

the sensor people





Figure can vary

Part no.: 50136265
PRK3C.T3/PT-M8
Polarized retro-reflective photoelectric











# **Contents**

- Technical data
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- Dimensioned drawings
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#### **Technical data**

Basic data	
Series	3C
Operating principle	Reflection principle
Application	Detection of highly transparent bottles
Special design	
Special design	Autocollimation
Optical data	
Operating range	Guaranteed operating range
Operating range	0 3 m, With reflector TK(S) 100x100
Operating range limit	Typical operating range
Operating range limit	0 3.6 m, With reflector TK(S) 100x100
Light source	LED, Red
LED light wavelength	635 nm
Transmitted-signal shape	Pulsed
LED protection class	Exempt group (in acc. with EN 62471)
Electrical data	
Protective circuit	Short circuit protected Polarity reversal protection
Performance data	
Supply voltage	10 30 V, DC, Incl. residual ripple
Residual ripple	0 15 %, From U <sub>B</sub>
Open-circuit current	0 15 mA
Inputs	
Number of teach inputs	1 Piece(s)
Teach inputs	
Voltage type	DC
Switching voltage	low: $\leq$ 0,35 x U <sub>B</sub> high: $\geq$ 0,65 x U <sub>B</sub>
Delay	1 ms
Input resistance	20,000 Ω
Teach input 1	
Function	Light/dark switching Keyboard lockout Sensitivity adjustment
Active switching state	High
Outputs	
Number of digital switching outputs	1 Piece(s)
Switching outputs	
Voltage type	DC
Switching current, max.	100 mA
Switching voltage	High: ≥(U <sub>B</sub> -2V) Low: ≤2V
Switching output 1	
Assignment	Connection 1, pin 4
Switching element	Transistor, PNP
Switching principle	Dark switching



Timing		
Switching frequency	1,500 Hz	
Response time	0.33 ms	
Readiness delay	300 ms	
Response jitter	110 µs	

Connection			
Connection 1			
Type of connection	Connector		
Function	Signal IN Signal OUT Voltage supply		
Thread size	M8		
Туре	Male		
Material	Metal		
No. of pins	4 -pin		

Mechanical data	
Design	Cubic
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	Through-hole mounting Via optional mounting device
Compatibility of materials	ECOLAB

Operation and display	
Type of display	LED
Number of LEDs	2 Piece(s)
Operational controls	Teach button
Function of the operational control	Scanning range adjustment

Environmental data	
Ambient temperature, operation	-40 60 °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	



