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

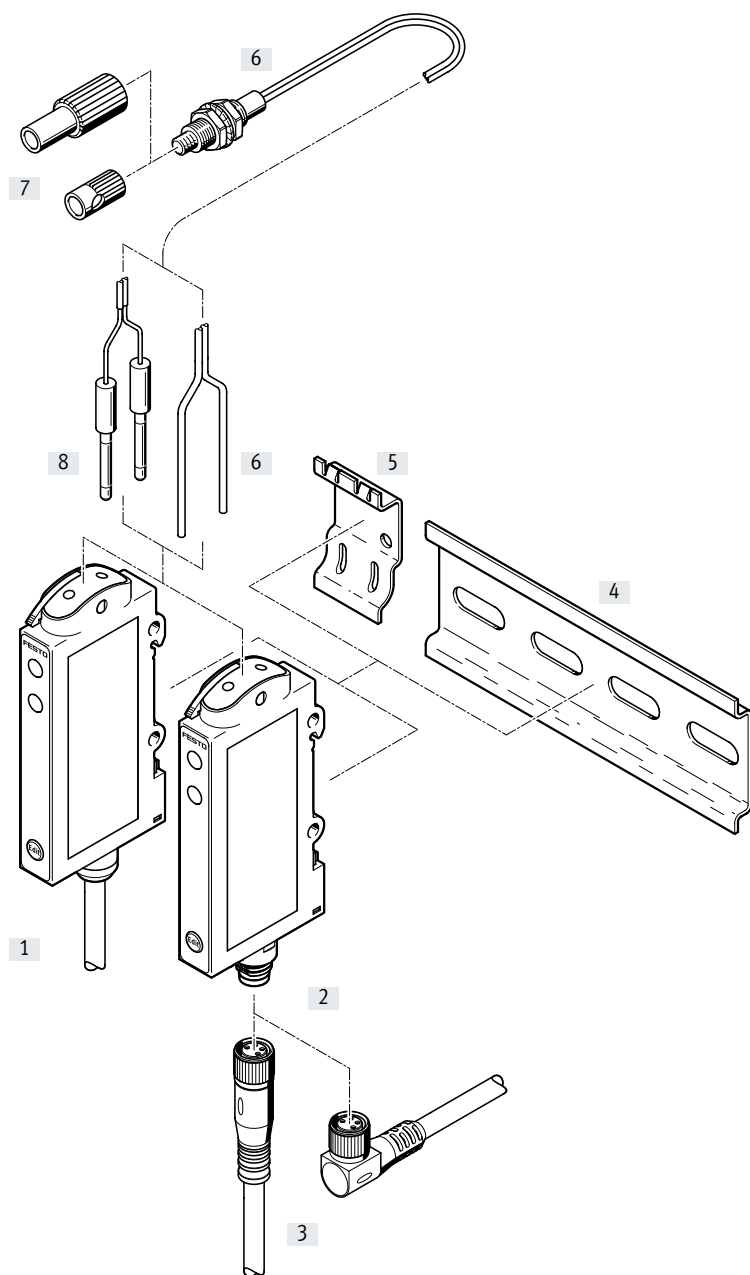- Comprehensive range of light guides

SOE4-FO-L-... with LED   SOE4-FO-D-... with LED display   Product combination SOE4, SVE4, SDE3

→ Internet: www.festo.com/catalogue/...

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%	
			High distance mode: approx. 190%	
Mutual interference	–		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		c UL us listed (OL)
		RCM compliance mark
Corrosion resistance class	CRC[2]	4
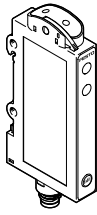
1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➜ Certificates.
   If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
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
		NPN, switchable	–	Plug M8x1, 4-pin	552800	SOE4-FO-D-HF2-1N-M8
		PNP, switchable	0 … 10 V	Cable, 5-wire	552801	SOE4-FO-D-HF2-1PU-K
		NPN, switchable	0 … 10 V	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	Flexible
Working range[1]	[mm]	140	75	130
Min. object diameter[2]	[mm]	0.1	0.1	0.1
Min. bending radius	[mm]	25	15	2
O.D.	[mm]	2.2	1.25	1.3
Head size		M6	M4	M4
Degree of protection		IP66		
Ambient temperature	[°C]	−55 ... +70		−40 ... +70
Information on materials	Housing	High-alloy stainless steel	Nickel-plated brass	High-alloy stainless steel
	Light guide	PE		
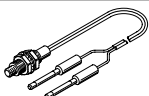
1) With SOE4-FO-L and SOE4-FO-D in standard mode
2) An attempt was made to obtain a signal at 10% of the working range using a copper wire. The smallest wire diameter that was still detected corresponds to the diameter of the smallest detectable object.

