

CE

## **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).

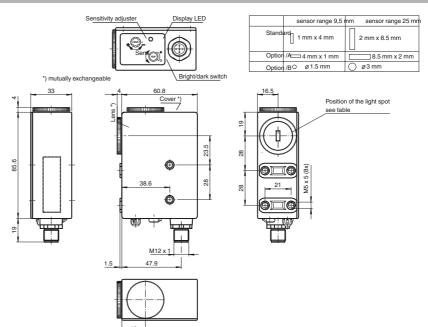
The DK10 sensor series offers laser and LED light sources, a manual sensitivity adjustment and high sensing ranges up to 800 mm.

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

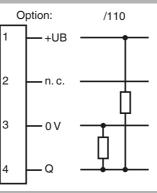
The DK31/DK34/DK35 sensor series is designed for cutting edge contrast recognition at highest sensitivity level.

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





## **Electrical connection**



**Pinout** 





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1-08-29

Subject to modifications without notice

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Light source LED  Light source LED  Light source LED  Light source LED  Light source modulated green light  Light spot parallel to housing  Angle deviation max. ± 3"  Angle deviation max. ± 3"  MITFq. 600 a  MITF	S	
Sensor range         25 mm = 3 mm         Cable socket,           Light type         modulated green light         (1)           Light type         modulated green light         (1)           Angle deviation         max + 3"         (1)           Masion Time (Tr <sub>A</sub> )         20 a         (1)           Diagnostic Coverage (DC)         0 %         (1)         (1)           Controls         Sensitivity adjuster. light/dark switch         (2)         (1)           Electrical specifications         (1)         (1		
Light source LED  Light spee modulated green light Light spee representation 2 mm x 8.5 mm , light spot parallel to housing Andeet light finat Continuous light 40000 Lux Functional safety related parameters MTTF , Mission Time (T <sub>u</sub> ) 20 a Diagnostic Coverage (CC) 0 % MH-DK.1 Flat Mounting Controls Exercised as a set of the set o	M12, 4-pin, PVC cable	
Light spot representation 2 mm x 8.5 mm , light spot parallel to housing Angle deviation max : 3 ° Arobient Light limit contributes light 4 0000 Lux • • • • • • • • • • • • • • • • • • •	V1-W-2M-PVC Cable socket, M12, 4-pin, PVC cable	
Angle deviation max ± 3° CMH-DK The Andres Teget The Andres Teget The Andres Teget The Andres Teget Test Andres Andres Test Andres Test Andres Test Andres Test Andres Test Andres Test Andres		
Amber Light limit Continuous light Angued I Surchical safety related parameters MTTF <sub>d</sub> 650 a Mission Time (T <sub>b</sub> ) 20 a Diagnostic Coverage (OC) 0 % Controls 20 a Diagnostic Coverage (OC) 0 % Controls Sensitivity adjuster, light/dark switch Electrical specifications Controls Sensitivity adjuster, light/dark switch Electrical specifications Controls 5 Sensitivity adjuster, light/dark switch Electrical specifications Public 1 D 30 V DC Signal output 1 Push-pull output, short-circuit protected, reverse polarity pro- tected Switching trougency f 16.5 kHz Response time 30 µs Timer function falling edge Off-delay 200 ms Ambient conditions Ambient conditions Ambient specifications Protection degree IIF67 Connection connector M12 x 1, 4-pin Material Housing P C (glass-Elecreniforced Makrolon) Optical face glass Standard conformity Product standard EC / EN 60047.5 2:2007 Shock and impact resistance EC (PM 50058, Raft sine, 40 gin each X, Y and Z directions Vibration resistance EC (PM 50058, Raft sine, 40 gin each X, Y and Z directions EC (PM 50058, Raft sine, 40 gin each X, Y and Z directions Vibration resistance EC (PM 50058, Raft sine, 40 gin each X, Y and Z directions Vibration resistance EC (PM 50058, Raft sine, 40 gin each X, Y and Z directions Vibration resistance EC (PM 50058, Raft sine, 40 gin each X, Y and Z directions Vibration resistance EC (PM 50058, Raft sine, 40 gin each X, Y and Z directions Vibration resistance EC (PM 50058, Raft sine, 40 gin each X, Y and Z directions Vibration resistance EC (PM 50058, Raft sine, 40 gin each X, Y and Z directions Vibration resistanc		
Continuous light       40000 Lux         Continuous light       40000 Lux         Sunctional safety related parameters       650 a         Mission Time (T <sub>k</sub> )       20 a         Diagnostic Coverage (DC)       0 %         Indicators/operating means       ED yellow: light up if receiver is lif (light on), lights up if receiver is lif (light on), light up if receiver is lif (light on), li		
Functional safety related parameters         OMH-DK-1           MTTF <sub>d</sub> 65 a           MTTF <sub>d</sub> 0 a           Diagnostic Coverage (CO)         0 %           Controls         Sensitivity adjuster, light viatin is lit (light on), lights up if receiver is lit (light on), light approximate on the light (		
