

Sensors SOE..., opto-electronic

Product overview

FESTO



- Diffuse sensors and retro-reflective sensors
- Sensors with background suppression
- Fibre-optic units
- Distance sensors
- Laser contrast sensors, diffuse sensors and retro-reflective sensors
- Colour sensors
- Ranges up to 20 m
- Adjustment using teach-in or potentiometer

Detailed product information

➔ www.festo.com/catalog/soe

Product overview						
Variant	Type	Operating voltage	Switch output	Analogue output	Design	➔ Page/Internet
Diffuse sensor	SOEG-RT Basic version	10 ... 36 V DC 10 ... 30 V DC	PNP NPN	–	Round Block-shaped	3
	SOEG-RTZ With cylindrical light beam		PNP NPN	–	Round	5
Sensor with background suppression	SOEG-RTH	10 ... 36 V DC 10 ... 30 V DC	PNP NPN	–	Round Block-shaped	6
Retro-reflective sensor	SOEG-RSP Basic version	10 ... 36 V DC 10 ... 30 V DC	PNP NPN	–	Round Block-shaped	8
	SOEG-RSG For transparent objects		PNP NPN	–	Block-shaped	10
Through-beam sensor	SOEG-S Transmitter	10 ... 36 V DC 10 ... 30 V DC	–	–	Round Block-shaped	11
	SOEG-E Receiver	10 ... 36 V DC 10 ... 30 V DC	PNP NPN	–	Round Block-shaped	11
Fibre-optic unit	SOEG-L Basic version	10 ... 30 V DC	PNP NPN	–	Block-shaped	13
Distance sensor	SOEG-RTD	15 ... 30 V DC	PNP	0 ... 10 V	Block-shaped	14
Laser diffuse sensor	SOEL-RT Contrast sensor	10 ... 30 V DC	PNP NPN	–	Block-shaped	15
Laser sensor with background suppression	SOEL-RTH		PNP NPN	–	Block-shaped	15
Laser retro-reflective sensor	SOEL-RSP	10 ... 30 V DC	PNP NPN	–	Block-shaped	16
Laser distance sensor	SOEL-RTD	16 ... 30 V DC	2x PNP	4 ... 20 mA	Block-shaped	17
		18 ... 28 V DC	–	0 ... 10 V		
Colour sensor	SOEC-RT	10 ... 30 V DC	3x PNP	–	Block-shaped	18

Sensors SOE..., opto-electronic

Type codes

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		SOE	G	-	RSP	-	Q20	-	PP	-	K	-	2L	-	TI	-	
Type																	
SOE	Opto-electronic sensors																
Design																	
G	Standard sensor																
L	Laser sensor																
C	Colour sensor																
Function																	
RT	Diffuse sensor																
RSP	Retro-reflective sensor																
S	Through-beam sensor, transmitter																
E	Through-beam sensor, receiver																
L	Fibre-optic unit																
RTH	Sensor with background suppression																
RTZ	Diffuse sensor with cylindrical light beam																
RTD	Distance sensor																
RSG	Retro-reflective sensor for transparent objects																
Design, size, version																	
4	Round, dia. 4 mm																
M5	Round, M5																
M12	Round, M12																
M18	Round, M18, beam exit straight																
M18W	Round, M18, beam exit angled																
Q20	Block design, 20x32x12 mm																
Q30	Block design, 30x30x15 mm																
Q50	Block design, 50x50x17 mm																
Switch output																	
PS	PNP, normally open																
NS	NPN, normally open																
PA	PNP, antivalent																
NA	NPN, antivalent																
PP	PNP, switchable																
NP	NPN, switchable																
PU	Analogue 0 ... 10 V																
Electrical connection																	
K	Cable																
S	Plug																
Indication																	
L	1 LED																
2L	2 LEDs																
3L	3 LEDs																
7L	7 LEDs																
Options																	
	Standard version																
TI	Teach-in by means of a button and via electrical connection																
Position measuring range																	

Diffuse sensors SOEG-RT

Technical data

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General technical data							
Size	Ø 4 mm	M5	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm
Working range [mm]	50		70 ... 300	40 ... 600	0 ... 600	10 ... 300	0 ... 600
Light type	Infrared		Red			Red	Infrared
Setting options	–		Potentiometer			Teach-in Teach-in via electrical connection	Potentiometer

Electrical data							
Size	Ø 4 mm	M5	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm
Electrical connection	Cable	3-wire		4-wire	3-wire	4-wire	3-wire
	Plug	M8x1, 3-pin		M12x1, 3-pin	M12x1, 4-pin	M12x1, 3-pin	M8x1, 4-pin M8x1, 3-pin
Operating voltage range [V DC]	10 ... 30		10 ... 36			10 ... 30	
Max. output current [mA]	100		200			100	200
Max. switching frequency [Hz]	250		1,000			1,000	
Protection against short circuit	Pulsed						
Protection against polarity reversal	For all electrical connections						
Protection class	IP67		IP65, IP67			IP67	IP65

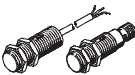
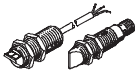
Operating and environmental conditions							
Size	Ø 4 mm	M5	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm
Ambient temperature [°C]	0 ... 55		-25 ... +55			-20 ... +60	-25 ... +55
Ambient temperature with flexible cable installation [°C]	0 ... 55		-5 ... +55			-5 ... +60	-5 ... +55
CE mark (see declaration of conformity)	In accordance with EU EMC directive						
Certification	c UL us - Listed (OL) C-Tick						

Materials							
Size	Ø 4 mm	M5	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm
Housing	High-alloy stainless steel		Brass, chrome-plated			Acrylic butadiene styrene	Polybutylene terephthalate, reinforced
Cable sheath	Polyurethane						

Diffuse sensors SOEG-RT

Technical data

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Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
Ø 4 mm							
	50	Light switching	PNP	537 671	SOEG-RT-4-PS-K-L	537 673	SOEG-RT-4-PS-S-L
			NPN	537 674	SOEG-RT-4-NS-K-L	537 676	SOEG-RT-4-NS-S-L
M5							
	50	Light switching	PNP	537 677	SOEG-RT-M5-PS-K-L	537 679	SOEG-RT-M5-PS-S-L
			NPN	537 680	SOEG-RT-M5-NS-K-L	537 682	SOEG-RT-M5-NS-S-L
M12							
	70 ... 300	Light switching	PNP	547 908	SOEG-RT-M12-PS-K-2L	547 909	SOEG-RT-M12-PS-S-2L
			NPN	547 906	SOEG-RT-M12-NS-K-2L	547 907	SOEG-RT-M12-NS-S-2L
M18, beam exit straight							
	40 ... 600	Antivalent	PNP	547 912	SOEG-RT-M18-PA-K-2L	547 913	SOEG-RT-M18-PA-S-2L
			NPN	547 910	SOEG-RT-M18-NA-K-2L	547 911	SOEG-RT-M18-NA-S-2L
M18, beam exit angled							
	0 ... 600	Light switching	PNP	537 701	SOEG-RT-M18W-PS-K-2L	537 702	SOEG-RT-M18W-PS-S-2L
			NPN	537 717	SOEG-RT-M18W-NS-K-2L	537 718	SOEG-RT-M18W-NS-S-2L
20x32x12 mm							
	10 ... 300	Switchable	PNP	537 732	SOEG-RT-Q20-PP-K-2L-TI	537 731	SOEG-RT-Q20-PP-S-2L-TI
			NPN	537 734	SOEG-RT-Q20-NP-K-2L-TI	537 733	SOEG-RT-Q20-NP-S-2L-TI
30x30x15 mm							
	0 ... 600	Light switching	PNP	165 350	SOEG-RT-Q30-PS-K-2L	165 351	SOEG-RT-Q30-PS-S-2L
			NPN	165 348	SOEG-RT-Q30-NS-K-2L	165 349	SOEG-RT-Q30-NS-S-2L

