

Technical data sheet Polarized retro-reflective photoelectric

Part no.: 50133733 PRK3CL1.BTT3/LP-200-M8



The Sensor People In der Braike 1, 73277 Owen

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We reserve the right to make technical changes eng • 2020-07-23

Reflection principle

Autocollimation Tracking function

Detection of highly transparent bottles Detection of transparent films

3C

Technical data

Leuze

Basic data

Series Operating principle Application

Special version

Special version

Optical data

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
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 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 _B	10 30 V, DC, Incl. residual ripple
Residual ripple	0 15 %, From U _B
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 _B -2V)
	Low: ≤2V
Switching output 1	
Assignment	Connection 1, pin 4
Switching element	Transistor, Push-pull
Switching principle	IO-Link / light switching (PNP)/dark swit- ching (NPN)
Switching output 2	
Assignment	Connection 1, pin 2
Switching element	Transistor, PNP
Switching principle	Dark switching

Timing

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

In	te	rfa	се
			00

Т	уре	IO-Link
	IO-Link	
	COM mode	COM2
	Frame type	2.5
	Specification	V1.1
	SIO-mode support	Yes
	Min. cycle time	COM2 = 2.3 ms

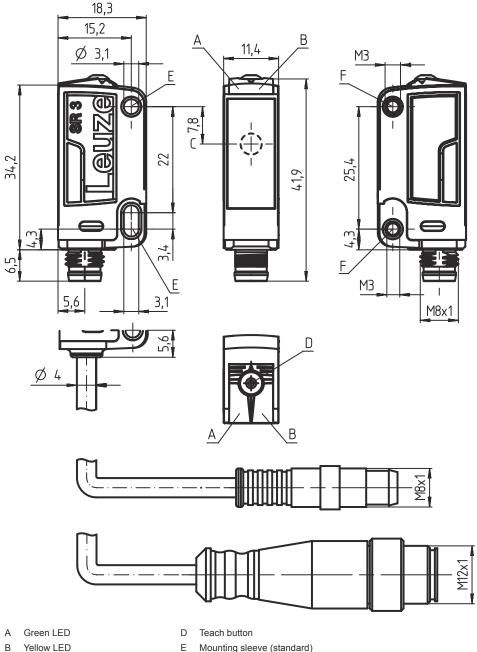
Connection

Connection 1FunctionSignal IN Signal OUT Voltage supplyType of connectionCable with connectorCable length200 mmShathling materialPURCable colorBlackWire cross section0.2 mm²Thread sizeM8TypeMaleMaterialMetalNo. of pins4 -pinHousing materialPlastic, PC-ABSLens cover materialPlastic, PC-ABSLens cover materialPlastic, PC-ABSLens cover materialPlastic, PC-ABSVery of fasteningTwo M3 threaded sleevesVia optional mounting deviceVia optional mounting deviceCompatibility of materialsECOLABOperation and displayLEDNumber of LEDS2 Piece(s)Operational controlsTeach buitonFunction of the operational controlSensitivity adjustmentEnvironmental dataIIDiffections2 Piece(s)Operational controlsTeach buitonEnvironmental dataIIMaterial controlSensitivity adjustmentEnvironmental dataIIICertificationsc UL USStandards appliedIIP 67 IP 69KProtection classIIICastificationsc UL USStandards appliedIEC 60947-5-2Castificationsc UL USStandards appliedECOU2717ETM 5.0EC002717		
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 mm² Thread size M8 Type Male Material Metal No. of pins 4 -pin Mechanical data Plastic, PC-ABS Lens cover material Plastic, PC-ABS Lens cover material Plastic / PMMA Net weight 20 g Housing color Red Type of display LED Number of LEDs 2 Piece(s) Operation and display LED Number of LEDs 2 Piece(s) Operational controls Teach button Function of the operational control Sensitivity adjustment Environmental data IP 67 IP 69K IP 69K Protection class III Certifications c UL US Standards applied IEC 60947-5-2 Classification 27270902		
Voltage supplyType of connectionCable with connectorCable length200 mmSheathing materialPURCable colorBlackWire cross section0.2 mm²Thread sizeM8TypeMaleMaterialMetalNo. of pins4 -pinMechanical dataPlastic, PC-ABSLens cover materialPlastic, PC-ABSLens cover materialPlastic / PMMANet weight20 gHousing colorRedType of fasteningVia optional mounting deviceCompatibility of materialsECOLABOperation and displayLEDNumber of LEDs2 Plece(s)Operational controlsTeach buttonFunction of the operational controlSensitivity adjustmentEnvironmental data110 55 °CAmbient temperature, operation-10 55 °CAmbient temperature, storage-40 70 °CCertificationsIIICertificationsc UL USStandards appliedIEC 60947-5-2ClassificationIIICustoms tariff number85365019eCi@ss 9.027270902eCi@ss 9.027270902eCi@ss 9.027270902eCi@ss 9.027270902eCi@ss 9.027270902eCi@ss 9.027270902	Function	Signal IN
Type of connectionCable with connectorCable length200 mmSheathing materialPURCable colorBlackWire cross section0.2 mm²Thread sizeMaMaterialMetalNo. of pins4 -pinMechanical dataPlastic, PC-ABSLens cover materialPlastic, PC-ABSLens cover materialPlastic, PC-ABSNot weight20 gHousing colorRedType of fasteningTwo M3 threaded sleevesVia optional mounting deviceConpatibility of materialsCompatibility of materials2 Plece(s)Operation and displayLEDNumber of LEDs2 Plece(s)Operational controlsTeach buttonFunction of the operational controlSensitivity adjustmentEnvironmental dataIIICertificationsc UL USProtection classIIICertificationsc UL USStandards appliedIEC 60947-5-2Classification27270902Ertificatios \$0,027270902Ertifies \$0,027270902ETIM 5.0EC002717		Signal OUT
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Cable color Black Wire cross section 0.2 mm ² 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, 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 operation of the operational control Environmental data Ambient temperature, operation -10 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 ecI@ss 8.0 ecI@ss 9.0 ETIM 5.0	Cable length	200 mm
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No. of pins4 - pinMechanical dataDimension (W x H x L)11.4 mm x 34.2 mm x 18.3 mmHousing materialPlastic, PC-ABSLens cover materialPlastic / PMMANo. of pins20 gHousing colorRedType of fasteningTwo M3 threaded sleeves Via optional mounting deviceCompatibility of materialsECOLABOperation and displayLEDNumber of LEDs2 Piece(s)Operational controlsTeach buttonFunction of the operational controlSensitivity adjustmentEnvironmental data-40 70 °CAmbient temperature, operation-10 55 °CAmbient temperature, storage-40 70 °CCertificationsc UL USStandards appliedIEC 60947-5-2ClassificationEC 0947-5-2Classification27270902eCl@ss 8.027270902eCl@ss 9.027270902ETIM 5.0EC002717	•••	Male
