

DK20-9,5/110/124

Print mark contrast scanner

# DK20-9,5/110/124

with M12, 5-pin metal connector

CE



- ◆ **Static TEACH-IN: automatic switching threshold adaptation**
- ◆ **30  $\mu$ s response time, suitable for extremely rapid scanning processes**
- ◆ **3 emitter colours: green, red and blue**
- ◆ **Powerful push-pull output**
- ◆ **Optical system exchangeable by 90°**
- ◆ **Sturdy, waterproof plastic housing**

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**General specifications**

Sensor range	9.5 mm +/-3 mm
Light source	LED
Light spot representation	1 mm x 4 mm
Angle deviation	max. ± 3°
Approvals	CE
Light type	Visible green/red/blue, modulated light
TEACH-IN	static TEACH-IN

**Indicators/operating means**

Function display	LED yellow; switching operation: lights up if print mark is detected TEACH-IN operation: flashing slowly alarm display: flashing quickly, if no safe operation is possible
Operating elements	TEACH-IN key

**Electrical specifications**

Operating voltage	10 ... 30 V DC
Ripple	10 %
No-load supply current I <sub>0</sub>	≤ 70 mA

**Input**

Function input	TEACH-IN input
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**Output**

Switching type	light/dark ON switchable, results from the order of the TEACH-IN
Signal output	Push-pull output, short-circuit proof, protected against reverse polarity
Switching voltage	PNP: ≥ (+U <sub>B</sub> -2.5 V) , NPN: ≤ 1.5 V
Switching current	max. 200 mA
Switching frequency f	16.5 kHz
Response time	30 μs

**Standard conformity**

Standards	EN 60947-5-2
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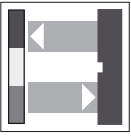
**Ambient conditions**

Ambient temperature	-20 ... 60 °C (253 ... 333 K)
Storage temperature	-20 ... 75 °C (253 ... 348 K)

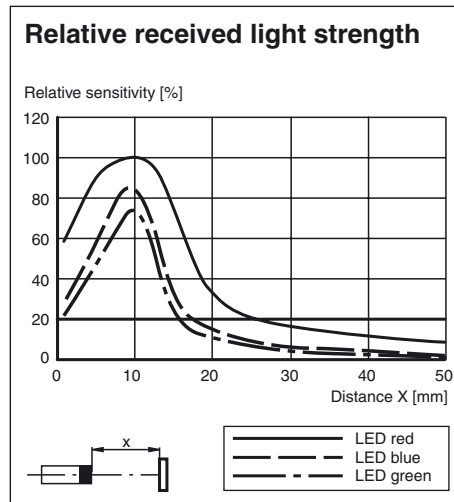
**Mechanical specifications**

Protection degree	IP67
Connection	M12 connector, 5 pin
Material	
Housing	PC (Makrolon, glass-fibre-reinforced)
Optical face	glass
Mass	200 g

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## Additional information

### Construction

This device is supplied with a changeable Lens. By interchanging Lens and cover the sensor is able to be modified from a side-looker to a top-looker and vice versa.

