



Figure can vary

**Part no.: 50137060**  
**PRK3CL1.A3/P-M8.3**  
**Polarized retro-reflective photoelectric sensor**



## Contents

- Technical data
- Reflectors & reflective tapes
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## Technical data

<b>Basic data</b>	
Series	3C
Operating principle	Reflection principle
<b>Special design</b>	
Special design	Autocollimation
<b>Optical data</b>	
Operating range	Guaranteed operating range
Operating range	0 ... 2 m, With reflector MTKS 50x50.1
Operating range limit	Typical operating range
Operating range limit	0 ... 3 m, With reflector MTKS 50x50.1
Beam profile	Collimated
Light source	Laser, Red
Laser light wavelength	655 nm
Laser class	1, IEC/EN 60825-1:2007
Max. laser power	0.0017 W
Transmitted-signal shape	Pulsed
Pulse duration	5.3 $\mu$ s
Light-spot size [at sensor distance]	1 mm [3,000 mm]
Type of light-spot geometry	Round
Shift angle	Typ. $\pm$ 2°
<b>Electrical data</b>	
Protective circuit	Short circuit protected Polarity reversal protection
<b>Performance data</b>	
Supply voltage	10 ... 30 V, DC, Incl. residual ripple
Residual ripple	0 ... 15 %, From $U_B$
Open-circuit current	0 ... 15 mA
<b>Outputs</b>	
Number of digital switching outputs	1 Piece(s)
<b>Switching outputs</b>	
Voltage type	DC
Switching current, max.	100 mA
Switching voltage	Low: $\leq$ 2V High: $\geq(U_B-2V)$
<b>Switching output 1</b>	
Assignment	Connection 1, pin 4
Switching element	Transistor, PNP
Switching principle	Dark switching
<b>Timing</b>	
Switching frequency	3,000 Hz
Response time	0.17 ms
Readiness delay	300 ms
<b>Connection</b>	

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**Connection 1**

Type of connection	Connector
Function	Voltage supply Signal OUT
Thread size	M8
Type	Male
Material	Metal
No. of pins	3 -pin

**Mechanical data**

Dimension (W x H x L)	11.4 mm x 34.2 mm x 18.3 mm
Housing material	Plastic, PC-ABS
Lens cover material	Plastic / PMMA
Net weight	10 g
Housing color	Red
Type of fastening	Via optional mounting device Through-hole mounting
Compatibility of materials	ECOLAB

**Operation and display**

Type of display	LED
Operational controls	Teach button
Function of the operational control	Sensitivity adjustment

**Environmental data**

Ambient temperature, operation	-40 ... 55 °C
Ambient temperature, storage	-40 ... 70 °C





**Certifications**

Degree of protection	IP 69K IP 67
Protection class	III
Certifications	c UL US
Standards applied	IEC 60947-5-2

**Classification**

eCl@ss 8.0	27270902
eCl@ss 9.0	27270902
ETIM 5.0	EC002717

## Reflectors & reflective tapes

	Part no.	Designation	Operating range/ Operating range limit	Description
	50040894	MTKS 20x30	0 ... 1.6 m 0 ... 2.2 m	Design: Rectangular Reflective surface: 19 mm x 29 mm Triple reflector size: 1.2 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive
	50104130	MTKS 20x40.1	0 ... 1 m 0 ... 1.5 m	Design: Rectangular Reflective surface: 17 mm x 38 mm Triple reflector size: 12 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive
	50117583	MTKS 50x50.1	0 ... 2 m 0 ... 3 m	Design: Rectangular Reflective surface: 50 mm x 50 mm Triple reflector size: 1.2 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive
	50110192	REF 6-A-50x50	0 ... 1 m 0 ... 1.4 m	Design: Rectangular Reflective surface: 50 mm x 50 mm Triple reflector size: 0.3 mm Material: Plastic Chemical designation of the material: PMMA Fastening: Self-adhesive

## Dimensioned drawings

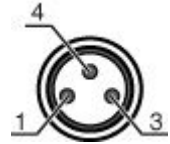
All dimensions in millimeters



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Connection 1	
Material	Metal
No. of pins	3 -pin
Encoding	

Pin	Pin assignment
1	V+
3	GND
4	OUT 1



## Operation and display

### LEDs

LED	Display	Meaning
1	Green, continuous light	Operational readiness
2	Yellow, continuous light	Light path free
	Yellow, flashing	Light path free, no function reserve

