



Model Number

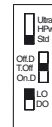
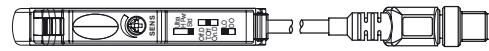
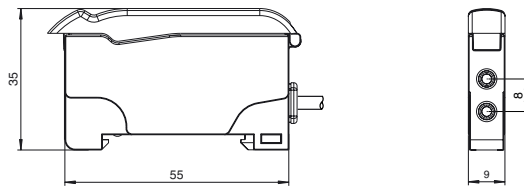
SU18/16/35/40a/110/115a/126a

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

Features

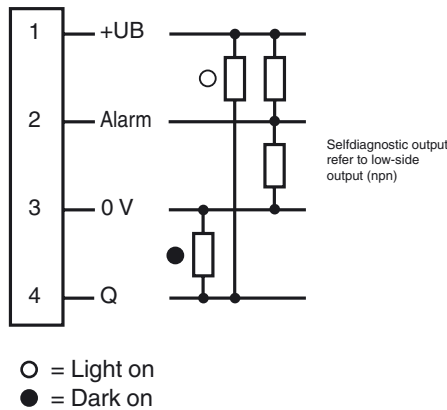
- Basic line for DIN rail installation
- High power version
- Sleek design
- 3 response times selectable
- Protected against mutual interference (no cross-talk)
- Self diagnosis function

Dimensions



Ultra = Ultra
HPwr = High-Power
Std = Standard
Off.D = Off Delay
T.Off = Timer off
On.D = On Delay
LO = Light on
DO = Dark on

Electrical connection



Pinout



Release date: 2014-05-13 14:02 Date of issue: 2014-05-13 808701_eng.xml

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Technical data**General specifications**

Sensor range	up to 460 mm (KLR-C02-2,2-2,0-K146)
Detection range	up to 1500 mm (KLE-C01-2,2-2,0-K116)
Light source	LED
Light type	modulated visible red light , 640 nm
Ambient light limit	10000 Lux

Functional safety related parameters

MTTF _d	690 a
Mission Time (T _M)	20 a
Diagnostic Coverage (DC)	0 %

Indicators/operating means

Operation indicator	LED green, statically lit Power on , Undervoltage indicator: Green LED, pulsing (approx. 0.8 Hz) , short-circuit : LED green flashing (approx. 4 Hz)
Function indicator	LED yellow: static illumination switching state, flashes when falling short of the stability control
Control elements	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 - Standard, High Power, Ultra

Electrical specifications

Operating voltage	U _B	10 ... 30 V DC
Ripple		10 %
No-load supply current	I ₀	≤ 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 _d	≤ 2 V DC at 100 mA ; ≤ 0.7 V at 10 mA
Switching frequency	f	Standard mode: 3 kHz , High power mode: 1 kHz , Ultra mode: 100 Hz
Response time		Standard mode: 160 μs , High power mode: 500 μs , Ultra mode: 5 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

Degree of protection	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	CCC approval / marking not required for products rated ≤36 V

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

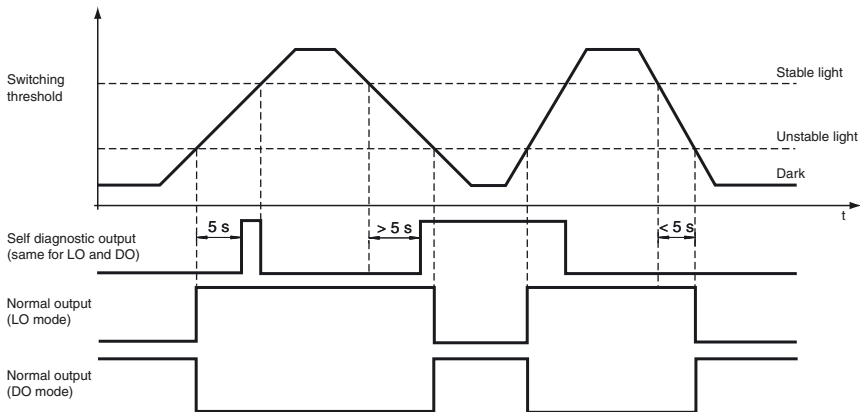
Bracket SU
Mounting bracket for DIN rail

