



**Model Number**

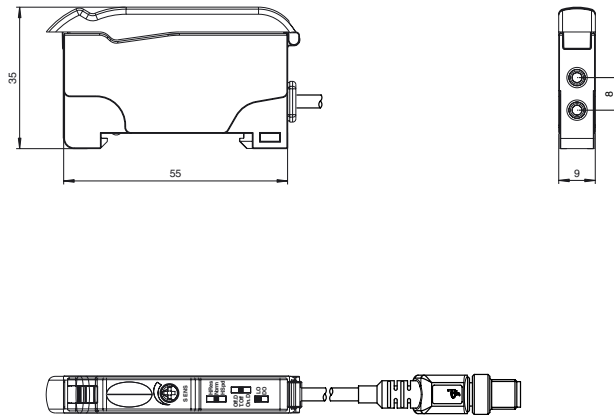
**SU18-16/40a/110/115a/126a**

Fiber optic sensor  
200 mm fixed cable with 4-pin, M8x1 connector

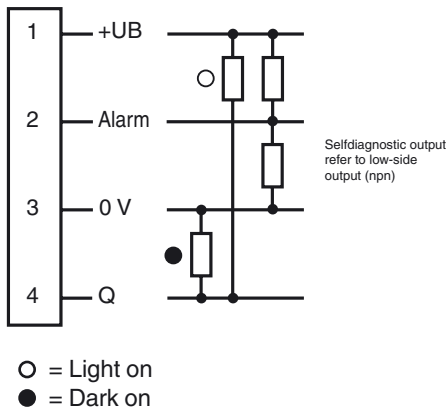
**Features**

- Basic line for DIN rail installation
- Sleek design
- 3 response times selectable
- High switching frequency
- Self diagnosis function

**Dimensions**



**Electrical connection**



**Pinout**



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**Technical data****General specifications**

Sensor range	up to 150 mm (KLR-C02-2,2-2,0-K146)
Detection range	up to 450 mm (KLE-C01-2,2-2,0-K116)
Light source	LED
Light type	modulated visible red light , 660 nm
Ambient light limit	10000 Lux

**Functional safety related parameters**

MTTF <sub>d</sub>	690 a
Mission Time (T <sub>M</sub> )	20 a
Diagnostic Coverage (DC)	0 %

**Indicators/operating means**

Operating display	LED green, statically lit Power on , Undervoltage indicator: Green LED, pulsing (approx. 0.8 Hz) , short-circuit : LED green flashing (approx. 4 Hz)
Function display	LED yellow: static illumination switching state, flashes when falling short of the stability control
Controls	Potentiometer for setting sensitivity slide switch 2 positions: light/dark switching slide switch 3 positions: timer function - timer off, on delay 40 ms, off-delay 40 ms slide switch 3 positions: operating mode - normal, high speed , high resolution

**Electrical specifications**

Operating voltage	U <sub>B</sub>	10 ... 30 V DC
Ripple		10 %
No-load supply current	I <sub>0</sub>	≤ 30 mA

**Output**

Pre-fault indication output	1 push-pull (4 in 1) output NPN/PNP , short-circuit protected	
Switching type	light/dark on, switchable	
Signal output	1 push-pull (4 in 1) output NPN/PNP , short-circuit protected	
Switching voltage	max. 30 V DC	
Switching current	max. 100 mA , resistive load	
Voltage drop	U <sub>d</sub>	≤ 2 V DC at 100 mA ; ≤ 0.7 V at 10 mA
Switching frequency	f	Standard mode: 3 kHz , High speed mode: 6 kHz , High resolution: 250 Hz
Response time		Standard mode: 160 μs , High speed mode: 80 μs , High resolution: 2 ms
Repeat accuracy	R	≤ 0.5 % of adjusted sensor range

**Ambient conditions**

Ambient temperature	-10 ... 55 °C (14 ... 131 °F)
Storage temperature	-20 ... 70 °C (-4 ... 158 °F)

**Mechanical specifications**

Protection degree	IP50
Connection	200 mm, PVC cable with M8 connector, 4-pin
Material	
Housing	PC
Mass	45 g

**Compliance with standards and directives**

Standard conformity	
Product standard	EN 60947-5-2:2007 IEC 60947-5-2:2007

**Approvals and certificates**

UL approval	cULus Listed, Class 2 Power Source, Type 1 enclosure
CCC approval	Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.

