∅ 80 mm		–	165 365	SOEZ-RFS-80
Reflector foil	square 100 x 100 mm		–	165 362	SOEZ-RFF-100
Reflectors for laser light	square 50x50 mm	Polymethylmethacrylate, acrylic butadiene styrene	■	537 788	SOEZ-RFL-50
	rectangular 10x50 mm	Polymethylmethacrylate, acrylic butadiene styrene	■	537 787	SOEZ-RFL-10

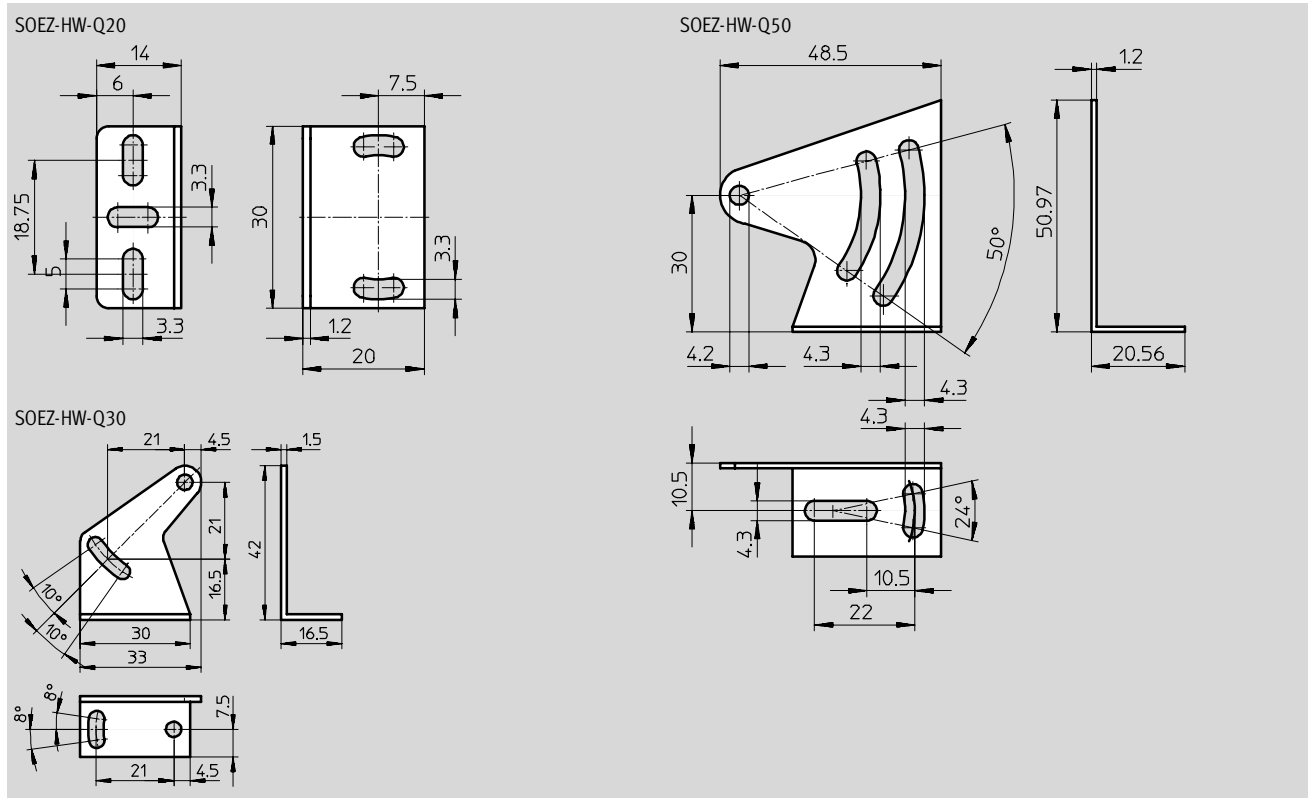
# Sensors SOE..., opto-electronic

Accessories

## Mounting bracket SOEZ-HW



Sensors and monitoring devices  
Sensors  
8.2







Ordering data					
Designation	Use	Material	Free of copper, PTFE and silicone	Part No.	Type
Wall mounting bracket	Sensors in block design 20x32x12 mm	Steel, nickel-plated	■	537 785	SOEZ-HW-Q20
	Sensors in block design 30x30x15 mm	Steel, galvanised	■	165 355	SOEZ-HW-Q30
	Sensors in block design 50x50x17 mm	Steel, nickel-plated	■	537 786	SOEZ-HW-Q50



# Sensors SOE..., opto-electronic

Accessories

Ordering data – Plug sockets with cable M8x1							Technical data → 4 / 8.3-9	
	Mounting	Connection	for switch output		Cable length [m]	Part No.	Type	
			PNP	NPN				
<b>Straight plug socket</b>								
	Locknut M8x1	3-pin	■	■	2.5	159 420	SIM-M8-3GD-2,5-PU	
			■	■	5	159 421	SIM-M8-3GD-5-PU	
		4-pin	■	■	2.5	158 960	SIM-M8-4GD-2,5-PU	
			■	■	5	158 961	SIM-M8-4GD-5-PU	
<b>Angled plug socket</b>								
	Locknut M8x1	3-pin	■	■	2.5	159 422	SIM-M8-3WD-2,5-PU	
			■	■	5	159 423	SIM-M8-3WD-5-PU	
			■	-	2.5	159 424	SIM-M8-3WD-2,5-PSL-PU	
			■	-	5	159 425	SIM-M8-3WD-5-PSL-PU	
		4-pin	-	■	2.5	159 426	SIM-M8-3WD-2,5-NSL-PU	
			-	■	5	159 427	SIM-M8-3WD-5-NSL-PU	
			■	■	2.5	158 962	SIM-M8-4WD-2,5-PU	
			■	■	5	158 963	SIM-M8-4WD-5-PU	

Ordering data – Plug sockets with cable M12x1							Technical data → 4 / 8.3-12	
	Mounting	Connection	for switch output		Cable length [m]	Part No.	Type	
			PNP	NPN				
<b>Straight plug socket</b>								
	Locknut M12x1	3-pin	■	■	2.5	159 428	SIM-M12-3GD-2,5-PU	
			■	■	5	159 429	SIM-M12-3GD-5-PU	
		4-pin	■	■	5	164 259	SIM-M12-4GD-5-PU	
			8-pin	■	■	2	525 616	SIM-M12-8GD-2-PU
				■	■	5	525 618	SIM-M12-8GD-5-PU
<b>Angled plug socket</b>								
	Locknut M12x1	3-pin	■	■	2.5	159 430	SIM-M12-3WD-2,5-PU	
			■	■	5	159 431	SIM-M12-3WD-5-PU	
			■	-	2.5	159 432	SIM-M12-3WD-2,5-PSL-PU	
			■	-	5	159 433	SIM-M12-3WD-5-PSL-PU	
		4-pin	-	■	2.5	159 434	SIM-M12-3WD-2,5-NSL-PU	
			-	■	5	159 435	SIM-M12-3WD-5-NSL-PU	
			■	■	5	164 258	SIM-M12-4WD-5-PU	
			■	■				

 Core Range