## Part number code






Part designation: **AAA 3C d EE-f.GG H/i J-K**

AAA3C	<b>Operating principle / construction:</b> HT3C: diffuse reflection sensor with background suppression LS3C: throughbeam photoelectric sensor transmitter LE3C: throughbeam photoelectric sensor receiver PRK3C: retro-reflective photoelectric sensor with polarization filter
d	<b>Light type:</b> n/a: red light I: infrared light
EE	<b>Light source:</b> n/a: LED L1: laser class 1 L2: laser class 2
f	<b>Pre-set range (optional):</b> n/a: operating range acc. to data sheet XXXX: pre-set range [mm]
GG	<b>Equipment:</b> n/a: standard A: autocollimation principle (single lens) for positioning tasks B: housing model with two M3 threaded sleeves, brass F: permanently set range L: long light spot S: small light spot T: autocollimation principle (single lens) for highly transparent bottles without tracking TT: autocollimation principle (single lens) for highly transparent bottles with tracking V: V-optics XL: extra long light spot
H	<b>Operating range adjustment:</b> n/a with HT: range adjustable via 8-turn potentiometer n/a with retro-reflective photoelectric sensors (PRK): operating range not adjustable 1: 270° potentiometer 3: teach-in via button 6: auto-teach











i	<p><b>Switching output/function OUT 1/IN: Pin 4 or black conductor:</b>                  2: NPN transistor output, light switching                  N: NPN transistor output, dark switching                  4: PNP transistor output, light switching                  P: PNP transistor output, dark switching                  6: push-pull switching output, PNP light switching, NPN dark switching                  G: push-pull switching output, PNP dark switching, NPN light switching                  L: IO-Link                  8: activation input (activation with high signal)                  X: pin not used</p>
J	<p><b>Switching output / function OUT 2/IN: pin 2 or white conductor:</b>                  2: NPN transistor output, light switching                  N: NPN transistor output, dark switching                  4: PNP transistor output, light switching                  P: PNP transistor output, dark switching                  6: push-pull switching output, PNP light switching, NPN dark switching                  G: push-pull switching output, PNP dark switching, NPN light switching                  W: warning output                  X: not connected (n. c.)                  8: activation input (activation with high signal)                  9: deactivation input (deactivation with high signal)                  T: teach-in via cable</p>
K	<p><b>Electrical connection:</b>                  n/a: cable, PVC, standard length 2000 mm, 4-wire                  5000: cable, PVC, standard length 5000 mm, 4-wire                  M8: M8 connector, 4-pin (plug)                  M8.3: M8 connector, 3-pin (plug)                  200-M8: cable, PVC, length 200 mm with M8 connector, 4-pin, axial (plug)                  200-M8.3: cable, PVC, length 200 mm with M8 connector, 3-pin, axial (plug)                  200-M12: cable, PVC, length 200 mm with M12 connector, 4-pin, axial (plug)</p>

## Accessories



### Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50130842	KD U-M8-3A-P1-020	Connection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PUR
	50130844	KD U-M8-3A-P1-050	Connection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR
	50130845	KD U-M8-3A-P1-100	Connection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR
	50130846	KD U-M8-3A-P1-150	Connection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 15,000 mm Sheathing material: PUR
	50130847	KD U-M8-3A-P1-200	Connection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 20,000 mm Sheathing material: PUR

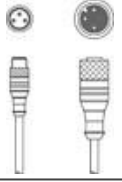
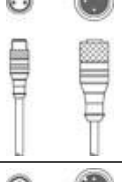
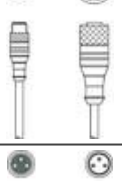
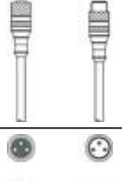
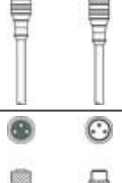
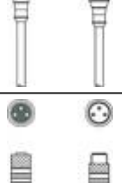
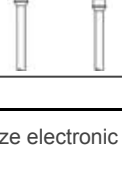
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	Part no.	Designation	Article	Description
	50130837	KD U-M8-3A-V1-020	Connection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC
	50130832	KD U-M8-3A-V1-050	Connection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC
	50130839	KD U-M8-3A-V1-100	Connection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PVC
	50130840	KD U-M8-3A-V1-150	Connection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 15,000 mm Sheathing material: PVC
	50130841	KD U-M8-3A-V1-200	Connection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 20,000 mm Sheathing material: PVC
	50130865	KD U-M8-3W-P1-020	Connection cable	Connection 1: Connector, M8, Angled, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PUR
	50130867	KD U-M8-3W-P1-050	Connection cable	Connection 1: Connector, M8, Angled, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR
	50130868	KD U-M8-3W-P1-100	Connection cable	Connection 1: Connector, M8, Angled, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR
	50130860	KD U-M8-3W-V1-020	Connection cable	Connection 1: Connector, M8, Angled, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC
	50130862	KD U-M8-3W-V1-050	Connection cable	Connection 1: Connector, M8, Angled, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC








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	Part no.	Designation	Article	Description
	50130863	KD U-M8-3W-V1-100	Connection cable	Connection 1: Connector, M8, Angled, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PVC
	50130864	KD U-M8-3W-V1-200	Connection cable	Connection 1: Connector, M8, Angled, Female, 3 -pin Connection 2: Open end Shielded: No Cable length: 20,000 mm Sheathing material: PVC

