

PN3071



Pressure sensor with display

PN-250-SER14-MFRKG/US/ I/V



- 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: 1; Number of analogue outputs: 1 |              |            |
| Measuring range              | 0...250 bar                                                 | 0...3620 psi | 0...25 MPa |
| Process connection           | threaded connection G 1/4 internal thread M6 I              |              |            |

Application

|                          |                             |           |         |
|--------------------------|-----------------------------|-----------|---------|
| Special feature          | Gold-plated contacts        |           |         |
| Measuring element        | metallic thin film cell     |           |         |
| Application              | for industrial applications |           |         |
| Media                    | liquids and gases           |           |         |
| Medium temperature [°C]  | -25...80                    |           |         |
| Min. bursting pressure   | 1200 bar                    | 17400 psi | 120 MPa |
| Pressure rating          | 500 bar                     | 7250 psi  | 50 MPa  |
| Vacuum resistance [mbar] | -1000                       |           |         |
| Vacuum resistance [MPa]  | -0.1                        |           |         |
| 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: 1; Number of analogue outputs: 1                               |               |                |
| Outputs                                         |                 |                                                                                           |               |                |
| Total number of outputs                         |                 | 2                                                                                         |               |                |
| Output signal                                   |                 | switching signal; analogue signal; IO-Link; (configurable)                                |               |                |
| Electrical design                               |                 | PNP                                                                                       |               |                |
| Number of digital outputs                       |                 | 1                                                                                         |               |                |
| Output function                                 |                 | normally open / normally closed; (parameterisable)                                        |               |                |
| Max. voltage drop switching output DC           | [V]             | 2.5                                                                                       |               |                |
| Permanent current rating of switching output DC | [mA]            | 150; (200 (...60 °C) 250 (...40 °C))                                                      |               |                |
| Switching frequency DC                          | [Hz]            | < 170                                                                                     |               |                |
| Number of analogue outputs                      |                 | 1                                                                                         |               |                |
| Analogue current output                         | [mA]            | 4...20                                                                                    |               |                |
| Max. load                                       | [Ω]             | 500                                                                                       |               |                |
| Analogue voltage output                         | [V]             | 0...10                                                                                    |               |                |
| Min. load resistance                            | [Ω]             | 2000                                                                                      |               |                |
| Short-circuit protection                        |                 | yes                                                                                       |               |                |
| Type of short-circuit protection                |                 | pulsed                                                                                    |               |                |
| Overload protection                             |                 | yes                                                                                       |               |                |
| Measuring/setting range                         |                 |                                                                                           |               |                |
| Measuring range                                 |                 | 0...250 bar                                                                               | 0...3620 psi  | 0...25 MPa     |
| Factory setting / CMPT = 2                      |                 |                                                                                           |               |                |
| Set point SP                                    |                 | 2...250 bar                                                                               | 40...3620 psi | 0.2...25 MPa   |
| Reset point rP                                  |                 | 1...249 bar                                                                               | 20...3600 psi | 0.1...24.9 MPa |
| Min. difference between SP and rP               |                 | 2 bar                                                                                     | 20 psi        | 0.2 MPa        |
| In steps of                                     |                 | 1 bar                                                                                     | 20 psi        | 0.1 MPa        |
| Status_B High Resolution / CMPT = 3             |                 |                                                                                           |               |                |
| Set point SP                                    |                 | 2...250 bar                                                                               | 30...3626 psi | 0.2...25 MPa   |
| Reset point rP                                  |                 | 1...249 bar                                                                               | 12...3608 psi | 0.1...24.9 MPa |
| Min. difference between SP and rP               |                 | 2 bar                                                                                     | 19 psi        | 0.2 MPa        |
| In steps of                                     |                 | 1 bar                                                                                     | 1 psi         | 0.1 MPa        |
| Accuracy / deviations                           |                 |                                                                                           |               |                |
| Switch point accuracy                           |                 | < ± 0,5                                                                                   |               |                |
|                                                 | [% of the span] |                                                                                           |               |                |
| Repeatability                                   |                 | < ± 0,1; (with temperature fluctuations < 10 K)                                           |               |                |
|                                                 | [% of the span] |                                                                                           |               |                |
| Characteristics deviation                       |                 | < ± 0,25 (BFSL) / < ± 0,5 (LS); (BFSL = Best Fit Straight Line; LS = limit value setting) |               |                |
|                                                 | [% of the span] |                                                                                           |               |                |
| Hysteresis deviation                            |                 | < ± 0,25                                                                                  |               |                |
|                                                 | [% of the span] |                                                                                           |               |                |