Diffuse sensors SOEG-RTZ, with cylindrical light beam

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Technical data

General technical data		
Size	Ø 4 mm	M5
Working range [mm]	10	
Light type	Infrared	
Setting options	–	

Electrical data		
Size	Ø 4 mm	M5
Electrical connection	Cable, 3-wire	
Operating voltage range [V DC]	10 ... 30	
Max. output current [mA]	100	
Max. switching frequency [Hz]	250	
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class	IP67	

Operating and environmental conditions		
Size	Ø 4 mm	M5
Ambient temperature [°C]	0 ... 55	
Ambient temperature with flexible cable installation [°C]	0 ... 55	
CE mark (see declaration of conformity)	In accordance with EU EMC directive	
Certification	c UL us - Listed (OL) C-Tick	

Materials		
Size	Ø 4 mm	M5
Housing	High-alloy stainless steel	
Cable sheath	Polyurethane	

Ordering data					
Size	Working range [mm]	Switching element function	Switch output	Electrical connection	
				Cable	
				Part No.	Type
Ø 4 mm					
	10	Light switching	PNP	537 672	SOEG-RTZ-4-PS-K-L
			NPN	537 675	SOEG-RTZ-4-NS-K-L
M5					
	10	Light switching	PNP	537 678	SOEG-RTZ-M5-PS-K-L
			NPN	537 681	SOEG-RTZ-M5-NS-K-L

Sensors SOEG-RTH, with background suppression

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Technical data

General technical data					
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Working range [mm]	10 ... 120	10 ... 120	25 ... 100	15 ... 150	30 ... 300
Light type	Red				
Setting options	Potentiometer		Teach-in Teach-in via electrical connection	Potentiometer	Potentiometer

Electrical data					
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Electrical connection	Cable	3-wire	4-wire	3-wire	4-wire
	Plug	M12x1, 3-pin	M8x1, 4-pin	M12x1, 3-pin	M12x1, 4-pin
Operating voltage range [V DC]	10 ... 36		10 ... 30	10 ... 36	10 ... 30
Max. output current [mA]	200		100	200	
Max. switching frequency [Hz]	500		1,000	500	1,000
Protection against short circuit	Pulsed				
Protection against polarity reversal	For all electrical connections				
Protection class	IP65, IP67		IP67	IP65	IP67

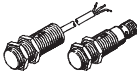
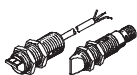
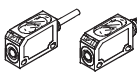
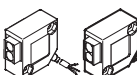
Operating and environmental conditions					
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Ambient temperature [°C]	−25 ... +55		−20 ... +60	−25 ... +55	−20 ... +60
Ambient temperature with flexible cable installation [°C]	−5 ... +55		−5 ... +60	−5 ... +55	−5 ... +60
CE mark (see declaration of conformity)	In accordance with EU EMC directive		In accordance with EU EMC directive In accordance with EU Low Voltage Directive	In accordance with EU EMC directive	In accordance with EU EMC directive In accordance with EU Low Voltage Directive
Certification	c UL us - Listed (OL) C-Tick				

Materials					
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Housing	Brass, chrome-plated		Acrylic butadiene styrene	Polybutylene terephthalate, reinforced	Acrylic butadiene styrene
Cable sheath	Polyurethane				

Sensors SOEG-RTH, with background suppression

Technical data

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Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
M18, beam exit straight							
	10 ... 120	Antivalent	PNP	537 687	SOEG-RTH-M18-PS-K-2L	537 689	SOEG-RTH-M18-PS-S-2L
			NPN	537 705	SOEG-RTH-M18-NS-K-2L	537 707	SOEG-RTH-M18-NS-S-2L
M18, beam exit angled							
	10 ... 120	Light switching	PNP	537 688	SOEG-RTH-M18W-PS-K-2L	537 690	SOEG-RTH-M18W-PS-S-2L
			NPN	537 706	SOEG-RTH-M18W-NS-K-2L	537 708	SOEG-RTH-M18W-NS-S-2L
20x32x12 mm							
	25 ... 100	Switchable	PNP	537 724	SOEG-RTH-Q20-PP-K-2L-TI	537 723	SOEG-RTH-Q20-PP-S-2L-TI
			NPN	537 726	SOEG-RTH-Q20-NP-K-2L-TI	537 725	SOEG-RTH-Q20-NP-S-2L-TI
30x30x15 mm							
	15 ... 150	Light switching	PNP	537 719	SOEG-RTH-Q30-PS-K-2L	537 720	SOEG-RTH-Q30-PS-S-2L
			NPN	537 721	SOEG-RTH-Q30-NS-K-2L	537 722	SOEG-RTH-Q30-NS-S-2L
50x50x17 mm							
	30 ... 300	Light switching	PNP	537 771	SOEG-RTH-Q50-PA-K-3L	537 773	SOEG-RTH-Q50-PA-S-3L
			NPN	537 772	SOEG-RTH-Q50-NA-K-3L	537 774	SOEG-RTH-Q50-NA-S-3L

Retro-reflective sensors SOEG-RSP

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Technical data

General technical data						
Size	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Working range [mm]	1,500	2,000	2,000	0 ... 2,500	0 ... 2,000	0 ... 5,500
Light type	Red polarised					
Setting options	–			Teach-in Teach-in via electrical connection ¹⁾	Potentiometer	

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

Electrical data							
Size		M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Electrical connection	Cable	3-wire			4-wire	3-wire	4-wire
	Plug	M12x1, 3-pin			M8x1, 4-pin	M8x1, 3-pin	M12x1, 4-pin
Operating voltage range	[V DC]	10 ... 36			10 ... 30		
Max. output current	[mA]	200			100	200	
Max. switching frequency	[Hz]	1,000					
Protection against short circuit		Pulsed					
Protection against polarity reversal		For all electrical connections					
Protection class		IP65, IP67			IP67	IP65	IP67

