



Figure can vary

**Part no.: 50133755**  
**PRK3CL1.BA3/LP-M8**  
**Polarized retro-reflective photoelectric sensor**



## Contents

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

## Technical data

<b>Basic data</b>	
Series	3C
Operating principle	Reflection principle
<b>Special design</b>	
Special design	Autocollimation
<b>Optical data</b>	
Operating range	Guaranteed operating range
Operating range	0 ... 2 m , With reflector MTKS 50x50.1
Operating range limit	Typical operating range
Operating range limit	0 ... 3 m , With reflector MTKS 50x50.1
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 $\mu$ s
Light spot size [at sensor distance]	1 mm [3,000 mm]
Type of light spot geometry	Round
Shift angle	Typ. $\pm$ 2°
<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>Outputs</b>	
Number of digital switching outputs	2 Piece(s)
<b>Switching outputs</b>	
Voltage type	DC
Switching current, max.	100 mA
Switching voltage	High: $\geq(U_B-2V)$ Low: $\leq 2V$
<b>Switching output 1</b>	
Assignment	Connection 1, pin 4
Switching element	Transistor , Push-pull
Switching principle	IO-Link / light switching (PNP)/dark switching (NPN)
<b>Switching output 2</b>	
Assignment	Connection 1, pin 2
Switching element	Transistor , PNP
Switching principle	Dark switching
<b>Timing</b>	
Switching frequency	3,000 Hz

**Part no.: 50133755 – PRK3CL1.BA3/LP-M8 – Polarized retro-reflective**

Response time	0.17 ms
Readiness delay	300 ms

**Interface**

Type	IO-Link
<b>IO-Link</b>	
COM mode	COM2
Frame type	2.5
Specification	V1.1
SIO-mode support	Yes
Min. cycle time	COM2 = 2.3 ms

**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	-10 ... 55 °C
Ambient temperature, storage	-40 ... 70 °C

**Certifications**

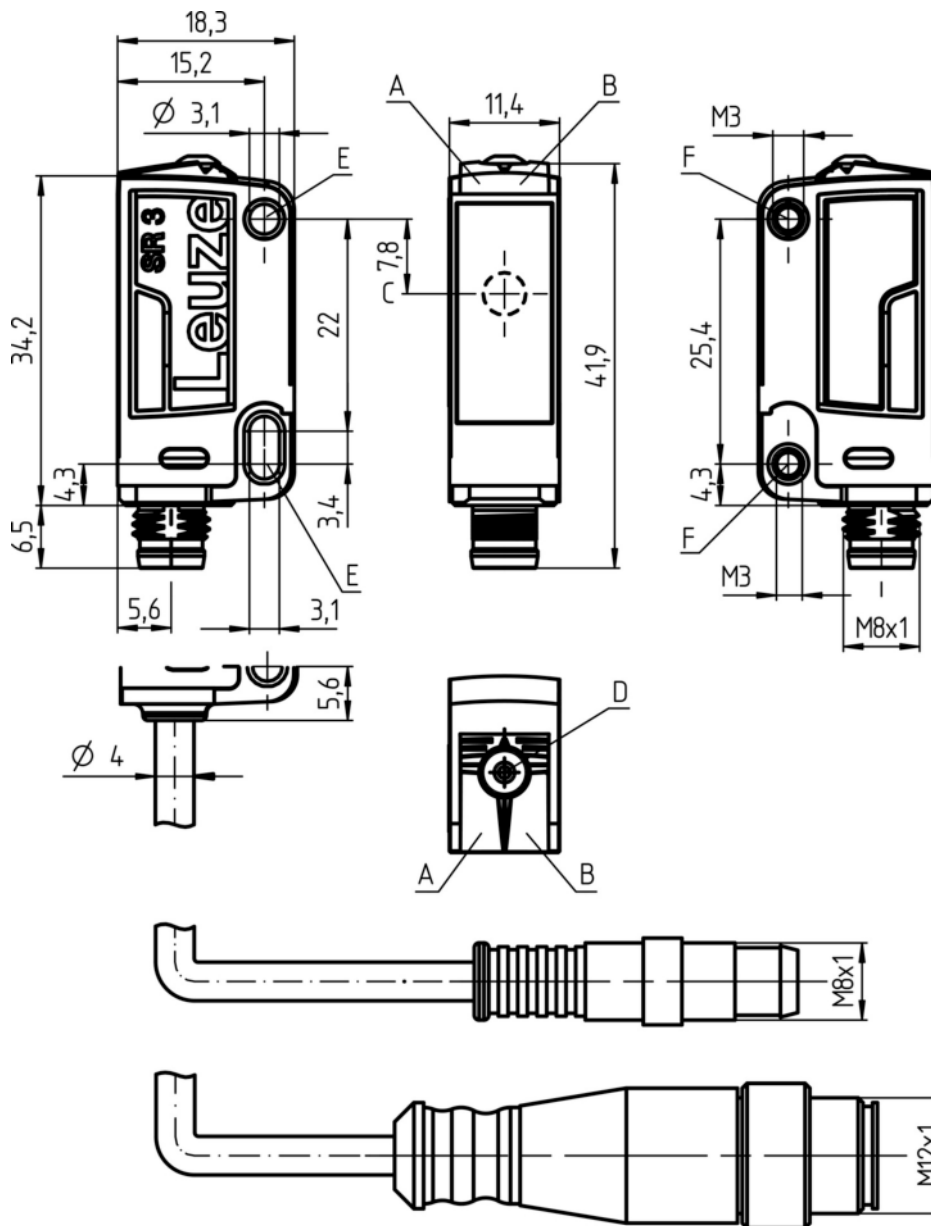
Degree of protection	IP 67 IP 69K
Protection class	III
Certifications	c UL US
Standards applied	IEC 60947-5-2

**Classification**

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

**Dimensioned drawings**

All dimensions in millimeters



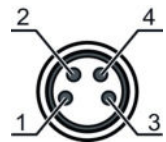
- A Green LED
- B Yellow LED
- C Optical axis
- D Teach button
- E Mounting sleeve (standard)

F Threaded sleeve (3C.B series)

## Electrical connection

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

Pin	Pin assignment
1	V+
2	OUT 2
3	GND
4	IO-Link / OUT 1




## 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
	50040894	MTKS 20x30	0 ... 1.6 m 0 ... 2.2 m	Design: Rectangular Reflective surface: 19 mm x 29 mm Triple reflector size: 1.2 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive

**Part no.: 50133755 – PRK3CL1.BA3/LP-M8 – Polarized retro-reflective**

	Part no.	Designation	Operating range/ Operating range limit	Description
	50104130	MTKS 20x40.1	0 ... 1 m 0 ... 1.5 m	Design: Rectangular Reflective surface: 17 mm x 38 mm Triple reflector size: 12 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive
	50117583	MTKS 50x50.1	0 ... 2 m 0 ... 3 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 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

## 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	<p><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)</p>
J	<p><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</p>
K	<p><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)</p>

**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!**

- 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)

**WARNING! LASER RADIATION – CLASS 1 LASER PRODUCT**

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.





- 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.

## Part no.: 50133755 – PRK3CL1.BA3/LP-M8 – Polarized retro-reflective


- 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
 	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

#### 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



Part no.: 50133755 – PRK3CL1.BA3/LP-M8 – Polarized retro-reflective

## Micro-triad-type reflectors

	Part no.	Designation	Article	Description
	50104130	MTKS 20x40.1	Reflector	Design: Rectangular Reflective surface: 17 mm x 38 mm Triple reflector size: 12 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Through-hole mounting, Adhesive
	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

### Note

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