



Model Number

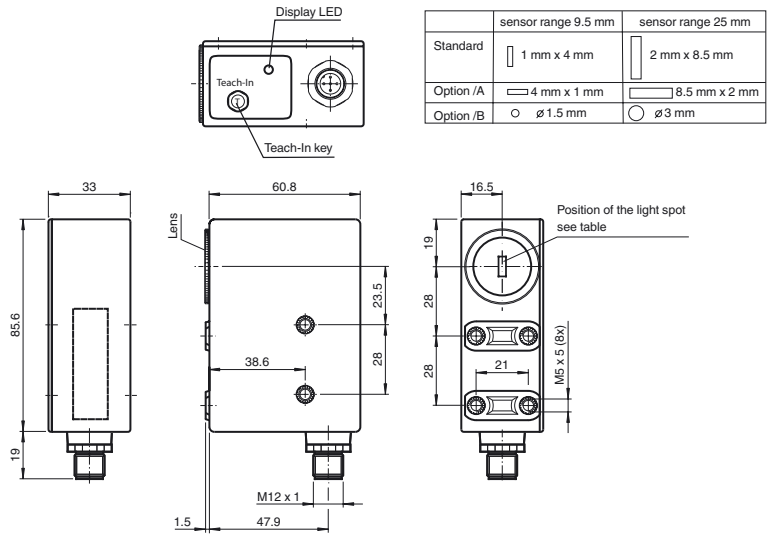
DK20-2497(/49)

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

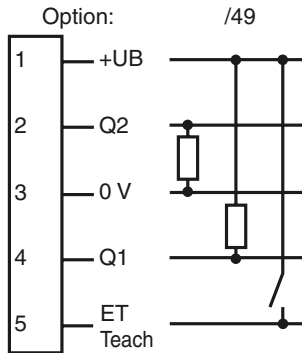
Features

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

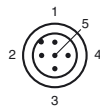
Dimensions



Electrical connection



Pinout



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

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	7000 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 Teach-In operation: flashing slowly 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	≤ 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	1 PNP and 1 NPN short-circuit protected, open collector, synchronized-switching	
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

Conformity

Product standard	EN 60947-5-2
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Ambient conditions

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Storage temperature	-20 ... 75 °C (-4 ... 167 °F)

Mechanical specifications

Housing width	33 mm
Housing height	85.6 mm
Housing depth	60.8 mm
Degree of protection	IP67
Connection	5-pin, M12 x 1 connector
Material	
Housing	PC (glass-fiber-reinforced Makrolon)
Optical face	plastic
Mass	200 g

Compliance with standards and directives

Standard conformity	
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
Laser class	

Approvals and certificates

UL approval	cULus Listed , Class 2 power source
CCC approval	CCC approval / marking not required for products rated ≤36 V

Accessories**V15-G-5M-PVC**

Female cordset, M12, 5-pin, PVC cable

V15-W-5M-PVC

Female cordset, M12, 5-pin, PVC cable

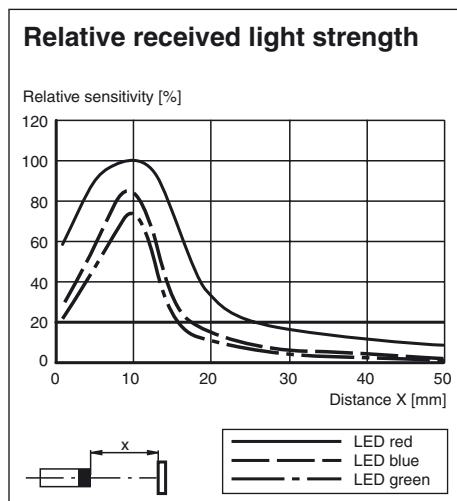
OMH-DK

Right-Angled Mounting Bracket

OMH-DK-1

Flat Mounting Bracket

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



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.

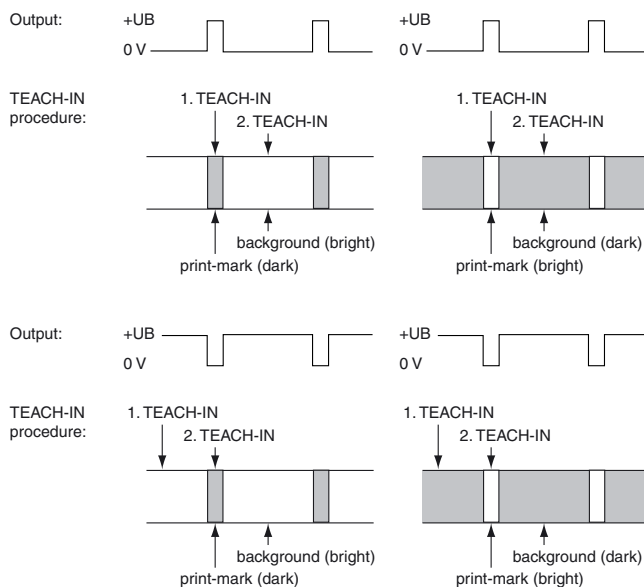
Switching type:

The output switches at the receiver signal that has been first taught-in after +UB. 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 +UB 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 fourth Teach-In: switching operation

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



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