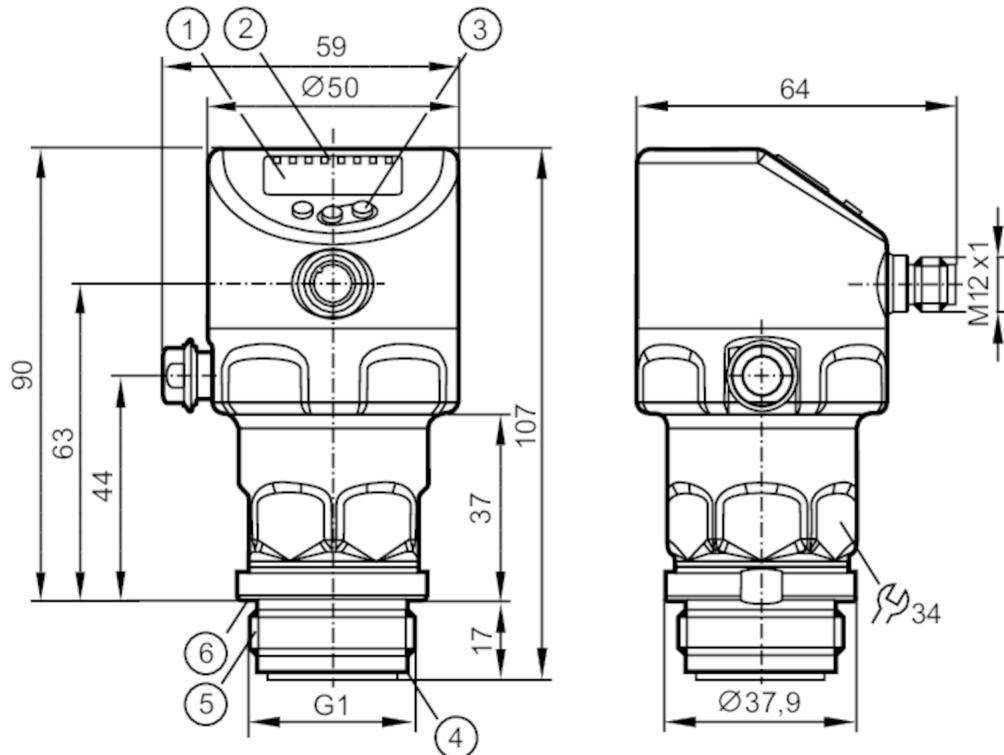


## Flush pressure sensor with display

PI-2.5-REA01-MFRKG/US/ /P



- 1 alphanumeric display 4-digit
- 2 status LEDs
- 3 programming button
- 4 groove for sealing ring
- 5 external thread G1 Aseptoflex Vario
- 6 groove with sealing ring (DIN 3869-33)

ACS CRN EC 1935/2004 EHEDG Certified FCM Reg31 UK

**Product characteristics**

|                              |   |                  |                  |
|------------------------------|---|------------------|------------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1 |                  |                  |
| Measuring range              | -0.124...2.5 bar  | -1.8...36.25 psi | -50...1004 inH2O |
| Process connection           | threaded connection G 1 external thread Aseptoflex Vario    |                  |                  |

**Application**

|  |   |         |          |
|--|---|---------|----------|
| Special feature                                | Gold-plated contacts  |         |          |
| Application                                    | flush mountable for the food and beverage industry                    |         |          |
| Media  | viscous media and liquids with suspended particles; liquids and gases |         |          |
| Medium temperature [°C]                        | 50  | 725     | 150      |
| Min. bursting pressure                         | 50 bar  | 725 psi | 5000 kPa |
| Pressure rating                                | 20 bar  | 290 psi | 2000 kPa |
| Vacuum resistance [mbar]                       |   | -1000   |          |
| Type of pressure                               | relative pressure; vacuum   |         |          |
| No dead space                                  | yes   |         |          |
| MAWP (for applications according to CRN) [bar] |   | 2.5     |          |

**Electrical data**

|                                 |                 |
|---------------------------------|-----------------|
| Min. insulation resistance [MΩ] | 100; (500 V DC) |
|---------------------------------|-----------------|