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|                                                              |                                                                                                                                  |            |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------|
| Long-term stability<br>[% of the span]                       | < ± 0,05; (per 6 months)                                                                                                         |            |
| Temperature coefficient zero point<br>[% of the span / 10 K] | 0,2; (-25...80 °C)                                                                                                               |            |
| Temperature coefficient span<br>[% of the span / 10 K]       | 0,2; (-25...80 °C)                                                                                                               |            |
| Response times                                               |                                                                                                                                  |            |
| Response time [ms]                                           | < 3                                                                                                                              |            |
| 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                                                                                                                                |            |
| Process data analogue                                        | 1                                                                                                                                |            |
| Process data binary                                          | 1                                                                                                                                |            |
| Supported DeviceIDs                                          | Type of operation                                                                                                                | DeviceID   |
|                                                              | Factory setting / CMPT = 2                                                                                                       | 428        |
|                                                              | Status_B High Resolution / CMPT = 3                                                                                              | 607        |
| Note                                                         | For further information please see the IODD 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 [bar]                            | 1                                                                                                                                |            |
| IO-Link resolution pressure [MPa]                            | 0.1                                                                                                                              |            |
| IO-Link process data (cyclical)                              | function                                                                                                                         | bit length |
|                                                              | pressure                                                                                                                         | 14         |
|                                                              | binary switching information                                                                                                     | 1          |
| IO-Link functions (acyclical)                                | application specific tag                                                                                                         |            |
| 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 [bar]                            | 0.1                                                                                                                              |            |

# PN3071



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|                                   |                              |                   |
|-----------------------------------|------------------------------|-------------------|
| IO-Link resolution pressure [MPa] | 0.01                         |                   |
| IO-Link process data (cyclical)   | <b>function</b>              | <b>bit length</b> |
|                                   | pressure                     | 16                |
|                                   | device status                | 4                 |
|                                   | binary switching information | 1                 |
| 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]                 | 190                                                                                   |                     |
| UL approval                  | UL Approval no.                                                                       | J006                |
| Pressure Equipment Directive | Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request |                     |

### Mechanical data

|                               |                                                                                                                                 |  |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--|
| Weight [g]                    | 231                                                                                                                             |  |
| Housing                       | cylindrical                                                                                                                     |  |
| Dimensions [mm]               | Ø 34 / L = 90.7                                                                                                                 |  |
| Materials                     | stainless steel (630/1.4542/17-4 PH); stainless steel (316L/1.4404)<br>stainless steel (316L/1.4404); PBT+PC-GF30; PBT-GF20; PC |  |
| Materials (wetted parts)      | stainless steel (630/1.4542/17-4 PH)                                                                                            |  |
| 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 internal thread M6 I                                                                                  |  |
| Restrictor element integrated | no (can be retrofitted)                                                                                                         |  |

### Displays / operating elements

|         |                  |                                         |
|---------|------------------|-----------------------------------------|
| Display | Display unit     | 3 x LED, green (bar, psi, MPa)          |
|         | switching status | 1 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 | analogue output  |
|      | Core colours :   |
| BK = | black            |
| BN = | brown            |
| BU = | blue             |
| WH = | white            |