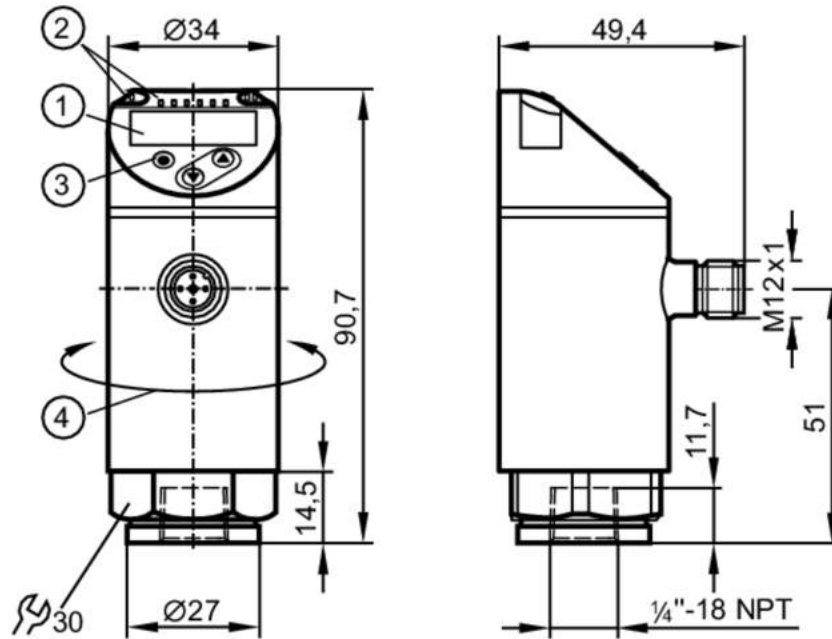


# PN2297



## Pressure sensor with display

PN-001BREN14-MFRKG/US/ IV



- 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              | -0.05...1 bar   | -50...1000 mbar | -0.72...14.5 psi | -20.1...401.5 inH2O | -5...100 kPa |
| Process connection           | threaded connection 1/4" NPT internal thread                |                 |                  |                     |              |

### 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. bursting pressure                   | 30000 mbar                                 | 450 psi    | 3000 kPa |          |  |
| Pressure rating                          | 10000 mbar                                 | 145 psi    | 1000 kPa |          |  |
| Vacuum resistance [mbar]                 | -1000                                      |            |          |          |  |
| Type of pressure                         | relative pressure                          |            |          |          |  |
| MAWP (for applications according to CRN) | 10 bar                                     | 10000 mbar | 145 psi  | 1000 kPa |  |

### Electrical data

|                                 |                            |  |  |  |  |
|---------------------------------|----------------------------|--|--|--|--|
| Operating voltage [V]           | 18...30 DC; (to SELV/PELV) |  |  |  |  |
| Current consumption [mA]        | < 35                       |  |  |  |  |
| Min. insulation resistance [MΩ] | 100; (500 V DC)            |  |  |  |  |

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|                             |     |
|-----------------------------|-----|
| Protection class            | III |
| Reverse polarity protection | yes |
| Power-on delay time [s]     | 0.3 |
| Integrated watchdog         | yes |

### 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      | -0.05...1 bar   | -50...1000 mbar  | -0.72...14.5 psi   | -20.1...401.5 inH2O | -5...100 kPa |
| Analogue start point | -50...800 mbar  | -0.72...11.6 psi | -20...321 inH2O    | -5...80 kPa         |              |
| Analogue end point   | 150...1000 mbar | 2.18...14.5 psi  | 60.5...401.5 inH2O | 15...100 kPa        |              |

#### Factory setting / CMPT = 2

|                                   |                 |                  |                     |                 |
|-----------------------------------|-----------------|------------------|---------------------|-----------------|
| Set point SP                      | -44...1000 mbar | -0.64...14.5 psi | -17.5...401.5 inH2O | -4.4...100 kPa  |
| Reset point rP                    | -48...996 mbar  | -0.7...14.44 psi | -19...400 inH2O     | -4.4...99.6 kPa |
| Min. difference between SP and rP | 6 mbar          | 0.06 psi         | 2 inH2O             | 0.6 kPa         |
| In steps of                       | 2 mbar          | 0.02 psi         | 0.5 inH2O           | 0.2 kPa         |

