

## Technical data sheet

### Contrast sensor

Part no.: 50148500

KRT3CL1.3S2/4T



For illustration purposes only

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# Technical data

## Basic data

Series	3C
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## Special version

Special version	Teach input
	Time function

## Optical data

Operating range	60 mm ± 20 mm
Beam path	Focused
Light source	Laser, Red
Wavelength	655 nm
Laser class	1, IEC 60825-1:2014 / EN 60825-1:2014+A11:2021
Max. laser power	0.0027 W
Transmitted-signal shape	Pulsed
Pulse duration	5 µs
Light spot size [at sensor distance]	0.5 mm x 1 mm [60 mm]
Light spot orientation	Vertical
Type of light spot geometry	Oval
Light beam exit	Front
Focus	Fixed

## Measurement data

Repeatability	0.05 mm
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## Electrical data

Protective circuit	Polarity reversal protection
	Short circuit protected

### Performance data

Supply voltage $U_B$	12 ... 30 V, DC, Incl. residual ripple
Residual ripple	0 ... 15 %, From $U_B$
Open-circuit current	0 ... 25 mA

### Inputs

Number of teach inputs	1 Piece(s)
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### Teach inputs

Voltage type	DC
Switching voltage	high: ≥8V
	low: ≤ 2 V or not connected
Delay	10 ms
Input resistance	15,000 Ω

### Teach input 1

Function	Keyboard lockout
	Setting the pulse stretching
	Teach-in
Active switching state	High
Teach process	Static 2-point

### Outputs

Number of digital switching outputs	1 Piece(s)
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### Switching outputs

Voltage type	DC
Switching current, max.	100 mA
Switching voltage	high: ≥( $U_B$ -2V)
	low: ≤ 2 V

### Switching output 1

Switching element	Transistor, PNP
Switching principle	Light switching

## Time behavior

Switching frequency	4,000 Hz
Response time	0.125 ms
Readiness delay	300 ms
Response jitter	35 µs

## Connection

### Connection 1

Function	Signal OUT
	Teach input
	Voltage supply
Type of connection	Cable
Cable length	2,000 mm
Number of conductors	4 -wire

## Mechanical data

Design	Cubic
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	50 g
Housing color	Red
Type of fastening	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	Setting the pulse stretching
	Switching-threshold adjustment
	Teach-in

## 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
Approvals	c UL US
Standards applied	EN IEC 60947-5-2



# Electrical connection

## Connection 1

<b>Function</b>	Signal OUT Teach input Voltage supply
<b>Type of connection</b>	Cable
<b>Cable length</b>	2,000 mm
<b>Sheathing material</b>	PUR
<b>Cable color</b>	Black
<b>Number of conductors</b>	4 -wire
<b>Wire cross section</b>	0.2 mm <sup>2</sup>

## Conductor color

## Conductor assignment

<b>Brown</b>	V+
<b>White</b>	Teach-in
<b>Blue</b>	GND
<b>Black</b>	OUT 1

# Operation and display

## Display LED 1

## Display LED 2

## Meaning

Green, continuous light	Off	Operational readiness
Green, flashing, 3 Hz	Yellow, flashing, 3 Hz	Teach event active
Green, flashing, 15 Hz	Yellow, flashing, 15 Hz	Teach error
Green, continuous light	Yellow, continuous light	Mark detected

# Part number code

Part designation: **KRT3C A.BCDD/EF-G**

<b>KRT3C</b>	<b>Operating principle</b> KRT3C: Contrast sensor
<b>A</b>	<b>Light type</b> M: LED, multicolor W: White light L1: laser class 1
<b>B</b>	<b>Light spot orientation</b> L: vertical Q: horizontal
<b>C</b>	<b>Control button</b> 3: teach-in via button
<b>DD</b>	<b>Teach mode</b> S1: Static 1-point teach S2: Static 2-point teach D2: Dynamic 2-point teach
<b>E</b>	<b>Switching output/function OUT 1/IN: Pin 4 or black conductor</b> 2: NPN transistor output, light switching 4: PNP transistor output, light switching 6: push-pull switching output, PNP light switching, NPN dark switching L: IO-Link / light switching (PNP)/dark switching (NPN)
<b>F</b>	<b>Switching output / function OUT 2/IN: pin 2 or white conductor</b> G: Push-pull switching output, PNP dark switching, NPN light switching T: teach-in via cable

## Part number code

<b>G</b>	<b>Electrical connection</b> n/a: cable, standard length 2000 mm, 4-wire M8: M8 connector, 4-pin (plug) 200-M12: cable, length 200 mm with M12 connector, 4-pin, axial (plug) 200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug)
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Note	
	↪ A list with all available device types can be found on the Leuze website at <a href="http://www.leuze.com">www.leuze.com</a> .

## Notes

<b>Observe intended use!</b>	
	↪ 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.

<b>For UL applications:</b>	
	↪ For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).


<b>ATTENTION! LASER RADIATION – CLASS 1 LASER PRODUCT</b>	
	The device satisfies the requirements of IEC 60825-1:2014 / EN 60825-1:2014+A11:2021 safety regulations for a product of <b>laser class 1</b> 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. ↪ 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



- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C

## Accessories

### Mounting technology - Mounting brackets

	Part no.	Designation	Article	Description
	50105546	BT 3B	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
	50117829	BTP 200M-D12	Mounting system	Design of mounting device: Protection hood Fastening, at system: For 12 mm rod Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal
	50117255	BTU 200M-D12	Mounting system	Contains: 2x M3 x 16 screw, 2 M3 x 20 screws, 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, Suited for M3 screws Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal

#### Note



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