Other suitable accessories can be found at
www.pepperl-fuchs.com

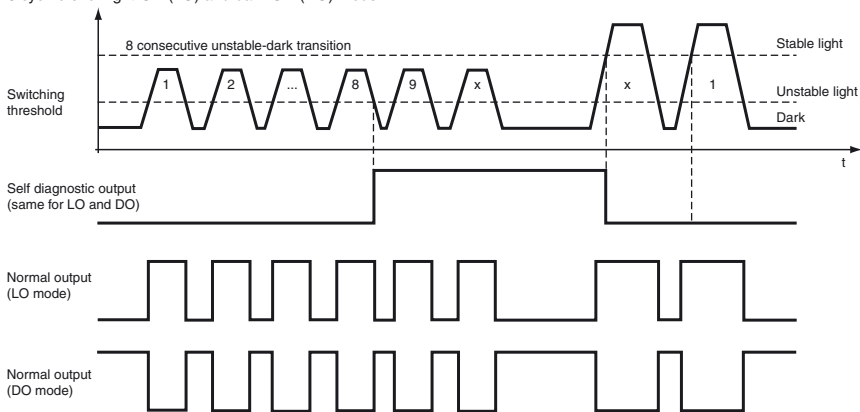
Curves/Diagrams

Self-Diagnostic definition and operation:

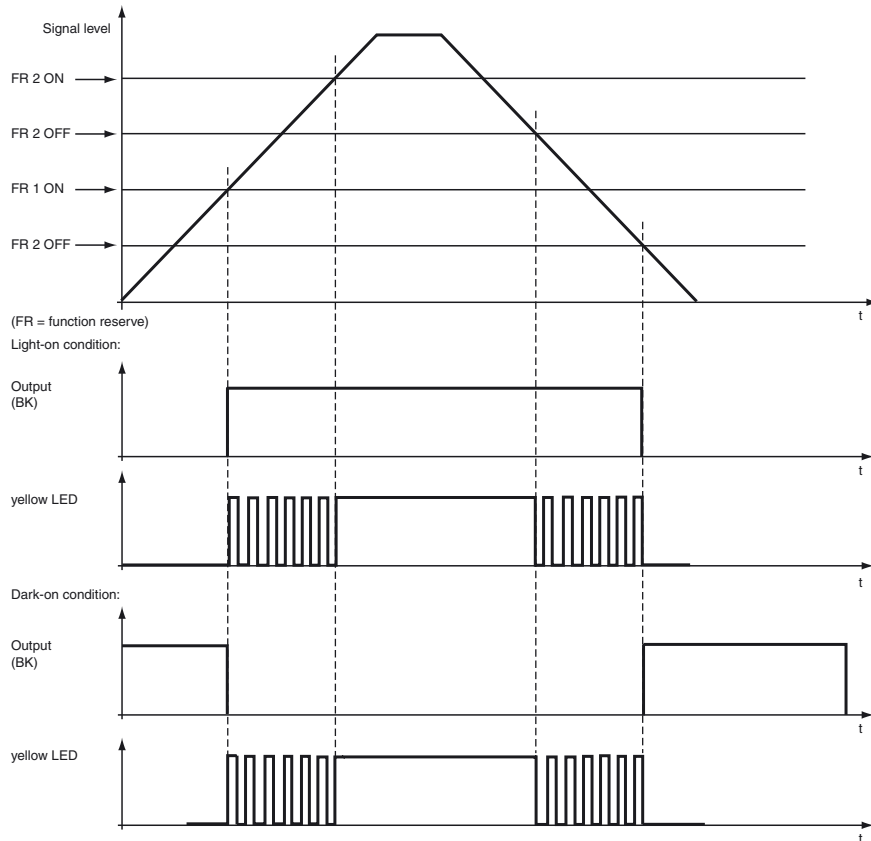
5 sec. rule for light-ON (LO) and dark-ON (DO) mode



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



LED indicators and operating chart:



