

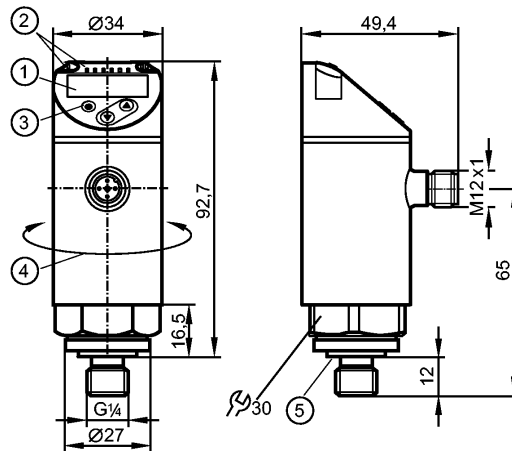


PN3593

PN-025-REG14-MFRKG/US/ IV



Pressure sensors



- 1: 4-digit alphanumeric display / alternating indication of red and green
- 2: LEDs (display unit / switching status)
- 3: Programming button
- 4: Upper part of the housing can be rotated by 345°
- 5: Process connection sealing FKM / DIN 3869



Product characteristics

Electronic pressure sensor

M12 connector

Function programmable

Measuring element: ceramic-capacitive pressure measuring cell

Process connection: G 1/4 A / M5 I (according to DIN EN ISO 1179-2)

2 outputs

OUT1 = switching output

OUT2 = analogue output

4-digit alphanumeric display / alternating indication of red and green

Measuring range: 0...25 bar / 0...362 psi / 0...2.5 MPa

Application

Application

Type of pressure: relative pressure  
Group 2 fluids according to the Pressure Equipment Directive (PED),  
group 1 fluids on request

|                          |          |          |        |
|--------------------------|----------|----------|--------|
| Pressure rating          | 150 bar  | 2175 psi | 15 MPa |
| Bursting pressure min.   | 350 bar  | 5075 psi | 35 MPa |
| Vacuum resistance [mbar] | -1000    |          |        |
| Medium temperature [°C]  | -25...80 |          |        |

Electrical data

Electrical design

DC PNP

Operating voltage [V]

18...30 DC <sup>1)</sup>

Current consumption [mA]

< 35

Insulation resistance [MΩ]

> 100 (500 V DC)

Protection class

III

Reverse polarity protection

yes

Outputs

Output

2 outputs

OUT1 = switching output

OUT2 = analogue output

Output function

normally open / closed programmable; 4...20 mA or 0...10 V

Current rating [mA]

150; 200 (...60 °C); 250 (...40 °C)

Voltage drop [V]

< 2.5

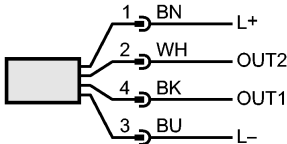
Short-circuit protection

pulsed

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|                                                                                                    |                                                                                                            |                     |                 |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------|-----------------|
| Overload protection                                                                                | yes                                                                                                        |                     |                 |
| Switching frequency [Hz]                                                                           | ≤ 170                                                                                                      |                     |                 |
| Analogue output                                                                                    | 4...20 mA; 0...10 V                                                                                        |                     |                 |
| Max. load [Ω]                                                                                      | 4...20 mA: max. 500                                                                                        |                     |                 |
| Min. load resistance [Ω]                                                                           | 0...10 V: min. 2000                                                                                        |                     |                 |
| Measuring / setting range                                                                          |                                                                                                            |                     |                 |
| Measuring range                                                                                    | 0...25 bar                                                                                                 | 0...362 psi         | 0...2.5 MPa     |
| Setting range                                                                                      |                                                                                                            |                     |                 |
| Set point, SP                                                                                      | 0.2...25 bar                                                                                               | 4...362 psi         | 0.02...2.5 MPa  |
| Reset point, rP                                                                                    | 0.1...24.9 bar                                                                                             | 2...360 psi         | 0.01...2.49 MPa |
| in steps of                                                                                        | 0.1 bar                                                                                                    | 2 psi               | 0.01 MPa        |
| Accuracy / deviations                                                                              |                                                                                                            |                     |                 |
| Accuracy / deviations (in % of the span)                                                           |                                                                                                            |                     |                 |
| Switch point accuracy                                                                              | < ± 0.5                                                                                                    |                     |                 |
| Characteristics deviation *)                                                                       | < ± 0.25 (BFSL) / < ± 0.5 (LS)                                                                             |                     |                 |
| Hysteresis                                                                                         | < ± 0.25                                                                                                   |                     |                 |
| Repeatability **)                                                                                  | < ± 0.1                                                                                                    |                     |                 |
| Long-term stability ***)                                                                           | < ± 0.05                                                                                                   |                     |                 |
| Temperature coefficients (TEMPCO) in the temperature range -25...80° C (in % of the span per 10 K) |                                                                                                            |                     |                 |
| Greatest TEMPCO of the zero point                                                                  | 0.2                                                                                                        |                     |                 |
| Greatest TEMPCO of the span                                                                        | 0.2                                                                                                        |                     |                 |
| Reaction times                                                                                     |                                                                                                            |                     |                 |
| Power-on delay time [s]                                                                            | 0.3                                                                                                        |                     |                 |
| Min. response time switching output [ms]                                                           | < 3                                                                                                        |                     |                 |
| Delay time programmable dS, dr [s]                                                                 | 0...50                                                                                                     |                     |                 |
| Damping for the switching output (dAP) [s]                                                         | 0...4                                                                                                      |                     |                 |
| Damping for the analogue output (dAA) [s]                                                          | 0...4                                                                                                      |                     |                 |
| Response time analogue output [ms]                                                                 | < 3                                                                                                        |                     |                 |
| Integrated watchdog                                                                                | yes                                                                                                        |                     |                 |
| Software / programming                                                                             |                                                                                                            |                     |                 |
| Programming options                                                                                | hysteresis / window function; NO / NC; on delay, off delay; damping; display unit; current/ voltage output |                     |                 |
| Interfaces                                                                                         |                                                                                                            |                     |                 |
| IO-Link device                                                                                     |                                                                                                            |                     |                 |
| Transfer type                                                                                      | COM2                                                                                                       |                     |                 |
| IO-Link revision                                                                                   | 1.1                                                                                                        |                     |                 |
| SDCI standard                                                                                      | IEC 61131-9                                                                                                |                     |                 |
| IO-Link device ID                                                                                  | 430 d / 00 01 ae h                                                                                         |                     |                 |
| Profiles                                                                                           | Smart Sensor: Process Data Variable; Device Identification, Device Diagnosis                               |                     |                 |
| SIO mode                                                                                           | yes                                                                                                        |                     |                 |
| Required master port class                                                                         | A                                                                                                          |                     |                 |
| Process data analogue                                                                              | 1                                                                                                          |                     |                 |
| Process data binary                                                                                | 1                                                                                                          |                     |                 |
| Min. process cycle time [ms]                                                                       | 2.3                                                                                                        |                     |                 |
| Environment                                                                                        |                                                                                                            |                     |                 |
| Ambient temperature [°C]                                                                           | -25...80                                                                                                   |                     |                 |
| Storage temperature [°C]                                                                           | -40...100                                                                                                  |                     |                 |
| Protection                                                                                         | IP 65 / IP 67                                                                                              |                     |                 |
| Tests / approvals                                                                                  |                                                                                                            |                     |                 |
| Pressure equipment directive                                                                       | Sound engineering practice                                                                                 |                     |                 |
| EMC                                                                                                | DIN EN 61000-6-2<br>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) |                 |