MNTFL,       e50 a         Mission Time (T <sub>µ</sub> )       20 a         Diagnostic Coverage (DC)       0 %         Anticotros/operating means       E0 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       0         Operating voltage       U <sub>B</sub> No-load supply current       10 %         No-load supply current       10 %         Switching voltage       PNP: 2 (U <sub>B</sub> -2.5 V), NPN: ≤ 1.5 V         Switching voltage       PNP: 2 (U <sub>B</sub> -2.5 V), NPN: ≤ 1.5 V         Switching voltage       PNP: 2 (U <sub>B</sub> -2.5 V), NPN: ≤ 1.5 V         Switching requency       f         Miserial tamperature       20 30 °C (4 140 °F)         Storage temperature       -20 75 °C (4 167 °F)         dechanical specifications       Protection degree         Protection degree       P67         Connector M12 x 1, 4-pin         Material       Housing         Protection degree       IE67         Connector M12 x 1, 4-pin         Material       FO (glass-fiber-reinforced Makrolon)         Opfical face       glass         Storage temperature       -20 75 °C (4 140 °F)     <	Mounting Bracket	
MT Fig       050 a         Diagnostic Coverage (DC)       0.%         Ordicators/operating means       ED values: light up if receiver is lit (light on), lights up if receiver is not lit (light on), lights up if receiver is not lit (light on), lights up if receiver is not lit (light on), lights up if receiver is not lit (light on), lights up if receiver is not lit (light on), lights up if receiver is not lit (light on), lights up if receiver is not lit (light on), lights up if receiver is lit (light on), lights up if receiver is not lit (light on), lights up if receiver is not lit (light on), lights up if receiver is not lit (light on), lights up if receiver is not lit (light on), lights up if receiver is not lit (light on), lights up if receiver is not lit (light on), lights up if receiver is not lit (light on), switchable         Signal output       Up a 10 30 V DC         Signal output       Push-pull output, short-circuit protected, reverse polarity protected         Switching ourcent       max. 200 mA         Ambient conditions       aniling edge         Off-delay       200 ms         Ambient conditions       aniling edge         Off-delay       200 ms         Ambient conditions       Prof         Protection degree       IP67         Connector M12 x 1, 4-pin         Material       EV (light-shear-eniforced Makrolon)         Optical face       gass         Standard conformity       Product standard       EV (se 00008-hatk-sine, 40 g in each X, Y and		
Industry       Evaluation         Diagnostic Coverage (DC)       0 %         Other suitables       Evaluation         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         Operating voltage       Up         Switching voltage       Up         Switching voltage       PNP: 2 (-Up, -2.5 V), NPN: ≤ 1.5 V         Switching routing       PNP: 2 (-Up, -2.5 V), NPN: ≤ 1.5 V         Switching routing       PNP: 2 (-Up, -2.5 V), NPN: ≤ 1.5 V         Switching routing       D is         Timer function       falling edge         Off-delay       200 ms         Ambient temperature       -20 75 °C (-4 140 °F)         Storage temperature       -20 75 °C (-4 140 °F)         Material       Portoction degree         Housing       PC (glass-fiber-reinforced Makrolon)         Opta face       glass         Storage temperature       -20 75 °C (-2007         Connection       connector M12 x 1, 4-pin         Material       Foodost -22:007         Product standard       EC / EN 60068. hafisine, 40 gin each X, Y and Z directions		
Indicators/operating means       Controls       Sensitivity adjuster, light/dark switch         Exercice is positications       Controls       Sensitivity adjuster, light/dark switch         Operating voltage       Up       10 30 V DC         Ripple       10 30 V DC         Ripple       10 %         No-load supply current       I_0 ≤ 55 mA         Switching type       light/dark on, switchable         Synthing voltage       PNP: 2 (JU, -25 V), NPN: ≤ 1.5 V         Switching routing       T         Switching current       max. 200 mA         Switching routing       T         Switching routing       C         Protection degree       IP67         Connection       connector M12 x 1, 4-pin         Material       Connection Mills routing resistance         Hosting       PC (glass-fiber-reinforced Makrolon)         Optical face       glas         Mass       200 g	Bracket	
Indicators/operating means     www.peppert-fuu       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       Bietricat specifications     Sensitivity adjuster, light/dark switch       Operating voltage     Up       10     30 V DC       Ripple     10 % %       No-load supply current     lg       255 mA     Switching type       Switching yea     Uptification on switchable       Switching requency     ft       Switching requency     ft       16.5 kHz     Response time       30 µs     Timer function       Timer function     failing edge       Off-delay     200 ms       Wobient conditions	accessories can be found	
