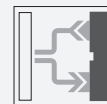




Fiber optic sensor SU18/16/35/40a/110/115/126a

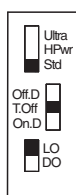
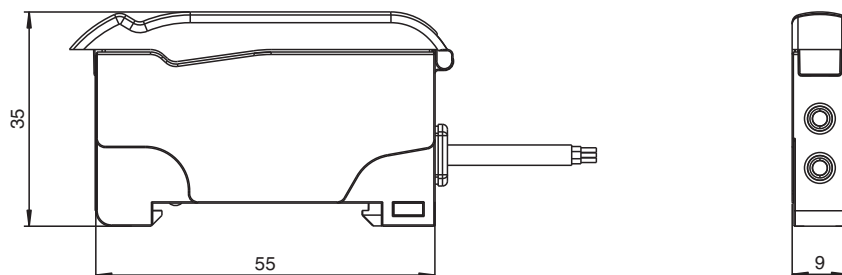


- Basic line for DIN rail installation
- High power version
- Sleek design
- 3 response times selectable
- Protected against mutual interference (no cross-talk)
- Self diagnosis function

Fiber optic sensor for glass fiber optics and plastic fiber optics



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

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 %

Technical Data

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 operating reserve
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

Stability alarm 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

Conformity

Product standard	EN 60947-5-2
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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

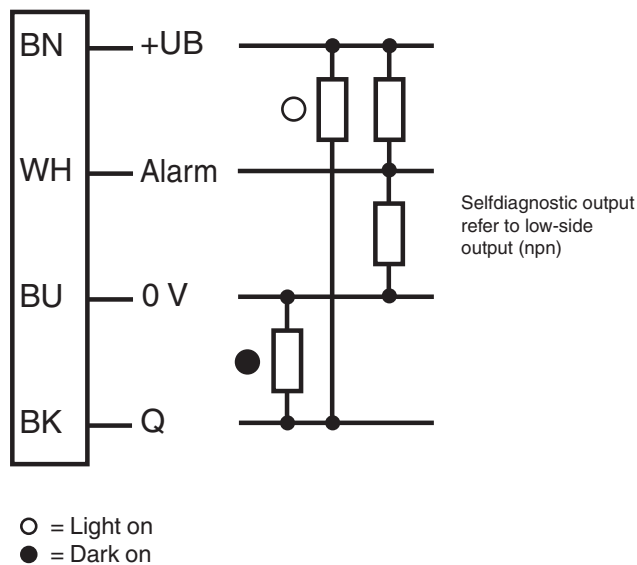
Ambient conditions

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

Mechanical specifications

Housing width	9 mm
Housing height	34.5 mm
Housing depth	62.3 mm
Degree of protection	IP50
Connection	2 m PVC cable, 4 x 0,14 mm ²
Material	
Housing	PC
Mass	45 g

