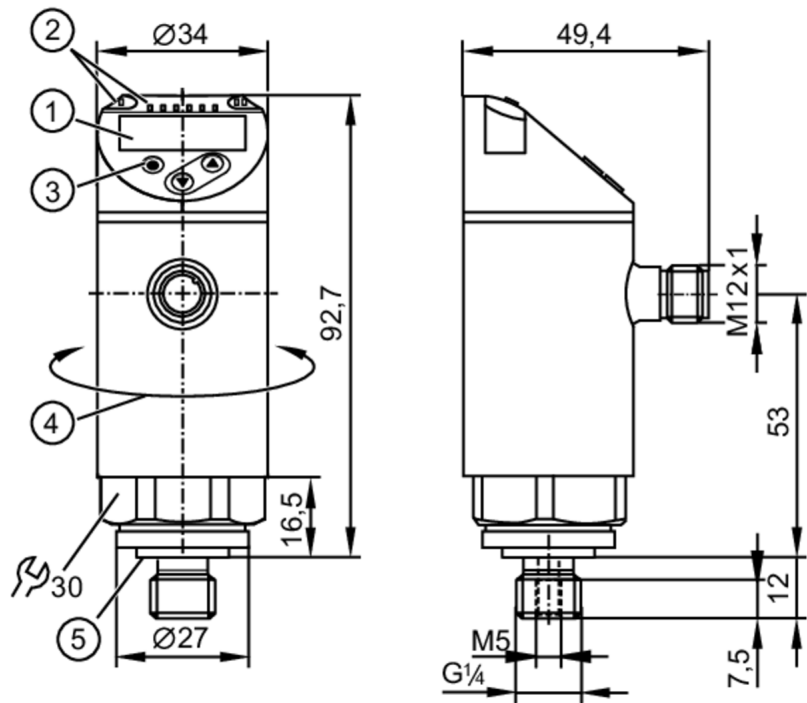


# PN2515



## Pressure sensor with display

PN-006-REG14-MFRKG/US/ /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°
- 5 sealing



### Product characteristics

|                              |                                                                                   |                |                |
|------------------------------|-----------------------------------------------------------------------------------|----------------|----------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analog outputs: 1                         |                |                |
| Measuring range              | -1...6 bar                                                                        | -14.5...87 psi | -100...600 kPa |
| Process connection           | threaded connection G 1/4 external thread (DIN EN ISO 1179-2); Internal thread:M5 |                |                |

### Application

|                         |                                            |          |           |
|-------------------------|--------------------------------------------|----------|-----------|
| System                  | 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     | 100 bar                                    | 1500 psi | 10000 kPa |
| Pressure rating         | 40 bar                                     | 600 psi  | 4000 kPa  |
| Vacuum resistance       | -1000 mbar                                 |          | -0.1 MPa  |
| 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                        |  |  |
| 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: 2; Number of analog outputs: 1 |
|------------------------------|-----------------------------------------------------------|

## Outputs

|                                                 |                                                          |
|-------------------------------------------------|----------------------------------------------------------|
| Total number of outputs                         | 2                                                        |
| Output signal                                   | switching signal; analog signal; IO-Link; (configurable) |
| Electrical design                               | PNP/NPN                                                  |
| Number of digital outputs                       | 2                                                        |
| Output function                                 | normally open / closed; (configurable)                   |
| Max. voltage drop switching output DC           | [V]<br>2                                                 |
| Permanent current rating of switching output DC | [mA]<br>250                                              |
| Switching frequency DC                          | [Hz]<br>< 500                                            |
| Number of analog outputs                        | 1                                                        |
| Analog current output                           | [mA]<br>4...20; (scalable 1:5)                           |
| Max. load                                       | [Ω]<br>500                                               |
| Analog voltage output                           | [V]<br>0...10; (scalable 1:5)                            |
| Min. load resistance                            | [Ω]<br>2000                                              |
| Short-circuit protection                        | yes                                                      |
| Type of short-circuit protection                | yes (non-latching)                                       |
| Overload protection                             | yes                                                      |

