

# **Technical data sheet Polarized retro-reflective photoelectric**

Part no.: 50133736

PRK3CL1.BTT3/4P-200-M12



### 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
	Tracking function

### **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, in accordance with IEC 60825-1:2014 (EN 60825-1:2014)
Max. laser power	0.0017 W
Transmitted-signal shape	Pulsed
Pulse duration	5.3 µs
Light spot size [at sensor distance]	1 mm [500 mm]
Type of light spot geometry	Round
Shift angle	Typ. ± 2°

#### **Electrical data**

Protective circuit	Polarity reversal protection
	Short circuit protected

#### Performance data

Supply voltage U <sub>B</sub>	10 30 V, DC, Incl. residual ripple
Residual ripple	0 15 %, From U <sub>B</sub>
Open-circuit current	0 15 mA

### Outputs

Number of digital switching outputs 2 Piece(s)

### **Switching outputs**

Voltage type	DC
Switching current, max.	100 mA
Switching voltage	high: ≥(U <sub>B</sub> -2V)
	low: ≤ 2 V

### Switching output 1

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

#### Switching output 2

Assignment	Connection 1, pin 2	
Switching element	Transistor, PNP	
Switching principle	Dark switching	

### Time behavior

Switching frequency	3,000 Hz
Response time	0.17 ms
Readiness delay	300 ms

Connection 1	
Function	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	M12
Туре	Male
Material	Metal
No. of pins	4 -pin

A-coded

### **Mechanical data**

Encoding

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	

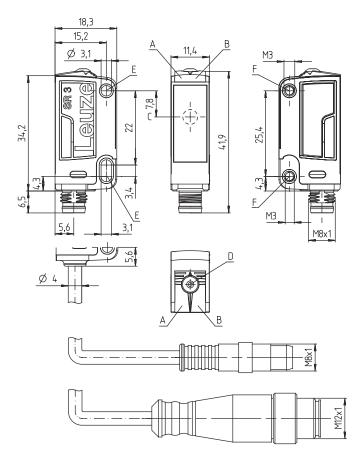
### Classification

Customs tariff number	85365019	
ECLASS 5.1.4	27270902	
ECLASS 8.0	27270902	
ECLASS 9.0	27270902	
ECLASS 10.0	27270902	
ECLASS 11.0	27270902	
ETIM 5.0	EC002717	
ETIM 6.0	EC002717	
ETIM 7.0	EC002717	

# **Dimensioned drawings**

Leuze

All dimensions in millimeters



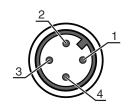
- A Green LED
- B Yellow LED
- C Optical axis
- D Teach button
- E Mounting sleeve (standard)
- F Threaded sleeve (3C.B series)

## **Electrical connection**

### **Connection 1**

Function	Signal 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	M12
Туре	Male
Material	Metal
No. of pins	4 -pin
Encoding	A-coded

Pin	Pin assignment
1	V+
2	OUT 2
3	GND
4	OUT 1







LED	Display	Meaning
1	Green, continuous light	Operational readiness
2	Yellow, continuous light	Light path free

# 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: Rectangular Triple reflector size: 0.3 mm Reflective surface: 25 mm x 25 mm Material: Plastic Chemical designation of the material: PMMA Fastening: Self-adhesive
	50114185	REF 6-S-20x40	0 0.4 m 0 0.5 m	Design: Rectangular Triple reflector size: 0.3 mm Reflective surface: 16 mm x 38 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Screw type
	50112142	TK BR 53	0 0.4 m 0 0.5 m	Design: Rectangular Triple reflector size: 0.3 mm Reflective surface: 29 mm x 10 mm Material: Plastic Base material: Stainless steel Chemical designation of the material: Stainless steel Fastening: Housing fit

### 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 ODT3C: Distance diffuse sensor with background suppression
d	Light type n/a: red light I: infrared light
EE	Light source n/a: LED L1: laser class 1 L2: laser class 2
f	Preset range (optional) n/a: operating range acc. to data sheet xxxF: Preset range [mm]
GG	Equipment 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)

### Part number code



н	Operating range adjustment  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	Switching output/function OUT 1/IN: Pin 4 or black conductor  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	Switching output / function OUT 2/IN: pin 2 or white conductor  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
К	Electrical connection 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)

### Note



 $\ ^{\mbox{\tiny $b$}}\ \mbox{A list with all available device types can be found on the Leuze website at www.leuze.com.}$ 

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)

### **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.
- by 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)

The Sensor People In der Braike 1, 73277 Owen

Leuze electronic GmbH + Co. KG info@leuze.com • www.leuze.com

### **Notes**





### WARNING! LASER RADIATION - CLASS 1 LASER PRODUCT



The device satisfies the requirements of IEC/EN 60825-1:2014 safety regulations for a product of **laser class 1** and complies with 21 CFR 1040.10 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

- b 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.

### **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
W D	50130652	KD U-M12-4A-V1- 050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5.000 mm Sheathing material: PVC
W D	50130690	KD U-M12-4W-V1- 050	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5.000 mm Sheathing material: PVC

# Mounting technology - Mounting brackets

Part no.	Designation	Article	Description
50139831	BT 205M	Mounting device	Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal



### **Accessories**



# 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
50114185	REF 6-S-20x40	Reflector	Design: Rectangular Triple reflector size: 0.3 mm Reflective surface: 16 mm x 38 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Screw type

# Reflective tapes for laser and clear-glass applications

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

### Note