Function display       LED yellow: lights up if receiver is lit (light on), lights up if receiver is light (light on), lights up if receiver is lit (light on), lights up if receit and lite is condit and lite on it and lite on ite and lite on i		
ver is not itt (dark on) Controls Sensitivity adjuster, light/dark switch itectrical specifications Operating voltage U <sub>B</sub> 10 ··· 30 V DC Ripple 10 % No-load supply current I <sub>0</sub> ≤ 55 mA Notput Switching type Iight/dark on, switchable Signal output Push-pull output, short-circuit protected, reverse polarity pro- tected Switching upper PNP: ≥ (4.0, -2.5 V), NPN: ≤ 1.5 V Switching drouency f 16.5 kHz Response time 30 µs Switching frequency f 16.5 kHz Response time 30 µs Stratege temperature 20 cm. 60 °C (4 140 °F) Storage temperature 20 cm. 60 °C (4 167 °F) Technolitons Ambient configure 10 connector M12 x 1, 4-pin Material Material Material Forduct standards and directi- Standard conformity Product standard Microction Storage temperature 20 cg 30 Storage temperature 20 cg 30 Storage temperature 20 cg 30 Storage temperature 20 cg 30 Storage configure 20 cg 30 Storage configure 20 cg 30 Storage configure 30 Product standard 10 EN 60447.5-2:2007 Stock and impact resistance 1EC / EN 60068-2-6. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions Approval configure 30 CCC approval curve conceived light strength Dirage/88:200 Products with a maximum operating voltage of S36 V do not be ar a CCC marking because they do not require approval. Proference 10 CCC approval be a a CCC marking because they do not require approval. Proference 20 CCC approval Dirage 4.58 V do not pose ar a CCC marking because they do not require approval. Proference		
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Operating voltage       Ug       10 ::::::::::::::::::::::::::::::::::::		
Operating voltage       Ug       10 ::::::::::::::::::::::::::::::::::::		
Ripple       10 %         No-load supply current       Ight/dark on, switchable         Switching type       light/dark on, switchable         Signal output       Publex-pull output, short-circuit protected, reverse polarity protected         Switching voltage       PNP: 2 (+Ug + 2.5 V), NPN: ≤ 1.5 V         Switching requency       1         Switching trequency       1         Immer function       falling edge         Off-delay       200 ms         Mobient temperature       -20 60 °C (-4 160 °F)         Storage temperature       -20 78 °C (-4 167 °F)         Rechanical specifications       Protection degree         Protection degree       IP67         Connection       connector M12 x 1, 4-pin         Material       PC (glass-fiber-reinforced Makrolon)         Optical face       glass         Standard conformity       PC (glass-fiber-reinforced Makrolon)         Product standard       EE (> 160 608-7-5-2:2007 fiEC 60947-5-2:2007 fiEC 60947-5-2:2007         Shock and impact resistance       IEC / EN 60086- half-sine, 40 g in each X, Y and Z directions         Vibration resistance       IEC / EN 60086- S.e. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions         Quical strandard       c/LN to Listed , Class 2 power source         QCC apror		
No-load supply current $ l_0  \le 55 \text{ mA}$ <b>Solution</b> <b>Solution</b> Solution Solut		
butput       Ight/dark on, switchable         Switching type       Iight/dark on, switchable         Signal output       Push-pull output, short-circuit protected, reverse polarity protected         Switching voltage       PNP: 2 (-Ug. 2.5 V), NPN: ≤ 1.5 V         Switching requency       f         16.5 kHz       Response time         30 µs       Timer function         Timer function       falling edge         Off-delay       200 ms         Mobient temperature       -2060 °C (-4140 °F)         Storage temperature       -2075 °C (-4167 °F)         Bechanical specifications       Protection degree         Protection degree       IP67         Connection       connector M12 x 1, 4-pin         Material       PC (glass-fiber-reinforced Makrolon)         Optical face       glass         Mass       200 g         Commetion       EN 60947-5-2:2007         IEC / EN 60088. half-sine, 40 g in each X, Y and Z directions         EC / EN 60088. half-sine, 40 g in each X, Y and Z directions         Vibration resistance       IEC / EN 60088. 2-6. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions         CCC approval       Products with a maximum operating voltage of <36 V do not bear a CCC marking because ting voltage of <36 V do not bear a CCC marking because ting v		