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 20 g Housing color Red Type of fastening Two M3 threaded sleeves Via optional mounting device ECOLAB Operation and display EED Number of LEDs 2 Piece(s) Operational controls Teach button Function of the operational control Sensitivity adjustment Environmental data -10 55 °C Ambient temperature, operation -10 55 °C Ambient temperature, storage -40 70 °C Certifications III Certifications IEC 60947-5-2 Classification IEC 60947-5-2 Classification 27270902 ecI@oss 8.0 27270902 ecI@oss 9.0 27270902 EtIM 5.0 EC002717		Metal
Dimension (W x H x L)11.4 mm x 34.2 mm x 18.3 mmHousing materialPlastic, PC-ABSLens cover materialPlastic / PMMANet weight20 gHousing colorRedType of fasteningTwo M3 threaded sleeves Via optional mounting deviceCompatibility of materialsECOLABOperation and displayLEDNumber of LEDs2 Piece(s)Operational controlsTeach buttonFunction of the operational controlSensitivity adjustmentEnvironmental data-10 55 °CAmbient temperature, operation-10 55 °CAmbient temperature, storage-40 70 °CCertificationsIIIDegree of protectionII e69KProtection classIIICustoms tariff number85365019ecQess 8.027270902ecQess 9.027270902ETIM 5.0ECO2717	No. of pins	4 -pin
Housing materialPlastic, PC-ABSLens cover materialPlastic / PMMANet weight20 gHousing colorRedType of fasteningTwo M3 threaded sleeves Via optional mounting deviceCompatibility of materialsECOLABOperation and displayLEDNumber of LEDs2 Piece(s)Operational controlsTeach buttonFunction of the operational controlSensitivity adjustmentEnvironmental data-10 55 °CAmbient temperature, operation-10 55 °CAmbient temperature, storage-40 70 °CCertificationsIIIPotection classIIIClassificationIEC 60947-5-2Classification27270902ecl@ss 8.027270902ecl@ss 9.027270902ETIM 5.0ECO22717	Mechanical data	
Lens cover materialPlastic / PMMANet weight20 gHousing colorRedType of fasteningTwo M3 threaded sleeves Via optional mounting deviceCompatibility of materialsECOLABOperation and displayLEDNumber of LEDs2 Piece(s)Operational controlsTeach buttonFunction of the operational controlSensitivity adjustmentEnvironmental data-10 55 °CAmbient temperature, operation-10 55 °CAmbient temperature, storage-40 70 °CCertificationsIIICertificationsc UL USStandards appliedIEC 60947-5-2Classification27270902eCl@ss 8.027270902eCl@ss 9.027270902ETIM 5.0ECO02717	Dimension (W x H x L)	11.4 mm x 34.2 mm x 18.3 mm
Net weight20 gHousing colorRedType of fasteningTwo M3 threaded sleeves Via optional mounting deviceCompatibility of materialsECOLABOperation and displayLEDNumber of LEDs2 Piece(s)Operational controlsTeach buttonFunction of the operational controlSensitivity adjustmentEnvironmental data-10 55 °CAmbient temperature, operation-10 55 °CAmbient temperature, storage-40 70 °CCertificationsIIIDegree of protectionIP 67 IP 69KProtection classIIICertificationsc UL USStandards appliedIEC 60947-5-2Classification27270902eCl@ss 8.027270902eCl@ss 9.027270902ETIM 5.0ECO02717	Housing material	,
Housing colorRedType of fasteningTwo M3 threaded sleeves Via optional mounting deviceCompatibility of materialsECOLABOperation and displayLEDNumber of LEDs2 Piece(s)Operational controlsTeach buttonFunction of the operational controlSensitivity adjustmentEnvironmental data-10 55 °CAmbient temperature, operation-10 55 °CAmbient temperature, storage-40 70 °CCertificationsIIICertificationsc UL USStandards appliedIEC 60947-5-2Classification27270902eCl@ss 8.027270902eCl@ss 9.027270902ETIM 5.0ECOU2717	Lens cover material	Plastic / PMMA
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Via optional mounting deviceCompatibility of materialsECOLABOperation and displayLEDType of displayLEDNumber of LEDs2 Piece(s)Operational controlsTeach buttonFunction of the operational controlSensitivity adjustmentEnvironmental data-10 55 °CAmbient temperature, operation-10 55 °CAmbient temperature, storage-40 70 °CCertificationsIIIDegree of protectionIP 67 IP 69KProtection classIIICertificationsc UL USStandards appliedIEC 60947-5-2Classification27270902Customs tariff number85365019 27270902ETIM 5.0EC002717	Housing color	Red
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Operation and display LED Number of LEDs 2 Piece(s) Operational controls Teach button Function of the operational control Sensitivity adjustment Environmental data -10 55 °C Ambient temperature, operation -10 55 °C Ambient temperature, storage -40 70 °C Certifications IP 67 Protection class III Certifications c UL US Standards applied IEC 60947-5-2 Classification 27270902 ecl@ss 8.0 27270902 ecl@ss 9.0 27270902 ETIM 5.0 Eco02717		Via optional mounting device
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Number of LEDs2 Piece(s)Operational controlsTeach buttonFunction of the operational controlSensitivity adjustmentEnvironmental data-10 55 °CAmbient temperature, operation-10 55 °CAmbient temperature, storage-40 70 °CCertificationsIP 67 IP 69KProtection classIIICertificationsc UL USStandards appliedIEC 60947-5-2Classification27270902ecl@ss 8.027270902ecl@ss 9.027270902ETIM 5.0EC002717	Operation and display	
Operational controls Teach button Function of the operational control Sensitivity adjustment Environmental data -10 55 °C Ambient temperature, operation -10 55 °C Ambient temperature, storage -40 70 °C Certifications IP 67 Degree of protection IP 67 III Certifications Certifications c UL US Standards applied IEC 60947-5-2 Classification 27270902 ecl@ss 8.0 27270902 ecl@ss 9.0 27270902 ETIM 5.0 EC002717	Type of display	LED
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ETIM 6.0 EC002717	ETIM 5.0	EC002717
	ETIM 6.0	EC002717

