

# O1D103

## Laser distance sensor

O1DLF6KG/IO-LINK



- 1 alphanumeric display 4-digit  
2 Programming buttons



### Product characteristics

|                        |             |
|------------------------|-------------|
| Laser protection class | 2           |
| Housing                | rectangular |

### Electrical data

|                             |            |
|-----------------------------|------------|
| Operating voltage [V]       | 18...30 DC |
| Current consumption [mA]    | < 150      |
| Protection class            | III        |
| Reverse polarity protection | yes        |
| Typ. lifetime [h]           | 50000      |

### Inputs / outputs

|                              |                                                           |
|------------------------------|-----------------------------------------------------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analog outputs: 1 |
|------------------------------|-----------------------------------------------------------|

### Outputs

|                                   |                                        |
|-----------------------------------|----------------------------------------|
| Total number of outputs           | 2                                      |
| Electrical design                 | NPN                                    |
| Number of digital outputs         | 2                                      |
| Output function                   | normally open / closed; (programmable) |
| Max. current load per output [mA] | 200                                    |
| Number of analog outputs          | 1                                      |
| Analog current output [mA]        | 4...20; (IEC 61131-2)                  |

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|                                  |                          |                                                     |
|----------------------------------|--------------------------|-----------------------------------------------------|
| Max. load                        | [Ω]                      | 250                                                 |
| Analog voltage output            | [V]                      | 0...10; (IEC 61131-2)                               |
| Min. load resistance             | [Ω]                      | 5000                                                |
| Short-circuit protection         |                          | yes                                                 |
| Type of short-circuit protection |                          | yes (non-latching)                                  |
| Overload protection              |                          | yes                                                 |
| <b>Monitoring range</b>          |                          |                                                     |
| Max. light spot width            | [mm]                     | 15                                                  |
| Max. light spot height           | [mm]                     | 15                                                  |
| Light spot dimensions refer to   |                          | 10 m                                                |
| Background suppression           | [m]                      | 10...19                                             |
| <b>Measuring/setting range</b>   |                          |                                                     |
| Measuring range                  | [m]                      | 0.2...10; (white paper 200 x 200 mm 90 % remission) |
| Sampling rate                    | [Hz]                     | 1...50                                              |
| <b>Interfaces</b>                |                          |                                                     |
| Communication interface          |                          | IO-Link                                             |
| Transmission type                |                          | COM2 (38,4 kBaud)                                   |
| IO-Link revision                 |                          | 1.1                                                 |
| SDCI standard                    |                          | IEC 61131-9                                         |
| Profiles                         | Smart Sensor - SSP 0     | Generic Profiled Sensor                             |
|                                  | Function                 | Device identification                               |
|                                  | Function                 | Process data variable                               |
|                                  | Function                 | Device diagnosis                                    |
|                                  | Function                 | Teach channel                                       |
| SIO mode                         |                          | yes                                                 |
| Required master port class       |                          | A                                                   |
| Process data analog              |                          | 2                                                   |
| Process data binary              |                          | 2                                                   |
| Min. process cycle time          | [ms]                     | 5                                                   |
| Supported DeviceIDs              | <b>Type of operation</b> | <b>DeviceID</b>                                     |
|                                  | default                  | 806                                                 |
| <b>Operating conditions</b>      |                          |                                                     |
| Ambient temperature              | [°C]                     | -10...60                                            |
| Protection                       |                          | IP 67                                               |
| <b>Tests / approvals</b>         |                          |                                                     |
| EMC                              | EN 60947-5-2             |                                                     |
| Laser protection class           |                          | 2                                                   |

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### Notes on laser protection

|                                    |                                                                                                                                     |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Caution:                           | Laser light                                                                                                                         |
| Power:                             | $\leq 4 \text{ mW}$                                                                                                                 |
| Wave length:                       | 650 nm                                                                                                                              |
| pulse:                             | 1,3 ns                                                                                                                              |
| Do not stare into beam.            |                                                                                                                                     |
| Avoid exposure to the laser light. |                                                                                                                                     |
| laser class:                       | 2                                                                                                                                   |
|                                    | EN / IEC60825-1:2007                                                                                                                |
|                                    | EN / IEC60825-1:2014                                                                                                                |
|                                    | 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. |
| MTTF [years]                       | 183                                                                                                                                 |

### Mechanical data

|                 |                                                          |
|-----------------|----------------------------------------------------------|
| Weight [g]      | 313                                                      |
| Housing         | rectangular                                              |
| Dimensions [mm] | 59 x 42 x 52                                             |
| Material        | housing: diecast zinc; front lens: glass; LED window: PC |
| Lens alignment  | Side sensing                                             |

### Displays / operating elements

|         |                       |                               |
|---------|-----------------------|-------------------------------|
| Display | Switching status      | 2 x LED, yellow               |
|         | Power                 | LED, green                    |
|         | Distance, programming | alphanumeric display, 4-digit |

### Accessories

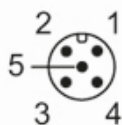
|                        |                          |
|------------------------|--------------------------|
| Accessories (optional) | Protective cover, E21133 |
|------------------------|--------------------------|

### Remarks

|               |                                 |
|---------------|---------------------------------|
| Remarks       | cULus - Class 2 source required |
| Pack quantity | 1 pcs.                          |

