

Technical data

Basic data

| | |
|-------------------------|----------------|
| Series | 9 |
| Type of scanning system | Against object |

Characteristic parameters

| | |
|------|----------|
| MTTF | 36 years |
|------|----------|

Optical data

| | |
|--------------------------------------|------------------------|
| Beam path | Divergent |
| Light source | Laser, Red |
| Wavelength | 655 nm |
| Laser class | 2, IEC/EN 60825-1:2014 |
| Transmitted-signal shape | Pulsed |
| Light spot size [at sensor distance] | 1 mm [450 mm] |
| Type of light spot geometry | Round |

Measurement data

| | |
|--|----------------------|
| Measurement range | 50 ... 450 mm |
| Resolution | 0.1 mm |
| Accuracy | 1 % |
| Reference value, accuracy | Measurement distance |
| Reproducibility (1 sigma) | 0.1 mm |
| Temperature drift, relative | 0.02 %/K |
| Referencing | No |
| Optical distance measurement principle | Triangulation |

Electrical data

| | |
|--------------------|------------------------------|
| Protective circuit | Polarity reversal protection |
| | Short circuit protected |
| | Transient protection |

Performance data

| | |
|----------------------|------------------------|
| Supply voltage U_B | 10 ... 30 V, DC |
| Residual ripple | 0 ... 15 %, From U_B |
| Open-circuit current | 0 ... 180 mA |

Outputs

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

Switching outputs

| | |
|-------------------|------------------------|
| Voltage type | DC |
| Switching voltage | high: $\geq(U_B - 2V)$ |

Switching output 1

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

Timing

| | |
|-----------------|--|
| Response time | 1 ms, Under constant ambient conditions, 90% diffuse reflection, standard measure mode |
| Readiness delay | 300 ms |

Interface

| | |
|------|--------|
| Type | RS 232 |
|------|--------|

RS 232

| | |
|-----------------------|---------------------------|
| Function | Process |
| Transmission speed | 2,400 ... 230,400 Bd |
| Data format | Adjustable |
| Start bit | 1 |
| Data bit | 8 |
| Stop bit | 1 |
| Transmission protocol | Adjustable |
| Data encoding | 14 bit HEX |
| | 16 bit HEX |
| | 24 bit HEX |
| | ASCII |
| | Decimal measurement value |
| | Remote Control (ASCII) |

Connection

| | |
|-----------------------|------------|
| Number of connections | 1 Piece(s) |
|-----------------------|------------|

Connection 1

| | |
|--------------------|-------------------------|
| Function | Signal OUT |
| | Voltage supply |
| Type of connection | Connector, Turning, 90° |
| Thread size | M12 |
| Type | Male |
| Material | Plastic |
| No. of pins | 5 -pin |
| Encoding | A-coded |

Mechanical data

| | |
|-----------------------|------------------------------|
| Design | Cubic |
| Dimension (W x H x L) | 21 mm x 50 mm x 50 mm |
| Housing material | Plastic |
| Plastic housing | PC |
| Lens cover material | Glass |
| Net weight | 50 g |
| Housing color | Red |
| Type of fastening | Through-hole mounting |
| | Via optional mounting device |

Operation and display

| | |
|-----------------------|-----------------|
| Type of display | OLED display |
| Number of LEDs | 2 Piece(s) |
| Type of configuration | Software |
| Operational controls | Control buttons |
| | LC Display |
| | PC software |

Environmental data

| | |
|--------------------------------|---------------|
| Ambient temperature, operation | -20 ... 50 °C |
| Ambient temperature, storage | -30 ... 70 °C |

Certifications

| | |
|----------------------|---------------|
| Degree of protection | IP 67 |
| Protection class | II |
| Certifications | c UL US |
| Standards applied | IEC 60947-5-2 |

Technical data

| | |
|-----------------------|----------|
| Customs tariff number | 90318020 |
| ECLASS 5.1.4 | 27270801 |
| ECLASS 8.0 | 27270801 |
| ECLASS 9.0 | 27270801 |
| ECLASS 10.0 | 27270801 |
| ECLASS 11.0 | 27270801 |
| ECLASS 12.0 | 27270916 |
| ETIM 5.0 | EC001825 |
| ETIM 6.0 | EC001825 |
| ETIM 7.0 | EC001825 |