**Accessories****HPF-D032****KLR-C02-2,2-2,0-K146**

Plastic fiber optic - diffuse

**KLR-C02-2,2-2,0-K70**

Plastic fiber optic - diffuse

**KLR-C02-1,0-2,0-K75**

Plastic fiber optic - diffuse

**KLR-C09-1,25-2,0-K76**

Plastic fiber optic - diffuse

**KLR-C09-1,25-2,0-K74**

Plastic fiber optic - diffuse

**KLR-C16-2,2-2,0-K71**

Plastic fiber optic - diffuse

**KLR-A32-2,2-2,0-K83**

Plastic fiber optic - diffuse

**KHR-C02-2,2-2,0-K131**

Plastic fiber optic - diffuse

**KHTR-C02-2,2-2,0-K88**

Plastic fiber optic - diffuse

**LHR 00-0,8-1,0-20M4**

Glass fiber optic - diffuse with silicon covering

**KLE-C01-2,2-2,0-K116**

Plastic fiber optic - thru-beam

**KLE-C01-2,2-2,0-K103**

Plastic fiber optic - thru-beam

**KLE-C01-2,2-2,0-K102**

Plastic fiber optic - thru-beam

**KLE-C01-2,2-2,0-K100**

Plastic fiber optic - thru-beam

**KLE-C01-2,2-2,0-K101**

Plastic fiber optic - thru-beam

**KLE-C01-2,2-2,0-K113**

Plastic fiber optic - thru-beam

**KLE-C01-1,0-2,0-K120**

Plastic fiber optic - thru-beam

**KHE-C01-2,2-2,0-K122**

Plastic fiber optic - thru-beam

**KHTE-C01-2,2-2,0-K118**

Plastic fiber optic - thru-beam

**LHE 00-1,1-1,0-20M4**

Glass fiber optic - thru-beam with silicon covering

**Bracket SU**

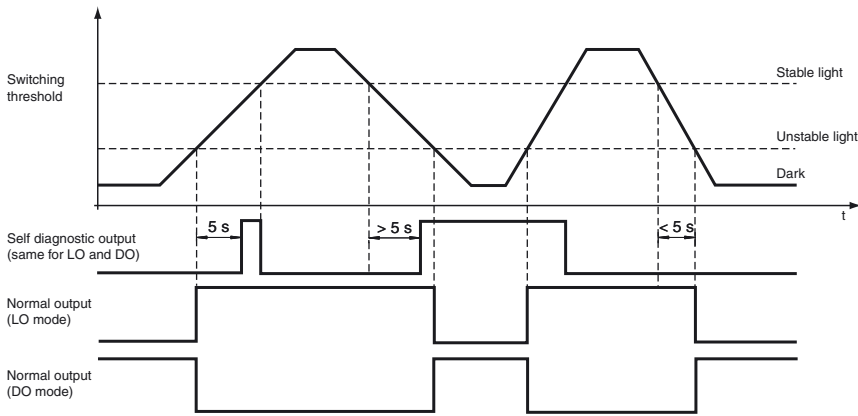
Mounting bracket for DIN rail

Other suitable accessories can be found at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