### Electrical connection

Connector: 1 x M12; coding: A



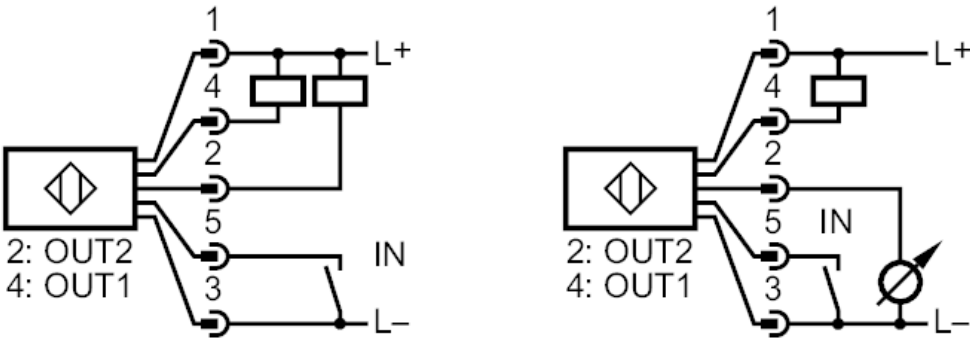
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### Connection



- 2: OUT2 Switching output or 4...20 mA / 0...10 V
- 4: OUT1 switching output or IO-Link
- 5: IN Laser On/ Off Ein / Aus

### Other data

| Parameter | Setting range            | Factory setting |
|-----------|--------------------------|-----------------|
| Uni       | mm, m, inch              | mm              |
| OU1       | Hno, Hnc, Fno, Fnc       | Hno             |
| SP1 [mm]  | 200...9999               | 1000            |
| nSP1 [mm] | 200...9999               | 800             |
| FSP1 [mm] | 200...9999               | 1200            |
| OU2       | Hno, Hnc, Fno, Fnc, I, U | I               |
| SP2 [mm]  | 200...9999               | 2000            |
| nSP2 [mm] | 200...9999               | 1800            |
| FSP2 [mm] | 200...9999               | 2200            |
| ASP [mm]  | 0...9999                 | 0               |
| AEP [mm]  | 0...9999                 | 9999            |
| rATE [Hz] | 1...50                   | 5               |
| dS1 [s]   | 0...0.1...5              | 0               |
| dr1 [s]   | 0...0.1...5              | 0               |
| dS2 [s]   | 0...0.1...5              | 0               |
| dr2 [s]   | 0...0.1...5              | 0               |
| dFo [s]   | 0...0.1...5              | 0               |
| dIS       | d1...3 ; rd1...3; OFF    | d3              |

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### Repeatability / Accuracy

| distance                       | Repeatability of the measured values |                       | Accuracy               |                       |
|--------------------------------|--------------------------------------|-----------------------|------------------------|-----------------------|
|                                | white (90 % remission)               | grey (18 % remission) | white (90 % remission) | grey (18 % remission) |
| 200...1000 mm                  | ± 5.0 mm                             | ±7.5 mm               | ± 15.0 mm              | ± 18.0 mm             |
| 1000...2000 mm                 | ± 5.5 mm                             | ±10.0 mm              | ± 15.0 mm              | ± 20.0 mm             |
| 2000...4000 mm                 | ± 17.5 mm                            | ±22.5 mm              | ± 25.0 mm              | ± 32.0 mm             |
| 4000...6000 mm                 | ± 27.5 mm                            | ±40.0 mm              | ± 35.0 mm              | ± 50.0 mm             |
| 6000...10000 mm                | ± 60.0 mm                            |                       | ± 70.0mm               |                       |
| Sampling rate                  |                                      | 50 Hz                 |                        |                       |
| Extraneous light on the object |                                      | < 40 klx              |                        |                       |

### Repeatability / Accuracy

| distance                       | Repeatability of the measured values |                       | Accuracy               |                       |
|--------------------------------|--------------------------------------|-----------------------|------------------------|-----------------------|
|                                | white (90 % remission)               | grey (18 % remission) | white (90 % remission) | grey (18 % remission) |
| 200...1000 mm                  | ± 16.5 mm                            | ±16.5 mm              | ± 26.5 mm              | ± 26.5 mm             |
| 1000...2000 mm                 | ± 16.5 mm                            | ±16.5 mm              | ± 26.5 mm              | ± 26.5 mm             |
| 2000...4000 mm                 | ± 30.0 mm                            | ±37.0 mm              | ± 40.0 mm              | ± 47.0 mm             |
| 4000...6000 mm                 | ± 37.0 mm                            | ±57.0 mm              | ± 47.0 mm              | ± 67.0 mm             |
| 6000...10000 mm                | ± 75.0 mm                            | —                     | ± 85.0mm               | —                     |
| Sampling rate                  |                                      | 50 Hz                 |                        |                       |
| Extraneous light on the object |                                      | 40...100 klx          |                        |                       |

### Repeatability / Accuracy

| distance                       | Repeatability of the measured values |                       | Accuracy               |                       |
|--------------------------------|--------------------------------------|-----------------------|------------------------|-----------------------|
|                                | white (90 % remission)               | grey (18 % remission) | white (90 % remission) | grey (18 % remission) |
| 200...1000 mm                  | ± 4.0 mm                             | ±4.5 mm               | ± 14.0 mm              | ± 15.0 mm             |
| 1000...2000 mm                 | ± 4.5 mm                             | ±6.0 mm               | ± 14.5 mm              | ± 16.0 mm             |
| 2000...4000 mm                 | ± 13.5 mm                            | ±14.5 mm              | ± 23.5 mm              | ± 24.0 mm             |
| 4000...6000 mm                 | ± 19.0 mm                            | ±21.0 mm              | ± 29.0 mm              | ± 31.0 mm             |
| 6000...10000 mm                | ± 37.0 mm                            | —                     | ± 47.0mm               | —                     |
| Sampling rate                  |                                      | 1 Hz                  |                        |                       |
| Extraneous light on the object |                                      | < 40 klx              |                        |                       |