Release date: 2014-05-13 14:02 Date of issue: 2014-05-13 808701_eng.xml

Indications

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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
Threaded	M2.6	KLE-C01-2.2-2.0-K113	PMMA	Ultra: 800 mm HiPwr: 480 mm Std: 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	Ultra: 920 mm HiPwr: 520 mm Std: 220 mm	1 mm	0.25 mm	2 m	min. 25 mm		
Cylindrical	dia. 5 mm	KLE-C01-2.2-2.0-K101	PMMA	Ultra: 920 mm HiPwr: 520 mm Std: 220 mm	1 mm	0.32 mm	2 m	min. 25 mm		
Bendable tip										
Threaded	M4	KLE 00-2.2-2.0-K55	PMMA	Ultra: 872 mm HiPwr: 500 mm Std: 228 mm	1 mm		2 m	min. 25 mm		
High detection range										
Threaded	M3	KLE-C01-2.2-2.0-K116	PMMA	Ultra: 1500 mm HiPwr: 950 mm Std: 450 mm	1.5 mm	0.35 mm	2 m	min. 40 mm		
Threaded	M6	KLE-C01-2.2-2.0-K115	PMMA	Ultra: 1500 mm HiPwr: 950 mm Std: 450 mm	1.5 mm	0.35 mm	2 m	min. 40 mm		
Threaded	M8 x 1	FEF-PLT1	PMMA	Ultra: 25620 mm HiPwr: 15070 mm Std: 6000 mm calculated values related on 2 m Fiber optic length	1 mm		1 m	min. 25 mm		Narrow beam
Threaded	M8 x 1	FEF-PLT1-L2	PMMA	Ultra: 25620 mm HiPwr: 15070 mm Std: 6000 mm calculated values related on 2 m Fiber optic length	1 mm		2 m	min. 25 mm		Narrow beam
Threaded	M8 x 1	FEF-PLT1-L5	PMMA	Ultra: 25620 mm HiPwr: 15070 mm Std: 6000 mm calculated values 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	Ultra: 1360 mm HiPwr: 820 mm Std: 400 mm	1.5 mm	0.35 mm	2 m	min. 25 mm		
Side view / Periscope										
Cylindrical	dia. 4.75 mm	KHE-C01-2.2-2.0-K136	PMMA	Ultra: 200 mm HiPwr: 110 mm Std: 50 mm	0.5 mm	0.15 mm	2 m	min. 1 mm		only 1 mm Bend radius

Release date: 2014-05-13 14:02 Date of issue: 2014-05-13 808701_eng.xml

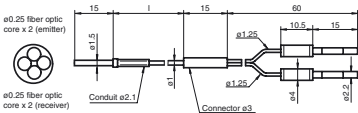
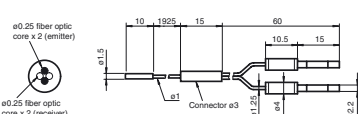
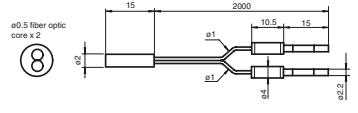
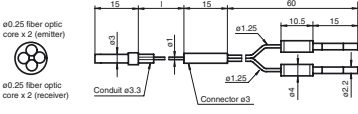
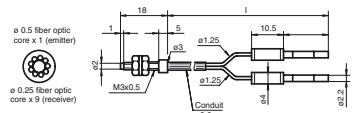
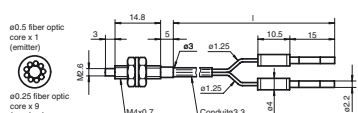
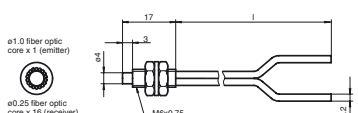
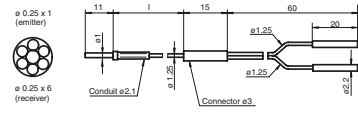
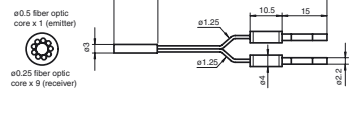
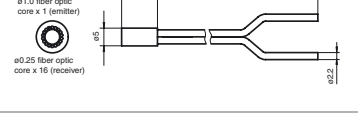
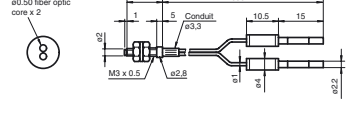
Head shape	Moun-ting	Model number	Core	Detection distance *	Fiber cross section	minimum Object size	Fiber optic length	Bend radius	Dimensions	Special features
Right angle	Bar 10 mm	LHE 00-1.1-1.0-K9	glass	Ultra: 710 mm HiPwr: 420 mm Std: 195 mm	1.1 mm		1 m	4 mm static		- 40°C ... + 180 °C
Special design										
Rectangular	2 x 2.2 mm	KHE-A01-1.0-2.0-K138	PMMA	Ultra: 100 mm HiPwr: 60 mm Std: 25 mm	0.5 mm	0.05 mm	2 m	min. 1 mm		only 1 mm Bend radius
Slot	2 x 3.2 mm	KLE-C02-1.25-2.0-K134	PMMA	5 mm	2 x 0.25 m		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 m		2 m	min. 10 mm		