# PI1706



## Flush pressure sensor with display

PI-2.5-REA01-MFRKG/US/ /P

|   |                    |   |                  |                   |
|---|--------------------|---|------------------|-------------------|
| Protection class                                |                    | III   |                  |                   |
| Reverse polarity protection                     |                    | yes   |                  |                   |
| Integrated watchdog                             |                    | yes   |                  |                   |
| 2-wire  |                    |   |                  |                   |
| Operating voltage                               | [V]                | 20...30 DC  |                  |                   |
| Current consumption                             | [mA]               | 3.5...21.5  |                  |                   |
| Power-on delay time                             | [s]                | < 1   |                  |                   |
| 3-wire  |                    |   |                  |                   |
| Operating voltage                               | [V]                | 18...30 DC  |                  |                   |
| Current consumption                             | [mA]               | 5...45; (430 bei max. Laststrom)                            |                  |                   |
| Power-on delay time                             | [s]                | < 0.5   |                  |                   |
| <b>Inputs / outputs</b>                         |                    |   |                  |                   |
| Number of inputs and outputs                    |                    | Number of digital outputs: 2; Number of analogue outputs: 1 |                  |                   |
| <b>Outputs</b>                                  |                    |   |                  |                   |
| Total number of outputs                         |                    | 2   |                  |                   |
| Output signal                                   |                    | switching signal; analogue signal; IO-Link                  |                  |                   |
| Electrical design                               |                    | PNP/NPN   |                  |                   |
| Number of digital outputs                       |                    | 2   |                  |                   |
| Output function                                 |                    | normally open / normally closed; (parameterisable)          |                  |                   |
| Number of analogue outputs                      |                    | 1   |                  |                   |
| Analogue current output                         | [mA]               | 4...20, invertible; (scalable)                              |                  |                   |
| Short-circuit protection                        |                    | yes   |                  |                   |
| Type of short-circuit protection                |                    | pulsed  |                  |                   |
| Overload protection                             |                    | yes   |                  |                   |
| 2-wire  |                    |   |                  |                   |
| Max. load                                       | [Ω]                | 300   |                  |                   |
| 3-wire  |                    |   |                  |                   |
| Max. voltage drop switching output DC           | [V]                | 2   |                  |                   |
| Permanent current rating of switching output DC | [mA]               | 100   |                  |                   |
| Switching frequency DC                          | [Hz]               | 125   |                  |                   |
| Max. load                                       | [Ω]                | (Ub - 10 V) / 21.5 mA; 650 Ω (Ub = 24 V)                    |                  |                   |
| <b>Measuring/setting range</b>                  |                    |   |                  |                   |
| Measuring range                                 | -0.124...2.5 bar   | -1.8...36.25 psi  | -50...1004 inH2O | -12.4...250 kPa   |
| Set point SP                                    | -0.12...2.5 bar    | -1.74...36.26 psi   | -48...1004 inH2O | -12...250 kPa     |
| Reset point rP                                  | -0.124...2.496 bar | -1.8...36.2 psi   | -50...1002 inH2O | -12.4...249.6 kPa |
| Analogue start point                            | -0.124...1.994 bar | -1.8...28.92 psi  | -50...801 inH2O  | -12.4...199.4 kPa |
| Analogue end point                              | 0.382...2.5 bar    | 5.54...36.26 psi  | 153...1004 inH2O | 38.2...250 kPa    |
| Min. difference between SP and rP               | 0.004 bar          | 0.06 psi  | 2 inH2O          | 0.4 kPa           |
| In steps of                                     | 0.001 bar          | 0.01 psi  | 1 inH2O          | 0.1 kPa           |

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## Flush pressure sensor with display

