



Model Number

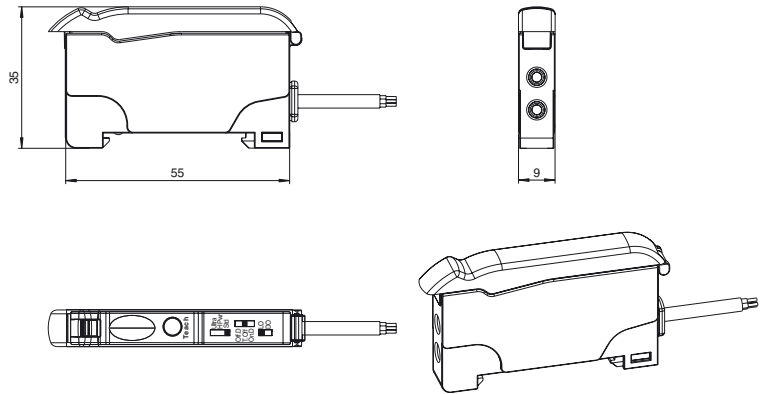
SU18-40a/110/115/123

Fiber optic sensor
with fixed cable

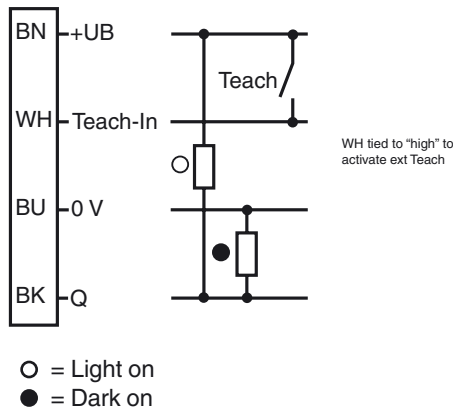
Features

- Basic line for DIN rail installation
- Sleek design
- 3 response times selectable
- High switching frequency
- External TEACH-IN

Dimensions



Electrical connection



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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 _d	690 a
Mission Time (T _M)	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	TEACH-IN key 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 _B	10 ... 30 V DC
Ripple		10 %
No-load supply current	I ₀	≤ 30 mA

Input

Function input	external Teach-In
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Output

Switching type	light/dark on, switchable	
Signal output	1 push-pull 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 speed mode: 6 kHz , High resolution: 500 Hz
Response time		Standard mode: 160 μs , High speed mode: 80 μs , High resolution: 1 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	2 m PVC cable, 4 x 0,14 mm ²
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**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

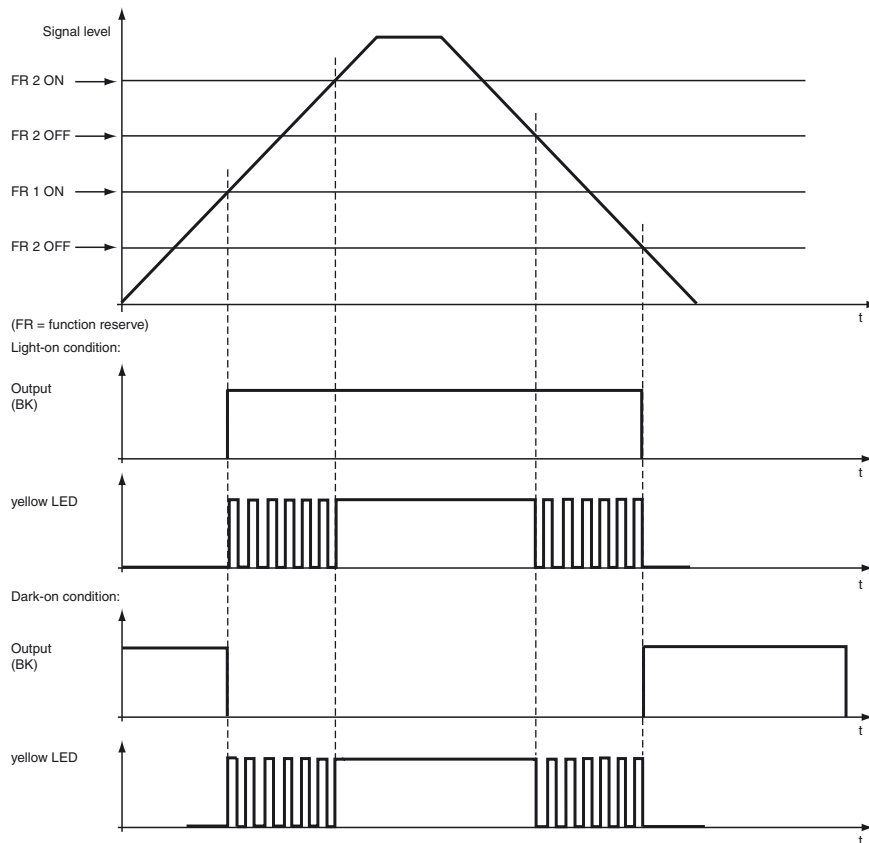
Bracket SU

Mounting bracket for DIN rail

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

Curves/Diagrams

LED indicators and operating chart:



Teach-in procedures

(for Auto Teach version only):

Dynamic Teach in High Resolution mode:

1. Place a target
2. Press and hold the Teach button for > 2 seconds to enter Teach mode. Both LEDs will indicate fast inphase blinking follow by slow in-phase blinking. If the target is too near (strong signal), the fast blinking will last slightly longer follow by slow blinking
3. Remove target or move target further away from sensor
4. Press and hold the Teach button for < 2 seconds to end Teach mode. Both LEDs will indicate fast inphase blinking and then alternate blinking to signal end of Teach mode

Dynamic Teach in Normal mode:

1. Press and hold the Teach button for > 2 seconds to enter Teach mode. Both LEDs will indicate fast inphase blinking follow by slow in-phase blinking
2. Pass a moving target
3. Press and hold the Teach button for < 2 seconds to end Teach mode. Both LEDs will indicate alternate blinking to signal end of Teach mode

Maximum Teach:

1. Remove target
2. Press and hold the Teach button for > 2 seconds to enter Teach mode. Both LEDs will indicate fast inphase blinking follow by slow in-phase blinking
3. Press and hold the Teach button for > 2 seconds to end Teach mode. Both LEDs will indicate fast inphase blinking and then alternate blinking to signal end of Teach mode

Position Teach:

1. Place a target
2. Press and hold the Teach button for > 2 second to enter Teach mode. Both LEDs will indicate fast inphase blinking follow by slow in-phase blinking. If the target is too near (strong signal), the fast blinking will last slightly longer follow by slow blinking
3. Press and hold the Teach button for > 2 seconds to end Teach mode. Both LEDs will indicate fast inphase blinking and then alternate blinking to signal end of Teach mode

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

- Yellow LED is stable ON to indicate that signal received is > FR2
- Yellow LED will flash at 4 Hz to indicate function reserve, FR1 < signal level < FR2
- Green LED stable ON to indicate power supply is ON, sensor is ready.
- Green LED will flash once for each key actuation, e.g. actuation of the Teach button
- Green LED will flash at 4 Hz to indicate a short-circuit fault at the output(s)

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	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		
Highly flexible										
Threaded	M3	KHE-C01-2.2-2.0-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
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

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Head shape	Mounting	Model number	Core	Detection distance	Fiber cross-section	Fiber optic length	Bend radius	Dimensions	Special features
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		
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		
Coaxial									
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		

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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. 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		
Highly flexible									
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		
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		
Flexible									
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		
Bendable tip									

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