



Pressure sensor with display

PN-001BREG14-QFRKG/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°
- 5 Sealing



Product characteristics

|                              |                                                              |               |              |               |             |
|------------------------------|--------------------------------------------------------------|---------------|--------------|---------------|-------------|
| Number of inputs and outputs | Number of digital outputs: 2                                 |               |              |               |             |
| Measuring range              | 0...1 bar                                                    | 0...1000 mbar | 0...14.5 psi | 0...29.5 inHg | 0...100 kPa |
| Process connection           | threaded connection G 1/4 external thread internal thread:M5 |               |              |               |             |

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 | 880 inHg | 3000 kPa |
| Pressure rating          | 10000 mbar                                 | 145 psi | 290 inHg | 1000 kPa |
| Vacuum resistance [mbar] | -1000                                      |         |          |          |
| Type of pressure         | relative pressure                          |         |          |          |

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                        |



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|                     |     |       |
|---------------------|-----|-------|
| Power-on delay time | [s] | < 0.3 |
| Integrated watchdog |     | yes   |

### Inputs / outputs

|                              |                              |
|------------------------------|------------------------------|
| Number of inputs and outputs | Number of digital outputs: 2 |
|------------------------------|------------------------------|

### Outputs

|                                                 |                                                    |
|-------------------------------------------------|----------------------------------------------------|
| Total number of outputs                         | 2                                                  |
| Output signal                                   | switching 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]<br>2.5                                         |
| Permanent current rating of switching output DC | [mA]<br>150; (200 (...60 °C) 250 (...40 °C))       |
| Switching frequency DC                          | [Hz]<br>< 170                                      |
| Short-circuit protection                        | yes                                                |
| Type of short-circuit protection                | pulsed                                             |
| Overload protection                             | yes                                                |

### Measuring/setting range

|                 |           |               |              |               |             |
|-----------------|-----------|---------------|--------------|---------------|-------------|
| Measuring range | 0...1 bar | 0...1000 mbar | 0...14.5 psi | 0...29.5 inHg | 0...100 kPa |
|-----------------|-----------|---------------|--------------|---------------|-------------|

#### Factory setting / CMPT = 2

|                                   |                |                  |                 |                |
|-----------------------------------|----------------|------------------|-----------------|----------------|
| Set point SP                      | 10...1000 mbar | 0.1...14.5 psi   | 0.2...29.5 inHg | 1...100 kPa    |
| Reset point rP                    | 5...995 mbar   | 0.05...14.45 psi | 0.1...29.4 inHg | 0.5...99.5 kPa |
| Min. difference between SP and rP | 5 mbar         | 0.1 psi          | 0.2 inHg        | 0.5 kPa        |
| In steps of                       | 5 mbar         | 0.05 psi         | 0.1 inHg        | 0.5 kPa        |

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

|                                   |               |                  |                 |                |
|-----------------------------------|---------------|------------------|-----------------|----------------|
| Set point SP                      | 8...1000 mbar | 0.12...14.5 psi  | 0.2...29.5 inHg | 0.8...100 kPa  |
| Reset point rP                    | 3...995 mbar  | 0.05...14.43 psi | 0.1...29.4 inHg | 0.3...99.5 kPa |
| Min. difference between SP and rP | 5 mbar        | 0.08 psi         | 0.2 inHg        | 0.5 kPa        |
| In steps of                       | 1 mbar        | 0.01 psi         | 0.1 inHg        | 0.1 kPa        |

### Accuracy / deviations

|                                    |                        |                                                                                           |
|------------------------------------|------------------------|-------------------------------------------------------------------------------------------|
| Switch point accuracy              | [% of the span]        | < ± 0,5                                                                                   |
| Repeatability                      | [% of the span]        | < ± 0,1; (with temperature fluctuations < 10 K)                                           |
| Characteristics deviation          | [% of the span]        | < ± 0,25 (BFSL) / < ± 0,5 (LS); (BFSL = Best Fit Straight Line; LS = limit value setting) |
| Hysteresis deviation               | [% of the span]        | < ± 0,25                                                                                  |
| Long-term stability                | [% of the span]        | < ± 0,05; (per 6 months)                                                                  |
| Temperature coefficient zero point | [% of the span / 10 K] | < ± 0,2; (-0...80 °C)                                                                     |
| Temperature coefficient span       |                        | < ± 0,2; (-0...80 °C)                                                                     |