Technical data – Light guide (diffuse sensor)

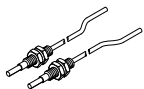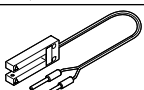| Special feature of light guide		Precision
Working range[1]	[mm]	65
Min. object diameter[2]	[mm]	0.1
Min. bending radius	[mm]	15
O.D.	[mm]	1.0
Head size		M4
Degree of protection		IP66
Ambient temperature	[°C]	−55 ... +70
Information on materials	Housing	High-alloy stainless steel
	Light guide	PE

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.

Ordering data – Light guide (diffuse sensor)

Measurement method	Special feature of light guide	O.D.[1]	Sleeve length	Length of light guide			
				1 m		2 m	
		[mm]	[mm]	Part no.	Type	Part no.	Type
	Standard	2.2	–	**552838**	**SOOC-DS-M6-1-R25**	552836	**SOOC-DS-M6-2-R25**
	Coaxial	1.25	–	–	–	552842	**SOOC-DS-C-M4-2-R15**
	Flexible	1.3	–	–	–	552843	**SOOC-DS-F-M4-2-R2**
	Precision	1	–	**552807**	**SOOC-DS-P-M4-1-R15**	552805	**SOOC-DS-P-M4-2-R15**

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)

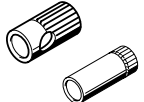| Special feature of light guide		Standard	Flexible
Working range[1]	[mm]	400	300
Min. object diameter[2]	[mm]	0.35	0.15
Min. bending radius	[mm]	25	2
O.D.	[mm]	2.2	
Head size		M4	
Degree of protection		IP66	
Ambient temperature	[°C]	−55 ... +70	−40 ... +70
Information on materials	Housing	High-alloy stainless steel	Nickel-plated brass
	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	Fork light barrier
Working range[1]	[mm]	120	5
Min. object diameter[2]	[mm]	0.2	0.2
Min. bending radius	[mm]	15	10
O.D.	[mm]	2.2	1.25
Head size		M4	41x15x7 mm
Fork pit size		–	5x29 mm
Degree of protection		IP66	
Ambient temperature	[°C]	−55 ... +70	
Information on materials	Housing	High-alloy stainless steel	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]	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**
	Flexible	2.2	**–**	**–**	**552818**	**SOOC-TB-F-M4-2-R2**
	Precision	2.2	**552825**	**SOOC-TB-P-M4-1-R15**	**552823**	**SOOC-TB-P-M4-2-R15**
	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

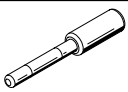|	Lens function		Degree of protection	Ambient temperature [°C]	Information on materials Housing	Part no.	Type
	Increasing working range	Factor 4[1]	IP66	−30 … +150	Nickel-plated brass	**552829**	**SASF-L1-LD-M2**
		Factor 8[1]			Anodised aluminium	**552832**	**SASF-L1-LD-M4**
	Light exit 90°				Nickel-plated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

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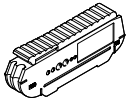2) Light spot diameter 0.7 mm at a distance of 10 mm, dependent on the light guide

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. [mm]	Suitable for light guide diameter [mm]	Degree of protection	Ambient temperature [°C]	Information on materials Housing	Part no.	Type
	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 [mm]	Radius of bending tool[1] [mm]	Ambient temperature [°C]	Information on materials Housing	Part no.	Type
	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