SMART
SENSOR
BUSINESS

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the sensor people

Figure can vary

Part no.: 50133715
PRK3CL1.TT3/4T
Polarized retro-reflective photoelectric sensor

Contents

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Technical data

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

Special design	
Special design	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 profile	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
Inputs	
Number of teach inputs	1 Piece(s)
Teach inputs	
Voltage type	DC
Switching voltage	high: ≥ 0,65 x U_B low: ≤ 0,35 x U_B
Delay	1 ms
Input resistance	20,000 Ω
Teach input 1	
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: ≥(U_B-2V) Low: ≤2V
Switching output 1	
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	
Type of connection	Cable
Function	Signal IN Signal OUT Voltage supply
Cable length	2,000 mm
Sheathing material	PUR
Cable color	Black
Number of conductors	4 -wire
Wire cross section	0.2 mm²

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	50 g
Housing color	Red
Type of fastening	Through-hole mounting 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

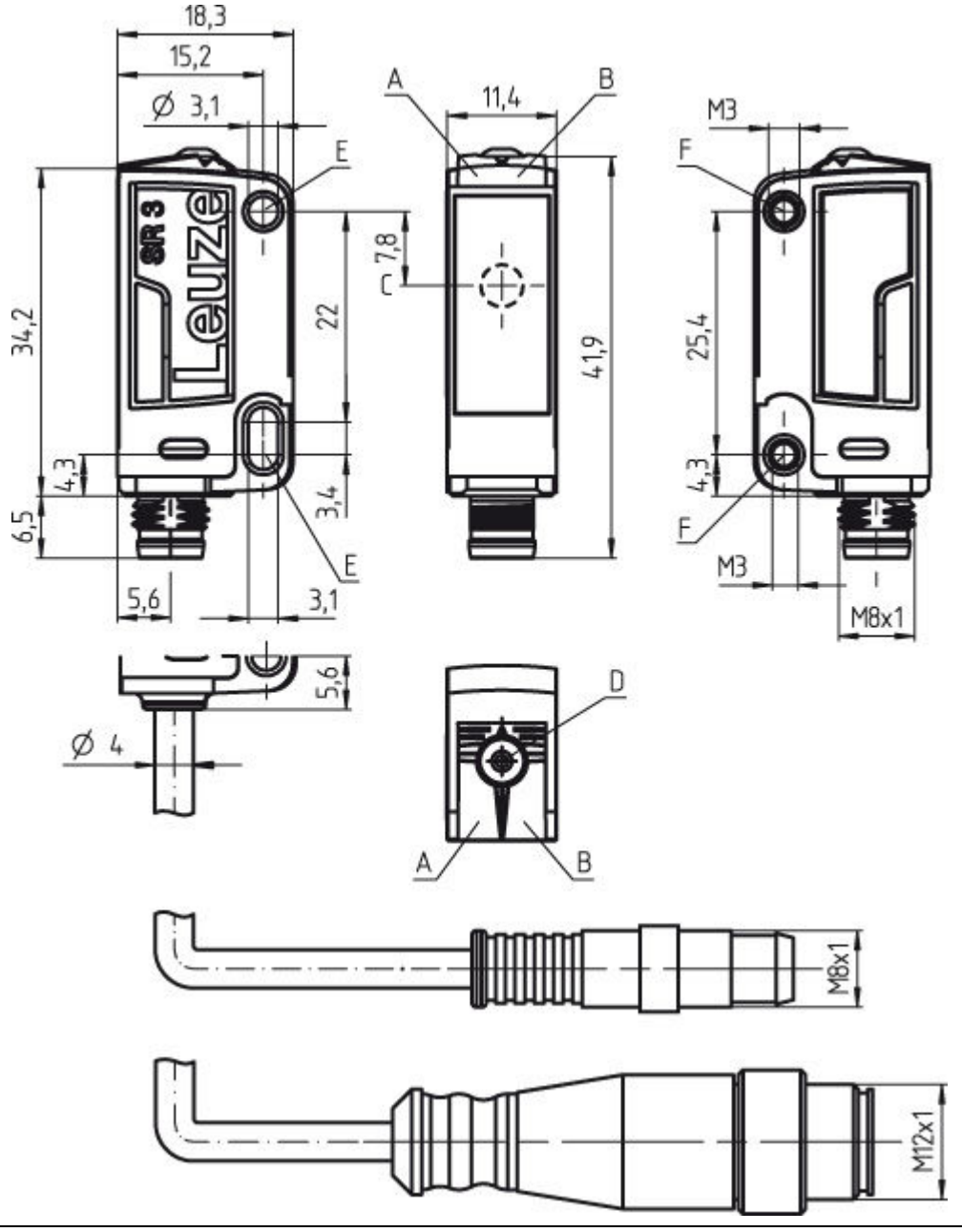
Certifications	
Degree of protection	IP 67 IP 69K

Protection class	III
Certifications	c UL US
Standards applied	IEC 60947-5-2

Classification	
Customs tariff number	85365019
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	
Type of connection	Cable
Function	Signal IN Signal OUT Voltage supply
Cable length	2,000 mm
Sheathing material	PUR
Cable color	Black
Number of conductors	4 -wire
Wire cross section	0.2 mm²

Conductor color	Conductor assignment
Brown	V+
White	Teach-in
Blue	GND
Black	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
	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

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	Part no.	Designation	Operating range/ Operating range limit	Description
	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
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	**Pre-set range (optional):** n/a: operating range acc. to data sheet XXXX: pre-set 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
H	**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 8: activation input (activation with high signal) X: pin not used

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
K	**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 with all available device types can be found on the Leuze electronic website at 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 – LASER CLASS 1

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.

- 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
- 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

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	Contains: 2x M3 x 16 screw, 2x M3 x 20 screw, 2x position washers Design of mounting device: Mounting system Fastening, at system: For 12 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type 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