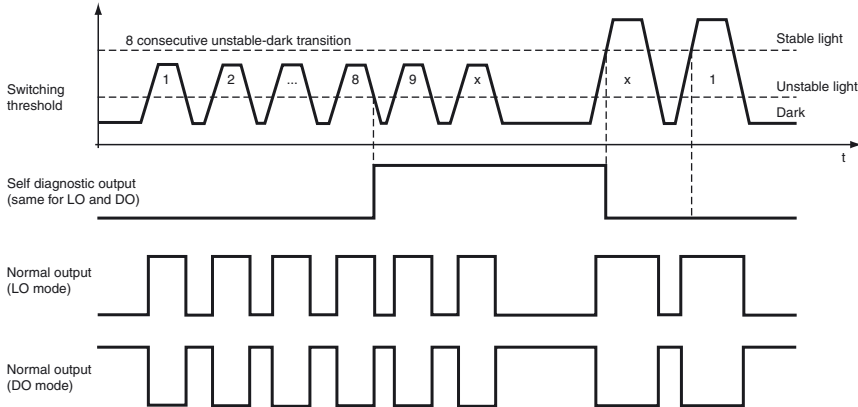
**Curves/Diagrams**

**Self-Diagnostic definition and operation:**

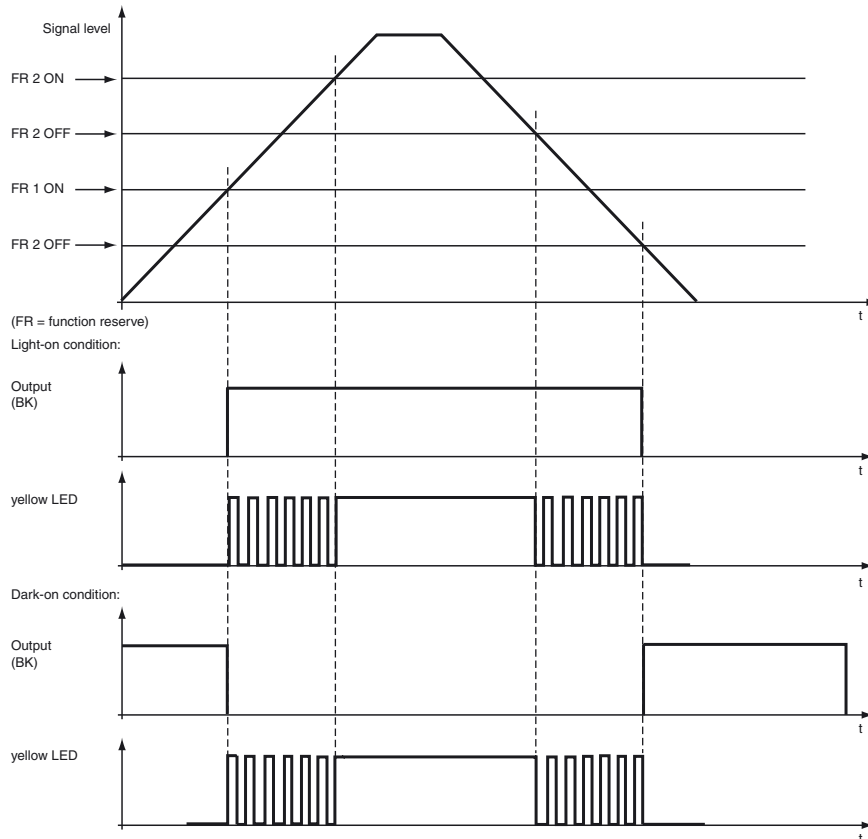
5 sec. rule for light-ON (LO) and dark-ON (DO) mode



8 cyc. rule for light-ON (LO) and dark-ON (DO) mode



**LED indicators and operating chart:**



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**Selection table - thru-beam fiber optic cable**