Switching type light/dark on, switchable Signal output Push-pull output, short-circuit protected, reverse polarity pro- tected Switching voltage PNF: 2 (+Ug - 2.5 V), NPN: ≤ 1.5 V Switching grequency f 16.5 kHz Response time 30 µs Timer function falling edge Off-delay 200 ms <b>mbient conditions</b> Ambient temperature -20 60 °C (+ 140 °F) Storage temperature -20 75 °C (+ 167 °F) <b>techanical specifications</b> Protection degree IP67 Connection connector M12 x 1, 4-pin Material Housing PC (glass-fiber-reinforced Makrolon) Optical face glass Mass 200 g <b>oropliance with standards and directi-</b> <b>es</b> Standard conformity Product standard EIN 60947-5-2-2007 Shock and impact resistance IEC / EN 60947-5-2-2007 Shock and impact resistance IEC / EN 60947-5-2-2007 Shock and impact resistance IEC / EN 60947-5-2-2007 Not consection & CILUS Listed , Class 2 power source Vibration resistance IEC / EN 6098-2-6. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions Vibration resistance IEC / EN 60088-2-6. Sinus. 10 -150 Hz, 5 g in each X, Y and Z <b>directions</b> <b>Approvals and certificates</b> UL approval cULUS Listed , Class 2 power source CCC approval bear a CCC marking because they do not require approval. <b>Felative received light strength</b> 1005		
Signal output       Push-pull output, short-circuit protected, reverse polarity protected         Switching voltage       PNP: 2 (+U <sub>B</sub> - 2.5 V), NPN: ≤ 1.5 V         Switching current       max. 200 mA         Switching requency       f         16.5 kHz       Response time         30 µs       Immediate and the standard tectors         Standard conformity       Product standard St		
witching voltage     PNP: ≥ (+Ug-2.5 V), NPN: ≤ 1.5 V       Switching requency     f       16.5 kHz       Response time     30 µs       Timer function     falling edge       Off-delay     200 ms       umbient conditions     Ambient temperature       -2060 °C (-4140 °F)       Storage temperature     -2060 °C (-4140 °F)       Storage temperature     -2060 °C (-4140 °F)       Protection degree     IP67       Connector M12 x 1, 4-pin       Material       Housing     PC (glass-fiber-reinforced Makrolon)       Optical face     glass       Mass     200 g       Compliance with standards and directi-es       Standard conformity       Product standard     IEC / EN 60947-5-2:2007       Shock and impact resistance     IEC / EN 60086, half-sine, 40 g in each X, Y and Z directions       Vibration resistance     IEC / EN 60086, alf-sine, 40 g in each X, Y and Z directions       Vibration resistance     IEC / EN 60086, alf-sine, 40 g in each X, Y and Z directions       Approvals and certificates     ULus Listed , Class 2 power source       UL approval     cULus Listed , Class 2 power source       CCC approval     Products with a maximum operating voltage of s36 V do not bear a CCC marking because they do not require approval.       Vibration resitivity     0% <td></td>		
Switching voltage PNP: 2 (+Ug2.5 V), NPN: 5 1.5 V Switching current max. 200 mA Switching requency f 165 kHz Response time 30 µs Timer function failing edge Off-delay 200 ms unbient conditions Ambient temperature -20 60 °C (-4 140 °F) Storage temperature -20 75 °C (-4 167 °F) Techanical specifications Protection degree IP67 Connection degree IP67 Connection degree glass Material Housing PC (glass-fiber-reinforced Makrolon) Optical face glass Mas 200 g compliance with standards and directi- es Standard conformity Product standard IEC / EN 60947-5-2:2007 IEC 60947-5-2:2007 Shock and impact resistance IEC / EN 6008826. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions Vibration resistance IEC / EN 60088-2-6. 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 CCC marking because they do not require approval. Felative enceived light strength DK10/35a/85200 Flags Barbier enceived light strength DK10/35a/		
Switching requency       max. 200 mÅ         Switching frequency       f         Besponse time       30 µs         Timer function       falling edge         Off-delay       200 ms         Vmblent conditions       Ambient temperature         -2075 °C (-4140 °F)         Storage temperature       -2075 °C (-4167 °F)         Mechanical specifications       Protection degree         Protection degree       IP67         Connection       connector M12 x 1, 4-pin         Material       Housing         Housing       PC (glass-fiber-reinforced Makrolon)         Optical face       glass         Mass       200 g         Sompliance with standards and directi-tes       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.e2-6. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions         Approvals and certificates       UL approval         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.         Relativ		