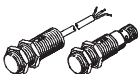
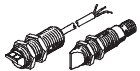
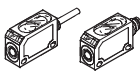
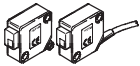
Operating and environmental conditions						
Size	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Ambient temperature [°C]	–25 ... +55			–20 ... +60	–25 ... +55	–20 ... +60
Ambient temperature with flexible cable installation [°C]	–5 ... +55			–5 ... +60	–5 ... +55	–5 ... +60
CE mark (see declaration of conformity)	In accordance with EU EMC directive			In accordance with EU EMC directive In accordance with EU Low Voltage Directive	In accordance with EU EMC directive	In accordance with EU EMC directive In accordance with EU Low Voltage Directive
Certification	c UL us - Listed (OL) C-Tick					

Materials						
Size	M12x1	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Housing	Brass, chrome-plated			Acrylic butadiene styrene	Polybutylene terephthalate, reinforced	Acrylic butadiene styrene
Cable sheath	Polyurethane					

Retro-reflective sensors SOEG-RSP

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Technical data

Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
M12							
	1,500	Dark switching	PNP	537 683	SOEG-RSP-M12-PS-K-2L	537 684	SOEG-RSP-M12-PS-S-2L
			NPN	537 685	SOEG-RSP-M12-NS-K-2L	537 686	SOEG-RSP-M12-NS-S-2L
M18, beam exit straight							
	2,000	Dark switching	PNP	537 697	SOEG-RSP-M18-PS-K-2L	537 699	SOEG-RSP-M18-PS-S-2L
			NPN	537 713	SOEG-RSP-M18-NS-K-2L	537 715	SOEG-RSP-M18-NS-S-2L
M18, beam exit angled							
	2,000	Dark switching	PNP	537 698	SOEG-RSP-M18W-PS-K-2L	537 700	SOEG-RSP-M18W-PS-S-2L
			NPN	537 714	SOEG-RSP-M18W-NS-K-2L	537 716	SOEG-RSP-M18W-NS-S-2L
20x32x12 mm							
	2,500	Switchable	PNP	537 750	SOEG-RSP-Q20-PP-K-2L-TI	537 749	SOEG-RSP-Q20-PP-S-2L-TI
			NPN	537 752	SOEG-RSP-Q20-NP-K-2L-TI	537 751	SOEG-RSP-Q20-NP-S-2L-TI
	2,500	Switchable	PNP	537 784	SOEG-RSP-Q20-PS-S-2L ¹⁾	—	
30x30x15 mm							
	0 ... 2,000	Dark switching	PNP	165 330	SOEG-RSP-Q30-PS-K-2L	165 331	SOEG-RSP-Q30-PS-S-2L
			NPN	165 328	SOEG-RSP-Q30-NS-K-2L	165 329	SOEG-RSP-Q30-NS-S-2L
50x50x17 mm							
	0 ... 5,500	Antivalent	PNP	537 763	SOEG-RSP-Q50-PA-K-3L	537 765	SOEG-RSP-Q50-PA-S-3L
			NPN	537 764	SOEG-RSP-Q50-NA-K-3L	537 766	SOEG-RSP-Q50-NA-S-3L

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

Retro-reflective sensors SOEG-RSG, for transparent objects

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Technical data

General technical data		
Size	20x32x12 mm	
Working range	[mm]	5 ... 500
Light type	Red polarised	
Setting options	Teach-in Teach-in via electrical connection	

Electrical data		
Size	20x32x12 mm	
Electrical connection	Cable	4-wire
	Plug	M8x1, 4-pin
Operating voltage range	[V DC]	10 ... 30
Max. output current	[mA]	100
Max. switching frequency	[Hz]	1,000
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class	IP67	

Operating and environmental conditions		
Size	20x32x12 mm	
Ambient temperature	[°C]	−20 ... +60
Ambient temperature with flexible cable installation	[°C]	−5 ... +60
CE mark (see declaration of conformity)	In accordance with EU EMC directive In accordance with EU Low Voltage Directive	
Certification	c UL us - Listed (OL) C-Tick	

Materials		
Size	20x32x12 mm	
Housing	Acrylic butadiene styrene	
Cable sheath	Polyurethane	

Ordering data						
Size	Working range [mm]	Switching element function	Switch output	Electrical connection		
				Cable		Plug
				Part No.	Type	Part No.
20x32x12 mm						
	5 ... 500	Switchable	PNP	537 754	SOEG-RSG-Q20-PP-K-2L-TI	537 753 SOEG-RSG-Q20-PP-S-2L-TI

Through-beam sensors SOEG-S/E

Technical data

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General technical data						
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm	
Working range [mm]	20,000	20,000	6,000	2,000	15,000	
Light type	Red			Infrared		
Setting options	–		Teach-in Teach-in via electrical connection	Potentiometer		

Electrical data							
Size			M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Electrical connection	Transmitter	Cable	3-wire		4-wire	3-wire	4-wire
		Plug	M12x1, 3-pin		M8x1, 4-pin	M8x1, 3-pin	M12x1, 4-pin
	Receiver	Cable	4-wire		4-wire	3-wire	4-wire
		Plug	M12x1, 4-pin		M8x1, 4-pin	M8x1, 3-pin	M12x1, 4-pin
Operating voltage range		[V DC]	10 ... 36		10 ... 30		
Max. output current		[mA]	200		100	200	
Max. switching frequency		[Hz]	1,000		500	1,000	
Protection against short circuit			Pulsed				
Protection against polarity reversal			For all electrical connections				
Protection class			IP65, IP67		IP67	IP65	IP67

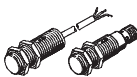
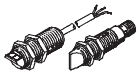
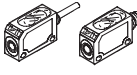
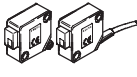
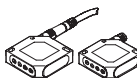
Operating and environmental conditions					
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Ambient temperature [°C]	-25 ... +55		-20 ... +60	-25 ... +55	-20 ... +60
Ambient temperature with flexible cable installation [°C]	-5 ... +55		-5 ... +60	-5 ... +55	-5 ... +60
CE mark (see declaration of conformity)	In accordance with EU EMC directive		In accordance with EU EMC directive In accordance with EU Low Voltage Directive	In accordance with EU EMC directive	In accordance with EU EMC directive In accordance with EU Low Voltage Directive
Certification	c UL us - Listed (OL) C-Tick				

Materials					
Size	M18x1, straight	M18x1, angled	20x32x12 mm	30x30x15 mm	50x50x17 mm
Housing	Brass, chrome-plated		Acrylic butadiene styrene	Polybutylene terephthalate, reinforced	Acrylic butadiene styrene
Cable sheath	Polyurethane				

