

PN2043



Pressure sensor with display

PN-040-SER14-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...40 bar | 0...580 psi | 0...4 MPa |
| 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 | | |
| Conditionally suitable for | use in gases at pressures > 25 bar only on request | | |
| Medium temperature [°C] | -25...80 | | |
| Min. burst pressure | 500 bar | 7200 psi | 50 MPa |
| Pressure rating | 200 bar | 3000 psi | 20 MPa |
| Vacuum resistance | -1000 mbar | | -0.1 MPa |
| 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 | | |
| Power-on delay time [s] | 0.3 | | |

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| | |
|---------------------|-----|
| 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...40 bar | 0...580 psi | 0...4 MPa |
| Set point SP | 0.3...40 bar | 5...580 psi | 0.032...4 MPa |
| Reset point rP | 0.1...39.8 bar | 2...577 psi | 0.012...3.98 MPa |
| Analogue start point | 0...32 bar | 0...464 psi | 0...3.2 MPa |
| Analogue end point | 8...40 bar | 116...580 psi | 0.8...4 MPa |
| Min. difference between SP and rP | 0.2 bar | 3 psi | 0.02 MPa |
| In steps of | 0.1 bar | 1 psi | 0.001 MPa |

Accuracy / deviations

| | |
|---|---|
| Switch point accuracy [% of the span] | < ± 0,8; (Turn down 1:1) |
| Repeatability [% of the span] | < ± 0,1; (with temperature fluctuations < 10 K; Turn down 1:1) |
| Characteristics deviation [% of the span] | < ± 0,4 (BFSL) / < ± 0,8 (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) |



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Notes on the accuracy / deviation

switch point accuracy, linearity error under DNV GL: $< \pm 1\%$: $< \pm 1\%$

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 | |
| Profiles | Smart Sensor - SSP 3.1 | Measuring Sensor |
| | Common - I&D | Identification and Diagnosis |
| SIO mode | yes | |
| Required master port type | A; (when pin 2 not connected: B) | |
| Min. process cycle time [ms] | 3 | |
| IO-Link resolution pressure [bar] | 0.02 | |
| IO-Link process data (cyclical) | function | bit length |
| | pressure | 16 |
| | device status | 4 |
| | binary switching information | 2 |
| IO-Link functions (acyclical) | application specific tag | |
| Supported DeviceIDs | Type of operation | DeviceID |
| | default | 1201 |
| Note | For further information please see the IODD PDF file under "Downloads" | |

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] | 166 | |
| UL approval | UL approval no. | J013 |
| | File number UL | E174189 |
| Pressure Equipment Directive | Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request | |

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| Mechanical data | |
|-------------------------------|--|
| Weight [g] | 282.5 |
| 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 | 3 x LED, green (bar, psi, MPa) |
| | switching status | 2 x LED, yellow |
| | measured values | alphanumeric display, red/green 4-digit |

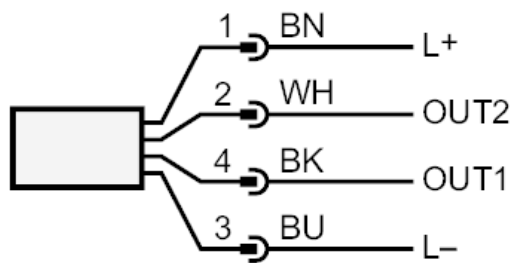
| Remarks | |
|---------------|--------|
| Pack quantity | 1 pcs. |

Electrical connection

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



Connection



| | |
|------|-------------------------------------|
| OUT1 | switching output IO-Link |
| OUT2 | switching output analogue output |