

Fibre-optic units SOE4

Product overview



- High precision fibre-optic units
- Switching frequencies up to 8,000 Hz
- Working ranges up to 2,000 mm
- Variants with LED display, switching and analogue outputs
- Setting via teach-in
- Comprehensive range of fibre-optic cables

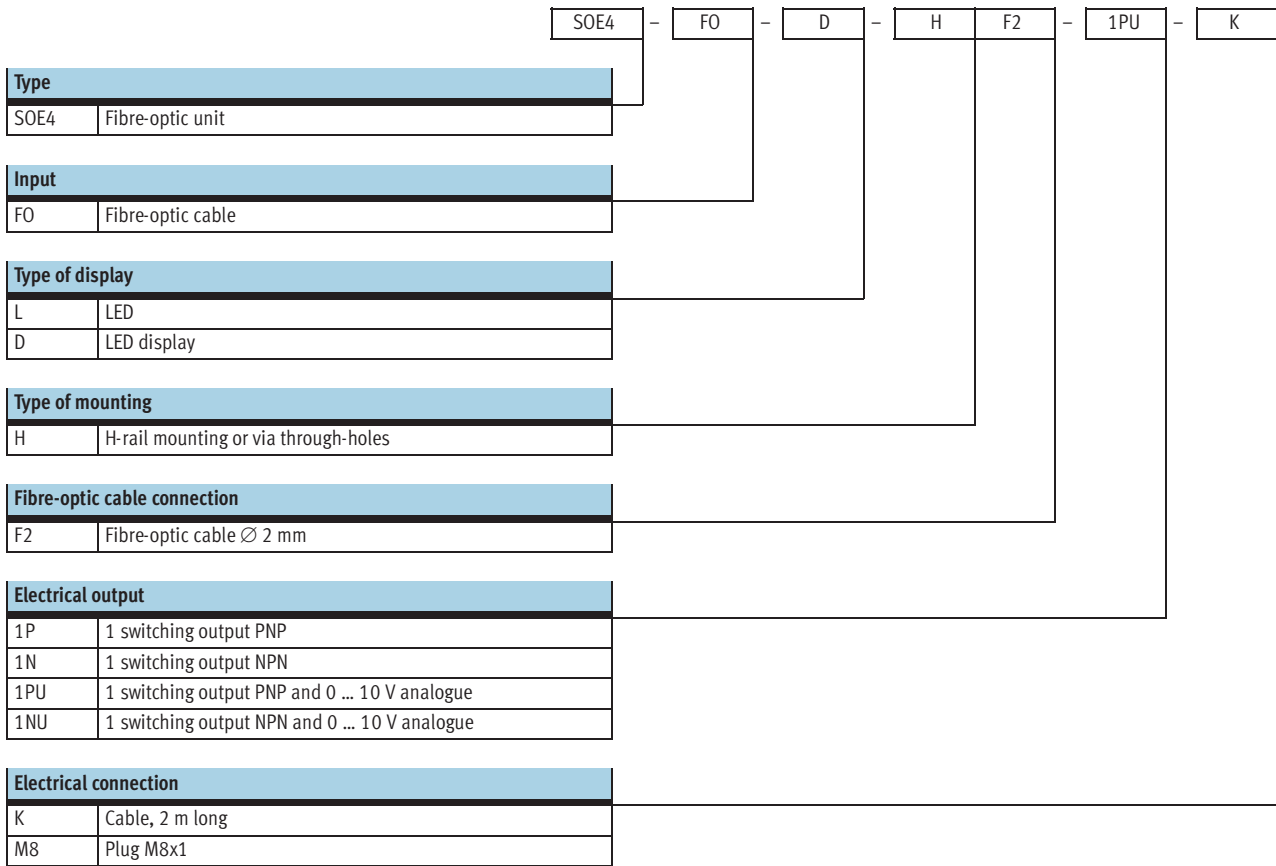
Detailed product information

→ www.festo.com/catalogue/soe4

Product overview						
Version	Type	Type of display	Timer function	Switching output	Analogue output	→ Page/Internet
Fibre-optic unit	SOE4-F0-L	LED	–	PNP NPN	–	3
	SOE4-F0-D	LED display	1 ... 2,000 ms	PNP NPN	–	3
	SOE4-F0-D	LED display	1 ... 2,000 ms	PNP NPN	0 ... 10 V	3