Through-beam sensors SOEG-S/E

Technical data

FESTO

Ordering data								
Size	Working range [mm]	Function	Switching element function	Switch output	Electrical connection			
					Cable		Plug	
					Part No.	Type	Part No.	Type
M18, beam exit straight								
	20,000	Transmitter	–	–	537 691	SOEG-S-M18-K-L	537 703	SOEG-S-M18-S-L
		Receiver	Antivalent	PNP	537 692	SOEG-E-M18-PA-K-2L	537 704	SOEG-E-M18-PA-S-2L
				NPN	537 709	SOEG-E-M18-NA-K-2L	537 711	SOEG-E-M18-NA-S-2L
M18, beam exit angled								
	20,000	Transmitter	–	–	537 693	SOEG-S-M18W-K-L	537 695	SOEG-S-M18W-S-L
		Receiver	Antivalent	PNP	537 694	SOEG-E-M18W-PA-K-2L	537 696	SOEG-E-M18W-PA-S-2L
				NPN	537 710	SOEG-E-M18W-NA-K-2L	537 712	SOEG-E-M18W-NA-S-2L
20x32x12 mm								
	6,000	Transmitter	–	–	537 744	SOEG-S-Q20-K-L-TI	537 743	SOEG-S-Q20-S-L-TI
		Receiver	Switchable	PNP	537 746	SOEG-E-Q20-PP-K-2L-TI	537 745	SOEG-E-Q20-PP-S-2L-TI
				NPN	537 748	SOEG-E-Q20-NP-K-2L-TI	537 747	SOEG-E-Q20-NP-S-2L-TI
30x30x15 mm								
	2,000	Transmitter	–	–	165 352	SOEG-S-Q30-K-L	165 353	SOEG-S-Q30-S-L
		Receiver	Dark switching	PNP	165 322	SOEG-E-Q30-PS-K-2L	165 323	SOEG-E-Q30-PS-S-2L
				NPN	165 320	SOEG-E-Q30-NS-K-2L	165 321	SOEG-E-Q30-NS-S-2L
50x50x17 mm								
	15,000	Transmitter	–	–	537 779	SOEG-S-Q50-K-L	537 781	SOEG-S-Q50-S-L
		Receiver	Antivalent	PNP	537 780	SOEG-E-Q50-PA-K-3L	537 782	SOEG-E-Q50-PA-S-3L

Fibre-optic units SOEG-L

Technical data

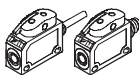
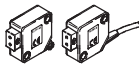
FESTO

General technical data		
Size	20x32x12 mm	30x30x15 mm
Working range [mm]	0 ... 250	0 ... 120
Light type	Red	
Setting options	Teach-in Teach-in via electrical connection	Potentiometer

Electrical data		
Size	20x32x12 mm	30x30x15 mm
Electrical connection	Cable	4-wire
	Plug	M8x1, 4-pin
Operating voltage range [V DC]	10 ... 30	
Max. output current [mA]	100	200
Max. switching frequency [Hz]	1,000	
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class	IP67	IP65

Operating and environmental conditions		
Size	20x32x12 mm	30x30x15 mm
Ambient temperature [°C]	0 ... 60	-25 ... +55
Ambient temperature with flexible cable installation [°C]	0 ... 60	-5 ... +55
CE mark (see declaration of conformity)	In accordance with EU EMC directive In accordance with EU Low Voltage Directive	In accordance with EU EMC directive
Certification	c UL us - Listed (OL) C-Tick	

Materials		
Size	20x32x12 mm	30x30x15 mm
Housing	Acrylic butadiene styrene	Polybutylene terephthalate, reinforced
Cable sheath	Polyurethane	

Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
20x32x12 mm							
	0 ... 250	Switchable	PNP	537 740	SOEG-L-Q20-PP-K-2L-TI	537 739	SOEG-L-Q20-PP-S-2L-TI
			NPN	537 742	SOEG-L-Q20-NP-K-2L-TI	537 741	SOEG-L-Q20-NP-S-2L-TI
30x30x15 mm							
	0 ... 120	Antivalent	PNP	165 326	SOEG-L-Q30-P-A-K-2L	165 327	SOEG-L-Q30-P-A-S-2L
			NPN	165 324	SOEG-L-Q30-NA-K-2L	165 325	SOEG-L-Q30-NA-S-2L

Distance sensors SOEG-RTD

Technical data

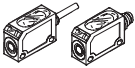
FESTO

General technical data		
Size	20x32x12 mm	
Working range	[mm]	20 ... 80
Displacement resolution	[mm]	0.5
Light type	Red	
Setting options	Teach-in Teach-in via electrical connection	

Electrical data		
Size	20x32x12 mm	
Analogue output	[V]	0 ... 10
Electrical connection	Cable	4-wire
	Plug	M8x1, 4-pin
Operating voltage range	[V DC]	15 ... 30
Max. output current	[mA]	100
Max. switching frequency	[Hz]	200
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class	IP67	

Operating and environmental conditions		
Size	20x32x12 mm	
Ambient temperature	[°C]	0 ... 60
Ambient temperature with flexible cable installation	[°C]	0 ... 60
CE mark (see declaration of conformity)	In accordance with EU EMC directive In accordance with EU Low Voltage Directive	
Certification	c UL us - Listed (OL) C-Tick	

Materials		
Size	20x32x12 mm	
Housing	Acrylic butadiene styrene	
Cable sheath	Polyurethane	

Ordering data						
Size	Working range [mm]	Switching element function	Switch output	Electrical connection		
				Cable		Plug
				Part No.	Type	Part No.
20x32x12 mm						
	20 ... 80	Switchable	PNP	537 758	SOEG-RTD-Q20-PP-K-2L-TI	537 757 SOEG-RTD-Q20-PP-S-2L-TI

Laser sensors SOEL-RT...

Technical data

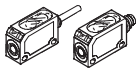
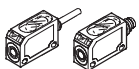
FESTO

General technical data			
Method of measurement	Contrast sensor (diffuse)	With background suppression	
Size	20x32x12 mm	20x32x12 mm	50x50x17 mm
Working range [mm]	10 ... 150	30 ... 110	50 ... 300
Light type	Laser, red		
Laser protection class	2		
Setting options	Teach-in Teach-in via electrical connection	Teach-in Teach-in via electrical connection	Potentiometer

Electrical data			
Method of measurement	Contrast sensor (diffuse)	With background suppression	
Size	20x32x12 mm	20x32x12 mm	50x50x17 mm
Electrical connection	Cable	4-wire	4-wire
	Plug	M8x1, 4-pin	M12x1, 4-pin
Operating voltage range [V DC]	10 ... 30	10 ... 30	
Max. output current [mA]	100	100	200
Max. switching frequency [Hz]	4,000	1,000	2,500
Protection against short circuit	Pulsed		
Protection against polarity reversal	For all electrical connections		
Protection class	IP67		

Operating and environmental conditions			
Method of measurement	Contrast sensor (diffuse)	With background suppression	
Size	20x32x12 mm	20x32x12 mm	50x50x17 mm
Ambient temperature [°C]	-20 ... +60	-20 ... +60	-20 ... +45
Ambient temperature with flexible cable installation [°C]	-5 ... +60	-5 ... +60	-5 ... +45
CE mark (see declaration of conformity)	In accordance with EU EMC directive In accordance with EU Low Voltage Directive		
Certification	c UL us - Listed (OL) C-Tick		