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Head shape	Moun-ting	Model number	Core	Detection distance	Fiber cross section	minimum Object size	Fiber optic length	Bend radius	Dimensions	Special features
<b>Highly precise</b>										
Threaded	M3	KLE-C01-1.0-2.0-K120	PMMA	20 mm	0.25 mm	0.05 mm	2 m	min. 10 mm		
Threaded	M4	KLE-C01-1.0-2.0-K119	PMMA	20 mm	0.25 mm	0.05 mm	2 m	min. 10 mm		4 x high Detection range with Auxiliary lens K-LA01/ 8 x high Detection range with Auxiliary lens K-LA06/ Side view / Periscope with K-LA02
Threaded	M3 x 0.5	KLE-C04-1.0-2.0-K104	PMMA	70 mm	4 x 0.25 mm	0.12 mm	2 m	min. 15 mm		
Cylindrical	dia. 2 mm	KLE-C01-1.0-2.0-K105	PMMA	20 mm	0.25 mm	0.05 mm	2 m	min. 10 mm		
Cylindrical	dia. 1.5 mm	KLE-C01-1.0-2.0-K107	PMMA	20 mm	0.25 mm	0.05 mm	2 m	min. 10 mm		
Cylindrical	dia. 1.5 mm	KLE-C04-1.0-2.0-K108	PMMA	70 mm	4 x 0.25 mm	0.12 mm	2 m	min. 15 mm		
Cylindrical	dia. 2 mm	KLE-C04-1.0-2.0-K106	PMMA	70 mm	4 x 0.25 mm	0.05 mm	2 m	min. 15 mm		
<b>Highly flexible</b>										
Threaded	M3	KHE-C01-1.0-2.0-K125	PMMA	50 mm	0.5 mm	0.15 mm	2 m	min. 1 mm		only 1 mm Bend radius
Threaded	M3	KHE-C01-2.2-2.0-K122	PMMA	200 mm	1 mm	0.25 mm	2 m	min. 2 mm		only 2 mm Bend radius
Threaded	M4 x 0.7 / M2.6	KHE-C01-1.0-2.0-K124	PMMA	50 mm	0.5 mm	0.15 mm	2 m	min. 1 mm		4 x high Detection range with Auxiliary lens K-LA01/ 8 x high Detection range with Auxiliary lens K-LA06 Side view / Periscope with K-LA02/ only 1 mm Bend radius
Threaded	M6	KHE-C01-2.2-2.0-K121	PMMA	200 mm	1.0 mm	0.25 mm	2 m	min. 2 mm		only 2 mm Bend radius

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Head shape	Moun-ting	Model number	Core	Detection distance	Fiber cross section	minimum Object size	Fiber optic length	Bend radius	Dimensions	Special features
Cylindrical	dia. 1.5 mm	KHE-C01-1.0-2.0-K139	PMMA	50 mm	0.5 mm	0.05 mm	2 m	min. 1 mm		only 1 mm Bend radius
Cylindrical	dia. 3 mm	KHE-C01-2.2-2.0-K126	PMMA	50 mm	0.5 mm	0.15 mm	2 m	min. 1 mm		only 1 mm Bend radius
Cylindrical	dia. 3 mm	KHE-C01-2.2-2.0-K123	PMMA	200 mm	1 mm	0.25 mm	2 m	min. 2 mm		only 2 mm Bend radius
Right angle	dia. 15 x 5	KHE-C01-2.2-2.0-K137	PMMA	35 mm	0.5 mm	0.15 mm	2 m	min. 1 mm		only 1 mm Bend radius
Right angle	dia. 15 x 5	KHE-C01-2.2-2.0-K140	PMMA	150 mm	1 mm	0.25 mm	2 m	min. 2 mm		only 2 mm Bend radius
<b>Flexible</b>										
Threaded	M3 x 0.5 /M2.6	KLE-C01-1.3-2.0-K112	PMMA	200 mm	1 mm	0.25 mm	2 m	min. 25 mm		4 x high Detection range with Auxiliary lens K-LA01/ 8 x high Detection range with Auxiliary lens K-LA06 Side view / Periscope with K-LA02
Threaded	M3 x 0.5	KLE-C01-2.2-2.0-K103	PMMA	220 mm	1 mm	0.25 mm	2 m	min. 25 mm		
Threaded	M4 x 0.7 /M2.6	KLE-C01-2.2-2.0-K102	PMMA	220 mm	1 mm	0.25 mm	2 m	min. 25 mm		4 x high Detection range with Auxiliary lens K-LA01/ 8 x high Detection range with Auxiliary lens K-LA06 Side view / Periscope with K-LA02
Threaded	M6	KLE-C01-2.2-2.0-K100	PMMA	220 mm	1 mm	0.32 mm	2 m	min. 25 mm		
Threaded	M2.6	KLE-C01-2.2-2.0-K113	PMMA	200 mm	1 mm	0.25 mm	2 m	min. 25 mm		4 x high Detection range with Auxiliary lens K-LA01/ 8 x high Detection range with Auxiliary lens K-LA06 Side view / Periscope with K-LA02
Cylindrical	dia. 2 mm	KLE-C01-1.3-2.0-K114	PMMA	220 mm	1 mm	0.25 mm	2 m	min. 25 mm		