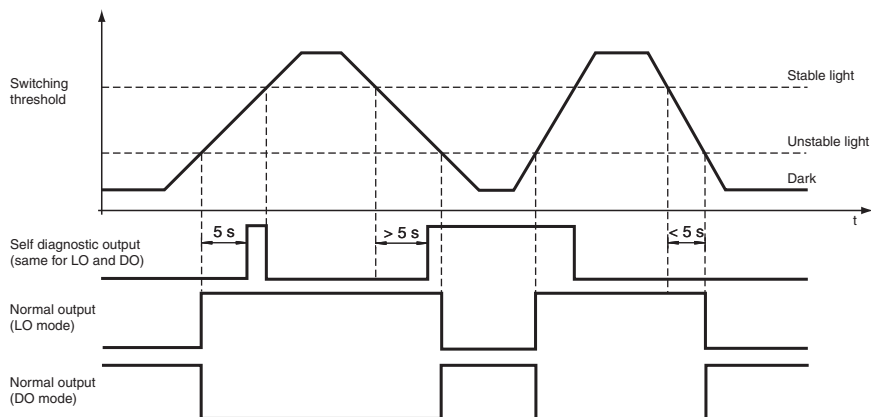
Connection Assignment



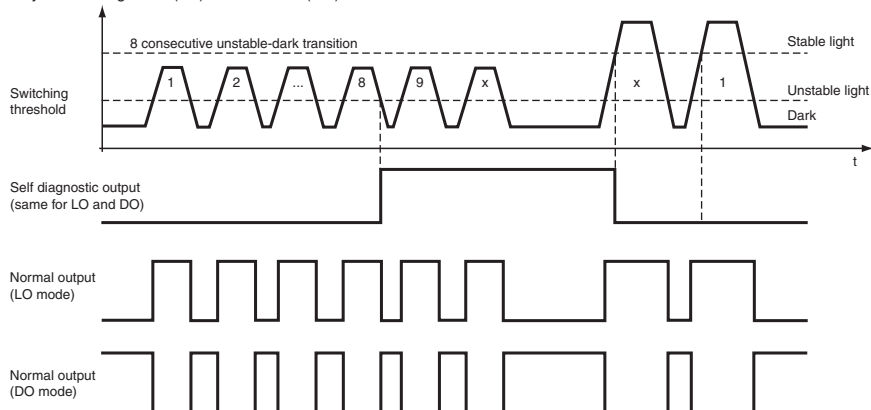
Characteristic Curve

Self-Diagnostic definition and operation:

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

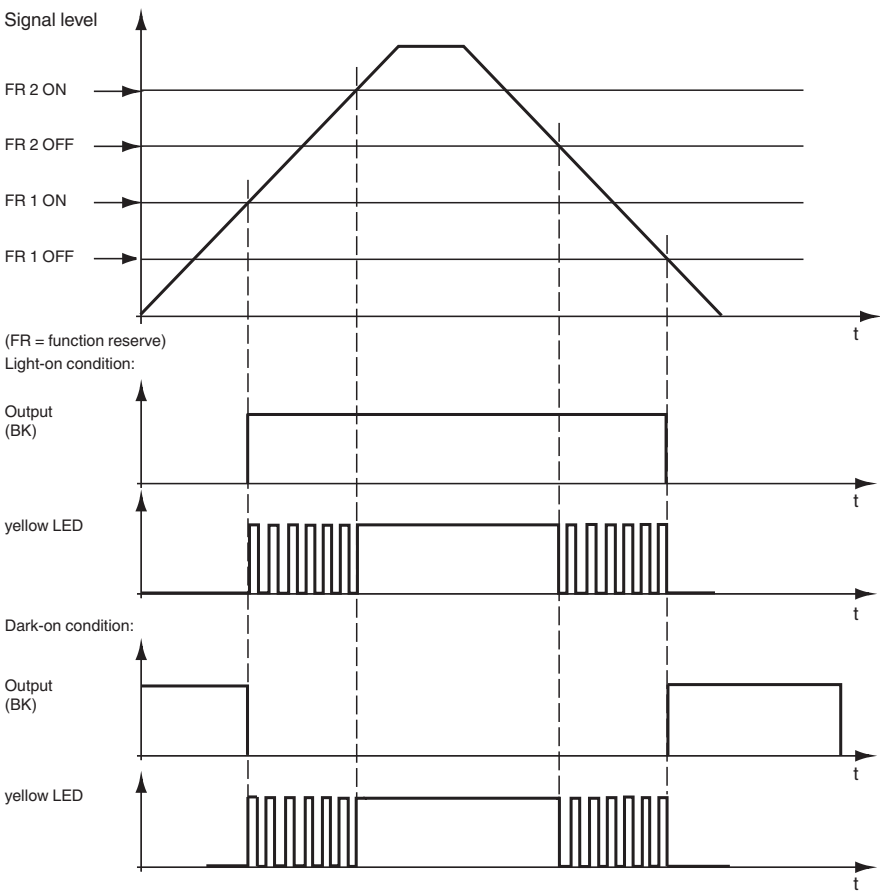


8 cyc. rule for light-ON (LO) and dark-ON (DO) mode



Characteristic Curve

LED indicators and operating chart:



