

Distance sensor OMT300-R200-UEP-IO-V31-L



- Medium design with versatile mounting options
- Space-saving distance sensors in small standardized design
- Multi Pixel Technology (MPT) exact and precise signal evaluation
- IO-Link interface for service and process data
- Analog output 0 ... 10 V DC

Distance sensor

CE 🖑 KA 🛦 🐼 IO-Link

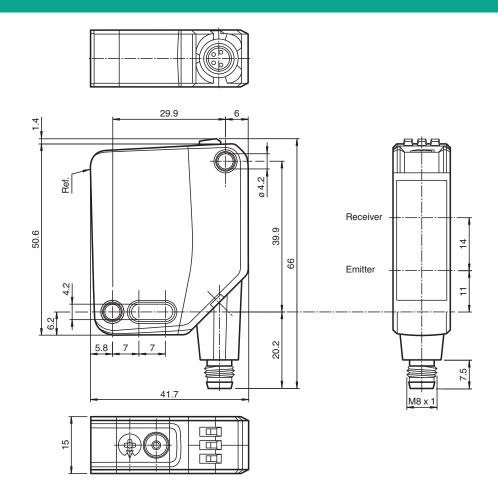
Function

The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design - from the thru-beam sensor through to the measuring distance sensor. As a result of this design, the sensors are able to perform practically all standard automation tasks.

The entire series enables sensors to communicate via IO-Link. The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

Multi Pixel Technology (MPT) ensures that the standard sensors are flexible and can be adapted to the application environment.

Dimensions



Refer to "General Notes Relating to Pepperl+Fuchs Product Information"

Technical Data

| General specifications | | |
|--------------------------------------|----|---|
| Measurement range | | 100 300 mm |
| Reference target | | standard white, 100 mm x 100 mm |
| Light source | | laser diode |
| Light type | | modulated visible red light |
| Laser nominal ratings | | J. J |
| Note | | LASER LIGHT , DO NOT STARE INTO BEAM |
| Laser class | | 1 |
| Wave length | | 680 nm |
| Beam divergence | | > 5 mrad, d63 < 2,8 mm in the range of 350 mm 800 mm |
| Pulse length | | 5.5 µs |
| Repetition rate | | approx. 2.4 kHz |
| max. pulse energy | | < 40 nJ |
| Angle deviation | | max. +/- 1.5 ° |
| Diameter of the light spot | | approx. 3 mm at a distance of 300 mm |
| Opening angle | | approx. 0.3 ° |
| Ambient light limit | | EN 60947-5-2 : 45000 Lux |
| Resolution | | 0.1 mm |
| Functional safety related parameters | | |
| MTTF _d | | 470 a |
| Mission Time (T_M) | | 20 a |
| Diagnostic Coverage (DC) | | 0 % |
| Indicators/operating means | | |
| Operation indicator | | LED green: constantly on - power on flashing (4Hz) - short circuit flashing with short break (1 Hz) - IO-Link mode |
| Function indicator | | LED yellow: constantly on - switch output active constantly off - switch output inactive |
| Control elements | | Teach-In key |
| Control elements | | 5-step rotary switch for operating modes selection |
| Electrical specifications | | |
| Operating voltage | UB | 18 30 V DC |
| Ripple | | max. 10 % |
| No-load supply current | lo | < 18 mA at 24 V supply voltage |
| Protection class | | III |
| Interface | | |
| Interface type | | IO-Link (via C/Q = pin 4) |
| IO-Link revision | | 1.1 |
| Device profile | | Identification and diagnosis Smart Sensor type 0/type 3.3 |
| Device ID | | 0x11190C (1120524) |
| Transfer rate | | COM2 (38.4 kBit/s) |
| Min. cycle time | | 3 ms |
| Process data width | | Process data input 4 byte Process data output 2 bits |
| SIO mode support | | yes |
| Compatible master port type | | A |
| Output | | |
| Switching type | | The default setting is: C/Q - Pin4: NPN normally open, PNP normally closed, IO-Link U—Pin2: analog output 0 10 V |
| | | 1 push-pull output , 1 analog output , short-circuit-proof, reverse polarity protection, |
| Signal output | | surge-proof |
| Signal output Switching voltage | | |

 Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

 Pepperl+Fuchs Group
 USA: +1 330 486 0001
 General General

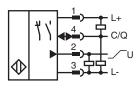
Germany: +49 621 776 1111 fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com