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Type codes



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Technical data

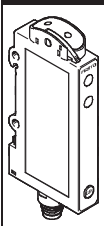
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General technical data		
Type of display	LED	LED display
Working range	Depends on the measuring mode and fibre-optic cables, value tables → 5, 6	Depends on the measuring mode and fibre-optic cables, value tables for standard mode → 5, 6 Standard mode: 100% Fine mode: approx. 40% Fast mode: approx. 40% High-distance mode: approx. 190%
Mutual interference	–	Protected against interference with up to four devices mounted directly next to one another
Light type	Red	
Setting options	Teach-in Teach-in via electrical connection	

Electrical data		
Type of display	LED	LED display
Max. switching frequency [Hz]	1,500	Standard mode: 1,000 Fine mode: 125 Fast mode: 8,000 High-distance mode: 125
Timer function [ms]	–	1 ... 2,000
Operating voltage range [V DC]	10 ... 30	
Max. output current [mA]	100	
Protection against short circuit	Pulsed	
Protection against polarity reversal	For operating voltage	
Protection class	IP64	

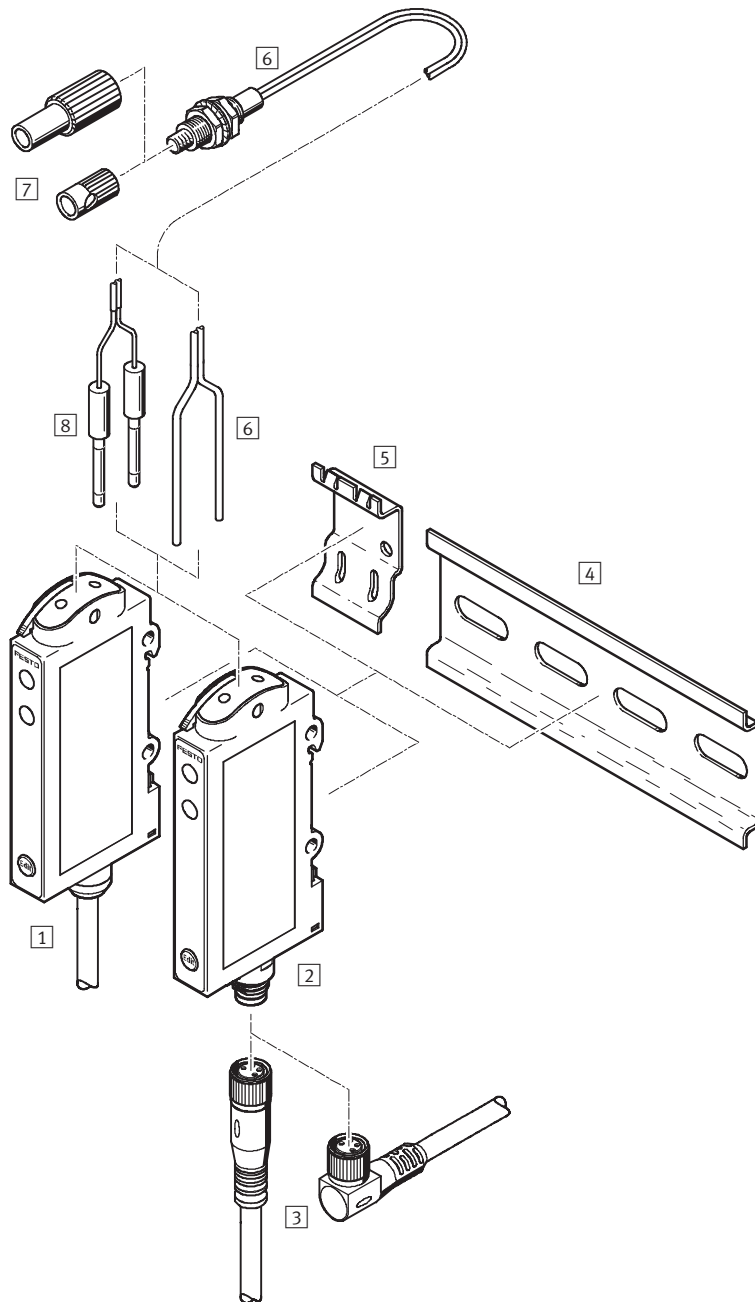
Operating and environmental conditions		
Ambient temperature [°C]	–20 ... +60	
Ambient temperature with flexible cable installation [°C]	–5 ... +60	
CE symbol (see declaration of conformity)	In accordance with EU EMC directive	
Certification	C-UL-US listed (OL) C tick	

