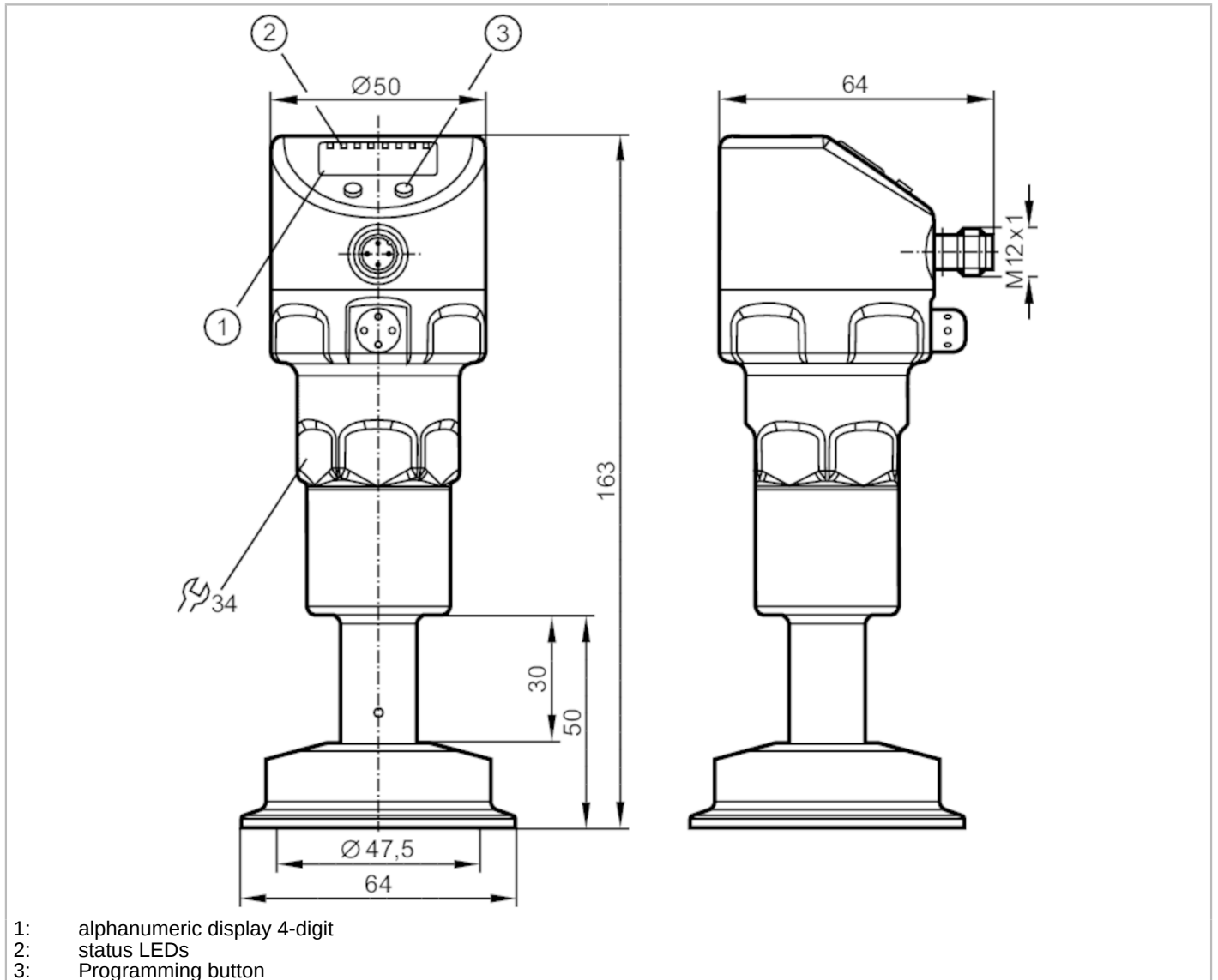


# PI2309



## Flush pressure sensor with display

PI-1-1BREZ02-MFRKG/US/ IP



### Product characteristics

|                              |   |                  |                |
|------------------------------|---|------------------|----------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analog outputs: 1 |                  |                |
| Measuring range              | -1000...1000 mbar   | -14.5...14.5 psi | -100...100 kPa |
| Process connection           | Clamp DN50 (2") DIN 32676 (ISO 2852)                      |                  |                |