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| [% of the span / 10 K]                     |                                                                                                                                                                                                                                           |                   |            |                            |     |                              |     |                                     |     |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|----------------------------|-----|------------------------------|-----|-------------------------------------|-----|
| <b>Response times</b>                      |                                                                                                                                                                                                                                           |                   |            |                            |     |                              |     |                                     |     |
| Response time [ms]                         | < 3                                                                                                                                                                                                                                       |                   |            |                            |     |                              |     |                                     |     |
| Delay time programmable dS, dr [s]         | 0...50                                                                                                                                                                                                                                    |                   |            |                            |     |                              |     |                                     |     |
| <b>Software / programming</b>              |                                                                                                                                                                                                                                           |                   |            |                            |     |                              |     |                                     |     |
| Parameter setting options                  | hysteresis / window; normally open / normally closed; switching logic; switch-on/switch-off delay; Damping; Display unit                                                                                                                  |                   |            |                            |     |                              |     |                                     |     |
| <b>Interfaces</b>                          |                                                                                                                                                                                                                                           |                   |            |                            |     |                              |     |                                     |     |
| 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)                                                                                                                                                                                                          |                   |            |                            |     |                              |     |                                     |     |
| Process data analogue                      | 1                                                                                                                                                                                                                                         |                   |            |                            |     |                              |     |                                     |     |
| Process data binary                        | 2                                                                                                                                                                                                                                         |                   |            |                            |     |                              |     |                                     |     |
| Supported DeviceIDs                        | <table> <tr> <th>Type of operation</th><th>DeviceID</th></tr> <tr> <td>Factory setting / CMPT = 2</td><td>405</td></tr> <tr> <td>PN7007</td><td>313</td></tr> <tr> <td>Status_B High Resolution / CMPT = 3</td><td>603</td></tr> </table> | Type of operation | DeviceID   | Factory setting / CMPT = 2 | 405 | PN7007                       | 313 | Status_B High Resolution / CMPT = 3 | 603 |
| Type of operation                          | DeviceID                                                                                                                                                                                                                                  |                   |            |                            |     |                              |     |                                     |     |
| Factory setting / CMPT = 2                 | 405                                                                                                                                                                                                                                       |                   |            |                            |     |                              |     |                                     |     |
| PN7007                                     | 313                                                                                                                                                                                                                                       |                   |            |                            |     |                              |     |                                     |     |
| Status_B High Resolution / CMPT = 3        | 603                                                                                                                                                                                                                                       |                   |            |                            |     |                              |     |                                     |     |
| Note                                       | For further information please see the IODD PDF file under "Downloads"                                                                                                                                                                    |                   |            |                            |     |                              |     |                                     |     |
| <b>Factory setting / CMPT = 2</b>          |                                                                                                                                                                                                                                           |                   |            |                            |     |                              |     |                                     |     |
| 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 resolution pressure [MPa]          | 0.0001                                                                                                                                                                                                                                    |                   |            |                            |     |                              |     |                                     |     |
| IO-Link process data (cyclical)            | <table> <tr> <th>function</th><th>bit length</th></tr> <tr> <td>pressure</td><td>14</td></tr> <tr> <td>binary switching information</td><td>2</td></tr> </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                                                                                                                                                                                                                  |                   |            |                            |     |                              |     |                                     |     |
| <b>Status_B High Resolution / CMPT = 3</b> |                                                                                                                                                                                                                                           |                   |            |                            |     |                              |     |                                     |     |
| 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 resolution pressure [MPa]          | 0.00005                                                                                                                                                                                                                                   |                   |            |                            |     |                              |     |                                     |     |
| IO-Link process data (cyclical)            | <table> <tr> <th>function</th><th>bit length</th></tr> <tr> <td>pressure</td><td>16</td></tr> <tr> <td>device status</td><td>4</td></tr> <tr> <td>binary switching information</td><td>2</td></tr> </table>                               | function          | bit length | pressure                   | 16  | device status                | 4   | binary switching information        | 2   |
| function                                   | bit length                                                                                                                                                                                                                                |                   |            |                            |     |                              |     |                                     |     |
| pressure                                   | 16                                                                                                                                                                                                                                        |                   |            |                            |     |                              |     |                                     |     |
| device status                              | 4                                                                                                                                                                                                                                         |                   |            |                            |     |                              |     |                                     |     |
| binary switching information               | 2                                                                                                                                                                                                                                         |                   |            |                            |     |                              |     |                                     |     |
| IO-Link functions (acyclical)              | application specific tag                                                                                                                                                                                                                  |                   |            |                            |     |                              |     |                                     |     |
| <b>Operating conditions</b>                |                                                                                                                                                                                                                                           |                   |            |                            |     |                              |     |                                     |     |
| Ambient temperature [°C]                   | -25...80                                                                                                                                                                                                                                  |                   |            |                            |     |                              |     |                                     |     |
| Storage temperature [°C]                   | -40...100                                                                                                                                                                                                                                 |                   |            |                            |     |                              |     |                                     |     |



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|            |              |
|------------|--------------|
| 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]                 |                                                                                       | 260                 |
| UL approval                  | UL Approval no.                                                                       | J001                |
| Pressure Equipment Directive | Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request |                     |

## Mechanical data

|                               |                                                                                            |
|-------------------------------|--------------------------------------------------------------------------------------------|
| Weight [g]                    | 259                                                                                        |
| Materials                     | stainless steel (316L/1.4404); PBT+PC-GF30; PBT-GF20; PC                                   |
| Materials (wetted parts)      | stainless steel (316L/1.4404); ceramics; FKM                                               |
| Min. pressure cycles          | 100 million                                                                                |
| Tightening torque [Nm]        | 25...35; (recommended tightening torque; depends on lubrication, seal and pressure rating) |
| Process connection            | threaded connection G 1/4 external thread internal thread:M5                               |
| Restrictor element integrated | no (can be retrofitted)                                                                    |

## Displays / operating elements

|         |                  |                                         |
|---------|------------------|-----------------------------------------|
| Display | Display unit     | 4 x LED, green (mbar, psi, kPa, 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: gold-plated



# PN7597



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### Connection



|      |                                                                   |
|------|-------------------------------------------------------------------|
| OUT1 | switching output<br>IO-Link                                       |
| OUT2 | switching output<br>colours to DIN EN 60947-5-2<br>Core colours : |
| BK = | black                                                             |
| BN = | brown                                                             |
| BU = | blue                                                              |
| WH = | white                                                             |