



Figure can vary

**Part no.: 50133656**  
**PRK3C.BT3/4T-M8**  
**Polarized retro-reflective photoelectric sensor**



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## Technical data

<b>Basic data</b>	
Series	3C
Operating principle	Reflection principle
Application	Detection of highly transparent bottles Detection of transparent films
<b>Special design</b>	
Special design	Autocollimation
<b>Optical data</b>	
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 group	Exempt group (in acc. with EN 62471)
<b>Electrical data</b>	
Protective circuit	Polarity reversal protection Short circuit protected
<b>Performance data</b>	
Supply voltage $U_B$	10 ... 30 V , DC , Incl. residual ripple
Residual ripple	0 ... 15 % , From $U_B$
Open-circuit current	0 ... 15 mA
<b>Inputs</b>	
Number of teach inputs	1 Piece(s)
<b>Teach inputs</b>	
Voltage type	DC
Switching voltage	high: $\geq 0,65 \times U_B$ low: $\leq 0,35 \times U_B$
Delay	1 ms
Input resistance	20,000 $\Omega$
<b>Teach input 1</b>	
Assignment	Connection 1, pin 2
Function	Keyboard lockout Light/dark switching Sensitivity adjustment
Active switching state	High

**Outputs**

Number of digital switching outputs	1 Piece(s)
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**Switching outputs**

Voltage type	DC
Switching current, max.	100 mA
Switching voltage	High: $\geq(U_B-2V)$ Low: $\leq 2V$

**Switching output 1**

Assignment	Connection 1, pin 4
Switching element	Transistor , PNP
Switching principle	Light switching

**Timing**

Switching frequency	1,500 Hz
Response time	0.33 ms
Readiness delay	300 ms
Response jitter	110 $\mu$ s

**Connection**
**Connection 1**

Function	Signal IN Signal OUT Voltage supply
Type of connection	Connector
Thread size	M8
Type	Male
Material	Metal
No. of pins	4 -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	Two M3 threaded sleeves 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	Sensitivity adjustment

**Environmental data**

Ambient temperature, operation	-40 ... 60 °C
Ambient temperature, storage	-40 ... 70 °C

**Certifications**

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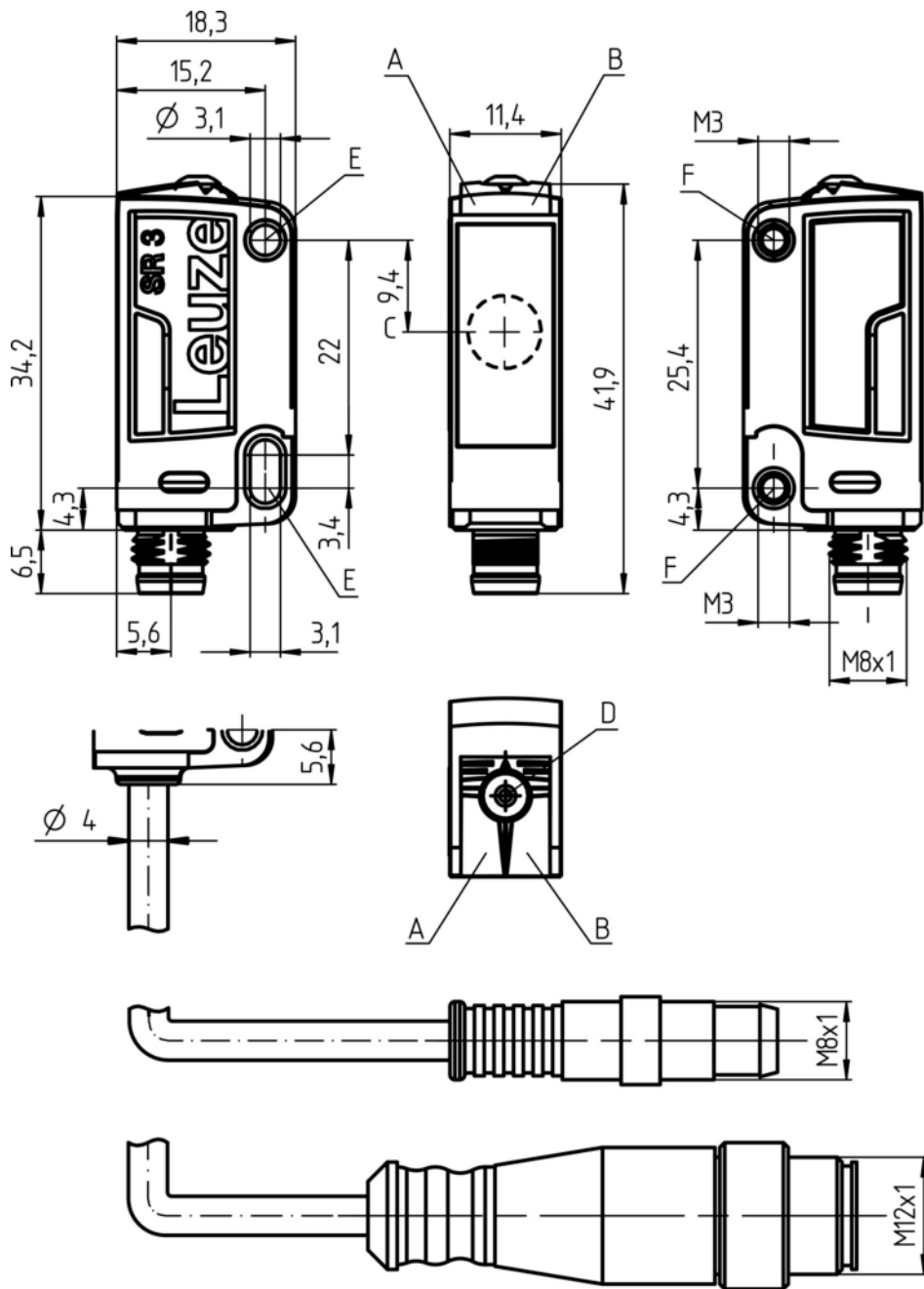
Degree of protection	IP 67 IP 69K
Protection class	III
Certifications	c UL US
Standards applied	IEC 60947-5-2