## Measuring/setting range

|                                   |                  |                  |                |
|-----------------------------------|------------------|------------------|----------------|
| Measuring range                   | -1...6 bar       | -14.5...87 psi   | -100...600 kPa |
| Set point SP                      | -0.95...6 bar    | -13.8...87 psi   | -95...600 kPa  |
| Reset point rP                    | -0.98...5.97 bar | -14.2...86.6 psi | -98...597 kPa  |
| Analog start point                | -1...4.8 bar     | -14.5...69.6 psi | -100...480 kPa |
| Analog end point                  | 0.2...6 bar      | 2.9...87 psi     | 20...600 kPa   |
| Min. difference between SP and rP | 0.03 bar         | 0.5 psi          | 3 kPa          |
| In steps of                       | 0.001 bar        | 0.1 psi          | 1 kPa          |

## Accuracy / deviations

|                                    |                                                                                                                             |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Switch point accuracy              | [% of the span]<br>< ± 0,4; (Turn down 1:1)                                                                                 |
| Repeatability                      | [% of the span]<br>< ± 0,1; (with temperature fluctuations < 10 K; Turn down 1:1)                                           |
| Characteristics deviation          | [% of the span]<br>< ± 0,25 (BFSL) / < ± 0,5 (LS); (Turn down 1:1; BFSL = Best Fit Straight Line; LS = limit value setting) |
| Hysteresis deviation               | [% of the span]<br>< ± 0,1; (Turn down 1:1)                                                                                 |
| Long-term stability                | [% of the span]<br>< ± 0,05; (Turn down 1:1; per 6 months)                                                                  |
| Temperature coefficient zero point | [% of the span / 10 K]<br>< ± 0,2; (-0...80 °C)                                                                             |
| Temperature coefficient span       | < ± 0,2; (-0...80 °C)                                                                                                       |



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|                                   |         |                                                                                                                         |                              |
|-----------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------|------------------------------|
| [% of the span / 10 K]            |         |                                                                                                                         |                              |
| Notes on the accuracy / deviation |         | switch point accuracy, linearity error under DNV GL: < ± 1%: < ± 1%                                                     |                              |
| Reaction times                    |         |                                                                                                                         |                              |
| Response time                     | [ms]    | < 1.5                                                                                                                   |                              |
| Delay time programmable dS, dr    | [s]     | 0...50                                                                                                                  |                              |
| Damping process value dAP         | [s]     | 0...4                                                                                                                   |                              |
| Damping for the analog output dAA | [s]     | 0...4                                                                                                                   |                              |
| Max. response time analog output  | [ms]    | 3                                                                                                                       |                              |
| Software / programming            |         |                                                                                                                         |                              |
| Parameter setting options         |         | hysteresis / window; normally open / 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 class        |         | A; (when pin 2 not connected: B)                                                                                        |                              |
| Min. process cycle time           | [ms]    | 3                                                                                                                       |                              |
| IO-Link resolution pressure       | [bar]   | 0.002                                                                                                                   |                              |
| 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                                                                                                                 | 1203                         |
| Note                              |         | For further information please see the IODD PDF file at "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] | 167                                                                                                                     |                              |
| UL approval                       |         | UL approval number                                                                                                      | J012                         |
|                                   |         | 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]  | 272.5                                                                                         |
| Housing                       |      | tubular                                                                                       |
| Dimensions                    | [mm] | Ø 34 / L = 92.7                                                                               |
| Material                      |      | stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC                                    |
| Materials (wetted parts)      |      | stainless steel (1.4404 / 316L); Al2O3 (ceramics); FKM                                        |
| Min. pressure cycles          |      | 100 million                                                                                   |
| Tightening torque             | [Nm] | 25...35; (recommended tightening torque;<br>Depends on lubrication, seal and pressure rating) |
| Process connection            |      | threaded connection G 1/4 external thread (DIN EN ISO 1179-2); Internal thread:M5             |
| Process connection sealing    |      | FKM (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: gold-plated



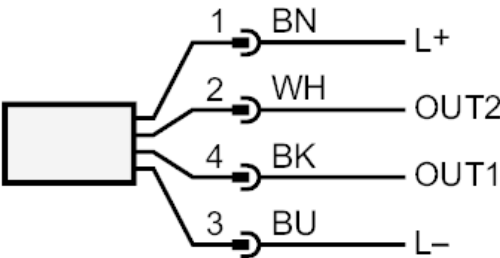
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### Connection



|      |                  |
|------|------------------|
| OUT1 | Switching output |
|      | IO-Link          |
| OUT2 | Switching output |
|      | analog output    |
|      | Core colors :    |
| BK = | black            |
| BN = | brown            |
| BU = | blue             |
| WH = | white            |