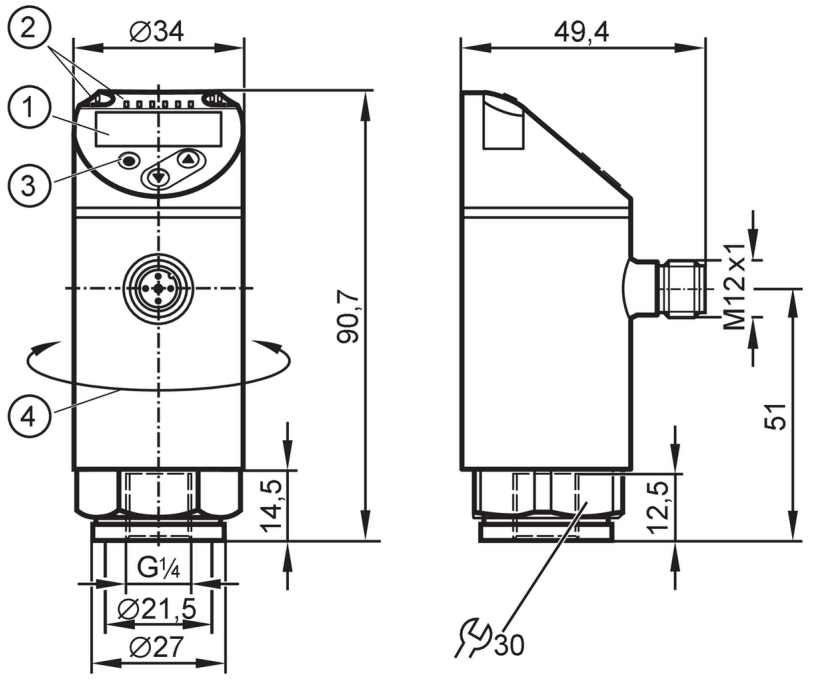
# PN2099

## Pressure sensor with display

PN-1-1BRER14-MFRKG/US/ /V




1 alphanumeric display 4-digit red/green
2 LEDs Display unit / switching status
3 programming button
4 upper part of the housing can be rotated 345°

| | | | | | | |
|---|---|---|---|---|---|---|
| **Product characteristics** | | | | | | |
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1 | | | | | |
| Measuring range | -1...1 bar | -1000...1000 mbar | -14.5...14.5 psi | -29.5...29.5 inHg | -401...401 inH2O | -100...100 kPa |
| Process connection | threaded connection G 1/4 internal thread (DIN EN ISO 1179-2) | | | | | |
| **Application** | | | | | | |
| Special feature | Gold-plated contacts | | | | | |
| Measuring element | ceramic-capacitive pressure measuring cell | | | | | |
| Application | for industrial applications | | | | | |
| Media | liquids and gases | | | | | |
| Medium temperature [°C] | -25...80 | | | | | |
| Min. burst pressure | 30000 mbar | 450 psi | 3000 kPa | | | |
| Pressure rating | 10000 mbar | 145 psi | 1000 kPa | | | |
| Vacuum resistance | -1000 mbar | -0.1 MPa | | | | |
| Type of pressure | relative pressure; vacuum | | | | | |
| **Electrical data** | | | | | | |
| Operating voltage [V] | 18...30 DC; (to SELV/PELV) | | | | | |
| Current consumption [mA] | < 35 | | | | | |
| Min. insulation resistance [MΩ] | 100; (500 V DC) | | | | | |
| Protection class | III | | | | | |
| Reverse polarity protection | yes | | | | | |
| Power-on delay time [s] | 0.3 | | | | | |
| Integrated watchdog | yes | | | | | |