#### **Classification**

Customs tariff number	85365019
eCl@ss 8.0	27270902
eCl@ss 9.0	27270902
ETIM 5.0	EC002717
ETIM 6.0	EC002717

## **Dimensioned drawings**

All dimensions in millimeters



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

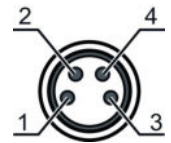
## Electrical connection

Connection 1	
Function	Signal IN Signal OUT Voltage supply
Type of connection	Connector
Thread size	M8

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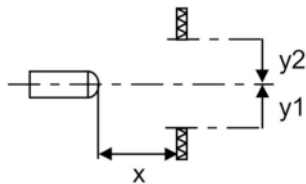
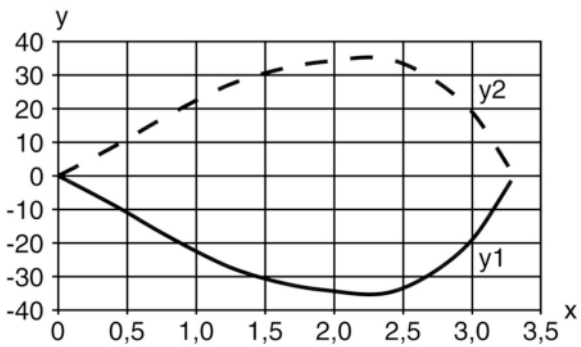
Connection 1	
Type	Male
Material	Metal
No. of pins	4 -pin
Encoding	

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



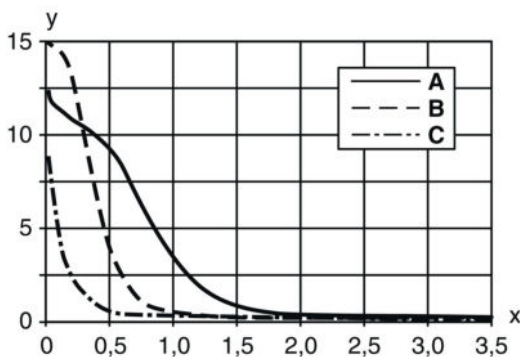
### Diagrams

Typ. response behavior



x Distance [m]  
y Misalignment [mm]

Typ. function reserve








x Distance [m]  
 y Function reserve  
 A TKS 40x60  
 B TKS 20x40  
 C 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

## 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 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 ... 1.2 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
	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

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	Part no.	Designation	Operating range/ Operating range limit	Description
	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

## 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 l: infrared light
EE	<b>Light source:</b> n/a: LED L1: laser class 1 L2: laser class 2
f	<b>Preset range (optional):</b> n/a: operating range acc. to data sheet xxxF: preset 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 X: extended model
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	<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 interface (SIO mode: PNP light switching, NPN dark switching) 8: activation input (activation with high signal) X: pin not used 1: IO-Link / light switching (NPN) / dark switching (PNP)
J	<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: pin not used 8: activation input (activation with high signal) 9: deactivation input (deactivation with high signal) T: teach-in via cable



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K	<b>Electrical connection:</b> n/a: cable, standard length 2000 mm, 4-wire 5000: cable, standard length 5000 mm, 4-wire M8: M8 connector, 4-pin (plug) M8.3: M8 connector, 3-pin (plug) 200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug) 200-M8.3: cable, length 200 mm with M8 connector, 3-pin, axial (plug) 200-M12: cable, length 200 mm with M12 connector, 4-pin, axial (plug)
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<b>Note</b>
A list with all available device types can be found on the Leuze website at <a href="http://www.leuze.com">www.leuze.com</a> .

## Notes


<b>Observe intended use!</b>
<ul style="list-style-type: none"> <li>• This product is not a safety sensor and is not intended as personnel protection.</li> <li>• The product may only be put into operation by competent persons.</li> <li>• Only use the product in accordance with its intended use.</li> </ul>

<b>For UL applications:</b>
<ul style="list-style-type: none"> <li>• For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).</li> <li>• 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)</li> </ul>


- 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.

## Accessories


### Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50130850	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


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	Part no.	Designation	Article	Description
	50130871	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


**Mounting technology - Mounting brackets**

	Part no.	Designation	Article	Description
	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


**Mounting technology - Rod mounts**

	Part no.	Designation	Article	Description
	50117255	BTU 200M-D12	Mounting system	Design of mounting device: Mounting system Fastening, at system: For 12 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type, Suited for M3 screws Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal

**Micro-triad-type reflectors**

	Part no.	Designation	Article	Description
	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
	50109257	TKS 40x60.1	Reflector	Design: Rectangular Reflective surface: 37 mm x 56 mm Triple reflector size: 2.3 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive

**Note**

A list with all available accessories can be found on the Leuze electronic website in the Download tab of the article detailed page.