Distance sensor

| Output type1 voltage output: 0 10 VLoad resistor> 1 kΩ voltage output; ≤ 470 Ω current outputRecovery time2 msConformityCommunication interfaceIEC 61131-9Product standardMe0947-5-2Laser safetyEN 60947-5-2Laser safetyEN 60825-1:2014Measurement accuracy5 minWarm up time5 minRepeat accuracy< 0.5 %/KLinearity error0.5 %/SUL approvalE87056, cULus Listed, class 2 power supply, type rating 1CCC approvalCCC approval / marking not required for products rated ≤36 VFDA approvalIEC 60825-1:2014 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007Ambient temperaturefn 50 °C (50 122 °F)Storage temperature-40 70 °C (-40 158 °F) | Technical Data | | |
|---|----------------------------|----------------|--|
| Volage drop U_u ≤ 1.5 V DC Response time 2 ms Analog output Uotput type 1 voltage output: 0 10 V Load resistor 1 (u) > 1 KΩ voltage output: 3 470 Ω current output Recovery time 2 ms Contomity IEC 61131-9 Contomity IEC 61131-9 Product standard IEC 61131-9 Product standard IEC 61030-5-2 Laser safety EN 60825-112014 Measurement accuracy EN 60825-112014 Varm up time 0.05 %/K Varm up time 0.05 %/K Varm up time 0.05 %/K Approvals and certificates 5 min UL approval CC Capproval/marking not required for products rated 36 V FDA approval E87056, cULus Listed, class 2 power supply, type rating 1 CCC approval IEC 60225-12014 Complies with 21 CFR 1004.01 and 1040.11 except for deviations Product standard IEC 60225-12014 Complies with 21 CFR 1040.01 ond 1040.11 except for deviations FDA approval II 0 50 °C (50 122 °F) Storage temperature -40 70 °C (40 158 °F) | Usage category | | DC-12 and DC-13 |
| Analog output Second Sec | Voltage drop | U _d | ≤ 1.5 V DC |
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| Load resistor If Ω voltage output; ≤ 470 Ω current output Recovery time 2 ms Conformity IEC 61131-9 Product standard IEC 61131-9 Assers afety EN 60947-5-2 Laser safety EN 60925-1:2014 Measurement accuracy 0.05 %/K Warm up time 0.05 %/K Repeat accuracy < 0.5 % | Analog output | | |
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| Measurement accuracy Image: Constraint of the second of the | Product standard | | EN 60947-5-2 |
| Temperature drift0.05 %/KWarm up time5 minRepeat accuracy<0.5 % | Laser safety | | EN 60825-1:2014 |
| Warn up time5 minRepeat accuracy<0.5 % | Measurement accuracy | | |
| Repeat accuracy<0.5 %Linearity error0.5 %Approvals and certificatesE87056 , cULus Listed , class 2 power supply , type rating 1UL approvalE87056 , cULus Listed , class 2 power supply , type rating 1CCC approvalCCC approval / marking not required for products rated <36 V | Temperature drift | | 0.05 %/K |
| Linearity error 0.5 % Approvals and certificates E87056, cULus Listed, class 2 power supply, type rating 1 UL approval E87056, cULus Listed, class 2 power supply, type rating 1 CCC approval CCC approval/ marking not required for products rated ≤36 V FDA approval IEC 60825-1:2014 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 Ambient conditions 10 50 °C (50 122 °F) Ambient temperature 10 50 °C (40 158 °F) Mechanical specifications 15 mm Housing height 50.6 mm Housing depth 15.7 mm Degree of protection IP67 / IP69 / IP69K Connection 4-pin, M8 x 1 connector, 90° rotatable Material PC (Polycarbonate) Material PC (Polycarbonate) | Warm up time | | 5 min |
| Approvals and certificates E87056, cULus Listed, class 2 power supply, type rating 1 CCC approval CCC approval / marking not required for products rated ≤36 V FDA approval IEC 60825-1:2014 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 Ambient conditions IEC 60825-1:2014 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 Ambient conditions 10 50 °C (50 122 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications 15 mm Housing width 15 mm Housing depth 50.6 mm Housing depth 41.7 mm Degree of protection IP67 / IP69 / IP69 K Connection 4-pin, M8 x 1 connector, 90° rotatable Material PC (Polycarbonate) Mousing PMMA | Repeat accuracy | | < 0.5 % |
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| Connection 4-pin, M8 x 1 connector, 90° rotatable Material PC (Polycarbonate) Optical face PMMA | Housing depth | | 41.7 mm |
| Material PC (Polycarbonate) Optical face PMMA | Degree of protection | | IP67 / IP69 / IP69K |
| Housing PC (Polycarbonate) Optical face PMMA | Connection | | 4-pin, M8 x 1 connector, 90° rotatable |
| Optical face PMMA | Material | | |
| | Housing | | PC (Polycarbonate) |
| Mass approx. 35 g | Optical face | | PMMA |
| | Mass | | approx. 35 g |