### Application

|                         |   |         |          |
|-------------------------|---|---------|----------|
| System                  | gold-plated contacts  |         |          |
| Application             | flush mountable for the food and beverage industry                    |         |          |
| Media                   | viscous media and liquids with suspended particles; liquids and gases |         |          |
| Medium temperature [°C] | -20...200   |         |          |
| Min. bursting pressure  | 30000 mbar  | 435 psi | 3000 kPa |
| Pressure rating         | 10000 mbar  | 145 psi | 1000 kPa |
| Type of pressure        | relative pressure; vacuum   |         |          |

### Electrical data

|                                 |                 |
|---------------------------------|-----------------|
| Min. insulation resistance [MΩ] | 100; (500 V DC) |
|---------------------------------|-----------------|

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|                             |     |
|-----------------------------|-----|
| Protection class            | III |
| Reverse polarity protection | yes |
| Integrated watchdog         | yes |

| 2-wire                   |            |
|--------------------------|------------|
| Operating voltage [V]    | 20...32 DC |
| Current consumption [mA] | 3.6...21   |
| Power-on delay time [s]  | 1          |

| 3-wire                   |            |
|--------------------------|------------|
| Operating voltage [V]    | 18...32 DC |
| Current consumption [mA] | < 45       |
| Power-on delay time [s]  | 0.5        |

### Inputs / outputs

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

### Outputs

|                                  |  |
|----------------------------------|--|
| Total number of outputs          | 2  |
| Output signal                    | switching signal; analog signal; IO-Link; (configurable) |
| Electrical design                | PNP/NPN  |
| Number of digital outputs        | 2  |
| Output function                  | normally open / closed; (configurable)                   |
| Number of analog outputs         | 1  |
| Analog current output [mA]       | 4...20, invertible; (scalable)                           |
| Short-circuit protection         | yes  |
| Type of short-circuit protection | yes (non-latching)                                       |
| Overload protection              | yes  |

| 2-wire        |     |
|---------------|-----|
| Max. load [Ω] | 300 |

| 3-wire   |                          |
|--|--------------------------|
| Max. voltage drop switching output DC [V]            | 2                        |
| Permanent current rating of switching output DC [mA] | 250                      |
| Switching frequency DC [Hz]                          | 125                      |
| Max. load [Ω]  | ( $U_b - 10 V$ ) / 20 mA |

### Measuring/setting range

|                    |                   |                   |                 |
|--------------------|-------------------|-------------------|-----------------|
| Measuring range    | -1000...1000 mbar | -14.5...14.5 psi  | -100...100 kPa  |
| Set point SP       | -998...1000 mbar  | -14.45...14.5 psi | -99.8...100 kPa |
| Reset point rP     | -1000...998 mbar  | -14.5...14.45 psi | -100...99.8 kPa |
| Analog start point | -1000...500 mbar  | -14.5...7.25 psi  | -100...50 kPa   |
| Analog end point   | -500...1000 mbar  | -7.25...14.5 psi  | -50...100 kPa   |
| In steps of        | 1 mbar            | 0.05 psi          | 0.1 kPa         |
| Factory setting    |                   | SP1 = -500 mbar   | rP1 = -540 mbar |
|                    |                   | SP2 = 500 mbar    | rP2 = 460 mbar  |
|                    |                   | ASP = -1000 mbar  | AEP = 1000 mbar |



## Flush pressure sensor with display

PI-1-1BREZ02-MFRKG/US/ IP

| Accuracy / deviations  |                                     |  |
|--|-------------------------------------|--|
| Switch point accuracy<br>[% of the span]                     |                                     | < ± 0,2; (Turn down 1:1)   |
| Repeatability<br>[% of the span]                             |                                     | < ± 0,1; (with temperature fluctuations < 10 K; Turn down 1:1)   |
| Characteristics deviation<br>[% of the span]                 |                                     | < ± 0,2; (Turn down 1:1, linearity, incl. hysteresis and repeatability, limit value setting to DIN EN IEC 62828-1) |
| Linearity deviation<br>[% of the span]                       |                                     | < ± 0,15; (Turn down 1:1)  |
| Hysteresis deviation<br>[% of the span]                      |                                     | < ± 0,15; (Turn down 1:1)  |
| Long-term stability<br>[% of the span]                       |                                     | < ± 0,1; (Turn down 1:1; per year)   |
| Temperature coefficient zero point<br>[% of the span / 10 K] |                                     | < ± 0,3; (0...200 °C)  |
| Temperature coefficient span<br>[% of the span / 10 K]       |                                     | < ± 0,15; (0...200 °C)   |
| Reaction times   |                                     |  |
| Damping process value dAP [s]                                |                                     | 0...30   |
| Damping for the analog output dAA [s]                        |                                     | 0.01...99.99   |
| 2-wire   |                                     |  |
| Step response time analog output [ms]                        |                                     | 45   |
| 3-wire   |                                     |  |
| Min. response time of switching output (dAP) [ms]            |                                     | 3  |
| Step response time analog output [ms]                        |                                     | 7  |
| Interfaces   |                                     |  |
| Communication interface                                      |                                     | IO-Link  |
| Transmission type  |                                     | COM2 (38,4 kBaud)  |
| IO-Link revision   |                                     | 1.0  |
| SDCI standard  |                                     | IO-Link Communication Specification, Version 1.0, January 2009, Ordner No: 10.002                                  |
| Profiles   |                                     | no profile   |
| SIO mode   |                                     | yes  |
| Required master port class                                   |                                     | A  |
| Process data analog  |                                     | 1  |
| Process data binary  |                                     | 2  |
| Min. process cycle time [ms]                                 |                                     | 2.3  |
| Supported DeviceIDs  | <b>Type of operation</b><br>default | <b>DeviceID</b><br>108   |
| Operating conditions   |                                     |  |
| Ambient temperature [°C]                                     |                                     | -25...80   |
| Note on ambient temperature                                  |                                     | Medium temperature: ≤ 160 °C   |
| Ambient temperature [°C]                                     |                                     | -25...65   |