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| | | | | | | |
|---|---|---|---|---|---|---|
| **Inputs / outputs** | | | | | | |
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1 | | | | | |
| **Outputs** | | | | | | |
| Total number of outputs | 2 | | | | | |
| Output signal | switching signal; analogue signal; IO-Link; (configurable) | | | | | |
| Electrical design | PNP/NPN | | | | | |
| Number of digital outputs | 2 | | | | | |
| Output function | normally open / normally closed; (parameterisable) | | | | | |
| Max. voltage drop switching output DC [V] | 2 | | | | | |
| Permanent current rating of switching output DC [mA] | 250 | | | | | |
| Switching frequency DC [Hz] | < 500 | | | | | |
| Number of analogue outputs | 1 | | | | | |
| Analogue current output [mA] | 4...20; (scalable 1:5) | | | | | |
| Max. load [Ω] | 500 | | | | | |
| Analogue voltage output [V] | 0...10; (scalable 1:5) | | | | | |
| Min. load resistance [Ω] | 2000 | | | | | |
| Short-circuit protection | yes | | | | | |
| Type of short-circuit protection | pulsed | | | | | |
| Overload protection | yes | | | | | |
| **Measuring/setting range** | | | | | | |
| Measuring range | -1...1 bar | -1000...1000 mbar | -14.5...14.5 psi | -29.5...29.5 inHg | -401...401 inH2O | -100...100 kPa |
| Analogue start point | -1000...600 mbar | -14.5...8.7 psi | -29.5...17.7 inHg | -402...240 inH2O | -100...60 kPa | |
| Analogue end point | -600...1000 mbar | -8.7...14.5 psi | -17.7...29.5 inHg | -240...402 inH2O | -60...100 kPa | |
| Factory setting / CMPT = 2 | | | | | | |
| Set point SP | -985...1000 mbar | -14.3...14.5 psi | -29.2...29.5 inHg | -396...402 inH2O | -98.5...100 kPa | |
| Reset point rP | -995...990 mbar | -14.45...14.4 psi | -29.4...29.3 inHg | -400...398 inH2O | -99.5...99 kPa | |
| Min. difference between SP and rP | 10 mbar | 0.15 psi | 0.3 inHg | 4 inH2O | 1 kPa | |
| In steps of | 5 mbar | 0.05 psi | 0.1 inHg | 2 inH2O | 0.5 kPa | |
| Status_B High Resolution / CMPT = 3 | | | | | | |
| Set point SP | -987...1000 mbar | -14.32...14.5 psi | -29.2...29.5 inHg | -396...401 inH2O | -98.7...100 kPa | |
| Reset point rP | -996...992 mbar | -14.44...14.38 psi | -29.4...29.3 inHg | -400...398 inH2O | -99.6...99.2 kPa | |
| Min. difference between SP and rP | 9 mbar | 0.12 psi | 0.3 inHg | 4 inH2O | 0.9 kPa | |
| In steps of | 1 mbar | 0.01 psi | 0.1 inHg | 1 inH2O | 0.1 kPa | |
| **Accuracy / deviations** | | | | | | |
| Switch point accuracy [% of the span] | < ± 0,4; (Turn down 1:1) | | | | | |
| Repeatability [% of the span] | < ± 0,1; (with temperature fluctuations < 10 K; Turn down 1:1) | | | | | |
| Characteristics deviation [% of the span] | < ± 0,25 (BFSL) / < ± 0,5 (LS); (Turn down 1:1; BFSL = Best Fit Straight Line; LS = limit value setting) | | | | | |
| Hysteresis deviation [% of the span] | < ± 0,1; (Turn down 1:1) | | | | | |