Connection



Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

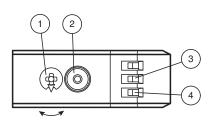
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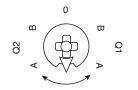
Connection Assignment

Wire colors in accordance with EN 60947-5-2

| 1 | BN | (brown) |
|---|----|---------|
| 2 | WH | (white) |
| 3 | BU | (blue) |
| 4 | BK | (black) |

Assembly





| 1 | Mode rotary switch | |
|---|-----------------------------|----|
| 2 | Teach-in button | |
| 3 | Switching output display Q1 | YE |
| 4 | Operating indicator | GN |

| Q1B | Switching output/switch point B |
|-----|---------------------------------|
| Q1A | Switching output/switch point A |
| Q2A | Analog output/value A |
| Q2B | Analog output/value B |
| 0 | Keylock |

| * | LASER 1 |
|----------|------------|
| IEC 6082 | 25-1:2014 |
| | |

Accessories

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| iccess | somes | |
|--------|----------------------|--|
| | | |
| | OMH-MLV12-HWK | Mounting bracket for series MLV12 sensors |
| | OMH-R200-01 | Mounting aid for round steel ø 12 mm or sheet 1.5 mm 3 mm |
| 1 | OMH-R20x-Quick-Mount | Quick mounting accessory |
| | OMH-MLV12-HWG | Mounting bracket for series MLV12 sensors |
| // | V31-GM-2M-PUR | Female cordset single-ended M8 straight A-coded, 4-pin, PUR cable grey |
| . / | V31-WM-2M-PUR | Female cordset single-ended M8 angled A-coded, 4-pin, PUR cable grey |
| | | |

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".



Distance sensor

| Acces | sories | |
|---------------------|----------------------|--|
| | ICE2-8IOL-G65L-V1D | EtherNet/IP IO-Link master with 8 inputs/outputs |
| u- | 1022-010E-005E-V1D | |
| | ICE3-8IOL-G65L-V1D | PROFINET IO IO-Link master with 8 inputs/outputs |
| | ICE2-8IOL-K45S-RJ45 | EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, screw terminal |
| | ICE3-8IOL-K45P-RJ45 | PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, push-in terminals |
| | ICE3-8IOL-K45S-RJ45 | PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, screw terminal |
| | IO-Link-Master02-USB | IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection |
| and a second second | ICE1-8IOL-G30L-V1D | Ethernet IO-Link module with 8 inputs/outputs |
| | ICE1-8IOL-G60L-V1D | Ethernet IO-Link module with 8 inputs/outputs |
| | ICE2-8IOL-K45P-RJ45 | EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, push-in connectors |

 Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Settings

Teach-In (TI)

Use the rotary switch for switching signal Q1 to select the relevant switching threshold A and/or B to teach in.

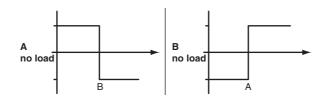
The yellow LEDs indicate the current state of the selected output.

To teach in a switching threshold, press and hold the "TI" button for approximately 1 s, until the yellow and green LEDs flash in phase. Teach-in starts when the "TI" button is released.

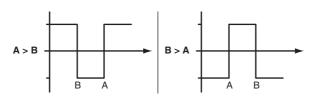
- Teach-in successful: the yellow and green LEDs flash alternately at 2.5 Hz.
- Teach-in unsuccessful: the yellow and green LEDs quickly flash alternately at 8 Hz.
- After an unsuccessful Teach-in, the sensor continues to operate with the previous valid setting after the relevant visual fault signal is issued.

Set switching mode: you can define different switching modes by teaching in the relevant distance data for switching thresholds A and B.

1. Single point mode:



2. Window mode:



Teach in switching thresholds: you can teach in or overwrite a taught-in switching threshold at any time. To do this, press the "TI" button again.

Reset a value: you can reset a taught-in value. To do this, press the "TI" button for > 4 s, until the yellow and green LEDs go out. The reset process itself starts when the "TI" button is released.

