Baumer
Passion for Sensors

Capacitive point level sensor/CleverLevel

# LBFI

LBFI-21.###.####20.#.###0.0

## Overview

- Optionally with adaptive trigger
- Ex certified for ATEX and IECEx
- Compact and robust stainless steel housing
- Problem solver for adhesions
- Two adjustable switching outputs
- 360° visible multicolor LED
- IO-Link interface

*Picture similar*

## Technical data

| | |
|---|---|
| **Performance characteristics** | |
| Measuring principle | CleverLevel level switches (Frequency Sweep) |
| Hysteresis | ± 1 mm |
| Media characteristics | DC > 1.5 |
| Step response time | 0.04 s , typ. |
| Trigger modes | Window trigger<br>Adaptive trigger |
| Damping | 0 … 10 s , adjustable |
| Repeatability | ± 1 mm |
| **Process conditions** | |
| Process temperature | Refer to section "Operating conditions" |
| Process pressure | Refer to section "Operating conditions" |
| **Process connection** | |
| Connection variants | Refer to section "Dimensional drawings" |
| Mounting position | Any, top, bottom, side |
| Wetted parts material | PEEK Natura<br>AISI 316L (1.4404) |
| Surface roughness wetted parts | Ra ≤ 0.8 µm |
| **Ambient conditions** | |
| Operating temperature range | -40 … 85 °C |
| Storage temperature range | -40 … 85 °C |
| Degree of protection (EN 60529) | M12-A connector, polycarbonate and stainless steel:<br>IP67 , with appropriate cable<br>IP69K , with appropriate cable<br>KingCrown M12-A connector (proTect+):<br>IP68 , with appropriate cable<br>IP69K , with appropriate cable |
| Humidity | < 98 % RH , condensing |

| | |
|---|---|
| **Ambient conditions** | |
| Vibration (sinusoidal) (EN 60068-2-6) | 1.6 mm p-p (2 … 25 Hz), 4 g (25 … 100 Hz), 1 octave / min. |
| **Output signal** | |
| Output type | Digital (push-pull)<br>NPN<br>PNP |
| Switching logic | Active high<br>Active low<br>Normally closed (NC)<br>Normally open (NO) |
| Voltage drop | NPN: (+0.4 V) ± 0.2 V, Rload ≥ 10 kΩ<br>PNP: (+Vs -0.5 V) ± 0.2 V, Rload ≥ 10 kΩ |
| Current rating | 100 mA , max. |
| Off leak current | 100 µA , max. |
| Short circuit protection | Yes |
| Interface | IO-Link 1.1 |
| **IO-Link interface** | |
| IO-Link version | 1.1 |
| IO-Link port type | Class A |
| Baud rate | 38,4 kbaud (COM2) |
| Cycle time | ≥ 6.4 ms |
| SIO-mode | Yes |
| **Housing** | |
| Style | Compact transmitter |
| Overall size | Refer to section "Dimensional drawings" |
| Material | Stainless steel |
| **Electrical connection** | |
| Connector | M12-A, 4-pin, polycarbonate<br>M12-A, 4-pin, stainless steel |
| **Power supply** | |
| Voltage supply range | 8 … 36 V DC |

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2025-09-29

## Technical data

| Power supply | |
|---|---|
| Current consumption (no load) | 25 mA , typ.<br>40 mA , max. |
| Power-up time | < 3 s |
| Reverse polarity protection | Yes |
| **Factory settings** | |
| qTeach | Activated |
| Switching logic SW1 | Normally open (NO) |
| Switching logic SW2 | Normally closed (NC) |
| Switching range (dielectric constant DC) | < 75 % , DC > 2 |
| Range hysteresis | 2.4 % |
| Damping | 0.1 s |
| **Factory settings – Adaptive trigger** | |
| Switching logic | Normally open (NO) |
| Advanced setup | Disabled |
| Set point high | 100 % |
| Damping | 0 ms |
| Trigger distance | 3.0 % |
| Startup Level | 0.0 % |
| Steady detection | Active |
| **IECEx / ATEX II 1D Ex - ta IIIC T100 °C Da** | |
| Voltage supply range, Un | 30 V DC , max. |
| Current rating, In | 100 mA |
| Degree of protection for cable accessories | IP 67 |
| Temperature class T100 °C | -40 < Tamb < 85 °C |

| IECEx / ATEX II 1G - Ex ia IIC T4 Ga | |
|---|---|
| Maximum values for barrier selection, Ui | 30 V DC , max. |
| Maximum values for barrier selection, Ii | 100 mA |
| Maximum values for barrier selection, Pi | 750 mW |
| Internal capacitance, Ci | 63 nF |
| Internal inductance, Li | 617 µH |
| Temperature class, T1 ... T4 | -40 < Tamb < 85 °C |
| **ATEX II 3G - Ex ec IIC T4 Gc** | |
| Voltage supply range, Un | 30 V DC , max. |
| Current rating, In | 100 mA |
| Degree of protection for cable accessories | IP 67 |
| Temperature class T1 ... T4 | -40 < Tamb < 85 °C |
| **Compliance and approvals** | |
| EMC Emission | EN 61326, installed in a closed metal tank |
| EMC Immunity | EN 61326, installed in a closed metal tank |
| Hygiene | FDA (21 CFR 177.2415) |
| Safety | cULus listed, E365692<br>WHG (overfill, leakage) |
| Explosion protection | IECEx / ATEX II 1D Ex - ta IIIC T100 °C Da<br>IECEx / ATEX II 1G - Ex ia IIC T4 Ga<br>ATEX II 3G - Ex ec IIC T4 Gc |
| Pharma | USP Class VI (PEEK material) |