Materials	
Housing	Acrylic butadiene styrene
Cable sheath	Polyurethane

Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
20x32x12 mm, contrast sensor (diffuse)							
	10 ... 150	Switchable	PNP	537 736	SOEL-RT-Q20-PP-K-2L-TI	537 735	SOEL-RT-Q20-PP-S-2L-TI
			NPN	537 738	SOEL-RT-Q20-NP-K-2L-TI	537 737	SOEL-RT-Q20-NP-S-2L-TI
20x32x12 mm, with background suppression							
	30 ... 110	Switchable	PNP	537 729	SOEL-RTH-Q20-PP-K-2L-TI	537 727	SOEL-RTH-Q20-PP-S-2L-TI
			NPN	537 730	SOEL-RTH-Q20-NP-K-2L-TI	537 728	SOEL-RTH-Q20-NP-S-2L-TI
50x50x17 mm, with background suppression							
	50 ... 300	Antivalent	PNP	537 777	SOEL-RTH-Q50-PA-K-3L	537 775	SOEL-RTH-Q50-PA-S-3L
			NPN	537 778	SOEL-RTH-Q50-NA-K-3L	537 776	SOEL-RTH-Q50-NA-S-3L

Laser retro-reflective sensors SOEL-RSP

Technical data

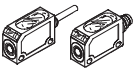
FESTO

General technical data		
Size	20x32x12 mm	50x50x17 mm
Working range [mm]	70 ... 3,000	20,000
Light type	Red polarised	
Laser protection class	1	1
Setting options	Teach-in Teach-in via electrical connection	Potentiometer

Electrical data		
Size	20x32x12 mm	50x50x17 mm
Electrical connection	Cable	4-wire
	Plug	M8x1, 4-pin
Operating voltage range [V DC]	10 ... 30	
Max. output current [mA]	100	200
Max. switching frequency [Hz]	4,000	2,500
Protection against short circuit	Pulsed	
Protection against polarity reversal	For all electrical connections	
Protection class	IP67	

Operating and environmental conditions		
Size	20x32x12 mm	50x50x17 mm
Ambient temperature [°C]	-20 ... +60	-20 ... +45
Ambient temperature with flexible cable installation [°C]	-5 ... +60	-5 ... +45
CE mark (see declaration of conformity)	In accordance with EU EMC directive In accordance with EU Low Voltage Directive	
Certification	c UL us - Listed (OL) C-Tick	

Materials		
Size	20x32x12 mm	50x50x17 mm
Housing	Acrylic butadiene styrene	
Cable sheath	Polyurethane	

Ordering data							
Size	Working range [mm]	Switching element function	Switch output	Electrical connection			
				Cable		Plug	
				Part No.	Type	Part No.	Type
20x32x12 mm							
	70 ... 3,000	Switchable	PNP	537 760	SOEL-RSP-Q20-PP-K-2L-TI	537 759	SOEL-RSP-Q20-PP-S-2L-TI
			NPN	537 762	SOEL-RSP-Q20-NP-K-2L-TI	537 761	SOEL-RSP-Q20-NP-S-2L-TI
50x50x17 mm							
	20,000	Antivalent	PNP	537 769	SOEL-RSP-Q50-PA-K-3L	537 767	SOEL-RSP-Q50-PA-S-3L
			NPN	537 770	SOEL-RSP-Q50-NA-K-3L	537 768	SOEL-RSP-Q50-NA-S-3L

Laser distance sensors SOEL-RTD

Technical data

FESTO

General technical data			
Size	50x50x17 mm		
Working range	[mm]	38 ... 58	44 ... 84
Position measuring range	[mm]	20	40
Displacement resolution	[mm]	0.007	0.02
Light type	Laser, red		
Laser protection class	2		
Setting options	–	–	Teach-in Teach-in via electrical connection

Electrical data			
Size	50x50x17 mm		
Working range	[mm]	38 ... 58	44 ... 84
Analogue output	[mA]	–	4 ... 20
	[V]	0 ... 10	–
Electrical connection	Plug M12x1, 4-pin		
Operating voltage range	[V DC]	18 ... 28	16 ... 30
Max. load current on the analogue voltage output	[mA]	3,0	–
Max. output current	[mA]	–	100
Measuring frequency	[Hz]	40	–
Max. switching frequency	[Hz]	–	1,000
Protection against short circuit	Pulsed		
Protection against polarity reversal	For operating voltage	For operating voltage	For all electrical connections
Protection class	IP67		

Operating and environmental conditions	
Size	50x50x17 mm
Ambient temperature	[°C] 0 ... 45
CE mark (see declaration of conformity)	In accordance with EU EMC directive In accordance with EU Low Voltage Directive
Certification	c UL us - Listed (OL) C-Tick

Materials	
Size	50x50x17 mm
Housing	Acrylic butadiene styrene

Ordering data					
Size	Working range	Switching element function	Switch output	Analogue output	Electrical connection
	[mm]				Plug
					Part No. Type
50x50x17 mm					
	38 ... 58	–	–	0 ... 10 V	549 315 SOEL-RTD-Q50-PU-S-2L-20
	44 ... 84	–	–	0 ... 10 V	549 316 SOEL-RTD-Q50-PU-S-2L-40
	80 ... 300	Switchable	2x PNP	4 ... 20 mA	537 823 SOEL-RTD-Q50-PP-S-7L

Colour sensors SOEC

Technical data

FESTO

General technical data	
Size	50x50x17 mm
Working range [mm]	12 ... 32
Light type	White
Setting options	Teach-in Teach-in via electrical connection

Electrical data	
Size	50x50x17 mm
Electrical connection	Plug M12x1, 8-pin
Operating voltage range [V DC]	10 ... 30
Max. output current [mA]	100
Max. switching frequency [Hz]	500
Protection against short circuit	Pulsed
Protection against polarity reversal	For all electrical connections
Protection class	IP67

Materials	
Size	50x50x17 mm
Housing	Acrylic butadiene styrene

Operating and environmental conditions	
Size	50x50x17 mm
Ambient temperature [°C]	−10 ... +55
CE mark (see declaration of conformity)	In accordance with EU EMC directive In accordance with EU Low Voltage Directive
Certification	c UL us - Listed (OL) C-Tick

Ordering data				
Size	Working range [mm]	Switching element function	Switch output	Electrical connection
				Plug
				Part No. Type
50x50x17 mm				
	12 ... 32	Light switching	3x PNP	538 236 SOEC-RT-Q50-PS-S-7L