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## Flush pressure sensor with display

PI-1-1BREZ02-MFRKG/US/ IP

|                             |  |
|-----------------------------|--|
| Note on ambient temperature | Medium temperature: $\leq 200\text{ }^{\circ}\text{C}$ |
| Storage temperature [°C]    | -25...100  |
| Protection                  | IP 67; IP 68; IP 69K                                   |

### Tests / approvals

|                      |   |                     |
|----------------------|---|---------------------|
| EMC                  | DIN EN 61000-6-2                                |                     |
|                      | DIN EN 61000-6-3                                |                     |
| Shock resistance     | DIN EN 60068-2-27                               | 50 g (11 ms)        |
| Vibration resistance | DIN EN 60068-2-6                                | 20 g (10...2000 Hz) |
| MTTF [years]         |   | 141                 |
| Note on approval     | Including free 6-point calibration certificate. |                     |

### Mechanical data

|   |   |
|---|---|
| Weight [g]  | 1200.3  |
| Material  | stainless steel (1.4404 / 316L); stainless steel (1.4435 / 316L); PBT; PEI; PFA |
| Materials (wetted parts)                          | stainless steel (1.4435 / 316L)   |
| Min. pressure cycles                              | 10 million  |
| Process connection                                | Clamp DN50 (2") DIN 32676 (ISO 2852)  |
| Surface characteristics Ra/Rz of the wetted parts | < 0.38 / -  |
| Fill fluid for pressure transfer                  | NEOBEE (food grade, FDA compliant)  |
| Diaphragm diameter [mm]                           | 47.5  |

### Displays / operating elements

|              |   |                               |
|--------------|---|-------------------------------|
| Display      | Display unit                              | LED, green                    |
|              | Switching status                          | LED, yellow                   |
|              | Function display                          | alphanumeric display, 4-digit |
|              | Measured values                           | alphanumeric display, 4-digit |
| Display unit | mbar; kPa; psi; inH2O; mWS; % of the span |                               |

### Remarks

|               |        |
|---------------|--------|
| Pack quantity | 1 pcs. |
|---------------|--------|

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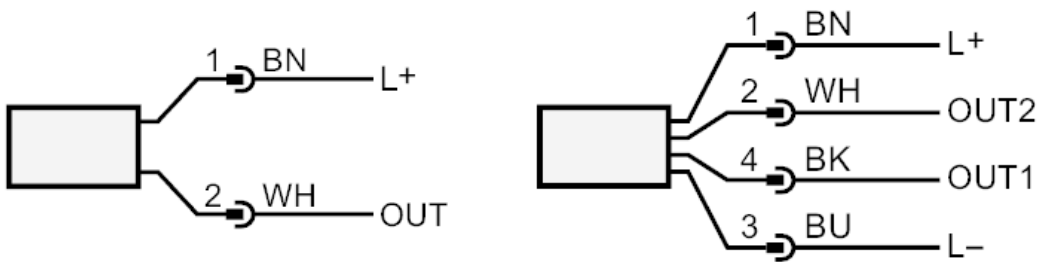


## Flush pressure sensor with display

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### Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated



- OUT            connection for 2-wire operation :  
                 analog output
  - OUT1          connection for 3-wire operation :  
                 Switching output
  - OUT2          IO-Link  
                 Switching output  
                 analog output
- Colors to DIN EN 60947-5-2  
Core colors :
- BK =            black
  - BN =            brown
  - BU =            blue
  - WH =            white