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Head shape	Moun-ting	Model number	Core	Detection distance	Fiber cross section	minimum Object size	Fiber optic length	Bend radius	Dimensions	Special features
Cylindrical	dia. 5 mm	KLE-C01-2.2-2.0-K101	PMMA	220 mm	1 mm	0.32 mm	2 m	min. 25 mm		
<b>Bendable tip</b>										
Threaded	M4	KLE 00-2.2-2.0-K55	PMMA	228 mm	1 mm		2 m	min. 25 mm		
<b>High detection range</b>										
Threaded	M3	KLE-C01-2.2-2.0-K116	PMMA	450 mm	1.5 mm	0.35 mm	2 m	min. 40 mm		
Threaded	M6	KLE-C01-2.2-2.0-K115	PMMA	450 mm	1.5 mm	0.35 mm	2 m	min. 40 mm		
Threaded	M8 x 1	FEF-PLT1	PMMA	6000 mm calculated value related on 2 m Fiber optic length	1 mm		1 m	min. 25 mm		Narrow beam
Threaded	M8 x 1	FEF-PLT1-L2	PMMA	6000 mm calculated value related on 2 m Fiber optic length	1 mm		2 m	min. 25 mm		Narrow beam
Threaded	M8 x 1	FEF-PLT1-L5	PMMA	6000 mm calculated value related on 2 m Fiber optic length	1 mm		4 m	min. 25 mm		Narrow beam
Cylindrical	dia. 3 mm	KLE-C01-2.2-2.0-K117	PMMA	400 mm	1.5 mm	0.35 mm	2 m	min. 25 mm		
<b>Side view / Periscope</b>										
Cylindrical	dia. 4.75 mm	KHE-C01-2.2-2.0-K136	PMMA	50 mm	0.5 mm	0.15 mm	2 m	min. 1 mm		only 1 mm Bend radius
<b>Array</b>										
Rectangular	3 x M2 x 0.5	KLE-A16-2.2-2.0-K109	PMMA	100 mm	16 x 0.25 mm	0.05 mm	2 m	min. 25 mm		
Rectangular	3 x M3 x 0.5	KLE-A16-2.2-2.0-K110	PMMA	100 mm	16 x 0.25 mm	0.05 mm	2 m	min. 25 mm		