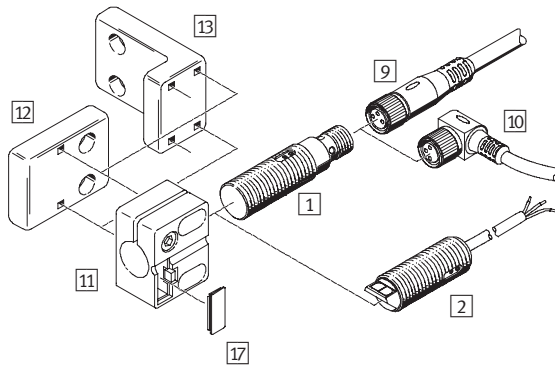
Sensors SOE..., opto-electronic

Peripherals overview

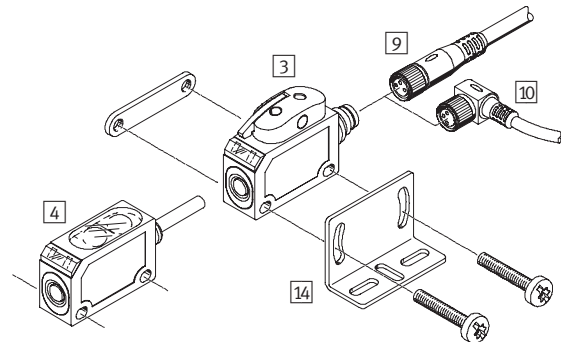
FESTO

Peripherals overview

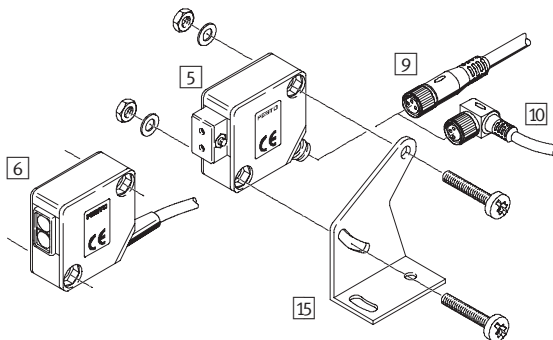
Round design, Ø 4 mm, M12, M18, M18W



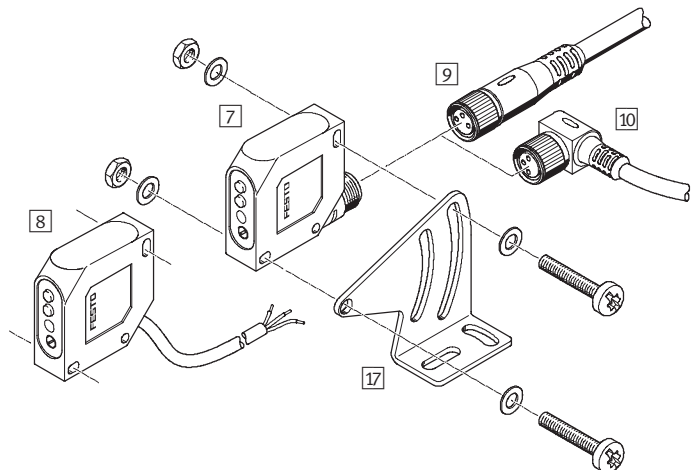
Block design, 20x32x12 mm



Block design, 30x30x15 mm



Block design, 50x50x17 mm



Mounting attachments and accessories

Sensors

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

Connecting cables

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

Sensor retainers

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

Mounting attachments and accessories

Mounting brackets

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

Inscription label

- | | |
|----|---------|
| 17 | SIEZ-LB |
|----|---------|

Fibre-optic cables, polymer

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

Fibre-optic cables, glass fibre

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

Reflectors

- | | |
|---|---------------------------|
| - | Reflector |
| | Reflector foil |
| | Reflector for laser light |

Sensors SOE..., opto-electronic

Accessories

FESTO

Ordering data – Connecting cables M8x1				
Technical data ➔ Internet: nebu				
	Number of wires	Cable length [m]	Part No.	Type
Straight plug socket				
	3	2.5	541 333	NEBU-M8G3-K-2.5-LE3
		5	541 334	NEBU-M8G3-K-5-LE3
	4	2.5	541 342	NEBU-M8G4-K-2.5-LE4
		5	541 343	NEBU-M8G4-K-5-LE4
Angled plug socket				
	3	2.5	541 338	NEBU-M8W3-K-2.5-LE3
		5	541 341	NEBU-M8W3-K-5-LE3
	4	2.5	541 344	NEBU-M8W4-K-2.5-LE4
		5	541 345	NEBU-M8W4-K-5-LE4

Ordering data – Connecting cables M12x1				
Technical data ➔ Internet: nebu, sim				
	Number of wires	Cable length [m]	Part No.	Type
Straight plug socket				
	3	2.5	541 363	NEBU-M12G5-K-2.5-LE3
		5	541 364	NEBU-M12G5-K-5-LE3
	4	5	541 328	NEBU-M12G5-K-5-LE4
	8	2	525 616	SIM-M12-8GD-2-PU
		5	525 618	SIM-M12-8GD-5-PU
Angled plug socket				
	3	2.5	541 367	NEBU-M12W5-K-2.5-LE3
		5	541 370	NEBU-M12W5-K-5-LE3
	4	5	541 329	NEBU-M12W5-K-5-LE4

Ordering data – Mounting attachments			
	For design	Part No.	Type
Mounting bracket			
	Q20	537 785	SOEZ-HW-Q20
	Q30	165 355	SOEZ-HW-Q30
	Q50	537 786	SOEZ-HW-Q50
Sensor retainer			
	4	538 343	SIEZ-NB-4
	M12	538 347	SIEZ-NB-12
	M18, M18W	538 349	SIEZ-NB-18
	M12, M18, M18W	538 354	SIEZ-UH
	M12, M18, M18W	538 355	SIEZ-UV

Ordering data – Mounting attachments			
	For design	Part No.	Type
Inscription label			
	M12, M18, M18W, M30	538 353	SIEZ-LB

Ordering data – Fibre-optic cables			
	Use	Part No.	Type
Polymer			
	RT ¹⁾	165 358	SOEZ-LLK-RT-2,0-M6
	S/E ²⁾	165 360	SOEZ-LLK-SE-2,0-M4
Glass fibre			
	RT ¹⁾	165 356	SOEZ-LLG-RT-0,5-M6
	S/E ²⁾	165 357	SOEZ-LLG-SE-0,5-M4
Fibre-optic cable cutter			
	For polymer fibre-optic cables	36 479	SOE-LKS