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|                               |                                                                                    |                                                                                                                                                                                                                                |
|-------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MTTF                          | [Years]                                                                            | 181                                                                                                                                                                                                                            |
| UL approval number            |                                                                                    | J004                                                                                                                                                                                                                           |
| Mechanical data               |                                                                                    |                                                                                                                                                                                                                                |
| Process connection            |                                                                                    | G ¼ A / M5 I (according to DIN EN ISO 1179-2)                                                                                                                                                                                  |
| Process connection sealing    |                                                                                    | FKM (to DIN 3869)                                                                                                                                                                                                              |
| Materials (wetted parts)      |                                                                                    | stainless steel (316L / 1.4404); Al2O3 (ceramics); FKM                                                                                                                                                                         |
| Housing materials             |                                                                                    | 1.4404 (V4A / 316L); PBT+PC-GF 30; PBT-GF 20; PC                                                                                                                                                                               |
| Switching cycles min.         |                                                                                    | 100 million                                                                                                                                                                                                                    |
| Tightening torque             | [Nm]                                                                               | 25...35 (recommended tightening torque <sup>2</sup> )                                                                                                                                                                          |
| Restrictor element integrated |                                                                                    | no (can be retrofitted)                                                                                                                                                                                                        |
| Weight                        | [kg]                                                                               | 0.257                                                                                                                                                                                                                          |
| Displays / operating elements |                                                                                    |                                                                                                                                                                                                                                |
| Display                       |                                                                                    | Display unit 3 x LED green (bar, psi, MPa)<br>Switching status 1 x LED yellow<br>4-digit alphanumeric display / alternating indication<br>Measured values of red and green                                                     |
| Electrical connection         |                                                                                    |                                                                                                                                                                                                                                |
| Connection                    |                                                                                    | M12 connector; Gold-plated contacts                                                                                                                                                                                            |
| <b>Wiring</b>                 |                                                                                    |                                                                                                                                                                                                                                |
| Core colours                  |                                                                                    |                                                                                                                                                                                                                                |
| BK black                      |                                                                                    |                                                                                                                                                                                                                                |
| BN brown                      |                                                                                    |                                                                                                                                                                                                                                |
| BU blue                       |                                                                                    |                                                                                                                                                                                                                                |
| WH white                      |                                                                                    |                                                                                                                                                                                                                                |
|                               |  |                                                                                                                                              |
|                               |                                                                                    | OUT1: switching output or IO-Link<br>OUT2: 4...20 mA / 0...10 V<br>Colours to DIN EN 60947-5-2                                                                                                                                 |
| Remarks                       |                                                                                    |                                                                                                                                                                                                                                |
| Remarks                       |                                                                                    | *) BFSL = Best Fit Straight Line / LS = Limit Value Setting<br>**) with temperature fluctuations < 10 K<br>***) in% of the span / 6 months<br>1) to EN50178, SELV, PELV<br>2) Depends on lubrication, seal and pressure rating |
| Pack quantity                 | [piece]                                                                            | 1                                                                                                                                                                                                                              |