Materials	
Housing	Acrylic butadiene styrene
Cable sheath	Polyurethane

Ordering data						
Version	Type of display	Switching output, switching function	Analogue output	Electrical connection	Part No.	Type
	LED	PNP, switchable	–	Cable, 4-wire	552 795	SOE4-FO-L-HF2-1P-K
				Plug M8x1, 4-pin	552 796	SOE4-FO-L-HF2-1P-M8
		NPN, switchable	–	Cable, 4-wire	552 797	SOE4-FO-L-HF2-1N-K
				Plug M8x1, 4-pin	552 798	SOE4-FO-L-HF2-1N-M8
	LED display	PNP, switchable	–	Plug M8x1, 4-pin	552 799	SOE4-FO-D-HF2-1P-M8
				Plug M8x1, 4-pin	552 800	SOE4-FO-D-HF2-1N-M8
		PNP, switchable	0 ... 10 V	Cable, 5-wire	552 801	SOE4-FO-D-HF2-1PU-K
				Cable, 5-wire	552 802	SOE4-FO-D-HF2-1NU-K

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Peripherals overview



Accessories	Brief description	→ Page/Internet	
1	Fibre-optic unit SOE4-...-K	3	
2	Fibre-optic unit SOE4-...-M8	3	
3	Connecting cable	8	
4	Mounting rail to DIN EN 60715	For wall mounting of more than 2 fibre-optic units	-
5	Adapter plate SXE3-W	For wall mounting of max. 2 fibre-optic units	8
6	Fibre-optic cable	As diffuse sensor, through-beam sensor, fixed focus or series designs	5
7	Ancillary lens	For adapting the optical characteristics of fibre-optic cables	7
8	Adapter	For fibre-optic cables with O.D. 1.0 and 1.25 ... 1.3 mm	7
-	Fibre-optic cutter	For fibre-optic cables made from plastic with O.D. 1.0 and 1.25 ... 1.3 as well as 2.2 mm	7

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Accessories

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Technical data – Fibre-optic cable (diffuse sensor)					
Special feature of fibre-optic cable		Standard	Coaxial	Large working range	Flexible
Working range ¹⁾	[mm]	140	75	200	130
Min. object diameter ²⁾	[mm]	0.1	0.1	0.1	0.1
Min. bending radius	[mm]	25	15	40	2
Outer Ø	[mm]	2.2	1.25	2.2	1.3
Head size		M6	M4	M6	M4
Protection class		IP66			
Ambient temperature	[°C]	-55 ... +70			-40 ... +70
Material	Housing	High-alloy stainless steel	Nickel-plated brass	Nickel-plated brass	High-alloy stainless steel
	Fibre-optic cable	Polyethylene			

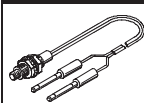
1) With SOE4-FO-L and SOE4-FO-D in standard mode

2) An attempt was made to obtain a signal at 10% of the range using a copper wire. The smallest wire diameter that was still detected corresponds to the diameter of the smallest detectable object.

Technical data – Fibre-optic cable (diffuse sensor)						
Special feature of fibre-optic cable		High temperature	Precision		Series	Fixed focus
Working range ¹⁾	[mm]	150	12	65	130	2 ... 10
Min. object diameter ²⁾	[mm]	0.1	0.05	0.1	0.15	0.1
Min. bending radius	[mm]	25	10	15	25	25
Outer Ø	[mm]	2.2	1.0	1.25	2.2	2.2
Head size		M6	M3	M4	19x25x6 mm	13x19.6x5 mm
Protection class		IP66				
Ambient temperature	[°C]	-55 ... +115	-55 ... +70			
Material	Housing	High-alloy stainless steel			Nickel-plated brass	Acrylic butadiene styrene
	Fibre-optic cable	Polyethylene				

1) With SOE4-FO-L and SOE4-FO-D in standard mode

2) An attempt was made to obtain a signal at 10% of the range using a copper wire. The smallest wire diameter that was still detected corresponds to the diameter of the smallest detectable object.

