

## Technical data sheet

### Contrast sensor

Part no.: 50155509

KRT3CM.L3S2/LT-M8.P1



For illustration purposes only

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## Technical data

### Basic data

|        |    |
|--------|----|
| Series | 3C |
|--------|----|

### Special version

|                 |                                                        |
|-----------------|--------------------------------------------------------|
| Special version | Teach input (preconfigured behavior as with Series 3B) |
|                 | Time function                                          |

### Optical data

|                                      |                                      |
|--------------------------------------|--------------------------------------|
| Beam path                            | Focused                              |
| Light source                         | LED, RGB                             |
| Transmitted-signal shape             | Pulsed                               |
| LED group                            | Exempt group (in acc. with EN 62471) |
| Light spot size [at sensor distance] | 1.5 mm x 4 mm [14.5 mm]              |
| Light spot orientation               | Vertical                             |
| Type of light spot geometry          | Rectangular                          |
| Light beam exit                      | Front                                |
| Focus                                | Fixed                                |

### Measurement data

|               |         |
|---------------|---------|
| Repeatability | 0.02 mm |
|---------------|---------|

### 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) |
| Number of digital switching inputs | 1 Piece(s) |

### Switching inputs

|                   |                                                   |
|-------------------|---------------------------------------------------|
| Voltage type      | DC                                                |
| Switching voltage | high: $\geq 8V$ , low: $\leq 2V$ or not connected |

### Teach inputs

|                  |                 |
|------------------|-----------------|
| Delay            | 10 ms           |
| Input resistance | 15,000 $\Omega$ |

### Teach input 1

|                        |                               |
|------------------------|-------------------------------|
| Function               | Teach-in (Series 3B behavior) |
| Active switching state | High                          |
| Teach process          | Static 2-point                |

### Outputs

|                                     |            |
|-------------------------------------|------------|
| Number of digital switching outputs | 1 Piece(s) |
|-------------------------------------|------------|

### Switching outputs

|                         |                         |
|-------------------------|-------------------------|
| Switching current, max. | 90 mA                   |
| Switching voltage       | high: $\geq (U_B - 2V)$ |
|                         | low: $\leq 2 V$         |

### Switching output 1

|                     |                                                      |
|---------------------|------------------------------------------------------|
| Assignment          | Connection 1, pin 4                                  |
| Switching element   | Transistor, Push-pull                                |
| Switching principle | IO-Link / light switching (PNP)/dark switching (NPN) |

### Time behavior

|                     |            |
|---------------------|------------|
| Switching frequency | 10,000 Hz  |
| Response time       | 0.05 ms    |
| Readiness delay     | 300 ms     |
| Response jitter     | 20 $\mu s$ |

### Interface

|      |         |
|------|---------|
| Type | IO-Link |
|------|---------|

### IO-Link

|                  |                      |
|------------------|----------------------|
| COM mode         | COM3                 |
| Profile          | Smart sensor profile |
| Min. cycle time  | COM3 = 0.6 ms        |
| Specification    | V1.1.4               |
| Device ID        | 3202                 |
| SIO-mode support | Yes                  |

### Connection

### Connection 1

|          |                |
|----------|----------------|
| Function | Signal OUT     |
|          | Teach input    |
|          | Voltage supply |

|                    |           |
|--------------------|-----------|
| Type of connection | Connector |
| Thread size        | M8        |
| Type               | Male      |
| Material           | Metal     |
| No. of pins        | 4 -pin    |

### 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                 | 10 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 | Teach-in     |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -40 ... 60 °C |
| Ambient temperature, storage   | -40 ... 70 °C |

### Certifications

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

## Technical data

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4          | 27270906 |
| ECLASS 8.0            | 27270906 |
| ECLASS 9.0            | 27270906 |
| ECLASS 10.0           | 27270906 |
| ECLASS 11.0           | 27270906 |
| ECLASS 12.0           | 27270906 |
| ECLASS 13.0           | 27270906 |
| ECLASS 14.0           | 27270906 |
| ECLASS 15.0           | 27270906 |
| ECLASS 16.0           | 27270906 |
| ETIM 5.0              | EC001820 |
| ETIM 6.0              | EC001820 |
| ETIM 7.0              | EC001820 |
| ETIM 8.0              | EC001820 |
| ETIM 9.0              | EC001820 |
| ETIM 10.0             | EC001820 |

## Dimensioned drawings

All dimensions in millimeters



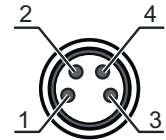
- A Green LED
- B Yellow LED
- C1 Optical axis (receiver)
- C2 Optical axis (transmitter)
- D Teach button
- E Mounting sleeve
- F Light spot orientation horizontal
- G Light spot orientation vertical

## Electrical connection

### Connection 1

|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Teach input    |
|                    | Voltage supply |
| Type of connection | Connector      |
| Thread size        | M8             |
| Type               | Male           |
| Material           | Metal          |
| No. of pins        | 4 -pin         |

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

## Part number code

|          |                                                                                                                                                                                                                                                               |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>G</b> | <b>Electrical connection</b><br>n/a: cable, standard length 2000 mm, 4-wire<br>M8: M8 connector, 4-pin (plug)<br>200-M12: cable, length 200 mm with M12 connector, 4-pin, axial (plug)<br>200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug) |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 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).

## Further information

- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C
- Output pin 4:  
Line-teach active at SIO – 2 Hz at the switching output  
Error after line-teach at SIO – 2 Hz at the switching output

## Accessories

### Connection technology - Connection unit

|                                                                                    | Part no. | Designation           | Article        | Description                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------|----------|-----------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50144900 | MD 798i-11-82/L5-2222 | IO-Link master | Current consumption, max.: 11,000 mA<br>Interface: IO-Link, Automatic protocol detection, EtherNet IP, Modbus TCP, PROFINET<br>Connections: 12 Piece(s)<br>Sensor connections: 8 Piece(s)<br>Degree of protection: IP 67, IP 65, IP 69K |

## Accessories

### Connection technology - Connection cables

|                                                                                  | Part no. | Designation       | Article          | Description                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------|----------|-------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50130850 | KD U-M8-4A-V1-050 | Connection cable | Application: Chemical resistant<br>Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC  |
|                                                                                  | 50130871 | KD U-M8-4W-V1-050 | Connection cable | Application: Chemical resistant<br>Connection 1: Connector, M8, Angled, Female, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC |

### Mounting technology - Mounting brackets

|                                                                                   | Part no. | Designation | Article         | Description                                                                                                                                                                              |
|-----------------------------------------------------------------------------------|----------|-------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50105546 | BT 3B       | Mounting device | Design of mounting device: Angle, L-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Rigid<br>Material: Metal |

### Mounting technology - Rod mounts

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