- 1) Diffuse sensor
2) Through-beam sensor

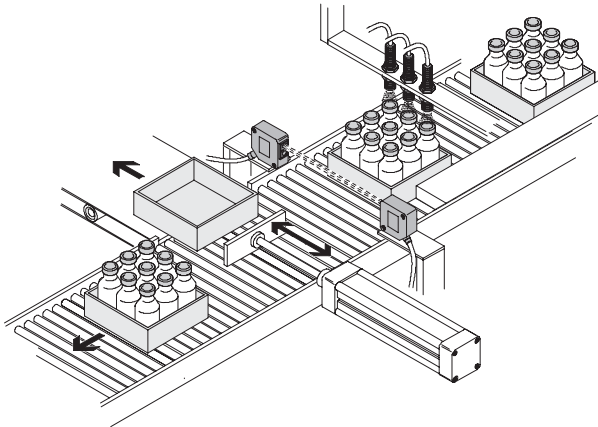
Ordering data – Reflectors			
	Size [mm]	Part No.	Type
Reflector			
	Ø 20	165 363	SOEZ-RFS-20
	Ø 40	165 364	SOEZ-RFS-40
	Ø 84	165 365	SOEZ-RFS-80
Reflector foil			
	100 x 100	165 362	SOEZ-RFF-100
Reflector for laser light			
	50 x 50	537 788	SOEZ-RFL-50
	10 x 50	537 787	SOEZ-RFL-10

Sensors SOE..., opto-electronic

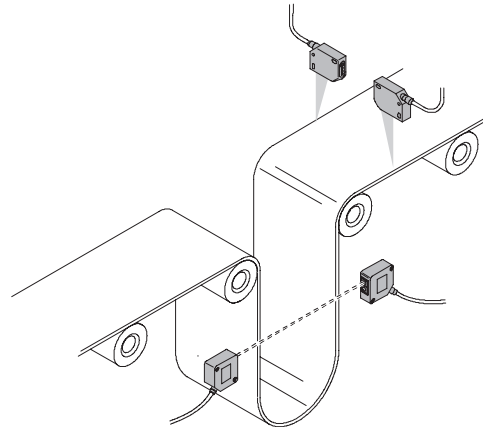
Application examples

FESTO

General application examples

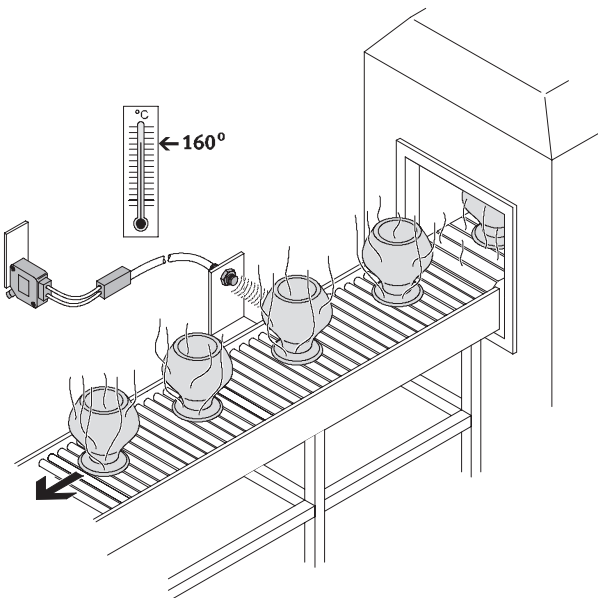


- Opto-electronic sensors SOEG check whether the boxes are filled.

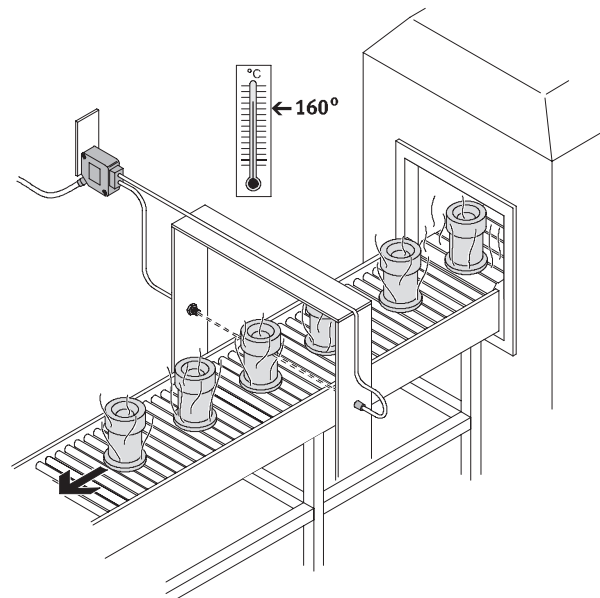


- Edge detection using opto-electronic sensors SOEG

Fibre-optic technology for high-temperature ranges



- SOEG-L can be combined with SOEZ-LLG glass fibre-optic cables to detect objects in high-temperature environments.

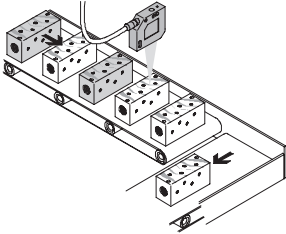


Sensors SOE..., opto-electronic

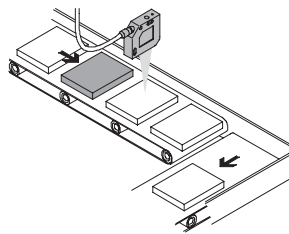
Application examples

FESTO

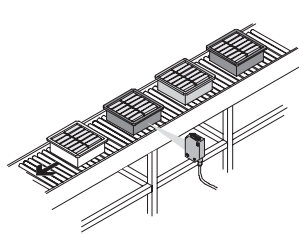
Sensors with background suppression



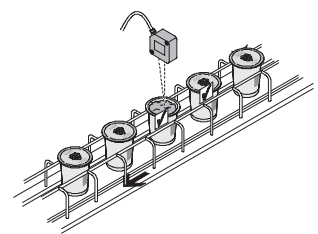
- Sensors SOEG-RTH with background suppression detect objects on the basis of their geometric position rather than the strength of the reflection.
- The objects are detected practically independently of their colour. It makes no difference how shiny any objects in the background are.



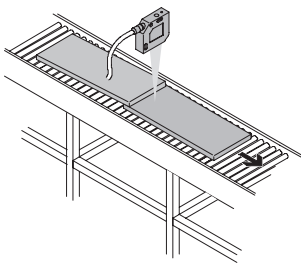
- Detection of objects of different colours at the same distance and close to the background.



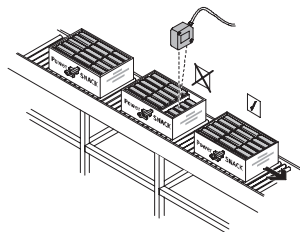
- Colour-independent detection of trays.



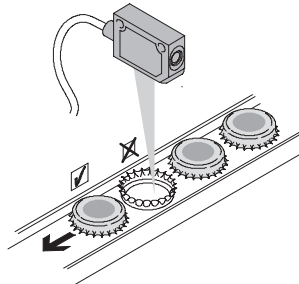
- Detection of lids of different colours on yogurt pots with a sensor SOEG-RTH with background suppression. Metallic lids can also be detected by inductive sensors SIEF.