Electrical connection

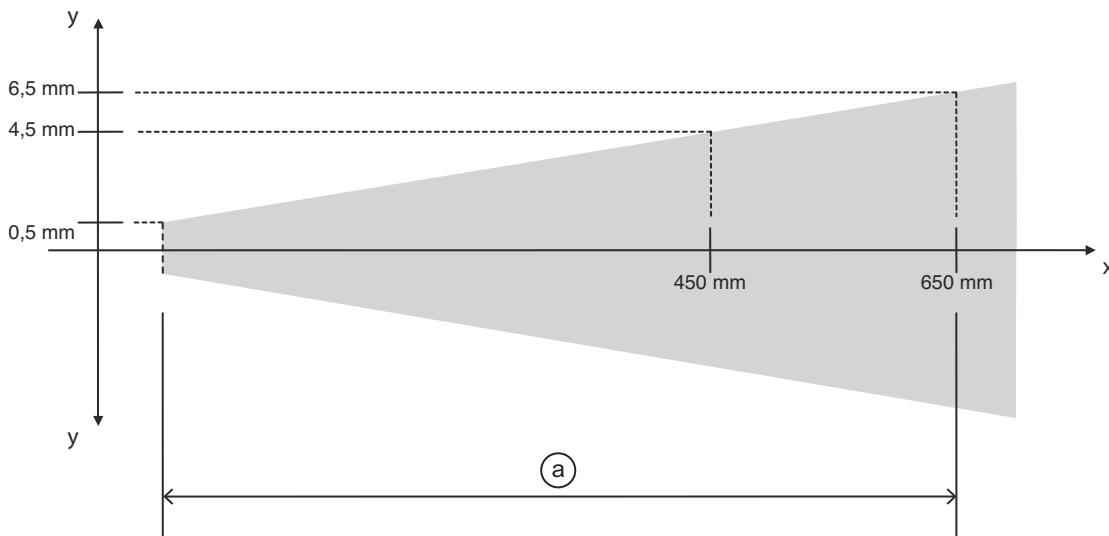
Connection 1

| | |
|--------------------|----------------|
| Function | Signal OUT |
| | Voltage supply |
| Type of connection | Connector |
| Thread size | M12 |
| Type | Male |
| Material | Plastic |
| No. of pins | 5 -pin |
| Encoding | A-coded |

| Pin | Pin assignment |
|-----|------------------|
| 1 | 18 ... 30 V DC + |
| 2 | RS 232 RxD |
| 3 | GND |
| 4 | IO-Link / OUT 1 |
| 5 | RS 232 TxD |

Diagrams

Accuracy of measurement



- x Measurement distance
- y Max. measurement error
- a 1% of measurement value

Operation and display

| LED | Display | Meaning |
|-----|--------------------------|------------------------------------|
| 1 | Green, continuous light | Operational readiness |
| | Green, flashing | Fault |
| | Off | No supply voltage |
| 2 | Yellow, continuous light | Object in the measurement range |
| | Off | No object in the measurement range |

Notes

Observe intended use!

| | |
|--|---|
| | <ul style="list-style-type: none"> ⚡ 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. |
|--|---|

Notes

! ATTENTION! LASER RADIATION – CLASS 2 LASER PRODUCT

Do not stare into beam!
 The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of **laser class 2** as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to Laser Notice No. 50 from June 24, 2007.

- ☞ Never look directly into the laser beam or in the direction of reflected laser beams! If you look into the beam path over a longer time period, there is a risk of injury to the retina.
- ☞ Do not point the laser beam of the device at persons!
- ☞ Interrupt the laser beam using a non-transparent, non-reflective object if the laser beam is accidentally directed towards a person.
- ☞ When mounting and aligning the device, avoid reflections of the laser beam off reflective surfaces!
- ☞ CAUTION! Use of controls or adjustments or performance of procedures other than specified herein may result in hazardous light exposure.
- ☞ 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.

NOTE

Affix laser information and warning signs!
 Laser information and warning signs are affixed to the device. In addition, self-adhesive laser information and warning signs (stick-on labels) are supplied in several languages.


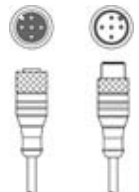
- ☞ Affix the laser information sheet to the device in the language appropriate for the place of use. When using the device in the US, use the stick-on label with the "Complies with 21 CFR 1040.10" note.
- ☞ Affix the laser information and warning signs near the device if no signs are attached to the device (e.g. because the device is too small) or if the attached laser information and warning signs are concealed due to the installation position.
- ☞ Affix the laser information and warning signs so that they are legible without exposing the reader to the laser radiation of the device or other optical radiation.

Accessories


Connection technology - Connection cables

| | Part no. | Designation | Article | Description |
|--|----------|--------------------|------------------|--|
| | 50132077 | KD U-M12-5A-V1-020 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 2.000 mm Sheathing material: PVC |
| | 50132079 | KD U-M12-5A-V1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5.000 mm Sheathing material: PVC |
| | 50133842 | KD U-M12-5W-V1-020 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 2.000 mm Sheathing material: PVC |


Accessories

| | Part no. | Designation | Article | Description |
|--|----------|--------------------------------|-----------------------|--|
|  | 50133802 | KD U-M12-5W-V1-050 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5.000 mm Sheathing material: PVC |
|  | 50140174 | KDS U-M12-5A-M12-5A-P1-003-25X | Interconnection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 5 -pin Shielded: No Cable, crossed: Connection 1, pin 2 <-> connection 2, pin 5 Cable length: 300 mm Sheathing material: PUR |

Mounting technology - Mounting brackets

| | Part no. | Designation | Article | Description |
|--|----------|-------------|-----------------|--|
|  | 50036195 | BT 8 | 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 |
|---|----------|--------------|-----------------|--|
|  | 50117252 | BTU 300M-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 M4 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.