



Pressure sensor with display

PN-010-REG14-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              | -1...10 bar                                                  | -14.5...145 psi | -100...1000 kPa | -0.1...1 MPa |
| 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   | 150 bar                                    | 2175 psi | 15 MPa  |
| Pressure rating          | 75 bar                                     | 1087 psi | 7.5 MPa |
| Vacuum resistance [mbar] | -1000                                      |          |         |
| Vacuum resistance [MPa]  | -0.1                                       |          |         |
| Type of pressure         | relative pressure; vacuum                  |          |         |

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 |
|------------------------------|------------------------------|

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

### Measuring/setting range

|                 |             |                 |                 |              |
|-----------------|-------------|-----------------|-----------------|--------------|
| Measuring range | -1...10 bar | -14.5...145 psi | -100...1000 kPa | -0.1...1 MPa |
|-----------------|-------------|-----------------|-----------------|--------------|

### Factory setting / CMPT = 2

|                                   |                  |                 |                    |
|-----------------------------------|------------------|-----------------|--------------------|
| Set point SP                      | -0.9...10 bar    | -13.5...145 psi | -0.09...1 MPa      |
| Reset point rP                    | -0.95...9.95 bar | -14...144.5 psi | -0.095...0.995 MPa |
| Min. difference between SP and rP | 0.05 bar         | 1 psi           | 0.005 MPa          |
| In steps of                       | 0.05 bar         | 0.5 psi         | 0.005 MPa          |

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

|                                   |                  |                 |                    |
|-----------------------------------|------------------|-----------------|--------------------|
| Set point SP                      | -0.92...10 bar   | -13.3...145 psi | -0.092...1 MPa     |
| Reset point rP                    | -0.97...9.95 bar | -14...144.3 psi | -0.097...0.995 MPa |
| Min. difference between SP and rP | 0.05 bar         | 0.8 psi         | 0.005 MPa          |
| In steps of                       | 0.01 bar         | 0.1 psi         | 0.001 MPa          |

### 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)                                                                     |



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|                                                        |                                                                                                                          |            |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------|
| Temperature coefficient span<br>[% of the span / 10 K] | < ± 0,2; (-0...80 °C)                                                                                                    |            |
| Response times                                         |                                                                                                                          |            |
| Response time [ms]                                     | < 3                                                                                                                      |            |
| Delay time programmable dS, dr [s]                     | 0...50                                                                                                                   |            |
| Software / programming                                 |                                                                                                                          |            |
| Parameter setting options                              | hysteresis / window; normally open / normally closed; switching logic; switch-on/switch-off delay; Damping; Display unit |            |
| 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)                                                                                         |            |
| Process data analogue                                  | 1                                                                                                                        |            |
| Process data binary                                    | 2                                                                                                                        |            |
| Supported DeviceIDs                                    | Type of operation                                                                                                        | DeviceID   |
|                                                        | Factory setting / CMPT = 2                                                                                               | 403        |
|                                                        | PN7004                                                                                                                   | 311        |
|                                                        | Status_B High Resolution / CMPT = 3                                                                                      | 601        |
| 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]                      | 0.01                                                                                                                     |            |
| IO-Link resolution pressure [MPa]                      | 0.001                                                                                                                    |            |
| IO-Link process data (cyclical)                        | function                                                                                                                 | bit length |
|                                                        | pressure                                                                                                                 | 14         |
|                                                        | binary switching information                                                                                             | 2          |
| 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]                      | 0.005                                                                                                                    |            |
| IO-Link resolution pressure [MPa]                      | 0.0005                                                                                                                   |            |
| 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                                                                                                                 |            |

# PN7594



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|                     |      |              |
|---------------------|------|--------------|
| 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]                                                                               | 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]                                                          | 260.5                                                                                      |
| 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     | 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

colours to DIN EN 60947-5-2

Core colours :

BK =            black  
BN =            brown  
BU =            blue  
WH =            white