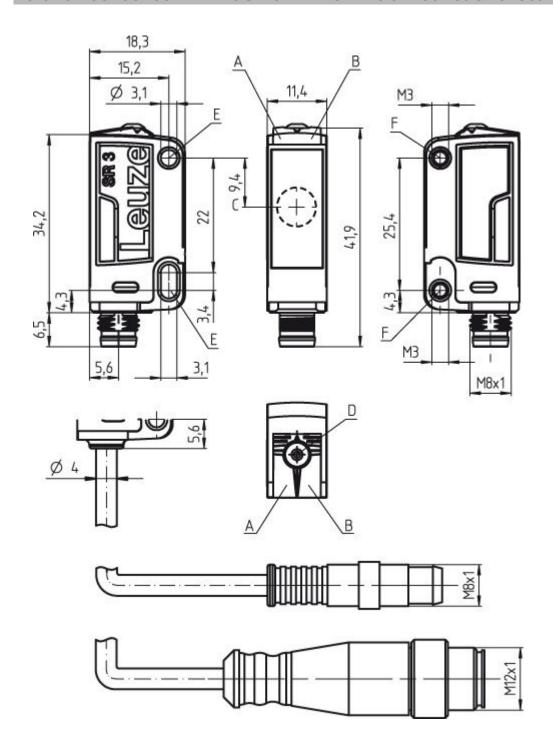
#### Reflectors & reflective tapes

Part no.	Designation	Operating range/ Operating range limit	Description
50117583	MTKS 50x50.1	0 1.3 m 0 1.6 m	Design: Rectangular Reflective surface: 50 mm x 50 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive
50110192	REF 6-A-50x50	0 1.2 m 0 1.4 m	Design: Rectangular Reflective surface: 50 mm x 50 mm Material: Plastic Chemical designation of the material: PMMA Fastening: Self-adhesive
50003192	TK 100x100	0 3 m 0 3.6 m	Design: Rectangular Reflective surface: 96 mm x 96 mm Triple reflector size: 4 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Adhesive
50022816	TKS 100X100	0 3 m 0 3.6 m	Design: Rectangular Reflective surface: 96 mm x 96 mm Triple reflector size: 4 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive
50081283	TKS 20X40	0 1 m 0 1.2 m	Design: Rectangular Reflective surface: 16 mm x 38 mm Triple reflector size: 2.3 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive
50040820	TKS 40X60	0 2 m 0 2.4 m	Design: Rectangular Reflective surface: 37 mm x 56 mm Triple reflector size: 4 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive

### **Dimensioned drawings**

All dimensions in millimeters





- Green LED Yellow LED A B C D E F
- Optical axis
- Teach button
- Mounting sleeve (standard)
  Threaded sleeve (3C.B series)

#### **Electrical connection**

Connection 1	
Type of connection	Connector



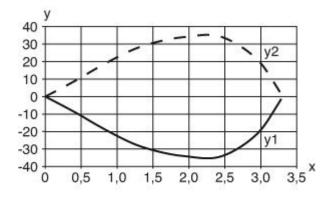
Connection 1	
Function	Signal IN Signal OUT Voltage supply
Thread size	M8
Туре	Male
Material	Metal
No. of pins	4 -pin
Encoding	

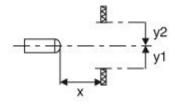
Pin	Pin assignment
1	V+
2	Teach-in
3	GND
4	OUT 1



### **Diagrams**

#### Typ. response behavior

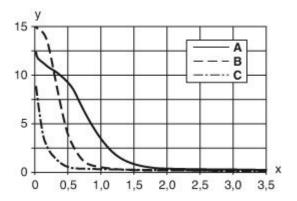




Distance [m] Misalignment [mm]



#### Typ. function reserve



Distance [m]

Function reserve y A B C

TKS 40x60

TKS 20x40

Film REF 4-A-50x50

### **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

#### **Accessories**

# Connection technology - Connection cables

Part no.	Designation	Article	Description
50130854	KD U-M8-4A- P1-020	Connection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PUR
50130855	KD U-M8-4A- P1-030	Connection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 3,000 mm Sheathing material: PUR
50130856	KD U-M8-4A- P1-050	Connection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR



Part no.	Designation	Article	Description
50130857	KD U-M8-4A- P1-100	Connection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR
50130858	KD U-M8-4A- P1-150	Connection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 15,000 mm Sheathing material: PUR
50130859	KD U-M8-4A- P1-200	Connection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 20,000 mm Sheathing material: PUR
50130848	KD U-M8-4A- V1-020	Connection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC
50130849	KD U-M8-4A- V1-030	Connection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 3,000 mm Sheathing material: PVC
1	KD U-M8-4A- V1-050	Connection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC
50130851	KD U-M8-4A- V1-100	Connection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PVC
50130852	KD U-M8-4A- V1-150	Connection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 15,000 mm Sheathing material: PVC
50130853	KD U-M8-4A- V1-200	Connection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 20,000 mm Sheathing material: PVC
50130873	KD U-M8-4W- P1-020	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PUR



