

Fibre-optic units SOE4

FESTO



Characteristics and product range overview

Product range overview						
Version	Type	Display type	Timer function	Switching output	Analogue output	→ Page/Internet
Fibre-optic unit	SOE4-FO-L	LED	–	PNP NPN	–	5
	SOE4-FO-D	LED display	1 ... 2000 ms	PNP NPN	–	5
	SOE4-FO-D	LED display	1 ... 2000 ms	PNP NPN	0 ... 10 V	5

- High precision fibre-optic units
- Switching frequencies of up to 8000 Hz
- Working ranges of up to 2000 mm
- Variants with LED display, switching and analogue outputs
- Setting via teach-in
- Comprehensive range of light guides

SOE4-FO-L-... with LED



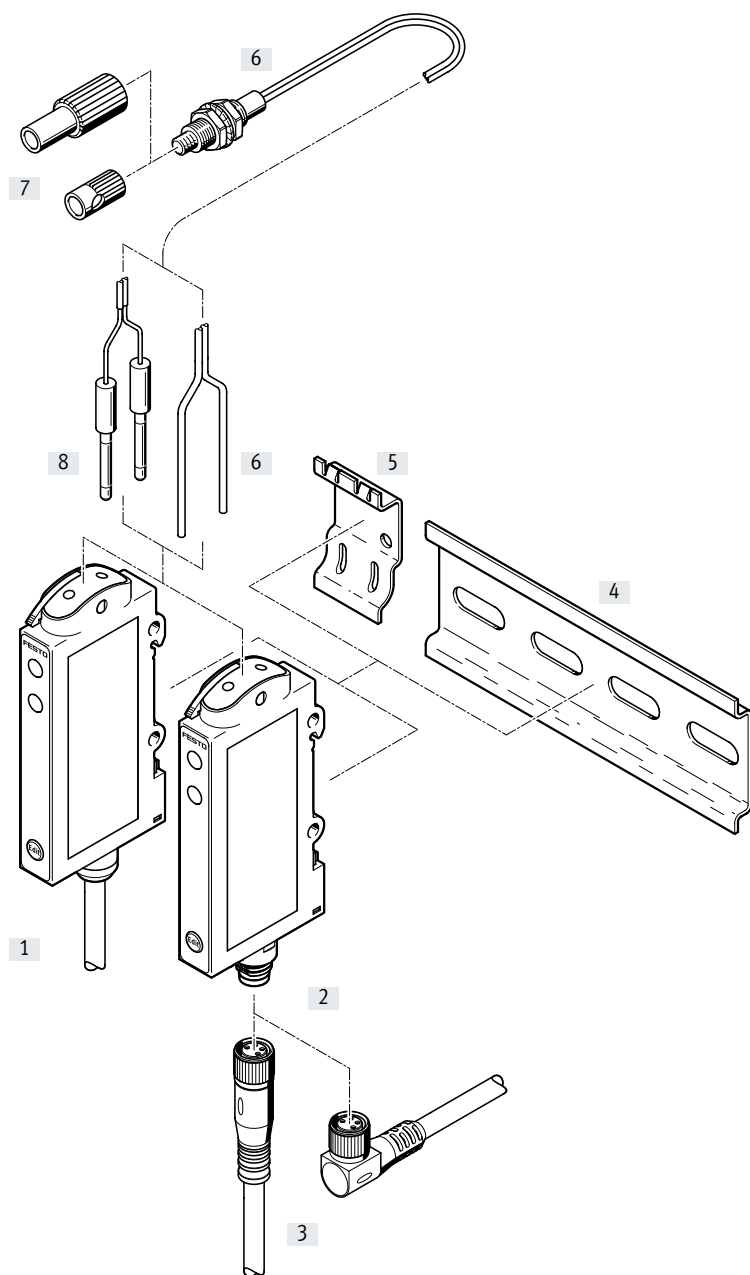
SOE4-FO-D-... with LED display



Product combination SOE4, SVE4, SDE3



Peripherals overview



Accessories	Brief description	→ Page/Internet
[1] Fibre-optic unit SOE4-...-K	With cable	5
[2] Fibre-optic unit SOE4-...-M8	With plug M8x1, 4-pin	5
[3] Connecting cable	With socket M8x1, 4-pin	10
[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	10
[6] Light guide	As diffuse sensor, through-beam sensor, fixed focus or series designs	7
[7] Adapter lens	For adapting the optical characteristics of light guides	9
[8] Adapter	For light guides with O.D. 1.0 and 1.25 ... 1.3 mm	9
- Fibre-optic cutter	For plastic light guides with O.D. 1.0 and 1.3 as well as 2.2 mm	9

