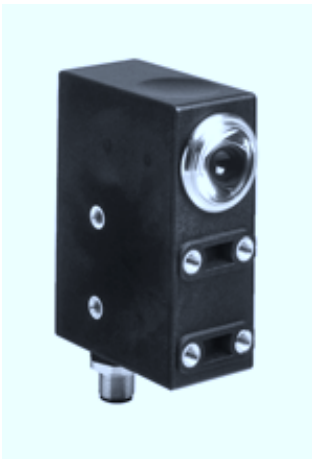


## Model Number

**DK34-9,5/110/124**

Print mark contrast sensor
with 5-pin, M12 x 1 connector

## Features

- Diffuse mode sensor for recording any print mark
- Static TEACH-IN: automatic switching threshold adaptation
- Sidelookerversion
- 30 µs response time, suitable for extremely rapid scanning processes
- High accuracy for precise positioning operations
- 3 emitter colors: green, red and blue

## Product information

The contrast sensor series DK10, DK2X, DKE2X and DK3X have an extreme robust and IP67 tight industrial standard housing with eight M5 metal reinforced inserts for sensor mounting. The lenses are made of high grade glass. All sensors offer different light spot shapes and orientations and have powerful push-pull outputs (NPN/PNP/push-pull).

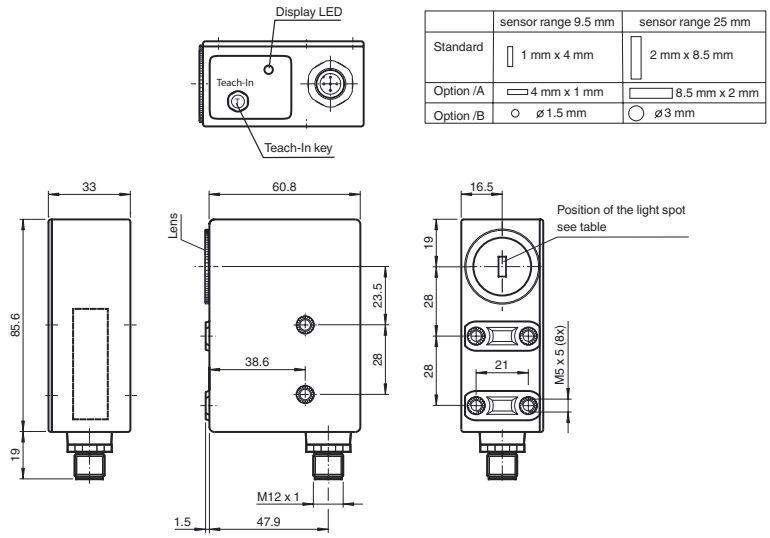
The DK10 sensor series offers laser and LED light sources, a manual sensitivity adjustment and high sensing ranges up to 800 mm.

The DK20/DK21/DKE2X standard contrast sensor series offers a very good contrast recognition and are available in extreme robust stainless-steel housings (DKE).

The DK31/DK34/DK35 sensor series is designed for cutting edge contrast recognition at highest sensitivity level.

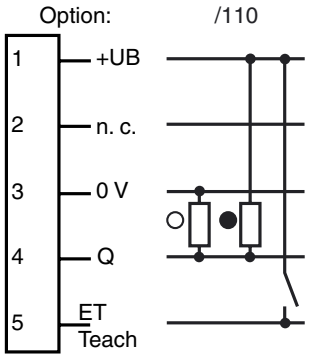
The series DK20/DK34 offer a static Teach-In, the DK21/DKE21/DK31/DK35 series offer a dynamic Teach-In.

## Dimensions

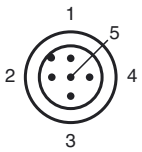



| | sensor range 9.5 mm | sensor range 25 mm |
|---|---|---|
| Standard | 1 mm x 4 mm | 2 mm x 8.5 mm |
| Option /A | 4 mm x 1 mm | 8.5 mm x 2 mm |
| Option /B | ø1.5 mm | ø3 mm |

## Electrical connection




## Pinout

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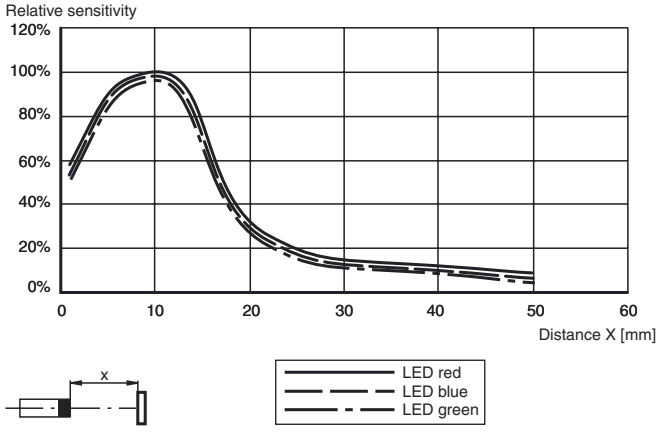
## Technical data