## Operating conditions

| Ordering key | Process connection | BCID | Continuous<br>Process temperature @ Tamb < 50 °C<br>(° C) | Continuous<br>Process pressure<br>(bar) | Temporary (t < 1 h)<br>Process temperature max. @ Tamb < 50 °C<br>(° C) | Temporary (t < 1 h)<br>Process pressure @ Process temperature max.<br>(bar) |
|---|---|---|---|---|---|---|
| G070 | G 1/2 A ISO 228-1 BSC | G07 | -40 … 115 | -1 … 100 | 135 | -1 … 100 |
| N020 | 1/2-14 NPT | N02 | -40 … 115 | -1 … 100 | 135 | -1 … 100 |
| T110 | G 3/4 A ISO 228-1 for reverse assembly (in-shell thread) | T11 | -40 … 85 | -1 … 100 | N/A | N/A |
| A030 | G 1/2 A hygienic | A03 | -40 … 115 | -1 … 10 | 135 | -1 … 5 |
| A031 | G 1/2 A hygienic, length 82 mm | A03 | -40 … 115 | -1 … 100 | 135 | -1 … 100 |

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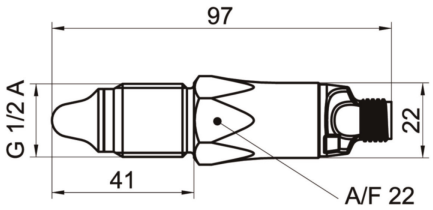
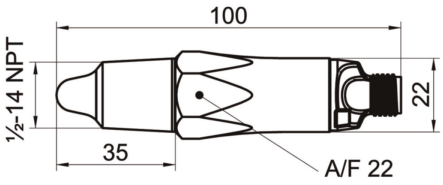
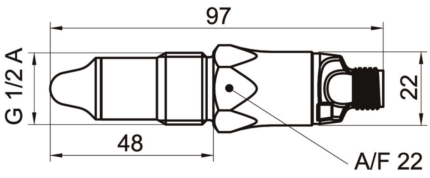
## Dimensional drawings (mm)



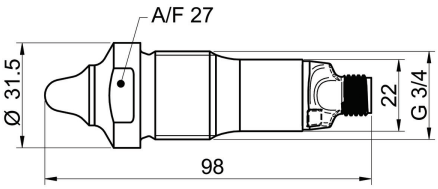

G 1/2 A ISO 228-1 BSC (BCID: G07)



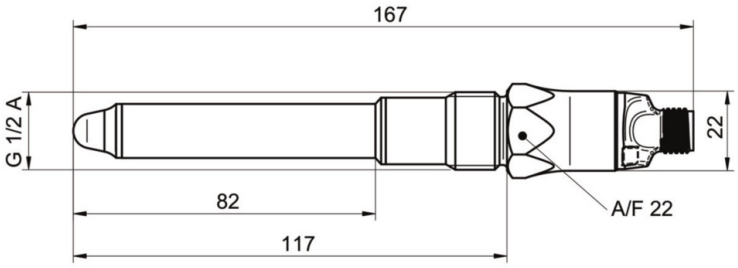

1/2-14 NPT (BCID: N02)




G 1/2 A hygienic (BCID: A03)

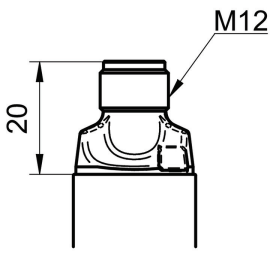



G 3/4 A ISO 228-1 for reverse assembly (in-shell thread) (BCID: T11)

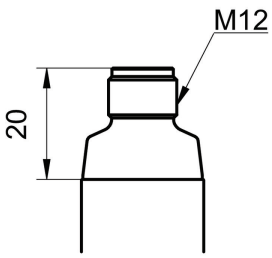



G 1/2 A hygienic, 82 mm length (BCID: A03)

## Housing




Connector M12-A, 4-pin, polycarbonate (with LED)




Connector M12-A, 4-pin, stainless steel (without LED)