Type codes

001	Series
SOE4	Fibre-optic unit

002	Sensor function
FO	Fibre-optic unit

003	Display
L	LED
D	Display

004	Type of mounting
H	H-rail mounting or via through-holes

005	Fibre-optic cable connection
F2	2 mm

006	Electrical output
1P	1 switching output PNP
1N	1 switching output NPN
1PU	1 switching output PNP and 0 ... 10 V analogue
1NU	1 switching output NPN and 0 ... 10 V analogue

007	Electrical connection
K	Cable
M8	Plug M8x1

Data sheet

General technical data		
Display type	LED	LED display
Measured variable	Position	
Measuring principle	Optoelectronic	
Working range	Depends on the measuring mode and light guide, value tables → 7, 8	Depends on the measuring mode and light guide, value tables for standard mode → 7, 8
		Standard mode: 100%
		Fine mode: approx. 40%
		Fast mode: approx. 40%
Mutual interference	–	High distance mode: approx. 190%
		Protected against interference with up to four devices mounted directly next to one another
Type of light	Red	
Setting options	Teach-in Teach-in via electrical connection	
Mounting position	Any	
Type of mounting	With through-hole	
	With H-rail	

Electrical data		
Display type	LED	LED display
Max. switching frequency [Hz]	1500	Standard mode: 1000
		Fine mode: 125
		Fast mode: 8000
		High distance mode: 125
Timer function [ms]	–	1 ... 2000
Operating voltage range [V DC]	10 ... 30	
Voltage drop [V]	≤ 2.4	
Insulation voltage [V]	50	
Residual ripple [%]	10	
Max. output current [mA]	100	
No-load supply current [mA]	≤ 25	
Short circuit current rating	Pulsed	
Reverse polarity protection	For operating voltage	
Degree of protection	IP64	

Data sheet

Operating and environmental conditions		
Ambient temperature	[°C]	-20 ... +60
Ambient temperature with flexible cable installation	[°C]	-5 ... +60
CE marking (see declaration of conformity)		To EU EMC Directive ¹⁾
Conforms to standard		EN 60947-5-2
Certification		cUL us listed (OL)
		RCM compliance mark
Corrosion resistance class	CRC ²⁾	4

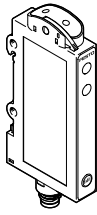
1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

2) Corrosion resistance class CRC 4 to Festo standard FN 940070

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

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

Ordering data						
Version	Display type	Switching output, switching element function	Analogue output	Electrical connection	Part no.	Type
	LED	PNP, switchable	-	Cable, 4-wire	552795	SOE4-FO-L-HF2-1P-K
				Plug M8x1, 4-pin	552796	SOE4-FO-L-HF2-1P-M8
		NPN, switchable	-	Cable, 4-wire	552797	SOE4-FO-L-HF2-1N-K
				Plug M8x1, 4-pin	552798	SOE4-FO-L-HF2-1N-M8
	LED display	PNP, switchable	-	Plug M8x1, 4-pin	552799	SOE4-FO-D-HF2-1P-M8
				Plug M8x1, 4-pin	552800	SOE4-FO-D-HF2-1N-M8
		NPN, switchable	0 ... 10 V	Cable, 5-wire	552801	SOE4-FO-D-HF2-1PU-K
				Cable, 5-wire	552802	SOE4-FO-D-HF2-1NU-K

Accessories – Ordering data

Technical data – Light guide (diffuse sensor)					
Special feature of light guide		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
O.D.	[mm]	2.2	1.25	2.2	1.3
Head size		M6	M4	M6	M4
Degree of protection		IP66			
Ambient temperature	[°C]	–55 ... +70			–40 ... +70
Information on materials	Housing	High-alloy stainless steel	Nickel-plated brass	Nickel-plated brass	High-alloy stainless steel
	Light guide	PE			