#### Status\_B High Resolution / CMPT = 3

|                                   |                 |                   |                     |                 |
|-----------------------------------|-----------------|-------------------|---------------------|-----------------|
| Set point SP                      | -44...1000 mbar | -0.63...14.5 psi  | -17.5...401.5 inH2O | -4.4...100 kPa  |
| Reset point rP                    | -48...996 mbar  | -0.69...14.44 psi | -19.2...399.8 inH2O | -4.8...99.6 kPa |
| Min. difference between SP and rP | 5 mbar          | 0.06 psi          | 1.7 inH2O           | 0.5 kPa         |
| In steps of                       | 1 mbar          | 0.01 psi          | 0.1 inH2O           | 0.1 kPa         |

### Accuracy / deviations

|                                       |                          |
|---------------------------------------|--------------------------|
| Switch point accuracy [% of the span] | < ± 0,4; (Turn down 1:1) |
|---------------------------------------|--------------------------|

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## Pressure sensor with display

PN-001BREN14-MFRKG/US/ IV

|                                    |                        |  |
|------------------------------------|------------------------|--|
| 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)   |
| 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                 | <table border="1"> <thead> <tr> <th>Type of operation</th> <th>DeviceID</th> </tr> </thead> <tbody> <tr> <td>Factory setting / CMPT = 2</td> <td>475</td> </tr> <tr> <td>Status_B High Resolution / CMPT = 3</td> <td>991</td> </tr> </tbody> </table> | Type of operation | DeviceID | Factory setting / CMPT = 2 | 475 | Status_B High Resolution / CMPT = 3 | 991 |
| Type of operation                   | DeviceID   |                   |          |                            |     |                                     |     |
| Factory setting / CMPT = 2          | 475  |                   |          |                            |     |                                     |     |
| Status_B High Resolution / CMPT = 3 | 991  |                   |          |                            |     |                                     |     |
| Note                                | For further information please see the IO-Link PDF file under "Downloads"  |                   |          |                            |     |                                     |     |

### Factory setting / CMPT = 2

| Profiles                        | Smart Sensor: Process Data Variable; Device Identification, Device Diagnosis  |          |            |          |    |                              |   |
|---------------------------------|---|----------|------------|----------|----|------------------------------|---|
| Min. process cycle time         | [ms] 2.3  |          |            |          |    |                              |   |
| IO-Link resolution pressure     | [mbar] 1  |          |            |          |    |                              |   |
| IO-Link process data (cyclical) | <table border="1"> <thead> <tr> <th>function</th> <th>bit length</th> </tr> </thead> <tbody> <tr> <td>pressure</td> <td>14</td> </tr> <tr> <td>binary switching information</td> <td>2</td> </tr> </tbody> </table> | function | bit length | pressure | 14 | binary switching information | 2 |
| function                        | bit length  |          |            |          |    |                              |   |
| pressure                        | 14  |          |            |          |    |                              |   |
| binary switching information    | 2   |          |            |          |    |                              |   |
| IO-Link functions (acyclical)   | application specific tag  |          |            |          |    |                              |   |

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## Pressure sensor with display

PN-001BREN14-MFRKG/US/ IV

| Status_B High Resolution / CMPT = 3                  |  |   |
|--|--|---|
| Profiles   | Smart Sensor ED2: Digital Measuring Sensor (0x000A), Identification and Diagnosis (0x4000) |   |
| Min. process cycle time [ms]                         | 3  |   |
| IO-Link resolution pressure [mbar]                   | 0.5  |   |
| 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]   | 222  |   |
| Materials  | stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC                                 |   |
| Materials (wetted parts)                             | stainless steel (1.4404 / 316L); Al2O3 (96%; ceramics); FKM                                |   |
| Min. pressure cycles                                 | 100 million  |   |
| Tightening torque [Nm]                               | > 50; (depends on lubrication, seal and pressure rating)                                   |   |
| Process connection                                   | threaded connection 1/4" NPT internal thread   |   |
| Restrictor element integrated                        | no (can be retrofitted)  |   |
| Displays / operating elements                        |  |   |
| Display  | Display unit   | 4 x LED, green (mbar, kPa, psi, inH2O)  |
|  | 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: gold-plated |  |   |
|  |  |   |

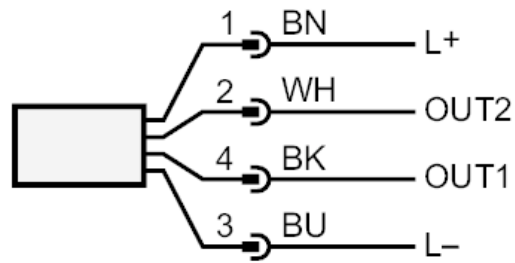
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## Pressure sensor with display

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### Connection



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