	Std: Standard Mode, 160 µs HiPwr: HighPower Mode, 500 µs Ultra: Ultra Mode, 5 ms
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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	
Highly precise										
Threaded	M3 x 0.5	KLR-C02-1.0-2.0-K75	PMMA	Ultra: 12 mm HiPwr: 6 mm Std: 4 mm	2 x 0.25 m	2 m	min. 10 mm			
Threaded	M4 x 0.7	KLR-C02-1.0-2.0-K73	PMMA	Ultra: 12 mm HiPwr: 6 mm Std: 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	Ultra: 25 mm HiPwr: 18 mm Std: 8 mm	4 x 0.25 m	2 m	min. 15 mm			
Cylindrical	dia. 2.0 mm	KLR-C02-1.0-2.0-K91	PMMA	Ultra: 12 mm HiPwr: 6 mm Std: 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	Ultra: 12 mm HiPwr: 6 mm Std: 4 mm	2 x 0.25 mm	2 m	min. 10 mm			

Release date: 2014-05-13 14:02 Date of issue: 2014-05-13 808701_eng.xml

Head shape	Mounting	Model number	Core	Detection distance *	Fiber cross-section	Fiber optic length	Bend radius	Dimensions	Special features
Cylindrical	dia. 1.5 mm	KLR-C04-1.25-2.0-K80	PMMA	Ultra: 25 mm HiPwr: 18 mm Std: 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	Ultra: 25 mm HiPwr: 18 mm Std: 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	Ultra: 85 mm HiPwr: 52 mm Std: 25 mm	2 x 0.5 mm	2 m	min. 15 mm		
Cylindrical	dia. 3.0 mm	KLR-C04-1.25-2.0-K79	PMMA	Ultra: 25 mm HiPwr: 18 mm Std: 8 mm	4 x 0.25 mm	2 m	min. 15 mm		
Coaxial									
Threaded	M3 x 0.5	KLR-C09-1.25-2.0-K76	PMMA	Ultra: 100 mm HiPwr: 60 mm Std: 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	Ultra: 100 mm HiPwr: 60 mm Std: 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	Ultra: 300 mm HiPwr: 190 mm Std: 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	Ultra: 70 mm HiPwr: 45 mm Std: 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	Ultra: 110 mm HiPwr: 60 mm Std: 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	Ultra: 300 mm HiPwr: 190 mm Std: 85 mm	1 x 1.0 mm Emitter 16 x 0.25 mm Receiver	2 m	min. 25 mm		
Highly flexible									
Threaded	M3	KHR-C02-1.0-2.0-K96	PMMA	Ultra: 40 mm HiPwr: 25 mm Std: 12 mm	2 x 0.5 mm	2 m	min. 1 mm		

