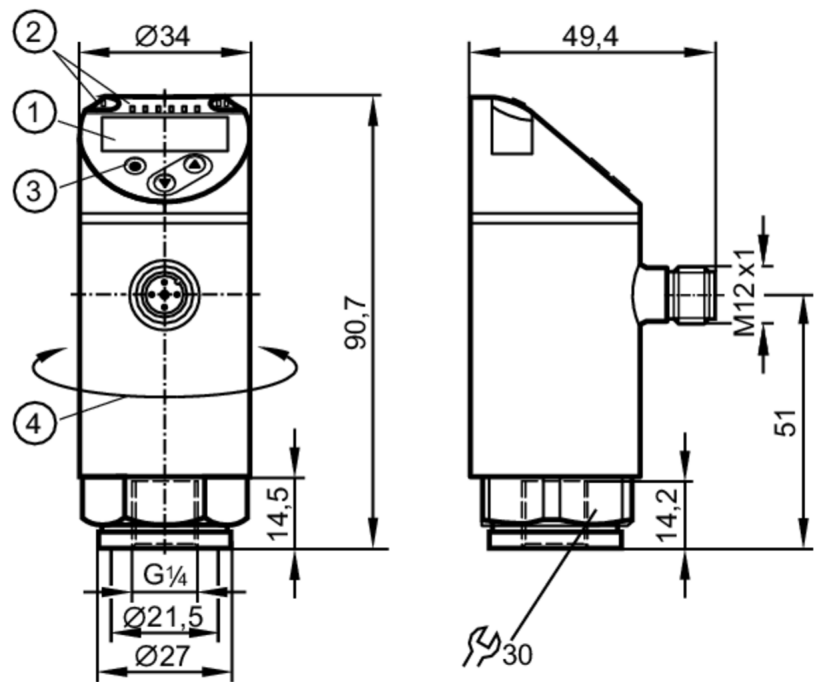




Pressure sensor with display

PN-160-SER14-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°



Product characteristics

|                              |                                           |              |            |
|------------------------------|-------------------------------------------|--------------|------------|
| Number of inputs and outputs | Number of digital outputs: 2              |              |            |
| Measuring range              | 0...160 bar                               | 0...2322 psi | 0...16 MPa |
| Process connection           | threaded connection G 1/4 internal thread |              |            |

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. bursting pressure     | 750 bar                                            | 10900 psi | 75 MPa |
| Pressure rating            | 350 bar                                            | 5100 psi  | 35 MPa |
| Vacuum resistance [mbar]   | -1000                                              |           |        |
| 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                        |  |  |



## Pressure sensor with display

PN-160-SER14-QFRKG/US/ IV

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

### Measuring/setting range

|                                   |                 |               |                  |
|-----------------------------------|-----------------|---------------|------------------|
| Measuring range                   | 0...160 bar     | 0...2322 psi  | 0...16 MPa       |
| Set point SP                      | 1.3...160 bar   | 19...2321 psi | 0.13...16 MPa    |
| Reset point rP                    | 0.5...159.2 bar | 7...2309 psi  | 0.05...15.92 MPa |
| Min. difference between SP and rP | 0.8 bar         | 12 psi        | 0.08 MPa         |
| In steps of                       | 0.1 bar         | 1 psi         | 0.01 MPa         |

### Accuracy / deviations

|                                    |       |                                                                                           |
|------------------------------------|-------|-------------------------------------------------------------------------------------------|
| Switch point accuracy              | [X21] | < ± 0,5                                                                                   |
| Repeatability                      | [X21] | < ± 0,1; (with temperature fluctuations < 10 K)                                           |
| Characteristics deviation          | [X21] | < ± 0,25 (BFSL) / < ± 0,5 (LS); (BFSL = Best Fit Straight Line; LS = limit value setting) |
| Hysteresis deviation               | [X21] | < ± 0,25                                                                                  |
| Long-term stability                | [X21] | < ± 0,05; (per 6 months)                                                                  |
| Temperature coefficient zero point | [X22] | < ± 0,2; (0...80 °C)                                                                      |
| Temperature coefficient span       | [X22] | < ± 0,2; (0...80 °C)                                                                      |

### Response times

|                                |      |        |
|--------------------------------|------|--------|
| Response time                  | [ms] | < 3    |
| Delay time programmable dS, dr | [s]  | 0...50 |
| Damping process value dAP      | [s]  | 0...4  |

### 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) |



## Pressure sensor with display

PN-160-SER14-QFRKG/US/ IV

|                                   |                                                                                            |                   |
|-----------------------------------|--------------------------------------------------------------------------------------------|-------------------|
| IO-Link revision                  | 1.1                                                                                        |                   |
| SDCI standard                     | IEC 61131-9                                                                                |                   |
| Profiles                          | Smart Sensor ED2: Digital Measuring Sensor (0x000A), Identification and Diagnosis (0x4000) |                   |
| 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] | 0.2                                                                                        |                   |
| IO-Link process data (cyclical)   | <b>function</b>                                                                            | <b>bit length</b> |
|                                   | pressure                                                                                   | 16                |
|                                   | device status                                                                              | 4                 |
|                                   | binary switching information                                                               | 2                 |
| IO-Link functions (acyclical)     | application specific tag                                                                   |                   |
| Supported DeviceIDs               | <b>Type of operation</b>                                                                   | <b>DeviceID</b>   |
|                                   | default                                                                                    | 1196              |
| 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 [ANN]                   | 249                                                                                   |                     |
| UL approval                  | UL Approval no.                                                                       | J039                |
|                              | File number UL                                                                        | E174189             |
| Pressure Equipment Directive | Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request |                     |

## Mechanical data

|                               |                                                                                            |
|-------------------------------|--------------------------------------------------------------------------------------------|
| Weight [g]                    | 280                                                                                        |
| Materials                     | 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; depends on lubrication, seal and pressure rating) |
| Process connection            | threaded connection G 1/4 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. |
|---------------|--------|

# PN7012



## Pressure sensor with display

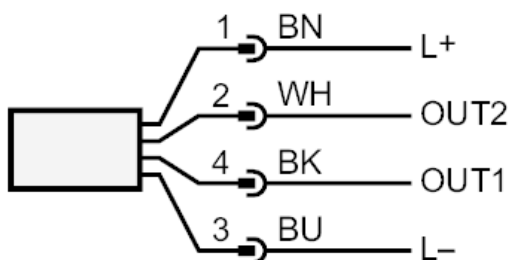
PN-160-SER14-QFRKG/US/ IV

### Electrical connection

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



### Connection



|      |                                                 |
|------|-------------------------------------------------|
| OUT1 | switching output<br>IO-Link                     |
| OUT2 | switching output<br>colours to DIN EN 60947-5-2 |
|      | Core colours :                                  |
| BK = | black                                           |
| BN = | brown                                           |
| BU = | blue                                            |
| WH = | white                                           |