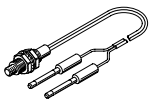
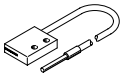
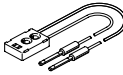
1) With SOE4-FO-L and SOE4-FO-D in standard mode

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

Technical data – Light guide (diffuse sensor)						
Special feature of light guide		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
O.D.	[mm]	2.2	1.0	1.25	2.2	2.2
Head size		M6	M3	M4	19x25x6 mm	13x19.6x5 mm
Degree of protection		IP66				
Ambient temperature	[°C]	–55 ... +115		–55 ... +70		
Information on materials	Housing	High-alloy stainless steel			Nickel-plated brass	ABS
	Light guide	PE				

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 working range using a copper wire. The smallest wire diameter that was still detected corresponds to the diameter of the smallest detectable object.

Ordering data – Light guide (diffuse sensor)							
Measurement method	Special feature of light guide	O.D. ¹⁾ [mm]	Sleeve length [mm]	Length of light guide			
				1 m		2 m	
				Part no.	Type	Part no.	Type
	Standard	2.2	–	552838	SOOC-DS-M6-1-R25	552836	SOOC-DS-M6-2-R25
			40	552839	SOOC-DS-M6-1-R25-S4	552837	SOOC-DS-M6-2-R25-S4
	Coaxial	1.25	–	–	–	552842	SOOC-DS-C-M4-2-R15
	Large working range	2.2	–	552841	SOOC-DS-H-M6-1-R40	552840	SOOC-DS-H-M6-2-R40
	Flexible	1.3	–	–	–	552843	SOOC-DS-F-M4-2-R2
	High temperature	2.2	–	–	–	552809	SOOC-DS-M6-2-R25-T1
	Precision	1.25	–	552804	SOOC-DS-P-M3-1-R10	552844	SOOC-DS-P-M3-2-R10
40			–	–	552803	SOOC-DS-P-M3-2-R10-S4	
1		–	552807	SOOC-DS-P-M4-1-R15	552805	SOOC-DS-P-M4-2-R15	
		40	552808	SOOC-DS-P-M4-1-R15-S4	552806	SOOC-DS-P-M4-2-R15-S4	
	Series	2.2	–	–	–	552810	SOOC-DS-M-A11-2-R25
	Fixed focus	2.2	–	–	–	552811	SOOC-DS-Q-2-R25

1) An adapter SASA is included in the scope of delivery for light guides with a light guide diameter of < 2.2 mm

Accessories – Ordering data

Technical data – Light guide (through-beam sensor)					
Special feature of light guide		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
O.D.	[mm]	2.2			
Head size		M4			
Degree of protection		IP66			
Ambient temperature	[°C]	–55 ... +70		–40 ... +70	–55 ... +115
Information on materials	Housing	High-alloy stainless steel		Nickel-plated brass	High-alloy stainless steel
	Light guide	PE			

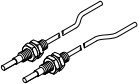
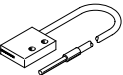
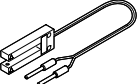
1) With SOE4-FO-L and SOE4-FO-D in standard mode

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

Technical data – Light guide (through-beam sensor)					
Special feature of light guide		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
O.D.	[mm]	1.0	2.2	2.2	1.25
Head size		M3	M4	10x10x5 mm	41x15x7 mm
Fork pit size		–			5x29 mm
Degree of protection		IP66			
Ambient temperature	[°C]	–55 ... +70			
Information on materials	Housing	High-alloy stainless steel		Nickel-plated brass	ABS
	Light guide	PE			

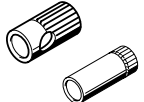
1) With SOE4-FO-L and SOE4-FO-D in standard mode