Release date: 2014-05-13 14:02 Date of issue: 2014-05-13 808701_eng.xml

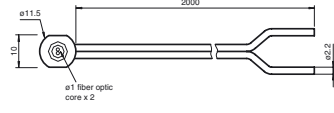
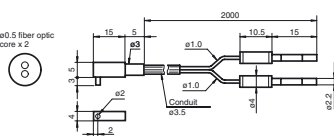
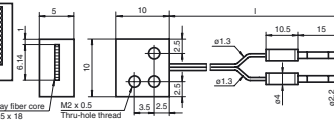
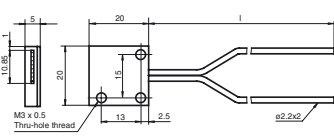
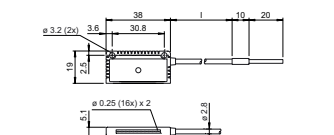
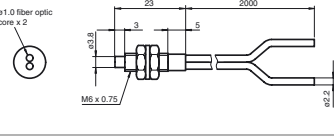
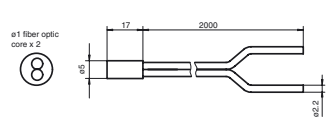
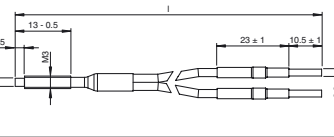
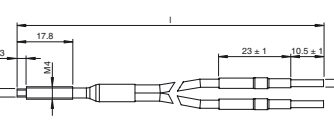
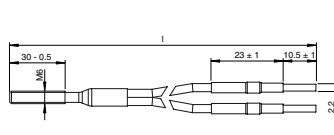
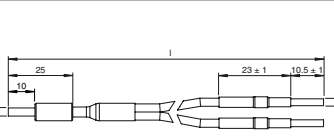
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Head shape	Mounting	Model number	Core	Detection distance *	Fiber cross-section	Fiber optic length	Bend radius	Dimensions	Special features
Threaded	M6	KHR-C02-2.2-2.0-K131	PMMA	Ultra: 210 mm HiPwr: 135 mm Std: 60 mm	2 x 1.0 mm	2 m	min. 2 mm		only 2 mm Bend radius
Threaded	dia. 5.0 mm	KHR-C02-1.0-2.0-K132	PMMA	Ultra: 52 mm HiPwr: 33 mm Std: 15 mm	2 x 0.5 mm	2 m	min. 1 mm		only 1 mm Bend radius
Array									
Rectangular	3 x M2 x 0.5	KLR-A18-1.3-2.0-K82	PMMA	Ultra: 86 mm HiPwr: 55 mm Std: 25 mm	18 x 0.25 mm	2 m	min. 25 mm		
Rectangular	3 x M3 x 0.5	KLR-A32-2.2-2.0-K83	PMMA	Ultra: 120 mm HiPwr: 78 mm Std: 35 mm	10.85 mm	2 m	min. 25 mm		
Rectangular	2 x 3.2 mm	KLR-A32-2.2-2.0-K141	PMMA	Ultra: 120 mm HiPwr: 78 mm Std: 35 mm	16 x 0.25 mm	2 m	min. 25 mm		
High temperature resistance									
Threaded	M6	KHTR-C02-2.2-2.0-K88	PMMA	Ultra: 280 mm HiPwr: 180 mm Std: 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	Ultra: 280 mm HiPwr: 180 mm Std: 80 mm	2 x 1.0 mm	2 m	min. 25 mm		-55°C ... +115°C
Sturdy design									
Threaded	M3 x 0.5	LHR 00-0.8-1.0-14M3	glass	Ultra: 195 mm HiPwr: 100 mm Std: 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	Ultra: 195 mm HiPwr: 100 mm Std: 40 mm	0.8 mm	1 m	4 mm static		-40°C ... +180°C
Threaded	M6	LHR 00-1.1-1.0-G	glass	Ultra: 230 mm HiPwr: 156 mm Std: 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	Ultra: 230 mm HiPwr: 156 mm Std: 70 mm	1.1 mm	1 m	4 mm static		-40°C ... +180°C

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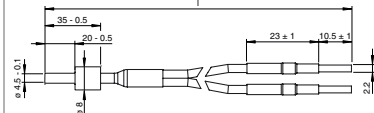
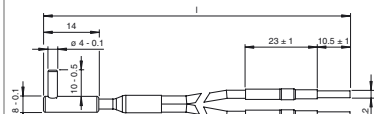
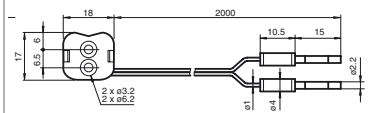
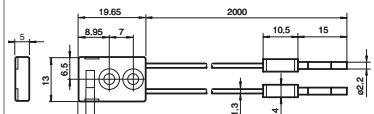
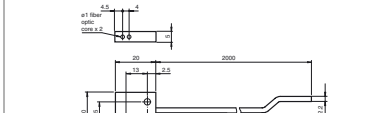
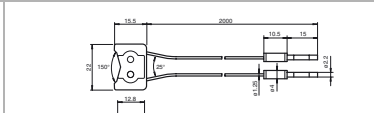
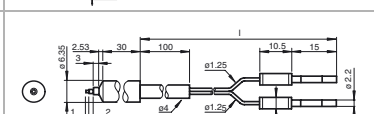
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".


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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. 4.5 mm	LHR 00-1.1-1.0-K1	glass	Ultra: 230 mm HiPwr: 156 mm Std: 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	Ultra: 230 mm HiPwr: 156 mm Std: 70 mm	1.1 mm	1 m	4 mm static		- 40°C ... + 180°C
Special design									
Rectangular		KHR-C02-1.0-2.0-K129	PMMA	5 ~ 10 mm	2 x 0.5 mm	2 m	min. 1 mm		crossed beam to background blanking only 1 mm Bend radius
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	Ultra: 175 mm HiPwr: 112 mm Std: 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

	Std: Standard Mode, 160 µs HiPwr: HighPower Mode, 500 µs Ultra: Ultra Mode, 5 ms
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