PI-2.5-REA01-MFRKG/US/ /P

| Factory setting                                      |  | SP1 = 0.625 bar   | rP1 = 0.575 bar |                   |                 |             |   |            |                           |             |  |
|--|--|---|-----------------|-------------------|-----------------|-------------|---|------------|---------------------------|-------------|--|
|  |  | SP2 = 1.875 bar   | rP2 = 1.825 bar |                   |                 |             |   |            |                           |             |  |
|  |  | ASP = 0.00 bar  | AEP = 2.50 bar  |                   |                 |             |   |            |                           |             |  |
|  |  | dAP = 2.00 s  | dAA = 2.00 s    |                   |                 |             |   |            |                           |             |  |
| Temperature monitoring                               |  |   |                 |                   |                 |             |   |            |                           |             |  |
| Measuring range                                      | -25...150 °C   | -13...302 °F  |                 |                   |                 |             |   |            |                           |             |  |
| <b>Accuracy / deviations</b>                         |  |   |                 |                   |                 |             |   |            |                           |             |  |
| Switch point accuracy<br>[% of the span]             |  | < ± 0,2; (DIN EN IEC 62828-1; Turn down 1:1)  |                 |                   |                 |             |   |            |                           |             |  |
| Repeatability<br>[% of the span]                     |  | < ± 0,1; (with temperature fluctuations < 10 K; Turn down 1:1)  |                 |                   |                 |             |   |            |                           |             |  |
| Characteristics deviation<br>[% of the span]         |  | < ± 0,2; (DIN IEC EN 62828-1 incl. zero point and span error, non-linearity, hysteresis; Turn down 1:1)   |                 |                   |                 |             |   |            |                           |             |  |
| Linearity deviation<br>[% of the span]               |  | < ± 0,15; (Turn down 1:1)   |                 |                   |                 |             |   |            |                           |             |  |
| Hysteresis deviation<br>[% of the span]              |  | < ± 0,15; (Turn down 1:1)   |                 |                   |                 |             |   |            |                           |             |  |
| Long-term stability<br>[% of the span]               |  | < ± 0,1; (Turn down 1:1; per year)  |                 |                   |                 |             |   |            |                           |             |  |
| Total deviation over<br>temperature range            |  | <table border="1"> <thead> <tr> <th>Temperature range</th><th>total deviation</th></tr> </thead> <tbody> <tr> <td>-25...15 °C</td><td>Characteristics deviation ± 0,05 % of the span / 10 K</td></tr> <tr> <td>15...80 °C</td><td>Characteristics deviation</td></tr> <tr> <td>80...150 °C</td><td>Characteristics deviation ± 0,1 % of the span / 10 K</td></tr> </tbody> </table> |                 | Temperature range | total deviation | -25...15 °C | Characteristics deviation ± 0,05 % of the span / 10 K | 15...80 °C | Characteristics deviation | 80...150 °C | Characteristics deviation ± 0,1 % of the span / 10 K |
| Temperature range                                    | total deviation  |   |                 |                   |                 |             |   |            |                           |             |  |
| -25...15 °C  | Characteristics deviation ± 0,05 % of the span / 10 K      |   |                 |                   |                 |             |   |            |                           |             |  |
| 15...80 °C   | Characteristics deviation                                  |   |                 |                   |                 |             |   |            |                           |             |  |
| 80...150 °C  | Characteristics deviation ± 0,1 % of the span / 10 K       |   |                 |                   |                 |             |   |            |                           |             |  |
| Notes on the accuracy /<br>deviation                 | for further details see section Diagrams and graphs        |   |                 |                   |                 |             |   |            |                           |             |  |
| Temperature monitoring                               |  |   |                 |                   |                 |             |   |            |                           |             |  |
| Accuracy [K]   | ± 2,5+ (0,08 x ( Umgebungstemperatur - Mediumtemperatur )) |   |                 |                   |                 |             |   |            |                           |             |  |
| Repeatability [K]                                    | ± 0,2  |   |                 |                   |                 |             |   |            |                           |             |  |
| Resolution [K]                                       | 0.2  |   |                 |                   |                 |             |   |            |                           |             |  |
| <b>Response times</b>                                |  |   |                 |                   |                 |             |   |            |                           |             |  |
| Damping process value dAP [s]                        | 0...99.99  |   |                 |                   |                 |             |   |            |                           |             |  |
| Damping for the analogue<br>output dAA [s]           | 0...99.99  |   |                 |                   |                 |             |   |            |                           |             |  |
| 2-wire   |  |   |                 |                   |                 |             |   |            |                           |             |  |
| Step response time analogue<br>output [ms]           | 30   |   |                 |                   |                 |             |   |            |                           |             |  |
| 3-wire   |  |   |                 |                   |                 |             |   |            |                           |             |  |
| Min. response time of<br>switching output (dAP) [ms] | 3  |   |                 |                   |                 |             |   |            |                           |             |  |
| Step response time analogue<br>output [ms]           | 7  |   |                 |                   |                 |             |   |            |                           |             |  |
| Temperature monitoring                               |  |   |                 |                   |                 |             |   |            |                           |             |  |
| Dynamic response T05 / T09 [s]                       | < 35 / < 135; (DIN EN 60751 water ; > 0,9 m/s)             |   |                 |                   |                 |             |   |            |                           |             |  |
| <b>Interfaces</b>                                    |  |   |                 |                   |                 |             |   |            |                           |             |  |
| Communication interface                              | IO-Link  |   |                 |                   |                 |             |   |            |                           |             |  |
| Transmission type                                    | COM2 (38,4 kBaud)  |   |                 |                   |                 |             |   |            |                           |             |  |