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Response time     30 μs       Timer function     falling edge       Off-delay     200 ms       Ambient conditions     -20 60 °C (4 140 °F)       Storage temperature     -20 75 °C (-4 167 °F)       Mechanical specifications		
Timer function       falling edge         Off-delay       200 ms         Ambient conditions       Ambient temperature         Ambient temperature       -20 60 °C (4 140 °F)         Storage temperature       -20 75 °C (4 167 °F)         fechanical specifications       Protection degree         Protection degree       IP67         Connection       connector M12 x 1, 4-pin         Material       PC (glass-fiber-reinforced Makrolon)         Optical face       glass         Mass       200 g         Compliance with standards and directi-es       E         Standard conformity       Product standard         Product standard       EN 609475-2:2007         Shock and impact resistance       IEC / EN 60068-2-6. Sinus. 10 -150 Hz, 5 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         Vibration resistance       IEC / EN 60068-2-6. Sinus. 10 -150 Hz, 5 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         Vibration resistance       IEC / EN 60068-2-6. Sinus. 10 -150 Hz, 5 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 <tr< td=""><td></td></tr<>		
Off-delay     200 ms       Ambient conditions     Ambient temperature       -20 60 °C (-4 140 °F)       Storage temperature     -20 75 °C (-4 167 °F)       Ambient temperature     -20 75 °C (-4 167 °F)       Mase     Connector M12 x 1, 4-pin       Material     Material       Housing     PC (glass-fiber-reinforced Makrolon)       Optical face     glass       Mass     200 g       Compoliance with standards and directi-       res     Standard conformity       Product standard     EC / EN 60068-26. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions       Vibration resistance     IEC / EN 60068-26. Sinus. 10 -150 Hz, 5 g V do not bear a CCC marking because they do not require approval.       Vibration resultivity     DK10/35a/85200		
Ambient conditions         Ambient temperature       -20 60 °C (-4 140 °F)         Storage temperature       -20 75 °C (-4 167 °F)         Bechanical Specifications       IP67         Protection degree       IP67         Connection       connector M12 x 1, 4-pin         Material       Image: specification of the spec		
Ambient temperature       -20 60 °C (-4 140 °F)         Storage temperature       -20 75 °C (-4 167 °F)         Archanical specifications       Protection degree         Protection degree       IP67         Connector M12 x 1, 4-pin       Material         Housing       PC (glass-fiber-reinforced Makrolon)         Optical face       glass         Mass       200 g         Compliance with standards and directires       Standard conformity         Product standard       EN 60947-5-2:2007         Stock and impact resistance       IEC / EN 60068. half-sine, 40 g in each X, Y and Z directions         Vibration resistance       IEC / EN 6006826. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions         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.		
Storage temperature       -20 75 °C (-4 167 °F)         Machanical specifications       Protection degree         Protection degree       IP67         Connector M12 x 1, 4-pin       Material         Housing       PC (glass-fiber-reinforced Makrolon)         Optical face       glass         Mass       200 g         Compliance with standards and directi- res       EN 60947-5-2:2007 IEC 60947-5-2:2007         Standard conformity       Product standard         Product standard       EIC / EN 60068-half-sine, 40 g in each X, Y and Z directions         Vibration resistance       IEC / EN 60068-set-s. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions         Question resistance       IEC / EN 60068-set-s. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions         Vibration resistance       IEC / EN 60068-set-s. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions         Vibration resistance       UL constance         Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.         CC approval       OK10/35a/85200         Relative sensitivity       IOM         100%       60%         60%       60%		