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| | | |
|---|---|---|
| Long-term stability [% of the span] | < ± 0,05; (Turn down 1:1; per 6 months) | |
| Temperature coefficient zero point [% of the span / 10 K] | < ± 0,2; (-0...80 °C) | |
| Temperature coefficient span [% of the span / 10 K] | < ± 0,2; (-0...80 °C) | |
| Notes on the accuracy / deviation | switch point accuracy, linearity error under DNV GL: < ± 1%: < ± 1% | |
| **Response times** | | |
| Response time [ms] | < 1.5 | |
| Delay time programmable dS, dr [s] | 0...50 | |
| Damping process value dAP [s] | 0...4 | |
| Damping for the analogue output dAA [s] | 0...4 | |
| Max. response time analogue output [ms] | 3 | |
| **Software / programming** | | |
| Parameter setting options | hysteresis / window; normally open / normally closed; switch-on/ switch-off delay; Damping; Display unit; current/voltage output | |
| **Interfaces** | | |
| Communication interface | IO-Link | |
| Transmission type | COM2 (38,4 kBaud) | |
| IO-Link revision | 1.1 | |
| SDCI standard | IEC 61131-9 | |
| SIO mode | yes | |
| Required master port type | A; (when pin 2 not connected: B) | |
| Supported DeviceIDs | **Type of operation** | **DeviceID** |
| | Factory setting / CMPT = 2 | 467 |
| | Status_B High Resolution / CMPT = 3 | 983 |
| Note | For further information please see the IODD PDF file under "Downloads" | |
| Factory setting / CMPT = 2 | | |
| Profiles | Smart Sensor - SSP 0 | Generic Profiled Sensor |
| | Function | Device identification |
| | Function | Process data variable |
| | Function | Device diagnosis |
| Min. process cycle time [ms] | 2.3 | |
| IO-Link resolution pressure [mbar] | 1 | |
| IO-Link process data (cyclical) | **function** | **bit length** |
| | pressure | 14 |
| | binary switching information | 2 |
| IO-Link functions (acyclical) | application specific tag | |
| Status_B High Resolution / CMPT = 3 | | |
| Profiles | Smart Sensor - SSP 3.1 | Measuring Sensor |
| | Common - I&D | Identification and Diagnosis |
| Min. process cycle time [ms] | 3 | |

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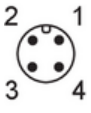
## Pressure sensor with display

PN-1-1BRER14-MFRKG/US/ /V

| | | | |
|---|---|---|---|
| IO-Link resolution pressure | [mbar] | 1 | |
| IO-Link process data (cyclical) | | **function** | **bit length** |
| | | pressure | 16 |
| | | device status | 4 |
| | | binary switching information | 2 |
| IO-Link functions (acyclical) | | application specific tag | |
| **Operating conditions** | | | |
| Ambient temperature | [°C] | -25...80 | |
| Storage temperature | [°C] | -40...100 | |
| Protection | | IP 65; IP 67 | |
| **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] | 138 | |
| UL approval | | UL approval no. | J012 |
| Pressure Equipment Directive | | Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request | |
| **Mechanical data** | | | |
| Weight | [g] | 237.5 | |
| Housing | | cylindrical | |
| Dimensions | [mm] | Ø 34 / L = 90.7 | |
| Materials | | stainless steel (316L/1.4404); PBT+PC-GF30; PBT-GF20; PC | |
| Materials (wetted parts) | | stainless steel (316L/1.4404); Al2O3 (ceramics); FKM | |
| Min. pressure cycles | | 100 million | |
| Tightening torque | [Nm] | 25...35; (recommended tightening torque; depends on the lubrication, the seal and the pressure load) | |
| Process connection | | threaded connection G 1/4 internal thread (DIN EN ISO 1179-2) | |
| Restrictor element integrated | | no (can be retrofitted) | |
| **Displays / operating elements** | | | |
| Display | | Display unit | 5 x LED, green (mbar, psi, kPa, inH2O, inHg) |
| | | switching status | 2 x LED, yellow |
| | | measured values | alphanumeric display, red/green 4-digit |
| **Remarks** | | | |
| Pack quantity | | 1 pcs. | |

**Electrical connection**

Connector: 1 x M12; coding: A; Contacts: 4, gold-plated

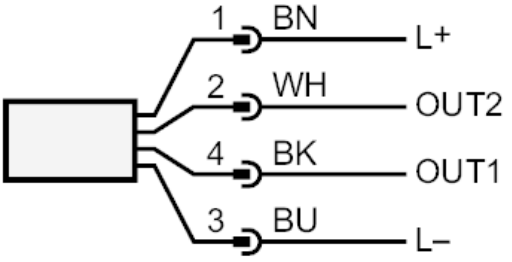


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### Connection




| | |
|---|---|
| OUT1 | switching output<br>IO-Link |
| OUT2 | switching output<br>analogue output |
| | Core colours : |
| BK = | black |
| BN = | brown |
| BU = | blue |
| WH = | white |