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Head shape	Mounting	Model number	Core	Detection distance	Fiber cross section	minimum Object size	Fiber optic length	Bend radius	Dimensions	Special features
Rectangular	3 x M3 x 0.5	KLE-A16-2.2-2.0-K111	PMMA	100 mm	16 x 0.25 mm	0.05 mm	2 m	min. 25 mm		
Rectangular	2 x 3.2 mm	KLE-A32-2.2-2.0-K142	PMMA	35 mm	32 x 0.25 mm		2 m	min. 25 mm		
<b>High temperature resistance</b>										
Cylindrical	dia. 3 mm	KHTE-C01-2.2-2.0-K118	PMMA	115 mm	1 mm	0.35 mm	2 m	min. 25 mm		-55°C ... +115 °C
<b>Sturdy design</b>										
Threaded	M3	LHE 00-1.1-1.0-14M3	glass	195 mm	1.1 mm		1 m	4 mm static		-40°C ... +180 °C
Threaded	M4 x 0.7 /M2.6	LHE 00-1.1-1.0-20M4	glass	195 mm	1.1 mm		1 m	4 mm static		4 x high Detection range with Auxiliary lens K-LA01/ 8 x high Detection range with Auxiliary lens K-LA06 Side view / Periscope with K-LA02/ -40°C ... +180 °C
Threaded	M6	LHE 00-1.1-1.0-G	glass	195 mm	1.1 mm		1 m	4 mm static		-40°C ... +180 °C
Cylindrical	dia. 1.5 mm	LHE 00-1.1-1.0-10C1.5	glass	195 mm	1.1 mm		1 m	4 mm static		-40°C ... +180 °C
Cylindrical	dia. 3 mm	LHE 00-1.1-1.0-15C3	glass	195 mm	1.1 mm		1 m	4 mm static		-40°C ... +180 °C
Right angle	Bar 3 mm	LHE 00-1.1-1.0-WC3	glass	195 mm	1.1 mm		1 m	4 mm static		-40°C ... +180 °C
Right angle	Bar 10 mm	LHE 00-1.1-1.0-K9	glass	195 mm	1.1 mm		1 m	4 mm static		-40°C ... +180 °C
<b>Special design</b>										
Rectangular	2 x 2.2 mm	KHE-A01-1.0-2.0-K138	PMMA	25 mm	0.5 mm	0.05 mm	2 m	min. 1 mm		only 1 mm Bend radius

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Head shape	Mounting	Model number	Core	Detection distance	Fiber cross section	minimum Object size	Fiber optic length	Bend radius	Dimensions	Special features
Slot	2 x 3.2 mm	KLE-C02-1.25-2.0-K134	PMMA	5 mm	2 x 0.25 mm		2 m	min. 10 mm		
Slot	2 x 3.2 mm	KLE-C02-1.25-2.0-K135	PMMA	10 mm	2 x 0.25 mm		2 m	min. 10 mm		

**Selection table - diffuse mode fiber optic cable**

Head shape	Mounting	Model number	Core	Detection distance	Fiber cross-section	Fiber optic length	Bend radius	Dimensions	Special features	
<b>Highly precise</b>										
Threaded	M3 x 0.5	KLR-C02-1.0-2.0-K75	PMMA	4 mm	2 x 0.25 mm	2 m	min. 10 mm			
Threaded	M4 x 0.7	KLR-C02-1.0-2.0-K73	PMMA	4 mm	2 x 0.25 mm	2 m	min. 10 mm			
Threaded	M3 x 0.5	KLR-C04-1.25-2.0-K78	PMMA	8 mm	4 x 0.25 mm	2 m	min. 15 mm			
Cylindrical	dia. 2.0 mm	KLR-C02-1.0-2.0-K91	PMMA	4 mm	2 x 0.25 mm	2 m	min. 10 mm			
Cylindrical	dia. 3.0 mm	KLR-C02-1.0-2.0-K90	PMMA	4 mm	2 x 0.25 mm	2 m	min. 10 mm			
Cylindrical	dia. 1.5 mm	KLR-C04-1.25-2.0-K80	PMMA	8 mm	4 x 0.25 mm	2 m	min. 15 mm			
Cylindrical	dia. 1.5 mm	KLR-C04-1.0-2.0-K133	PMMA	7 mm	4 x 0.25 mm	2 m	min. 15 mm			
Cylindrical	dia. 2.0 mm	KLR-C02-1.0-2.0-K87	PMMA	25 mm	2 x 0.5 mm	2 m	min. 15 mm			

