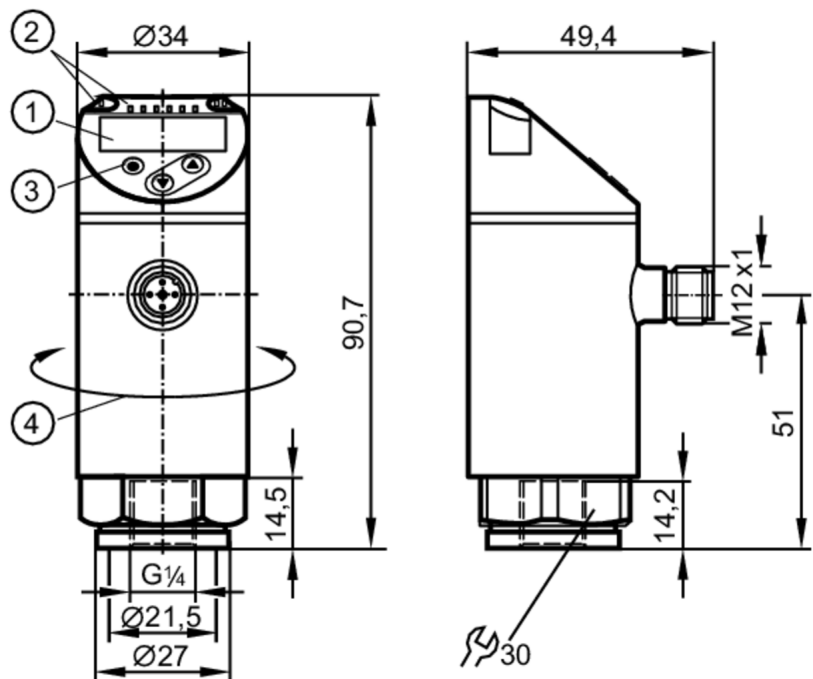


# PE2096



## Pressure sensor with display

PE-2,5-RER14-MFRKG/US/ /E



- 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 analog outputs: 1 |                  |                  |                 |
| Measuring range              | -0.125...2.5 bar                                          | -125...2500 mbar | -1.8...36.25 psi | -12.5...250 kPa |
| Process connection           | threaded connection G 1/4 Internal thread                 |                  |                  |                 |

### 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     | 50 bar                                     | 725 psi | 5000 kPa |
| Pressure rating         | 20 bar                                     | 290 psi | 2000 kPa |
| 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 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]            | 2                                                                                                        |                   |                  |                 |
| Permanent current rating of switching output DC [mA] | 250                                                                                                      |                   |                  |                 |
| Switching frequency DC [Hz]                          | < 500                                                                                                    |                   |                  |                 |
| Number of analog outputs                             | 1                                                                                                        |                   |                  |                 |
| Analog current output [mA]                           | 4...20; (scalable 1:5)                                                                                   |                   |                  |                 |
| Max. load [Ω]                                        | 500                                                                                                      |                   |                  |                 |
| Analog voltage output [V]                            | 0...10; (scalable 1:5)                                                                                   |                   |                  |                 |
| Min. load resistance [Ω]                             | 2000                                                                                                     |                   |                  |                 |
| Short-circuit protection                             | yes                                                                                                      |                   |                  |                 |
| Type of short-circuit protection                     | yes (non-latching)                                                                                       |                   |                  |                 |
| Overload protection                                  | yes                                                                                                      |                   |                  |                 |
| Measuring/setting range                              |                                                                                                          |                   |                  |                 |
| Measuring range                                      | -0.125...2.5 bar                                                                                         | -125...2500 mbar  | -1.8...36.25 psi | -12.5...250 kPa |
| Analog start point                                   | -0.125...2 bar                                                                                           | -1.8...29 psi     | -12.5...200 kPa  |                 |
| Analog end point                                     | 0.375...2.5 bar                                                                                          | 5.45...36.25 psi  | 37.5...250 kPa   |                 |
| Factory setting / CMPT = 2                           |                                                                                                          |                   |                  |                 |
| Set point SP                                         | -0.11...2.5 bar                                                                                          | -1.6...36.25 psi  | -11...250 kPa    |                 |
| Reset point rP                                       | -0.12...2.49 bar                                                                                         | -1.75...36.1 psi  | -12...249 kPa    |                 |
| Min. difference between SP and rP                    | 0.015 bar                                                                                                | 0.15 psi          | 1.5 kPa          |                 |
| In steps of                                          | 0.005 bar                                                                                                | 0.05 psi          | 0.5 kPa          |                 |
| Status_B High Resolution / CMPT = 3                  |                                                                                                          |                   |                  |                 |
| Set point SP                                         | -0.109...2.5 bar                                                                                         | -1.58...36.25 psi | -10.9...250 kPa  |                 |
| Reset point rP                                       | -0.12...2.49 bar                                                                                         | -1.73...36.11 psi | -12...249 kPa    |                 |
| Min. difference between SP and rP                    | 0.011 bar                                                                                                | 0.15 psi          | 1.1 kPa          |                 |
| In steps of                                          | 0.001 bar                                                                                                | 0.01 psi          | 0.1 kPa          |                 |
| Accuracy / deviations                                |                                                                                                          |                   |                  |                 |
| Switch point accuracy [% of the span]                | < ± 0,4; (Turn down 1:1)                                                                                 |                   |                  |                 |
| Repeatability [% of the span]                        | < ± 0,1; (with temperature fluctuations < 10 K; Turn down 1:1)                                           |                   |                  |                 |
| Characteristics deviation [% of the span]            | < ± 0,25 (BFSL) / < ± 0,5 (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)                                                                                 |                   |                  |                 |