| | | |
|---|---|---|
| **General specifications** | | |
| Sensor range | | 9.5 mm ± 3 mm |
| Light source | | LED |
| Light type | | Visible green/red/blue, modulated light |
| Light spot representation | | rectangular 1 mm x 4 mm |
| Angle deviation | | max. ± 3° |
| Ambient light limit | | |
| Continuous light | | 40000 Lux |
| Teach-In | | static Teach-In |
| **Functional safety related parameters** | | |
| $MTTF_d$ | | 650 a |
| Mission Time ($T_M$) | | 20 a |
| Diagnostic Coverage (DC) | | 0 % |
| **Indicators/operating means** | | |
| Function indicator | | LED yellow; switching operation: lights up if print mark is detected<br>Teach-In operation: flashing slowly<br>alarm display: flashing quickly, if no safe operation is possible |
| Control elements | | Teach-In key |
| **Electrical specifications** | | |
| Operating voltage | $U_B$ | 10 ... 30 V DC |
| Ripple | | 10 % |
| No-load supply current | $I_0$ | ≤ 75 mA |
| **Input** | | |
| Function input | | Teach-In input |
| **Output** | | |
| Switching type | | light/dark on switchable, results from the order of the Teach-In |
| Signal output | | Push-pull output, short-circuit protected, reverse polarity protected |
| Switching voltage | | PNP: ≥ (+$U_B$ -2.5 V) , NPN: ≤ 1.5 V |
| Switching current | | max. 200 mA |
| Switching frequency | f | 16.5 kHz |
| Response time | | 30 µs |
| **Ambient conditions** | | |
| Ambient temperature | | -20 ... 60 °C (-4 ... 140 °F) |
| Storage temperature | | -20 ... 75 °C (-4 ... 167 °F) |
| **Mechanical specifications** | | |
| Protection degree | | IP67 |
| Connection | | M12 x 1 connector, 5-pin |
| Material | | |
| Housing | | PC (glass-fiber-reinforced Makrolon) |
| Optical face | | glass |
| Mass | | 200 g |
| **Compliance with standards and directives** | | |
| Standard conformity | | |
| Product standard | | EN 60947-5-2:2007<br>IEC 60947-5-2:2007 |
| Shock and impact resistance | | IEC / EN 60068. half-sine, 40 g in each X, Y and Z directions |
| Vibration resistance | | IEC / EN 60068-2-6. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions |
| **Approvals and certificates** | | |
| CCC approval | | CCC approval / marking not required for products rated ≤36 V |

### Relative received light strength




## Accessories

**V15-G-5M-PVC**
Female cordset, M12, 5-pin, PVC cable

**V15-W-5M-PVC**
Female cordset, M12, 5-pin, PVC cable

**OMH-DK**
Right-Angled Mounting Bracket

**OMH-DK-1**
Flat Mounting Bracket

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

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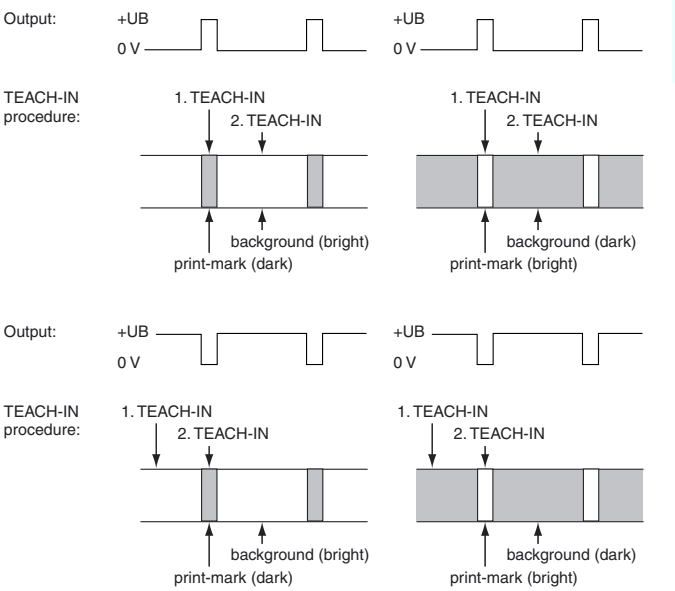
## Additional information

### Adjustment

1. Adjust light spot to print mark. In case of mirroring or shiny object surface tilt Sensor by 10° ... 15°.
2. Press Teach-In key, or apply a positive pulse (+UB) for at least 50 ms to the external Teach-In input. Now the indication LED flashes slowly (approx. 1 Hz).
3. Adjust light spot to the background
4. Press Teach-In key, or apply a positive pulse (+UB) for at least 50 ms to the external Teach-In input once more.
5. Teach-In successful: sensor in switching mode, LED is off
   Alarme-function: contrast for all emitter colours too weak; a reliable sensor operation cannot be guaranteed. Indicator LED flashes quickly (approx. 4 Hz). Return to switch mode by keystroke.

The switching level is centered between the evaluated print mark/background-contrast values.
The sensor automatically selects and stores the most suitable emitter colour for the best print mark/background-contrast.
For exact contrast evaluation, the DK... can optionally be equipped with an additional analogue output.




### Switching type:

The output switches at the receiver signal that has been first taught-in after $+U_B$. The light-on/dark-on switching results from the changed sequence of the Teach-In procedure and is therefore reversible.

### Emitter-test function:

1. Connection of $+U_B$ at active Teach-In signal (keystroke or ext. Teach-In).
2. After teach-in is finished (keystroke or ext. Teach-In signal) the green emitter is switched.
3. The red emitter is switched after the second Teach-In.
4. The blue emitter is switched after the third Teach-In.
5. After the forth Teach-In: switching operation

The switching of the output is suppressed during the test operation.

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