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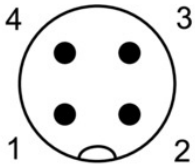
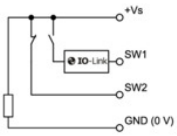
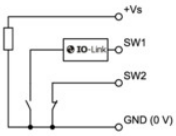
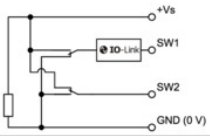
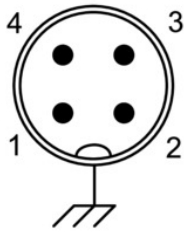
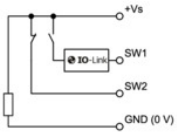
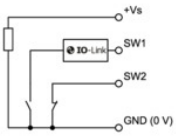
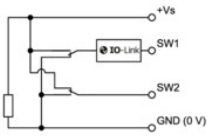
## Electrical connection

| Output type | Electrical connection | Equivalent circuit | Function | Pin assignment |
|---|---|---|---|---|
| Programmable output<br>IO-Link<br>PNP |  |  | +Vs<br>SW1 (IO-Link)<br>SW2<br>GND (0 V) | 1<br>4<br>2<br>3 |
| Programmable output<br>IO-Link<br>NPN | |  | +Vs<br>SW1 (IO-Link)<br>SW2<br>GND (0 V) | 1<br>4<br>2<br>3 |
| Programmable output<br>IO-Link<br>Digital (push-pull) | |  | +Vs<br>SW1 (IO-Link)<br>SW2<br>GND (0 V) | 1<br>4<br>2<br>3 |
| Programmable output<br>IO-Link<br>PNP |  |  | +Vs<br>SW1 (IO-Link)<br>SW2<br>GND (0 V)<br>Frame Ground | 1<br>4<br>2<br>3<br>Plug thread |
| Programmable output<br>IO-Link<br>NPN | |  | +Vs<br>SW1 (IO-Link)<br>SW2<br>GND (0 V)<br>Frame Ground | 1<br>4<br>2<br>3<br>Plug thread |
| Programmable output<br>IO-Link<br>Digital (push-pull) | |  | +Vs<br>SW1 (IO-Link)<br>SW2<br>GND (0 V)<br>Frame Ground | 1<br>4<br>2<br>3<br>Plug thread |

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## Ordering information

**Ordering key - Configuration possibilities see website**

| | LBFI | - | 2 | 1 | . | ### | . | #### | 2 | 0 | . | # | . | # | ## | 0 | . | # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Product** | | | | | | | | | | | | | | | | | | |
| Level switches | LBFI | | | | | | | | | | | | | | | | | |
| **Version** | | | | | | | | | | | | | | | | | | |
| Programmable output, IO-Link | | | 2 | | | | | | | | | | | | | | | |
| **Housing** | | | | | | | | | | | | | | | | | | |
| AISI 316L (1.4404) | | | | 1 | | | | | | | | | | | | | | |
| **Electrical connection** | | | | | | | | | | | | | | | | | | |
| M12-A, 4-pin, polycarbonate (with LED) | | | | | | 010 | | | | | | | | | | | | |
| M12-A, 4-pin, stainless steel (without LED) | | | | | | 020 | | | | | | | | | | | | |
| **Process connection** | | | | | | | | | | | | | | | | | | |
| G 1/2 A ISO 228-1 (G07) | | | | | | | | G070 | | | | | | | | | | |
| 1/2-14 NPT (N02) | | | | | | | | N020 | | | | | | | | | | |
| G 1/2 A hygienic (A03) | | | | | | | | A030 | | | | | | | | | | |
| G 1/2 A hygienic, length 82 mm (A03) | | | | | | | | A031 | | | | | | | | | | |
| G 3/4 A ISO 228-1 for reverse assembly (in-shell thread) (T11)(1) | | | | | | | | T110 | | | | | | | | | | |
| **Process connection material** | | | | | | | | | | | | | | | | | | |
| AISI 316L (1.4404) | | | | | | | | | 2 | | | | | | | | | |
| **Gasket** | | | | | | | | | | | | | | | | | | |
| Without | | | | | | | | | | 0 | | | | | | | | |
| **Output type** | | | | | | | | | | | | | | | | | | |
| PNP | | | | | | | | | | | | 1 | | | | | | |
| NPN | | | | | | | | | | | | 2 | | | | | | |
| Digital (push-pull) | | | | | | | | | | | | 3 | | | | | | |
| **Explosion protection** | | | | | | | | | | | | | | | | | | |
| ATEX ec | | | | | | | | | | | | | | 3 | | | | |
| IECEx / ATEX ia + ta | | | | | | | | | | | | | | 4 | | | | |
| **Industrial approvals** | | | | | | | | | | | | | | | | | | |
| Standard | | | | | | | | | | | | | | | 00 | | | |
| WHG | | | | | | | | | | | | | | | 11 | | | |
| **Special approvals** | | | | | | | | | | | | | | | | | | |
| Standard | | | | | | | | | | | | | | | | 0 | | |
| **Configuration** | | | | | | | | | | | | | | | | | | |
| Factory settings | | | | | | | | | | | | | | | | | | 0 |
| Customer-specific | | | | | | | | | | | | | | | | | | 1 |

(1) Including gasket ZPX3-14C0 (glass/aramide fiber with NBR)

- /9271: Upgrade to adaptive trigger

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