Accessories

	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

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Accessories

	KHTR-C02-2,2-2,0-K88	Plastic fiber optic - diffuse
	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-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

Indications for the Green and Yellow LEDs in detection mode (normal operation):

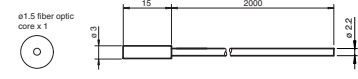
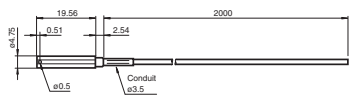
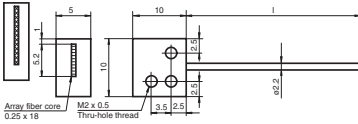
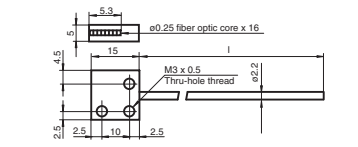
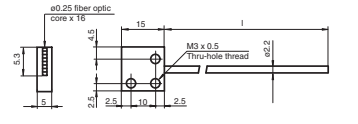
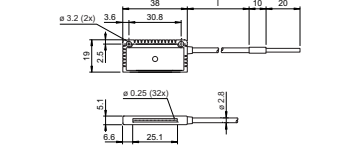
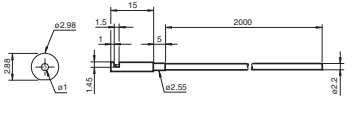
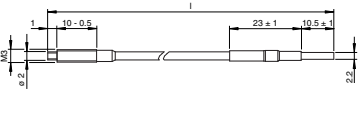
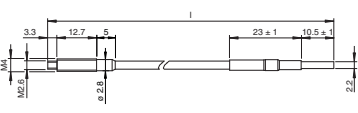
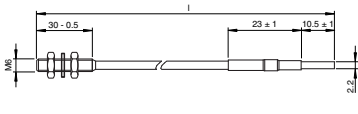
- ### Selection table - thru-beam fiber optic cable

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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
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
Array										
Rectangular	3 x M2 x 0.5	KLE-A16-2.2-2.0-K109	PMMA	Ultra: 420 mm HiPwr: 240 mm Std: 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	Ultra: 420 mm HiPwr: 240 mm Std: 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-K111	PMMA	Ultra: 420 mm HiPwr: 240 mm Std: 100 mm	16 x 0.25 mm	0.05 mm	2 m	min. 25 mm		
Rectangular	2 x 3.2 m	KLE-A32-2.2-2.0-K142	PMMA	Ultra: 140 mm HiPwr: 80 mm Std: 35 mm	32 x 0.25 mm		2 m	min. 25 mm		
High temperature resistance										
Cylindrical	dia. 3 mm	KHTE-C01-2.2-2.0-K118	PMMA	Ultra: 475 mm HiPwr: 270 mm Std: 115 mm	1 mm	0.35 mm	2 m	min. 25 mm		- 55°C ... + 115 °C
Sturdy design										
Threaded	M3	LHE 00-1.1-1.0-14M3	glass	Ultra: 710 mm HiPwr: 420 mm Std: 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	Ultra: 710 mm HiPwr: 420 mm Std: 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	Ultra: 710 mm HiPwr: 420 mm Std: 195 mm	1.1 mm		1 m	4 mm static		- 40°C ... + 180 °C

Head shape	Mounting	Model number	Core	Detection distance *	Fiber cross section	minimum Object size	Fiber optic length	Bend radius	Dimensions	Special features
Cylindrical	dia. 1.5 mm	LHE 00-1.1-1.0-10C1.5	glass	Ultra: 710 mm HiPwr: 420 mm Std: 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	Ultra: 710 mm HiPwr: 420 mm Std: 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	Ultra: 710 mm HiPwr: 420 mm Std: 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	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 m m	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 m m	KLE-C02-1.25-2.0-K134	PMMA	5 mm	2 x 0.25 m m		2 m	min. 10 mm		
Slot	2 x 3.2 m m	KLE-C02-1.25-2.0-K135	PMMA	10 mm	2 x 0.25 m m		2 m	min. 10 mm		



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

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		

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
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
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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