Model Number

DK10/35a/8S200

Print mark contrast sensor
with 4-pin, M12 x 1 connector

Features

- Diffuse mode sensor for recording any print mark
- Adjustable sensitivity
- Optical system exchangeable by 90°
- 30 µs response time, suitable for extremely rapid scanning processes
- Green transmitter light
- Time function

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).

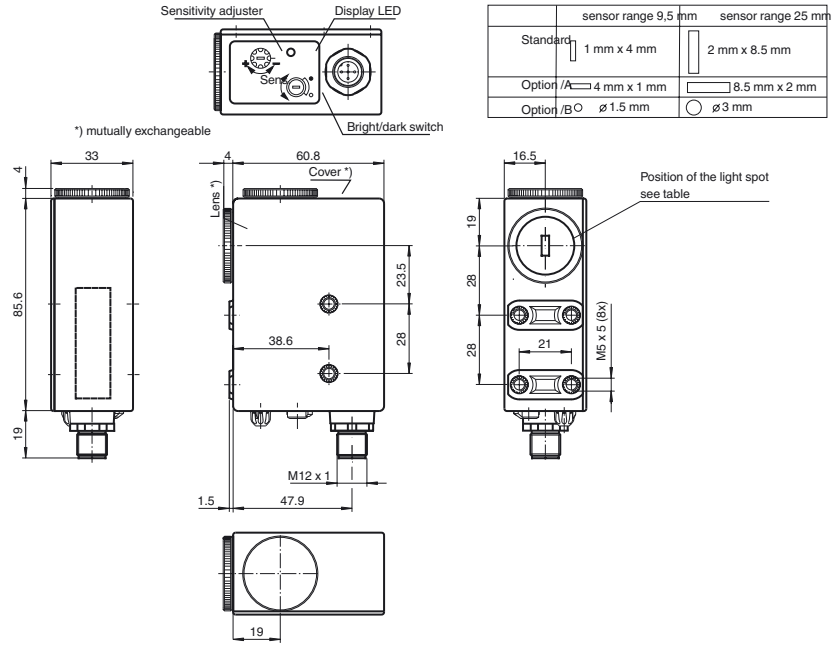
The DK10 sensor series offers laser and LED light sources, a manual sensitivity adjustment and high sensing ranges up to 800 mm.

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

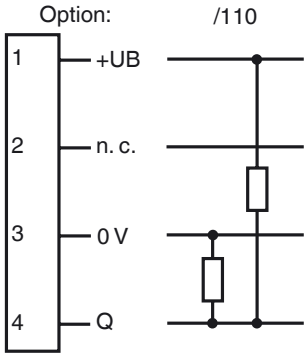
The DK31/DK34/DK35 sensor series is designed for cutting edge contrast recognition at highest sensitivity level.

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

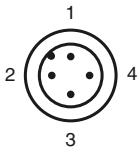
Dimensions



Electrical connection



Pinout



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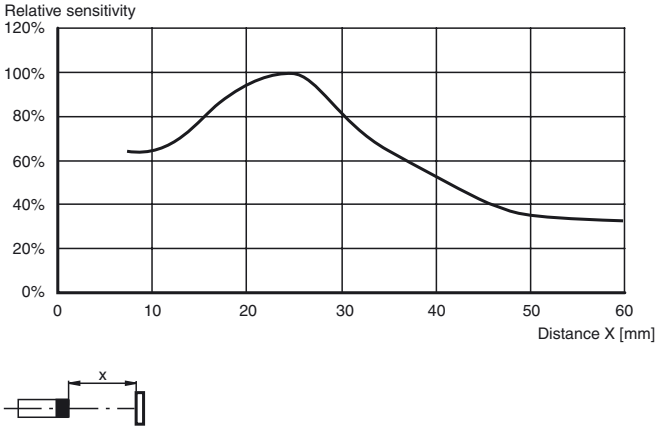
Technical data

General specifications		
Sensor range		25 mm ± 3 mm
Light source		LED
Light type		modulated green light
Light spot representation		2 mm x 8.5 mm , light spot parallel to housing
Angle deviation		max. ± 3°
Ambient light limit		
Continuous light		40000 Lux
Functional safety related parameters		
$MTTF_d$		650 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Function display		LED yellow: lights up if receiver is lit (light on), lights up if receiver is not lit (dark on)
Controls		Sensitivity adjuster, light/dark switch
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC
Ripple		10 %
No-load supply current	I_0	≤ 55 mA
Output		
Switching type		light/dark on, switchable
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
Timer function		falling edge
Off-delay		200 ms
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Storage temperature		-20 ... 75 °C (-4 ... 167 °F)
Mechanical specifications		
Protection degree		IP67
Connection		connector M12 x 1, 4-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 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		
UL approval		cULus Listed , Class 2 power source
CCC approval		Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.

Relative received light strength

DK10/35a/8S200



Accessories

V1-G-2M-PVC
Cable socket, M12, 4-pin, PVC cable

V1-W-2M-PVC
Cable socket, M12, 4-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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Adjustment instructions

Switching threshold adjustment

The required switching threshold is adjusted with the sensitivity control. Please proceed as follows:

1. Switch the light/dark change-over switch to the light setting.
2. Point the light spot at the light part of the surface being scanned.
3. If the yellow indicator LED lights up, turn the sensitivity control to the left until the indicator LED goes off again.
   If the yellow indicator LED does not light up, miss out this step.
4. Turn the sensitivity control to the right until the indicator LED just lights up.
5. Point the light spot at the dark part of the surface being scanned.
6. The indicator LED must have gone off.
7. Turn the sensitivity control to the right again until the indicator LED lights up again. Counting the number of turns.
8. Turn the sensitivity control back to the left by half the number of counted turns.

Once the DK10 colour mark scanner has been adjusted in this way, the switching thres-hold is exactly in the middle of the measured light and dark values. The greater the number the number of times the sensitivity control is turned between the light and the dark marks, the greater the contrast.
Recommendation: The number of turns should be to > 0.5.

Switching mode adjustment:

Setting of light/dark switch	Receiver	Output PNP	Output NPN
H	exposed	inactive	active
	unexposed	active	inactive
D	exposed	active	inactive
	unexposed	inactive	active

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