### Connection technology - Interconnection cables






	Part no.	Designation	Article	Description
	50130929	KDS U-M8-3A-M12-3A-P1-010	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 3 -pin Shielded: No Cable length: 1,000 mm Sheathing material: PUR
	50130931	KDS U-M8-3A-M12-3A-P1-020	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 3 -pin Shielded: No Cable length: 2,000 mm Sheathing material: PUR
	50130932	KDS U-M8-3A-M12-3A-P1-050	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 3 -pin Shielded: No Cable length: 5,000 mm Sheathing material: PUR
	50130901	KDS U-M8-3A-M8-3A-P1-003	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 300 mm Sheathing material: PUR
	50130902	KDS U-M8-3A-M8-3A-P1-006	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 600 mm Sheathing material: PUR
	50130903	KDS U-M8-3A-M8-3A-P1-010	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 1,000 mm Sheathing material: PUR
	50130905	KDS U-M8-3A-M8-3A-P1-020	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 2,000 mm Sheathing material: PUR

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	Part no.	Designation	Article	Description
	50130907	KDS U-M8-3A-M8-3A-P1-050	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 5,000 mm Sheathing material: PUR
	50130897	KDS U-M8-3A-M8-3A-V1-003	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 300 mm Sheathing material: PVC
	50130898	KDS U-M8-3A-M8-3A-V1-006	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 600 mm Sheathing material: PVC
	50130899	KDS U-M8-3A-M8-3A-V1-010	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 1,000 mm Sheathing material: PVC
	50130900	KDS U-M8-3A-M8-3A-V1-020	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 2,000 mm Sheathing material: PVC
	50130917	KDS U-M8-3W-M8-3A-P1-003	Interconnection cable	Connection 1: Connector, M8, Angled, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 300 mm Sheathing material: PUR
	50130918	KDS U-M8-3W-M8-3A-P1-006	Interconnection cable	Connection 1: Connector, M8, Angled, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 600 mm Sheathing material: PUR
	50130919	KDS U-M8-3W-M8-3A-P1-010	Interconnection cable	Connection 1: Connector, M8, Angled, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 1,000 mm Sheathing material: PUR
	50130920	KDS U-M8-3W-M8-3A-P1-020	Interconnection cable	Connection 1: Connector, M8, Angled, Female, 3 -pin Connection 2: Connector, M8, Axial, Male, 3 -pin Shielded: No Cable length: 2,000 mm Sheathing material: PUR

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## Mounting technology - Mounting brackets




	Part no.	Designation	Article	Description
	50118542	BT 200M.5	Mounting bracket	Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Adjustable Material: Stainless steel
	50124651	BT 205M-10SET	Mounting device set	Contains: 10x Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal
	50060511	BT 3	Mounting device	Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal
	50105585	BT 3.1	Mounting strap set	Contains: 10x Design of mounting device: Retaining clip Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal
	50105546	BT 3B	Mounting device	Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal

## Mounting technology - Rod mounts


	Part no.	Designation	Article	Description
	50117256	BTU 200M-D10	Mounting system	Contains: 2x M3 x 18 screw, 2x position washers Design of mounting device: Mounting system Fastening, at system: For 10 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal
	50117255	BTU 200M-D12	Mounting system	Contains: 2x M3 x 18 screw, 2x position washers Design of mounting device: Mounting system Fastening, at system: For 12 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal
	50117254	BTU 200M-D14	Mounting system	Contains: 2x M3 x 18 screw, 2x position washers Design of mounting device: Mounting system Fastening, at system: For 14 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal
	50120426	BTU 200M.5-D12	Mounting system	Contains: 2x M3 x 18 screw, 2x M3 mounting nut, 2x position washers Design of mounting device: Mounting system Fastening, at system: For 12 mm rod Mounting bracket, at device: Screw type Type of mounting device: Turning, 360°, Clampable, Adjustable Material: Stainless steel

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## Micro-triad-type reflectors

	Part no.	Designation	Article	Description
	50040894	MTKS 20x30	Reflector	Design: Rectangular Reflective surface: 19 mm x 29 mm Triple reflector size: 1.2 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive
	50104130	MTKS 20x40.1	Reflector	Design: Rectangular Reflective surface: 17 mm x 38 mm Triple reflector size: 12 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive
	50117583	MTKS 50x50.1	Reflector	Design: Rectangular Reflective surface: 50 mm x 50 mm Triple reflector size: 1.2 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive

## Reflective tapes for laser and clear-glass applications

	Part no.	Designation	Article	Description
	50110192	REF 6-A-50x50	Reflective tape	Design: Rectangular Reflective surface: 50 mm x 50 mm Triple reflector size: 0.3 mm Material: Plastic Chemical designation of the material: PMMA Fastening: Self-adhesive

## Notes

### Observe intended use!

- This product is not a safety sensor and is not intended as personnel protection.
- The product may only be put into operation by competent persons.
- Only use the product in accordance with its intended use.

### For UL applications:

- For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).
- These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)

**WARNING! LASER RADIATION – LASER CLASS 1**

The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of **laser class 1** as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24, 2007.

- Observe the applicable statutory and local laser protection regulations.
  - The device must not be tampered with and must not be changed in any way.  
There are no user-serviceable parts inside the device.  
Repairs must only be performed by Leuze electronic GmbH + Co. KG.
- 
- Light source: Average life expectancy 50,000 h at an ambient temperature of 25 °C
  - Response time: For short decay times, an ohmic load of approx. 5 kOhm is recommended
  - Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C