

PN2293



Pressure sensor with display

PN-025-REN14-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 | -1...25 bar | -14.5...362.5 psi | -0.1...2.5 MPa |
| 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. burst pressure | 350 bar | 5075 psi | 35 MPa |
| Pressure rating | 150 bar | 2175 psi | 15 MPa |
| Vacuum resistance | -1000 mbar | -0.1 MPa | |
| Type of pressure | relative pressure; vacuum | | |
| MAWP for applications according to CRN | 70 bar | 1015 psi | 7 MPa |

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 | | |

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| | |
|-----------------------------|-----|
| 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 | -1...25 bar | -14.5...362.5 psi | -0.1...2.5 MPa |
| Analogue start point | -1...20 bar | -14.5...290 psi | -0.1...2 MPa |
| Analogue end point | 4...25 bar | 58...362.5 psi | 0.4...2.5 MPa |

Factory setting / CMPT = 2

| | | | |
|-----------------------------------|------------------|-----------------|-------------------|
| Set point SP | -0.85...25 bar | -12...362.5 psi | -0.085...2.5 MPa |
| Reset point rP | -0.95...24.9 bar | -13.5...361 psi | -0.095...2.49 MPa |
| Min. difference between SP and rP | 0.15 bar | 1.5 psi | 0.015 MPa |
| In steps of | 0.05 bar | 0.5 psi | 0.005 MPa |

Status_B High Resolution / CMPT = 3

| | | | |
|-----------------------------------|------------------|-------------------|-------------------|
| Set point SP | -0.84...25 bar | -12.2...362.6 psi | -0.084...2.5 MPa |
| Reset point rP | -0.95...24.9 bar | -13.7...361.1 psi | -0.095...2.49 MPa |
| Min. difference between SP and rP | 0.11 bar | 1.5 psi | 0.011 MPa |
| In steps of | 0.01 bar | 0.1 psi | 0.001 MPa |

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 | < ± 0,25 (BFSL) / < ± 0,5 (LS); (Turn down 1:1; BFSL = Best Fit Straight Line; LS = limit value setting) |

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| | | |
|------------------------------------|------------------------|---|
| | [% of the span] | |
| 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>472</td> </tr> <tr> <td>Status_B High Resolution / CMPT = 3</td> <td>988</td> </tr> </tbody> </table> | Type of operation | DeviceID | Factory setting / CMPT = 2 | 472 | Status_B High Resolution / CMPT = 3 | 988 |
| Type of operation | DeviceID | | | | | | |
| Factory setting / CMPT = 2 | 472 | | | | | | |
| Status_B High Resolution / CMPT = 3 | 988 | | | | | | |
| 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 | [bar] | 0.01 |
| IO-Link process data (cyclical) | function | bit length |
| | pressure | 14 |
| | binary switching information | 2 |
| IO-Link functions (acyclical) | | application specific tag |

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| Status_B High Resolution / CMPT = 3 | | |
|---|---|--|
| Profiles | Smart Sensor - SSP 3.1 Common - I&D | Measuring Sensor Identification and Diagnosis |
| Min. process cycle time [ms] | | 3 |
| IO-Link resolution pressure [bar] | | 0.01 |
| 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] | | 223.5 |
| 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 (96%; ceramics); FKM | |
| Min. pressure cycles | | 100 million |
| Tightening torque [Nm] | > 50; (depends on the lubrication, the seal and the pressure load) | |
| Process connection | threaded connection 1/4" NPT internal thread | |
| Restrictor element integrated | no (can be retrofitted) | |
| Displays / operating elements | | |
| Display | Display unit | 3 x LED, green (bar, psi, MPa) |
| | 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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Connection



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