

## Technical data sheet

### Polarized retro-reflective photoelectric

Part no.: 50133705

PRK3CL1.BT3/4T-200-M8



#### Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Operation and display
- Reflectors & reflective tapes
- Part number code
- Notes
- Further information
- Accessories



## Technical data

### Basic data

Series	3C
Operating principle	Reflection principle
Application	Detection of highly transparent bottles Detection of transparent films

### Special version

Special version	Autocollimation
-----------------	-----------------

### Optical data

Operating range	Guaranteed operating range
Operating range	0 ... 0.4 m
Operating range limit	Typical operating range
Operating range limit	0 ... 0.5 m
Beam path	Collimated
Light source	Laser, Red
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 [500 mm]
Type of light spot geometry	Round
Shift angle	Typ. $\pm$ 2°

### Electrical data

Protective circuit	Polarity reversal protection Short circuit protected
--------------------	---

#### Performance data

Supply voltage $U_B$	10 ... 30 V, DC, Incl. residual ripple
Residual ripple	0 ... 15 %, From $U_B$
Open-circuit current	0 ... 15 mA

#### Inputs

Number of teach inputs	1 Piece(s)
------------------------	------------

#### Teach inputs

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 $\Omega$

#### Teach input 1

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)
-------------------------------------	------------

#### 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	3,000 Hz
Response time	0.17 ms
Readiness delay	300 ms

### Connection

#### Connection 1

Function	Signal IN Signal OUT Voltage supply
Type of connection	Cable with connector
Cable length	200 mm
Sheathing material	PUR
Cable color	Black
Wire cross section	0.2 mm <sup>2</sup>
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
Plastic housing	PC-ABS
Lens cover material	Plastic / PMMA
Net weight	20 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 ... 55 °C
Ambient temperature, storage	-40 ... 70 °C

### Certifications

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

## Technical data

Customs tariff number	85365019
eCl@ss 5.1.4	27270902
eCl@ss 8.0	27270902
eCl@ss 9.0	27270902
eCl@ss 10.0	27270902
eCl@ss 11.0	27270902
ETIM 5.0	EC002717
ETIM 6.0	EC002717
ETIM 7.0	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

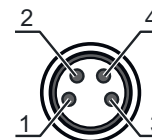
Function	Signal IN
	Signal OUT
	Voltage supply
Type of connection	Cable with connector
Cable length	200 mm
Sheathing material	PUR

## Electrical connection

### Connection 1

Cable color	Black
Wire cross section	0.2 mm <sup>2</sup>
Thread size	M8
Type	Male
Material	Metal
No. of pins	4 -pin




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



## Operation and display

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	Description
	50110191	REF 6-A-25x25	0 ... 0.4 m 0 ... 0.5 m	Design: rechteckig Triple reflector size: 0.3 mm Reflective surface: 25 mm x 25 mm Material: Kunststoff Chemical designation of the material: PMMA Fastening: selbstklebend
	50114185	REF 6-S-20x40	0 ... 0.4 m 0 ... 0.5 m	Design: rechteckig Triple reflector size: 0.3 mm Reflective surface: 16 mm x 38 mm Material: Kunststoff Base material: Kunststoff Chemical designation of the material: PMMA8N Fastening: schraubbar
	50112142	TK BR 53	0 ... 0.4 m 0 ... 0.5 m	Design: rechteckig Triple reflector size: 0.3 mm Reflective surface: 29 mm x 10 mm Material: Kunststoff Base material: Edelstahl Chemical designation of the material: Edelstahl Fastening: Gehäusepassung

## Part number code

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

AAA3C	Operating principle / construction
	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

## Part number code

<b>d</b>	<b>Light type</b> n/a: red light l: infrared light
<b>EE</b>	<b>Light source</b> n/a: LED L1: laser class 1 L2: laser class 2
<b>f</b>	<b>Preset range (optional)</b> n/a: operating range acc. to data sheet xxxF: Preset range [mm]
<b>GG</b>	<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 HF: Suppression of HF illumination (LED)
<b>H</b>	<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
<b>i</b>	<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)
<b>J</b>	<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
<b>K</b>	<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)

### Note



A list with all available device types can be found on the Leuze website at [www.leuze.com](http://www.leuze.com).

## Notes

⚠ Observe intended use!	
	<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>

For UL applications:	
	<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>

⚠ WARNING! LASER RADIATION – CLASS 1 LASER PRODUCT	
	<p>The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of <b>laser class 1</b> as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24, 2007.</p> <ul style="list-style-type: none"> <li>⌘ Observe the applicable statutory and local laser protection regulations.</li> <li>⌘ 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.</li> </ul>

## Further information

- 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. 5kOhm is recommended
- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C
- For REF 6-A reflective tape, the sensor's side edge must be aligned parallel to the side edge of the reflective tape.
- The devices may only be operated with the reflectors listed above.


## 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
	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

## Accessories


### Mounting technology - Mounting brackets

	Part no.	Designation	Article	Description
	50139831	BT 205M	Mounting device	Fastening, at system: Durchgangsbefestigung Mounting bracket, at device: schraubbar Type of mounting device: starr Material: Metall


### Mounting technology - Rod mounts

	Part no.	Designation	Article	Description
	50117255	BTU 200M-D12	Mounting system	Design of mounting device: Montagesystem Fastening, at system: für Rundstange 12 mm, Blechklemmbefestigung Mounting bracket, at device: schraubbar, für M3-Schrauben geeignet Type of mounting device: klemmbar, drehbar 360°, justierbar Material: Metall

### Micro-triad-type reflectors

	Part no.	Designation	Article	Description
	50114185	REF 6-S-20x40	Reflector	Design: rechteckig Triple reflector size: 0.3 mm Reflective surface: 16 mm x 38 mm Material: Kunststoff Base material: Kunststoff Chemical designation of the material: PMMA8N Fastening: schraubbar

### Reflective tapes for laser and clear-glass applications

	Part no.	Designation	Article	Description
	50110191	REF 6-A-25x25	Reflective tape	Design: rechteckig Triple reflector size: 0.3 mm Reflective surface: 25 mm x 25 mm Material: Kunststoff Chemical designation of the material: PMMA Fastening: selbstklebend

#### Note



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