Ordering data – Fibre-optic cable (diffuse sensor)								
Measuring method	Special feature of fibre-optic cable	Outer Ø ¹⁾ [mm]	Sleeve length [mm]	Fibre-optic cable length				
				1 m		2 m		
				Part No.	Type	Part No.	Type	
	Standard	2.2	–	552 838	SOOC-DS-M6-1-R25	552 836	SOOC-DS-M6-2-R25	
			40	552 839	SOOC-DS-M6-1-R25-S4	552 837	SOOC-DS-M6-2-R25-S4	
	Coaxial	1.25	–	–	–	552 842	SOOC-DS-C-M4-2-R15	
	Large working range	2.2	–	–	552 841	SOOC-DS-H-M6-1-R40	552 840	SOOC-DS-H-M6-2-R40
	Flexible	1.3	–	–	–	–	552 843	SOOC-DS-F-M4-2-R2
	High temperature	2.2	–	–	–	–	552 809	SOOC-DS-M6-2-R25-T1
	Precision	1.25	–	–	552 804	SOOC-DS-P-M3-1-R10	552 844	SOOC-DS-P-M3-2-R10
				40	–	–	552 803	SOOC-DS-P-M3-2-R10-S4
		1	–	–	552 807	SOOC-DS-P-M4-1-R15	552 805	SOOC-DS-P-M4-2-R15
				40	552 808	SOOC-DS-P-M4-1-R15-S4	552 806	SOOC-DS-P-M4-2-R15-S4
Series	2.2	–	–	–	–	552 810	SOOC-DS-M-A11-2-R25	
Fixed focus	2.2	–	–	–	–	552 811	SOOC-DS-Q-2-R25	

1) The scope of delivery for fibre-optic cables with fibre-optic cable Ø < 2.2 mm includes an adapter SASA

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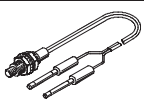
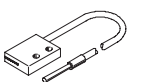
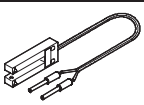
Accessories

Technical data – Fibre-optic cable (through-beam sensor)					
Special feature of fibre-optic cable		Standard	Large working range	Flexible	High temperature
Working range ¹⁾	[mm]	400	650	300	400
Min. object diameter ²⁾	[mm]	0.35	0.2	0.15	0.35
Min. bending radius	[mm]	25	40	2	25
Outer Ø	[mm]	2.2			
Head size		M4			
Protection class		IP66			
Ambient temperature	[°C]	-55 ... +70		-40 ... +70	-55 ... +115
Material	Housing	High-alloy stainless steel		Nickel-plated brass	High-alloy stainless steel
	Fibre-optic cable	Polyethylene			

- 1) With SOE4-FO-L and SOE4-FO-D in standard mode
 2) An attempt was made to obtain a signal at 10% of the range using a copper wire. The smallest wire diameter that was still detected corresponds to the diameter of the smallest detectable object.

Technical data – Fibre-optic cable (through-beam sensor)					
Special feature of fibre-optic cable		Precision		Series	Fork light barrier
Working range ¹⁾	[mm]	30	120	250	5
Min. object diameter ²⁾	[mm]	0.05	0.2	0.1	0.2
Min. bending radius	[mm]	10	15	25	10
Outer Ø	[mm]	1.0	2.2	2.2	1.25
Head size		M3	M4	10x10x5 mm	41x15x7 mm
Fork pit size		-			5x29 mm
Protection class		IP66			
Ambient temperature	[°C]	-55 ... +70			
Material	Housing	High-alloy stainless steel		Nickel-plated brass	Acrylic butadiene styrene
	Fibre-optic cable	Polyethylene			

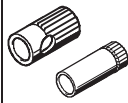
- 1) With SOE4-FO-L and SOE4-FO-D in standard mode
 2) An attempt was made to obtain a signal at 10% of the range using a copper wire. The smallest wire diameter that was still detected corresponds to the diameter of the smallest detectable object.

Ordering data – Fibre-optic cable (through-beam sensor)							
Measuring method	Special feature of fibre-optic cable	Outer Ø ¹⁾ [mm]	Sleeve length [mm]	Fibre-optic cable length			
				1 m		2 m	
				Part No.	Type	Part No.	Type
Through-beam sensor							
	Standard	2.2	-	552 814	SOOC-TB-M4-1-R25	552 812	SOOC-TB-M4-2-R25
			40	552 815	SOOC-TB-M4-1-R25-S4	552 813	SOOC-TB-M4-2-R25-S4
	Large working range	2.2	-	552 817	SOOC-TB-H-M4-1-R40	552 816	SOOC-TB-H-M4-2-R40
	Flexible	2.2	-	-	-	552 818	SOOC-TB-F-M4-2-R2
	High temperature	2.2	-	-	-	552 826	SOOC-TB-M4-2-R25-T1
	Precision	1	-	-	552 821	SOOC-TB-P-M3-1-R10	552 819
40				552 822	SOOC-TB-P-M3-1-R10-S4	552 820	SOOC-TB-P-M3-2-R10-S4
2.2		-	-	552 825	SOOC-TB-P-M4-1-R15	552 823	SOOC-TB-P-M4-2-R15
			40	-	-	552 824	SOOC-TB-P-M4-2-R15-S4
	Series	2.2	-	-	-	552 827	SOOC-TB-M-A5-2-R25
			40	-	-	-	-
	Fork light barrier	1.25	-	-	-	552 828	SOOC-TB-P-C5-2-R10
			40	-	-	-	-