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

Ordering data – Light guide (through-beam sensor)								
Measurement method	Special feature of light guide	O.D. ¹⁾ [mm]	Sleeve length [mm]	Length of light guide 1 m		2 m		
				Part no.	Type	Part no.	Type	
	Standard	2.2	–	552814	SOOC-TB-M4-1-R25	552812	SOOC-TB-M4-2-R25	
			40	552815	SOOC-TB-M4-1-R25-S4	552813	SOOC-TB-M4-2-R25-S4	
	Large working range	2.2	–	552817	SOOC-TB-H-M4-1-R40	552816	SOOC-TB-H-M4-2-R40	
	Flexible	2.2	–	–	–	552818	SOOC-TB-F-M4-2-R2	
	Precision	1	–	–	552821	SOOC-TB-P-M3-1-R10	552819	SOOC-TB-P-M3-2-R10
				40	552822	SOOC-TB-P-M3-1-R10-S4	–	–
2.2		–	552825	SOOC-TB-P-M4-1-R15	552823	SOOC-TB-P-M4-2-R15		
	40	–	–	–	552824	SOOC-TB-P-M4-2-R15-S4		
	Series	2.2	–	–	–	552827	SOOC-TB-M-A5-2-R25	
	Fork light barrier	1.25	–	–	–	552828	SOOC-TB-P-C5-2-R10	

1) An adapter SASA is included in the scope of delivery for light guides with a light guide diameter of < 2.2 mm

Accessories – Ordering data

Technical data and order codes – Adapter lenses							
	Lens function		Degree of protection	Ambient temperature [°C]	Information on materials Housing	Part no.	Type
		Increasing working range	Factor 4 ¹⁾	IP66	-30 ... +150	Nickel-plated brass	552829
Factor 8 ¹⁾			Anodised aluminium			552832	SASF-L1-LD-M4
Light exit 90° Focusing ²⁾			Nickel-plated brass			552830	SASF-L1-LA-M2
			Anodised aluminium			552831	SASF-L1-LS2-M4

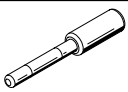
1) Dependent on the light guide

2) Light spot diameter 0.7 mm at a distance of 10 mm, dependent on the light guide

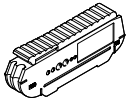
Compatibility table – Adapter lenses						
Light guide	SASF-L1-LD-M2	SASF-L1-LD-M4	SASF-L1-LA-M2	SASF-L1-LS2-M4	→ Page/Internet	
Diffuse sensor						
SOOC-DS-P-M4-2-R15	■	–	–	■	7	
SOOC-DS-P-M4-1-R15	■	–	–	■		
SOOC-DS-C-M4-2-R15	■	–	–	■		
Through-beam sensor						
SOOC-TB-M4-2-R25	■	■	■	■	8	
SOOC-TB-M4-1-R25	■	■	■	■		
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**

Any light guide not listed here is not suitable for combining with an adapter lens.




Technical data and order codes – Adapter ¹⁾							
	O.D.	Suitable for light guide diameter	Degree of protection	Ambient temperature	Information on materials Housing	Part no.	Type
	[mm]	[mm]		[°C]			
	2.2	1.0	IP64	-20 ... +60	ABS	552834	SASA-L1-10
		1.25 ... 1.3				552833	SASA-L1-13

1) Included in the scope of delivery for light guides SOOC with a light guide diameter of < 2.2 mm

Technical data and order codes – Fibre-optic cutter							
	Use	Suitable for light guide diameter	Radius of bending tool ¹⁾	Ambient temperature	Information on materials Housing	Part no.	Type
		[mm]	[mm]	[°C]			
	For plastic light guides	1.0; 1.3; 2.2	5, 8, 10	10 ... 60	ABS, reinforced	552835	SATC-L1-C

1) Bending tool for light guide sleeves

Accessories – Ordering data

Ordering data – Connecting cables			Data sheets → Internet: nebu	
	Number of wires	Cable length [m]	Part no.	Type
M8x1, straight socket				
	4	2.5	541342	NEBU-M8G4-K-2.5-LE4
		5	541343	NEBU-M8G4-K-5-LE4
M8x1, angled socket				
	4	2.5	541344	NEBU-M8W4-K-2.5-LE4
		5	541345	NEBU-M8W4-K-5-LE4
Ordering data – Adapter plate			Part no.	Type
			540214	SXE3-W