Dimensioned drawings

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All dimensions in millimeters



- Е
- С Optical axis
- Mounting sleeve (standard)
- Threaded sleeve (3C.B series) F

Electrical connection

Connection 1

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

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Electrical connection

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Connection 1

Black
0.2 mm ²
M8
Male
Metal
4 -pin

Pin **Pin assignment**

2 OUT 2	
3 GND	1)
4 IO-Link / 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: Rectangular Reflective surface: 25 mm x 25 mm Triple reflector size: 0.3 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 Reflective surface: 16 mm x 38 mm Triple reflector size: 0.3 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 Reflective surface: 29 mm x 10 mm Triple reflector size: 0.3 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

Part number code



d	Light type n/a: red light l: 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
Η	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 C: push-pull switching output, PNP dark switching, NPN dark 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, light switching P: 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) 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 w	with all available device types can be found on the Leuze website at www.leuze.com.

Notes

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Observe intended use!

- ✤ This product is not a safety sensor and is not intended as personnel protection.
- b The product may only be put into operation by competent persons.

For UL applications:					
A	 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 – CLASS 1 LASER PRODUCT
\wedge	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.
*	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. 5 kOhm is recommended
- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C
- Permissible operating temperature range during IO-Link operation: -10 °C to +40 °C

Accessories

Connection technology - Connection cables

	Part no.	Designation	Article	Description
Ŵ	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
Ŵ	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
1	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
50114185	REF 6-S-20x40	Reflector	Design: Rectangular Reflective surface: 16 mm x 38 mm Triple reflector size: 0.3 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 Reflective surface: 25 mm x 25 mm Triple reflector size: 0.3 mm Material: Plastic Chemical designation of the material: PMMA Fastening: Self-adhesive

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