- 1) The scope of delivery for fibre-optic cables with fibre-optic cable Ø < 2.2 mm includes an adapter SASA

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Accessories

Technical data and order codes – Ancillary lenses							
	Lens function		Protection class	Ambient temperature [°C]	Material Housing	Part No.	Type
	Increasing working range	Factor 4 ¹⁾	IP66	-30 ... +150	Nickel-plated brass	552 829	SASF-L1-LD-M2
		Factor 8 ¹⁾			Anodised aluminium	552 832	SASF-L1-LD-M4
	Light exit 90° Focussing ²⁾				Nickel-plated brass	552 830	SASF-L1-LA-M2
					Anodised aluminium	552 831	SASF-L1-LS2-M4

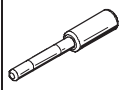
1) Depending on the fibre-optic cable

2) Light spot diameter 0.7 mm at a distance of 10 mm, depending on the fibre-optic cable

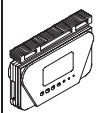
Compatibility table – Ancillary lenses					
Fibre-optic cable	SASF-L1-LD-M2	SASF-L1-LD-M4	SASF-L1-LA-M2	SASF-L1-LS2-M4	→ Page/Internet
Diffuse sensor					
SOOC-DS-P-M4-2-R15	■	-	-	■	5
SOOC-DS-P-M4-1-R15	■	-	-	■	
SOOC-DS-C-M4-2-R15	■	-	-	■	
Through-beam sensor					
SOOC-TB-M4-2-R25	■	■	■	■	6
SOOC-TB-M4-1-R25	■	■	■	■	
SOOC-TB-H-M4-2-R40	■	■	■	■	
SOOC-TB-H-M4-1-R40	■	■	■	■	
SOOC-TB-F-M4-2-R2	■	■	■	■	
SOOC-TB-P-M4-2-R15	■	■	■	■	
SOOC-TB-P-M4-1-R15	■	■	■	■	
SOOC-TB-M4-2-R25-T1	■	■	■	■	

 Note

Only the fibre-optic cables listed here are suitable for combination with an ancillary lens.

Technical data and order codes – Adapter ¹⁾							
	Outer Ø	Suitable for fibre-optic cable Ø	Protection class	Ambient temperature [°C]	Material Housing	Part No.	Type
	[mm]	[mm]					
	2.2	1.0	IP64	-20 ... +60	Acrylic butadiene styrene	552 834	SASA-L1-10
		1.25 ... 1.3				552 833	SASA-L1-13



1) Included in the scope of delivery for fibre-optic cables SOOC with fibre-optic cable Ø < 2.2 mm


Technical data and order codes – Fibre-optic cable cutter							
	Use	Suitable for fibre-optic cable Ø [mm]	Radius of bending tool ¹⁾ [mm]	Ambient temperature [°C]	Material Housing	Part No.	Type
	For polymer fibre-optic cables	1.0; 1.25 ... 1.3; 2.2	5, 8, 10	10 ... 60	Acrylic butadiene styrene, reinforced	552 835	SATC-L1-C

1) Bending tool for fibre-optic cable sleeves

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Ordering data – Connecting cables			Technical data → Internet: nebu	
	Number of wires	Cable length [m]	Part No.	Type
M8x1, straight socket				
	4	2.5	541 342	NEBU-M8G4-K-2.5-LE4
		5	541 343	NEBU-M8G4-K-5-LE4
M8x1, angled socket				
	4	2.5	541 344	NEBU-M8W4-K-2.5-LE4
		5	541 345	NEBU-M8W4-K-5-LE4

Ordering data – Adapter plate	
Part No.	Type
 540 214	SXE3-W