



Model Number

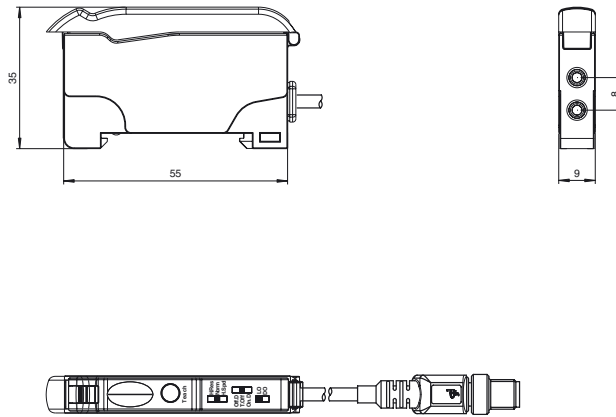
SU18-40a/102/115a/123

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

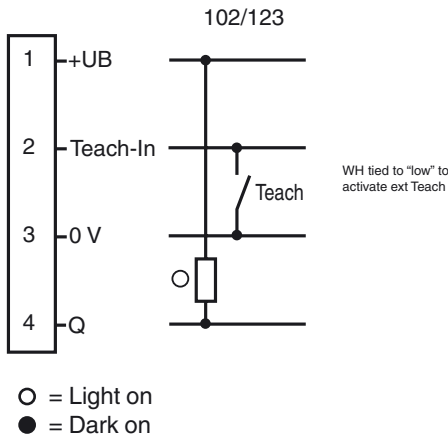
Features

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

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 _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 |
|----------------|-------------------|

Output

| | | |
|------------------------------------|---|---|
| Output of the pre-fault indication | 1 NPN, short-circuit protected open collector | |
| Switching type | light/dark on, switchable | |
| Signal output | 1 NPN, short-circuit protected open collector | |
| 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 | 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**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

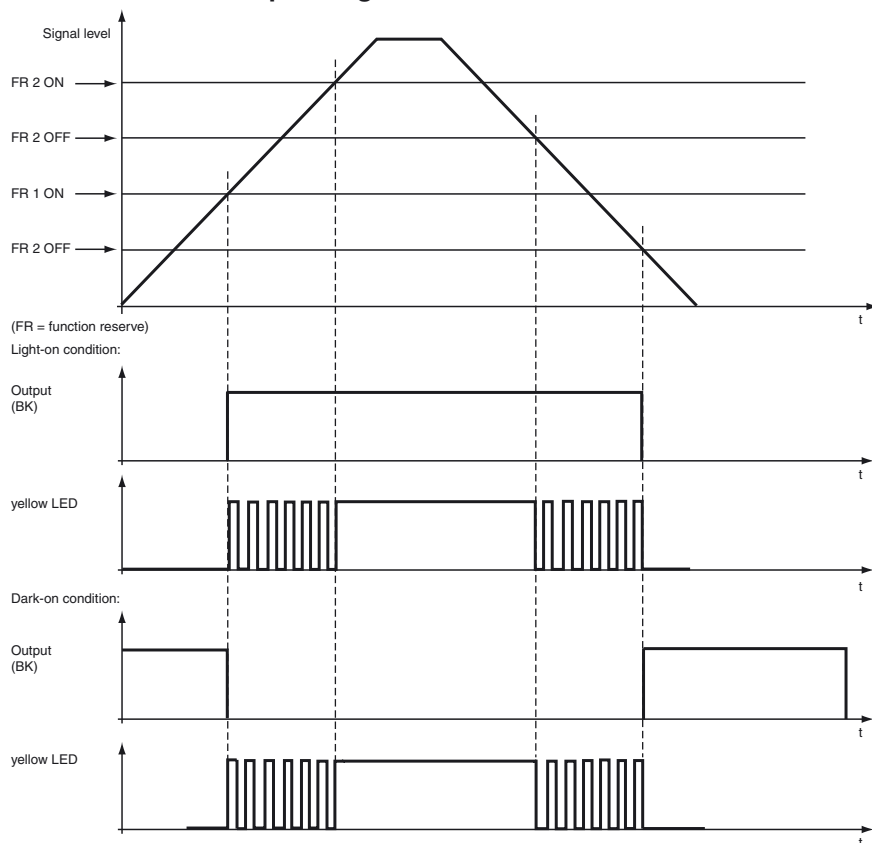
Bracket SU

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 | Moun-ting | Model number | Core | Detection distance | Fiber cross section | minimum Object size | Fiber optic length | Bend radius | Dimensions | Special features |
|-----------------------------|-----------------|-----------------------|-------|--|---------------------|---------------------|--------------------|----------------|------------|--------------------------|
| 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 | | |
| Side view / Periscope | | | | | | | | | | |
| 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 |
| Array | | | | | | | | | | |
| 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 | | |
| 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 | | |
| High temperature resistance | | | | | | | | | | |
| 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 |
| Sturdy design | | | | | | | | | | |
| Threaded | M3 | LHE 00-1.1-1.0-14M3 | glass | 195 mm | 1.1 mm | | 1 m | 4 mm static | | - 40°C ... + 180 °C |

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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 |
|-----------------------|----------------|-----------------------|-------|--------------------|---------------------|---------------------|--------------------|-------------|------------|--|
| 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 |
| Special design | | | | | | | | | | |
| 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 |
| 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 | | |

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 | 4 mm | 2 x 0.25 m | 2 m | min. 10 mm | | | |

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