Adechanical specifications       IP67         Protection degree       IP67         Connection       connector M12 x 1, 4-pin         Material       Housing         Housing       PC (glass-fiber-reinforced Makrolon)         Optical face       glass         Mass       200 g         Compliance with standards and directi- res       Standard conformity         Product standard       EN 60947-5-2:2007         Shock and impact resistance       IEC / EN 60068-balf-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         Vibration resistance       IEC / EN 60068-2-6. Sinus. 10 - 150 Hz, 5 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         Vibration resistance       IEC / EN 60068-2-6. Sinus. 10 - 150 Hz, 5 g in each X, Y and Z directions         Vibration resistance       CULus Listed , Class 2 power source         CCC approval       CULus Listed , Class 2 power source         CCC approval       CULus Listed , Class 2 power source         Relative sensitivity       IOM a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.         Nong       Bong       Bong         Bong       B		
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 directi- res Standard conformity Product standard EN 60947-5-2:2007 Product standard EN 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 600682-6. 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 Dear a CCC marking because they do not require approval. Felative sensitivity 100% 80% 80% 80% 80%		
Connection       connector M12 x 1, 4-pin         Material		
Material       Housing       PC (glass-fiber-reinforced Makrolon)         Optical face       glass         Mass       200 g         Compliance with standards and directi- es       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       ULus Listed , Class 2 power source         CCC 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.         Felative sensitivity       DK10/35a/85200         100%       60%		
Housing       PC (glass-fiber-reinforced Makrolon)         Optical face       glass         Mass       200 g         Compliance with standards and directi- res		
Optical face       glass         Mass       200 g         Compliance with standards and directi- es       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         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.         Felative received light strength       DK10/35a/8S200         10%       00%       0%         00%       0%       0%		
Mass       200 g         Compliance with standards and directi- res       Standard conformity         Standard conformity       Product standard         Product standard       EN 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         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.		
Compliance with standards and directi- res         Standard conformity         Product standard         EN 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         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/6S200         Relative sensitivity       10%         10%       0%         0%       0%		
Standard conformity       Froduct 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         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         Ilog6       0%         00%       0%         00%       0%         00%       0%         00%       0%         00%       0%         0%       0%         0%       0%         0%       0%         0%       0%         0%       0%         0%       0%		
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         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.		
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         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         Relative sensitivity       100%         100%       60%		
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         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.         NK10/35a/8S200         Relative sensitivity         100%       0%         60%       0%		
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         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         Relative sensitivity       00%         00%       0%		
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         Relative sensitivity       100%         100%       60%		
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         Relative sensitivity       100%         80%       60%		
UL approval cULus Listed , Class 2 power source Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval. Relative sensitivity 100% 80% 60%		
CCC approval Products with a maximum operating voltage of <36 V do not bear a CCC marking because they do not require approval.		
bear a CCC marking because they do not require approval.		
Relative sensitivity 120% 100% 80% 60%		
60%		
20%		

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Subject to modifications without notice

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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
н	exposed	inactive	active
	unexposed	active	inactive
D	exposed	active	inactive
	unexposed	inactive	active