• Reset successful: the yellow and green LEDs flash alternately at 2.5 Hz.

Minimum and maximum values for the analog output Q2 are taught in and deleted in the same way as those for the switching output.

The following applies:

A = Minimum voltage/current

B = Maximum voltage/current

Resetting to Factory Settings

To revert back to factory settings, press the "TI" button for > 10 s with the rotary switch set to position "O," until the yellow and green LEDs go out at the same time. The reset process itself starts when the "TI" button is released.

Reset to factory settings successful: the yellow and green LEDs light up at the same time. The sensor then continues to
operate with factory settings.

OMT-IEP

- Factory setting for switching signal Q1:
- Switching signal is high active, window mode
- Analog output: current output, 4 mA ... 20 mA absolute mode

OMT-UEP

- Factory setting for switching signal Q1:
- Switching signal is high active, window mode
- Analog output: voltage output, 0 V ... 10 V absolute mode

Analog output

The analog output type can be configured as voltage or current output via IO-Link. The following output types are available:

- Analog output 0 mA ... 20 mA
- Analog output 4 mA ... 20 mA
- Analog output 0 V ... 10 V

Refer to "General Notes Relating to Pepperl+Fuchs Product Information



Distance sensor

The following operating modes are available:

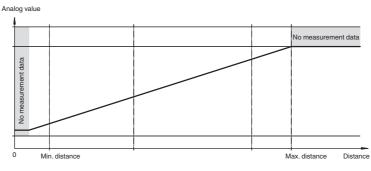
- Absolute mode (default setting)
- Normalized mode
- Rising slope
- Falling slope

The following substitute values can optionally be configured:

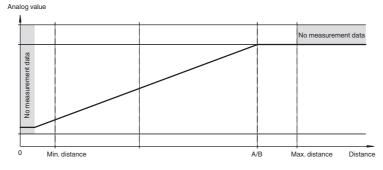
- No substitute values used (default setting)
- Substitute value for "no measured value" used
- Substitute value for "no measured value" and "Measuring overrange" used

The sensor's tolerances are based on the digital process data.

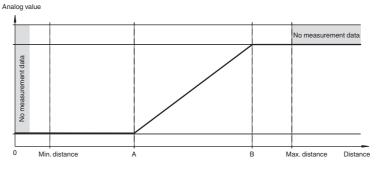
Absolute mode (default setting, A and B = deleted)



Normal mode (A and B without teach-in / deleted)



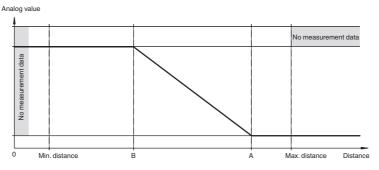
Rising slope (A < B)



Refer to "General Notes Relating to Pepperl+Fuchs Product Information"

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Falling slope (A > B)



Configuration

Setting different operating modes via the IO-Link interface

The devices are equipped with an IO-Link interface as standard for diagnostics and parameterization tasks to ensure optimum adjustment of the sensors to the relevant application.

Single point mode operating mode (one switch point):

- "Detection of objects irrespective of type and color in a defined detection range. Objects in the background are suppressed.
- "The switch point corresponds exactly to the set point.

active detection range

| | Background suppression |
|--|------------------------|

Window mode operating mode (two switch points):

- Detection of objects irrespective of type and color in a defined detection range. Reliable detection when object leaves the
 detection range.
- · Window mode with two switch points.

E

| a | active detection range | е | | |
|-----------------------|------------------------|---|------------------------|--|
| | | | | |
| oreground suppression | | | Background suppression | |

Center window mode operating mode (one switch point):

- Detection of objects irrespective of type and color in a defined detection range. Sets a defined window around a given object.
 Objects outside this window are not detected.
- Window mode with one switch point.

| active | detection range |
|--|---|
| | |
| Foreground suppression | Background suppression |
| Two point mode operating mode (hystereDetection of objects irrespective of type and | sis operating mode): Id color between a defined switch-on and switch-off point. |

| | active detection range | |
|----------------------------|--|--------|
| | | |
| | | Output |
| Output | Hysteresis | · |
| Output | | |
| | | |
| Inactive o | perating mode: | |
| Evalua | ion of switching signals is deactivated. | |
| | | |

The associated IODD device description file can be found in the download area at www.pepperl-fuchs.com.

Refer to "General Notes Relating to Pepperl+Fuchs Product Information"