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Head shape	Mounting	Model number	Core	Detection distance	Fiber cross-section	Fiber optic length	Bend radius	Dimensions	Special features
Cylindrical	dia. 3.0 mm	KLR-C04-1.25-2.0-K79	PMMA	8 mm	4 x 0.25 mm	2 m	min. 15 mm		
<b>Coaxial</b>									
Threaded	M3 x 0.5	KLR-C09-1.25-2.0-K76	PMMA	30 mm	1 x 0.5 mm Emitter 9 x 0.25 mm Receiver	2 m	min. 15 mm		only 0.5 mm light spot at 8 mm with auxiliary lens K-LA03
Threaded	M4 x 0.7 /M2.6	KLR-C09-1.25-2.0-K74	PMMA	30 mm	1 x 0.5 mm Emitter 9 x 0.25 mm Receiver	2 m	min. 15 mm		only 0.7 mm light spot at 10 mm with auxiliary lens K-LA04/ 2 x high Detection range with Auxiliary lens K-LA01/ 3 x high Detection range with Auxiliary lens K-LA06
Threaded	M6 x 0.75	KLR-C16-2.2-2.0-K71	PMMA	85 mm	1 x 1.0 mm Emitter 16 x 0.25 mm Receiver	2 m	min. 25 mm		
Cylindrical	dia. 1.0 mm	KLR-C06-1.25-2.0-K81	PMMA	20 mm	1 x 0.25 mm Emitter 6 x 0.25 mm Receiver	2 m	min. 15 mm		
Cylindrical	dia. 3.0 mm	KLR-C09-1.25-2.0-K77	PMMA	30 mm	1 x 0.5 mm Emitter 9 x 0.25 mm Receiver	2 m	min. 15 mm		
Cylindrical	dia. 5.0 mm	KLR-C16-2.2-2.0-K72	PMMA	85 mm	1 x 1.0 mm Emitter 16 x 0.25 mm Receiver	2 m	min. 25 mm		
<b>Highly flexible</b>									
Threaded	M3	KHR-C02-1.0-2.0-K96	PMMA	12 mm	2 x 0.5 mm	2 m	min. 1 mm		
Threaded	M4	KHR-C02-1.0-2.0-K95	PMMA	12 mm	2 x 0.5 mm	2 m	min. 1 mm		
Threaded	M4	KHR-C02-1.3-2.0-K92	PMMA	60 mm	2 x 1.0 mm	2 m	min. 2 mm		
Threaded	M6	KHR-C02-2.2-2.0-K94	PMMA	12 mm	2 x 0.5 mm	2 m	min. 1 mm		

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Head shape	Mounting	Model number	Core	Detection distance	Fiber cross-section	Fiber optic length	Bend radius	Dimensions	Special features
Cylindrical	dia. 3.0 mm	KHR-C02-1.3-2.0-K93	PMMA	60 mm	2 x 1.0 mm	2 m	min. 2 mm		
<b>Flexible</b>									
Threaded	M6 x 0.75	KLR-C02-2.2-2.0-K70	PMMA	80 mm	2 x 1.0 mm	2 m	min. 25 mm		
Cylindrical	dia. 3.0 mm	KLR-C02-1.3-2.0-K86	PMMA	80 mm	2 x 1.0 mm	2 m	min. 25 mm		
Cylindrical	dia. 5.0 mm	KLR-C02-2.2-2.0-K85	PMMA	80 mm	2 x 1.0 mm	2 m	min. 25 mm		
<b>Bendable tip</b>									
Threaded	M3 x 0.5	KLR 00-1.0-2.0-K58	PMMA	20 mm		2 m	min. 15 mm		
Threaded	M6	KLR 00-2.2-2.0-K57	PMMA	60 mm		2 m	min. 15 mm		
<b>High detection range</b>									
Threaded		KLR-C02-2.2-2.0-K146	PMMA	150 mm		2 m	mind. 40 mm		
Threaded		KLR-C10-1,25-2,0-K144	PMMA	30 mm		2 m	mind. 15 mm		
<b>Side view / Periscope</b>									
Threaded	M6	KHR-C02-2.2-2.0-K131	PMMA	60 mm	2 x 1.0 mm	2 m	min. 2 mm		only 2 mm Bend radius
Threaded	dia. 5.0 mm	KHR-C02-1.0-2.0-K132	PMMA	15 mm	2 x 0.5 mm	2 m	min. 1 mm		only 1 mm Bend radius
<b>Array</b>									
Rectangular	3 x M2 x 0.5	KLR-A18-1.3-2.0-K82	PMMA	25 mm	18 x 0.25 m m	2 m	min. 25 mm		