Part no	Designation	Article	Description
5013088	0 KD U-M8-4W- P1-020-DP	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connector, LED: Yes, 1 Piece(s) Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PUR
5013087	4 KD U-M8-4W- P1-030	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 3,000 mm Sheathing material: PUR
5013087	5 KD U-M8-4W- P1-050	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR
5013088	1 KD U-M8-4W- P1-050-DP	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connector, LED: Yes, 1 Piece(s) Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR
5013087	6 KD U-M8-4W- P1-100	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR
5013088	2 KD U-M8-4W- P1-100-DP	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connector, LED: Yes, 1 Piece(s) Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR
5013086	9 KD U-M8-4W- V1-020	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC
5013087	7 KD U-M8-4W- V1-020-DP	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connector, LED: Yes, 1 Piece(s) Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC
5013087	0 KD U-M8-4W- V1-030	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 3,000 mm Sheathing material: PVC
5013087	1 KD U-M8-4W- V1-050	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC



	Part no.	Designation	Article	Description
W	50130878	KD U-M8-4W- V1-050-DP	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connector, LED: Yes, 1 Piece(s) Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC
W	50130872	KD U-M8-4W- V1-100	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PVC
W	50130879	KD U-M8-4W- V1-100-DP	Connection cable	Connection 1: Connector, M8, Angled, Female, 4 -pin Connector, LED: Yes, 1 Piece(s) Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PVC

# Connection technology - Interconnection cables

	Part no.	Designation	Article	Description
<b>3</b>	50130913	KDS U-M8-4A- M8-4A-P1-003	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Connector, M8, Axial, Male, 4 -pin Shielded: No Cable length: 300 mm Sheathing material: PUR
	50130914	KDS U-M8-4A- M8-4A-P1-006	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Connector, M8, Axial, Male, 4 -pin Shielded: No Cable length: 600 mm Sheathing material: PUR
	50130915	KDS U-M8-4A- M8-4A-P1-010	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Connector, M8, Axial, Male, 4 -pin Shielded: No Cable length: 1,000 mm Sheathing material: PUR
	50130916	KDS U-M8-4A- M8-4A-P1-020	Interconnection cable	Connection 1: Connector, M8, Axial, Female, 4 -pin Connection 2: Connector, M8, Axial, Male, 4 -pin Shielded: No Cable length: 2,000 mm Sheathing material: PUR

# Mounting technology - Mounting brackets

	Part no.	Designation	Article	Description
1:1	50118542	BT 200M.5		Design of mounting device: Angle, L-shape Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Adjustable Material: Stainless steel



Part no.	Designation	Article	Description
50124651	BT 205M	Mounting device set	Contains: 10x Design of mounting device: Angle, L-shape Mounting bracket, 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 Mounting bracket, 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 Mounting bracket, 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 Mounting bracket, 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 Mounting bracket, 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 Mounting bracket, 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 Mounting bracket, 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 Mounting bracket, at system: For 12 mm rod Mounting bracket, at device: Screw type Type of mounting device: Turning, 360°, Clampable, Adjustable Material: Stainless steel



#### Standard reflectors

Part no.	Designation	Article	Description
50134985	MTKS 20x30.1	Reflector	Design: Rectangular Reflective surface: 18.5 mm x 28.5 mm Triple reflector size: 1 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA Fastening: Through-hole mounting, Adhesive
50003192	TK 100x100	Reflector	Design: Rectangular Reflective surface: 96 mm x 96 mm Triple reflector size: 4 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Adhesive
50022816	TKS 100X100	Reflector	Design: Rectangular Reflective surface: 96 mm x 96 mm Triple reflector size: 4 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive
50081283	TKS 20X40	Reflector	Design: Rectangular Reflective surface: 16 mm x 38 mm Triple reflector size: 2.3 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive
50040820	TKS 40X60	Reflector	Design: Rectangular Reflective surface: 37 mm x 56 mm Triple reflector size: 4 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive

# Micro-triad-type reflectors

Par	rt no. Designat	ion Article	Description
50117	7583 MTKS 50x8	50.1 Reflector	Design: Rectangular Reflective surface: 50 mm x 50 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 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)
- Light source: Average life expectancy 100,000 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
- · The light spot may not exceed the reflector.
- Use of MTK(S) or REF 6-A- reflective tape is preferred.
- For REF 6-A reflective tape, the sensor's side edge must be aligned parallel to the side edge of the reflective tape.