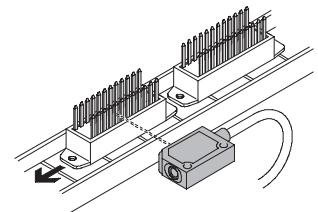
- Detection of overlaps with SOEG-RTH-Q30/Q50.



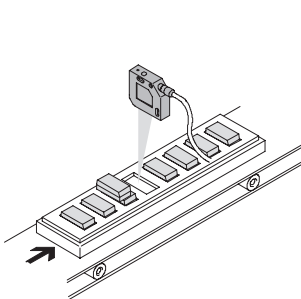
- Checking that snack food quantities are correct using sensors SOEG-RTH with background suppression.
- The distance sensor SOEG-RTD can also check that the number of items is correct.



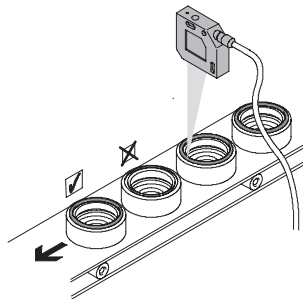
- Checking that the position of bowls is correct using sensors SOEG-RTH with background suppression.
- Metallic bowls can also be detected by inductive sensors SIE....



- Counting of connections using the laser sensor SOEL-RTH with background suppression.



- The presence or absence of small objects can be detected easily using the laser sensor SOEL-RTH with background suppression.



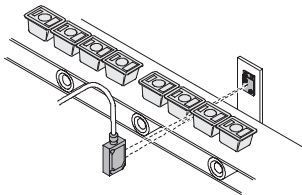
- Detection of O-rings using the laser sensor SOEL-RTH with background suppression.

Sensors SOE..., opto-electronic

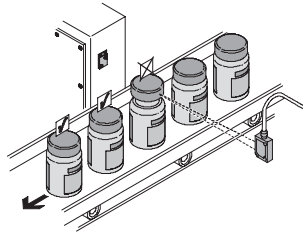
Application examples

FESTO

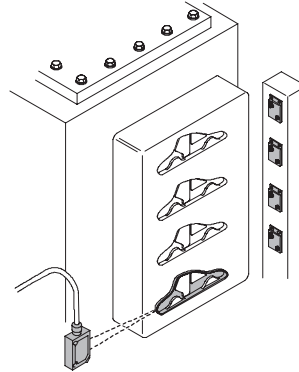
Retro-reflective sensors



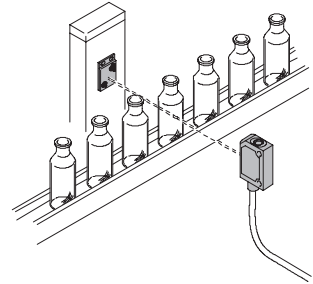
- The laser retro-reflective sensors SOEL-RSP detect small gaps between objects.



- The laser beam of a retro-reflective sensor SOEL-RSP can thus be set to detect variations in alignment.

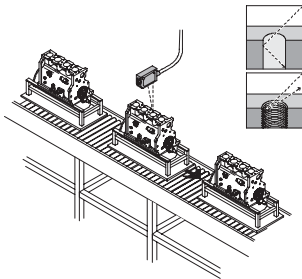


- After moulding, the laser retro-reflective sensor SOEL-RSP detects whether the workpieces are still in the metallic mould.



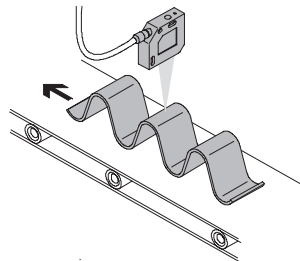
- SOEG-RSG – the perfect retro-reflective sensor for transparent objects.

Contrast sensor



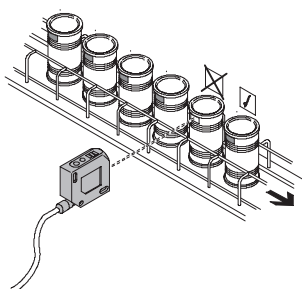
- The laser contrast sensor SOEL-RT-Q20 can detect a thread, even in a hole.

Distance sensor

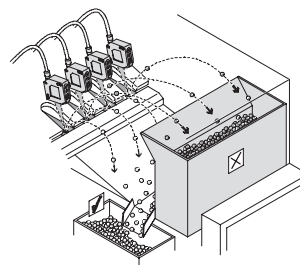


- The laser distance sensors SOEL-RTD can gauge the shapes of different workpieces.

Colour sensor



- The colour sensor SOEC-RT-Q50 has three channels. Each of these channels can be adjusted separately by means of a simple teach-in procedure.



- Parts are sorted by colour using the colour sensor SOEC-RT-Q50.

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Festo North America

Festo Regional Contact Center

5300 Explorer Drive
Mississauga, Ontario L4W 5G4
Canada

USA Customers:

For ordering assistance,

Call: 1.800.99.FESTO (1.800.993.3786)

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Canadian Customers:

Call: 1.877.GO.FESTO (1.877.463.3786)

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Email: festo.canada@ca.festo.com

USA Headquarters

Festo Corporation
395 Moreland Road
P.O. Box 18023
Hauppauge, NY 11788, USA
www.festo.com/us

USA Sales Offices

Appleton

North 922 Tower View Drive, Suite N
Greenville, WI 54942, USA

Boston

120 Presidential Way, Suite 330
Woburn, MA 01801, USA

Chicago

1441 East Business Center Drive
Mt. Prospect, IL 60056, USA

Dallas

1825 Lakeway Drive, Suite 600
Lewisville, TX 75057, USA

Detroit – Automotive Engineering Center

2601 Cambridge Court, Suite 320
Auburn Hills, MI 48326, USA

New York

395 Moreland Road
Hauppauge, NY 11788, USA

Silicon Valley

4935 Southfront Road, Suite F
Livermore, CA 94550, USA

United States



USA Headquarters, East: Festo Corp., 395 Moreland Road, Hauppauge, NY 11788

Phone: 1.631.435.0800; Fax: 1.631.435.8026;

Email: info@festo-usa.com

www.festo.com/us

Canada



Headquarters: Festo Inc., 5300 Explorer Drive, Mississauga, Ontario L4W 5G4

Phone: 1.905.624.9000; Fax: 1.905.624.9001;

Email: festo.canada@ca.festo.com

www.festo.ca

Mexico



Headquarters: Festo Pneumatic, S.A., Av. Ceylán 3, Col. Tequesquahuac,
54020 Tlalneapantla, Edo. de México

Phone: 011 52 [55] 53 21 66 00; Fax: 011 52 [55] 53 21 66 65;

Email: festo.mexico@mx.festo.com

www.festo.com/mx

Central USA

Festo Corporation
1441 East Business
Center Drive
Mt. Prospect, IL 60056, USA
Phone: 1.847.759.2600
Fax: 1.847.768.9480



Western USA

Festo Corporation
4935 Southfront Road,
Suite F
Livermore, CA 94550, USA
Phone: 1.925.371.1099
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Festo Worldwide

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