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Head shape	Mounting	Model number	Core	Detection distance	Fiber cross-section	Fiber optic length	Bend radius	Dimensions	Special features
Rectangular	3 x M3 x 0.5	KLR-A32-2.2-2.0-K83	PMMA	35 mm	10.85 mm	2 m	min. 25 mm		
Rectangular	2 x 3.2 mm	KLR-A32-2.2-2.0-K141	PMMA	35 mm	16 x 0.25 mm	2 m	mind. 25 mm		
<b>High temperature resistance</b>									
Threaded	M6	KHTR-C02-2.2-2.0-K88	PMMA	80 mm	2 x 1.0 mm	2 m	min. 25 mm		-55°C ... +115°C
Cylindrical	dia. 5.0 mm	KHTR-C02-2.2-2.0-K89	PMMA	80 mm	2 x 1.0 mm	2 m	min. 25 mm		-55°C ... +115°C
<b>Sturdy design</b>									
Threaded	M3 x 0.5	LHR 00-0.8-1.0-14M3	glass	40 mm	0.8 mm	1 m	4 mm static		-40°C ... +180°C
Threaded	M4 x 0.7	LHR 00-0.8-1.0-20M4	glass	40 mm	0.8 mm	1 m	4 mm static		-40°C ... +180°C
Threaded	M6	LHR 00-1.1-1.0-G	glass	70 mm	1.1 mm	1 m	4 mm static		-40°C ... +180°C
Cylindrical	dia. 3 mm	LHR 00-1.1-1.0-Z1	glass	70 mm	1.1 mm	1 m	4 mm static		-40°C ... +180°C
Cylindrical	dia. 4.5 mm	LHR 00-1.1-1.0-K1	glass	70 mm	1.1 mm	1 m	4 mm static		-40°C ... +180°C
Right angle	10 mm Bar	LHR 00-1.1-1.0-K9	glass	70 mm	1.1 mm	1 m	4 mm static		-40°C ... +180°C
<b>Special design</b>									
Rectangular		KHR-C02-1.0-2.0-K129	PMMA	5 ~ 10 mm	2 x 0.5 mm	2 m	min. 1 mm		<b>crossed beam to background blanking</b> <b>only 1 mm Bend radius</b>

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Subject to modifications without notice

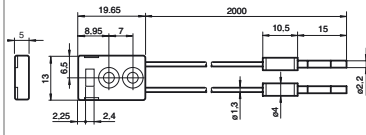
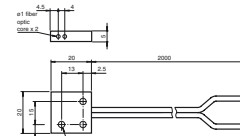
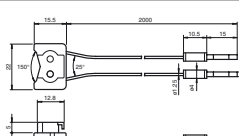
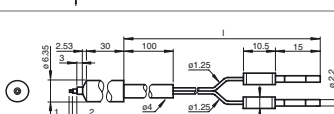
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Head shape	Mounting	Model number	Core	Detection distance	Fiber cross-section	Fiber optic length	Bend radius	Dimensions	Special features
Rectangular		KLR-C02-1.3-2.0-K130	PMMA	1 ~ 8 mm	2 x 1.0 mm	2 m	min. 25 mm		crossed beam to background blanking
Rectangular	3 x M3 x 0.5	KHR-A02-2.2-2.0-K127	PMMA	50 mm	2 x 1.0 mm	2 m	min. 2 mm		only 2 mm Bend radius
Rectangular		KLR-C02-1.25-2.0-K128	PMMA	4~26 mm	2 x 0.5 mm	2 m	min. 15 mm		Level measurement
Cylindrical		KLR-C02-1,25-2,0-K147	PMMA			2 m	mind. 40 mm		Fluid detection