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|                                                              |                                                                     |
|--------------------------------------------------------------|---------------------------------------------------------------------|
| Long-term stability<br>[% of the span]                       | < ± 0,05; (Turn down 1:1; 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)                                                  |
| 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                                                                                                                                                                                         |                   |          |                            |     |                                     |     |
| SIO mode                            | yes                                                                                                                                                                                                 |                   |          |                            |     |                                     |     |
| Required master port class          | A; (when pin 2 not connected: B)                                                                                                                                                                    |                   |          |                            |     |                                     |     |
| Supported DeviceIDs                 | <table> <tr> <th>Type of operation</th><th>DeviceID</th></tr> <tr> <td>Factory setting / CMPT = 2</td><td>464</td></tr> <tr> <td>Status_B High Resolution / CMPT = 3</td><td>975</td></tr> </table> | Type of operation | DeviceID | Factory setting / CMPT = 2 | 464 | Status_B High Resolution / CMPT = 3 | 975 |
| Type of operation                   | DeviceID                                                                                                                                                                                            |                   |          |                            |     |                                     |     |
| Factory setting / CMPT = 2          | 464                                                                                                                                                                                                 |                   |          |                            |     |                                     |     |
| Status_B High Resolution / CMPT = 3 | 975                                                                                                                                                                                                 |                   |          |                            |     |                                     |     |
| Note                                | For further information please see the IODD PDF file at "Downloads"                                                                                                                                 |                   |          |                            |     |                                     |     |

## Factory setting / CMPT = 2

|                                   |                              |                         |
|-----------------------------------|------------------------------|-------------------------|
| Profiles                          | Smart Sensor - SSP 0         | Generic Profiled Sensor |
|                                   | Function                     | Device identification   |
|                                   | Function                     | Process data variable   |
|                                   | Function                     | Device diagnosis        |
| Min. process cycle time [ms]      | 2.3                          |                         |
| IO-Link resolution pressure [bar] | 0.005                        |                         |
| 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 - SSP 3.1 | Measuring Sensor             |
|                              | Common - I&D           | Identification and Diagnosis |
| Min. process cycle time [ms] | 3                      |                              |

# PE2096



## Pressure sensor with display

PE-2,5-RER14-MFRKG/US/ /E

|                                    |                              |                   |
|------------------------------------|------------------------------|-------------------|
| IO-Link resolution pressure        | [bar]                        | 0.001             |
| IO-Link process data<br>(cyclical) | <b>Function</b>              | <b>bit length</b> |
|                                    | pressure                     | 16                |
|                                    | device status                | 4                 |
|                                    | binary switching information | 2                 |

| 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]                                                                               | 171                 |
| UL approval                  | UL approval number                                                                    | J012                |
| Pressure equipment directive | sound engineering practice; can be used for group 2 fluids; group 1 fluids on request |                     |

| Mechanical data               |      |                                                                                               |
|-------------------------------|------|-----------------------------------------------------------------------------------------------|
| Weight                        | [g]  | 235.5                                                                                         |
| Housing                       |      | tubular                                                                                       |
| Dimensions                    | [mm] | Ø 34 / L = 90.7                                                                               |
| Material                      |      | stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC                                    |
| Materials (wetted parts)      |      | stainless steel (1.4404 / 316L); Al2O3 (99.9 %; ceramics); EPDM                               |
| 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 Internal thread                                                     |
| Restrictor element integrated |      | no (can be retrofitted)                                                                       |

| Displays / operating elements |                  |                                         |
|-------------------------------|------------------|-----------------------------------------|
| Display                       | Display unit     | 3 x LED, green (bar, psi, kPa)          |
|                               | 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



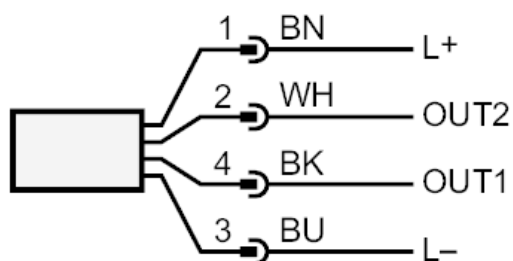
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### Connection



|      |                                   |
|------|-----------------------------------|
| OUT1 | switching output or IO-Link       |
| OUT2 | switching output or analog output |
|      | Colors to DIN EN 60947-5-2        |
|      | Core colors :                     |
| BK = | black                             |
| BN = | brown                             |
| BU = | blue                              |
| WH = | white                             |