### Adjustment

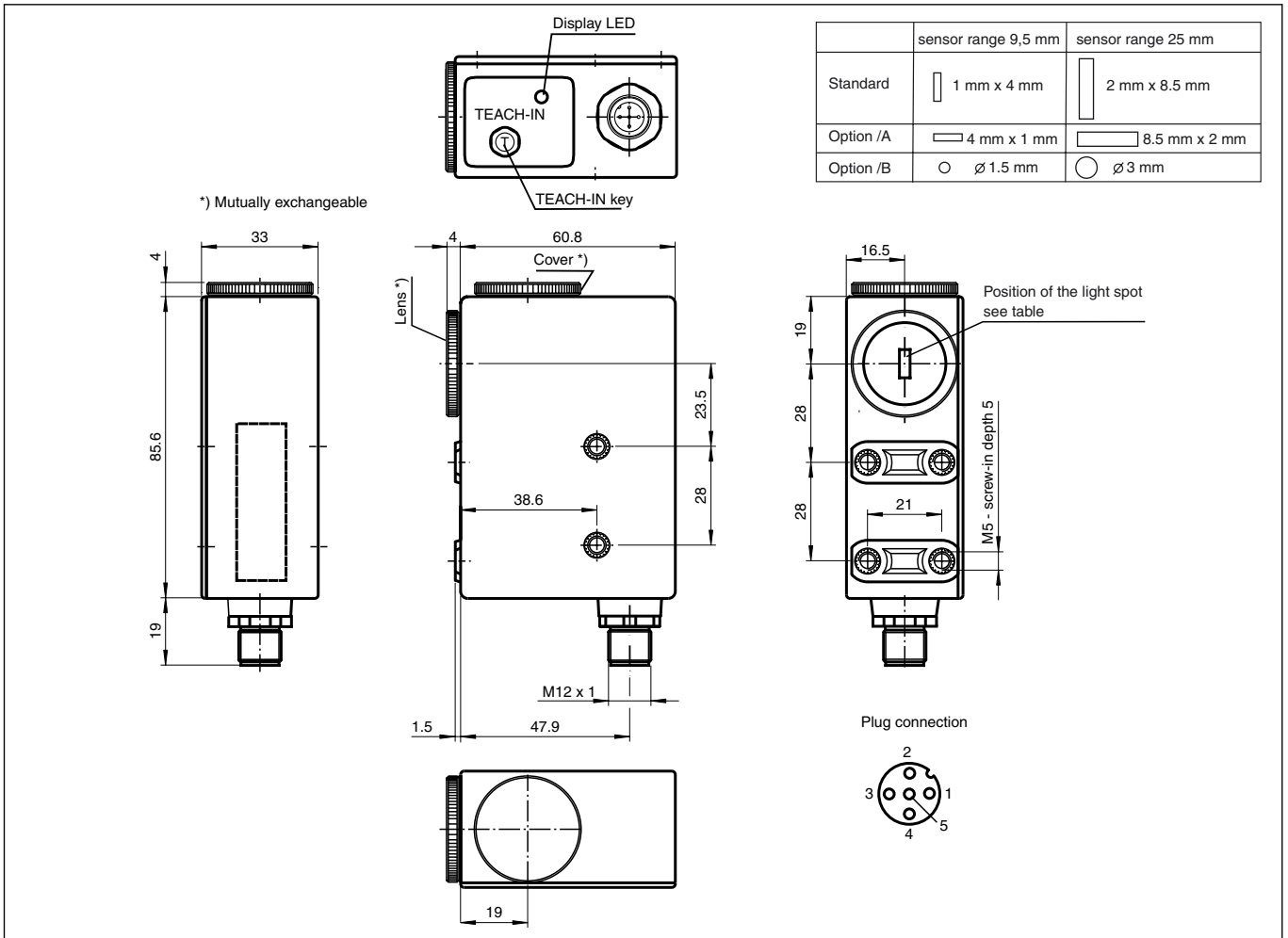
1. Point the light spot to the print mark. With mirroring or shiny object surface the sensor has to be tilt by  $10^\circ \dots 15^\circ$ .
2. Press TEACH-IN key at the device or apply a positive pulse (UB+) for at least 50 ms to the external TEACH-IN input. After finishing this first step, the indicator LED flashes slowly (approx. 1 Hz).
3. Point light spot to the underground/background.
4. Press TEACH-IN key or apply TEACH-IN signal once more.
5. If TEACH-IN successful: sensor in switching mod, LED off.  
Alarme-Function: insufficient contrast. No reliable switching operation possible. Indicator LED flashes fast (approx. 4 Hz)
6. Return to switching mode when pressing key

The switching signal level is set automatically to the middle between print mark and background.

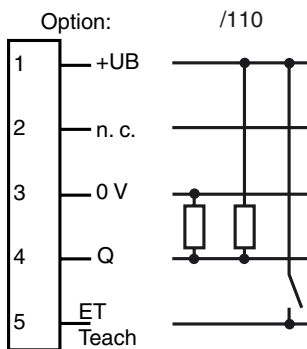
If there is the same contrast between mark and background for various transmitter colours, the sensor selects a transmitter colour by random.

For exact contrast evaluation the DK... , as an option, can be delivered with an additional analogue output.

Dimensions



Electrical connection



○ = light on, ● = dark on