# PI1706



## Flush pressure sensor with display

PI-2,5-REA01-MFRKG/US/ /P

| IO-Link revision                     | 1.1   |                               |          |            |          |    |             |    |               |   |                              |   |
|--------------------------------------|---|-------------------------------|----------|------------|----------|----|-------------|----|---------------|---|------------------------------|---|
| SDCI standard                        | IEC 61131-9   |                               |          |            |          |    |             |    |               |   |                              |   |
| Profiles                             | Identification and Diagnosis (0x4000), Measurement Data Channel (0x800A)  |                               |          |            |          |    |             |    |               |   |                              |   |
| SIO mode                             | yes   |                               |          |            |          |    |             |    |               |   |                              |   |
| Required master port type            | A   |                               |          |            |          |    |             |    |               |   |                              |   |
| Min. process cycle time [ms]         | 5.6   |                               |          |            |          |    |             |    |               |   |                              |   |
| IO-Link resolution pressure [bar]    | 0.0001  |                               |          |            |          |    |             |    |               |   |                              |   |
| IO-Link resolution temperature [K]   | 0.2   |                               |          |            |          |    |             |    |               |   |                              |   |
| IO-Link process data (cyclical)      | <table border="1"> <thead> <tr> <th>function</th><th>bit length</th></tr> </thead> <tbody> <tr> <td>pressure</td><td>32</td></tr> <tr> <td>temperature</td><td>32</td></tr> <tr> <td>device status</td><td>4</td></tr> <tr> <td>binary switching information</td><td>2</td></tr> </tbody> </table> application specific tag; internal temperature; operating hours counter; switching cycles counter; Pressure peak counter |                               | function | bit length | pressure | 32 | temperature | 32 | device status | 4 | binary switching information | 2 |
| function                             | bit length  |                               |          |            |          |    |             |    |               |   |                              |   |
| pressure                             | 32  |                               |          |            |          |    |             |    |               |   |                              |   |
| temperature                          | 32  |                               |          |            |          |    |             |    |               |   |                              |   |
| device status                        | 4   |                               |          |            |          |    |             |    |               |   |                              |   |
| binary switching information         | 2   |                               |          |            |          |    |             |    |               |   |                              |   |
| Supported DeviceIDs                  | Type of operation   | DeviceID                      |          |            |          |    |             |    |               |   |                              |   |
|                                      | default   | 1154                          |          |            |          |    |             |    |               |   |                              |   |
| <b>Operating conditions</b>          |   |                               |          |            |          |    |             |    |               |   |                              |   |
| Ambient temperature [°C]             | -25...80  |                               |          |            |          |    |             |    |               |   |                              |   |
| Storage temperature [°C]             | -40...100   |                               |          |            |          |    |             |    |               |   |                              |   |
| Protection                           | IP 67; IP 68; IP 69K  |                               |          |            |          |    |             |    |               |   |                              |   |
| <b>Tests / approvals</b>             |   |                               |          |            |          |    |             |    |               |   |                              |   |
| EMC                                  | DIN EN 61326-1  |                               |          |            |          |    |             |    |               |   |                              |   |
| 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]                         | 214   |                               |          |            |          |    |             |    |               |   |                              |   |
| Note on approval                     | factory certificate available as download at <a href="http://www.factory-certificate.ifm">www.factory-certificate.ifm</a>   |                               |          |            |          |    |             |    |               |   |                              |   |
| UL approval                          | UL Approval no.   | J048                          |          |            |          |    |             |    |               |   |                              |   |
|                                      | File number UL  | E174189                       |          |            |          |    |             |    |               |   |                              |   |
| <b>Mechanical data</b>               |   |                               |          |            |          |    |             |    |               |   |                              |   |
| Weight [g]                           | 358.1   |                               |          |            |          |    |             |    |               |   |                              |   |
| Materials                            | stainless steel (316L/1.4404); FKM; PTFE; PBT; PEI; PFA   |                               |          |            |          |    |             |    |               |   |                              |   |
| Materials (wetted parts)             | ceramics (99.9 % Al2O3); stainless steel (316L/1.4435); surface characteristics: Ra < 0,4 / Rz 4; PTFE  |                               |          |            |          |    |             |    |               |   |                              |   |
| Min. pressure cycles                 | 100 million   |                               |          |            |          |    |             |    |               |   |                              |   |
| Tightening torque [Nm]               | 35  |                               |          |            |          |    |             |    |               |   |                              |   |
| Process connection                   | threaded connection G 1 external thread Aseptoflex Vario  |                               |          |            |          |    |             |    |               |   |                              |   |
| <b>Displays / operating elements</b> |   |                               |          |            |          |    |             |    |               |   |                              |   |
| Display                              | Display unit  | LED, green                    |          |            |          |    |             |    |               |   |                              |   |
|                                      | switching status  | LED, yellow                   |          |            |          |    |             |    |               |   |                              |   |
|                                      | function display  | alphanumeric display, 4-digit |          |            |          |    |             |    |               |   |                              |   |
|                                      | measured values   | alphanumeric display, 4-digit |          |            |          |    |             |    |               |   |                              |   |
| Display unit                         | bar; psi; kPa; inH2O  |                               |          |            |          |    |             |    |               |   |                              |   |
| <b>Remarks</b>                       |   |                               |          |            |          |    |             |    |               |   |                              |   |
| Pack quantity                        | 1 pcs.  |                               |          |            |          |    |             |    |               |   |                              |   |

## Flush pressure sensor with display

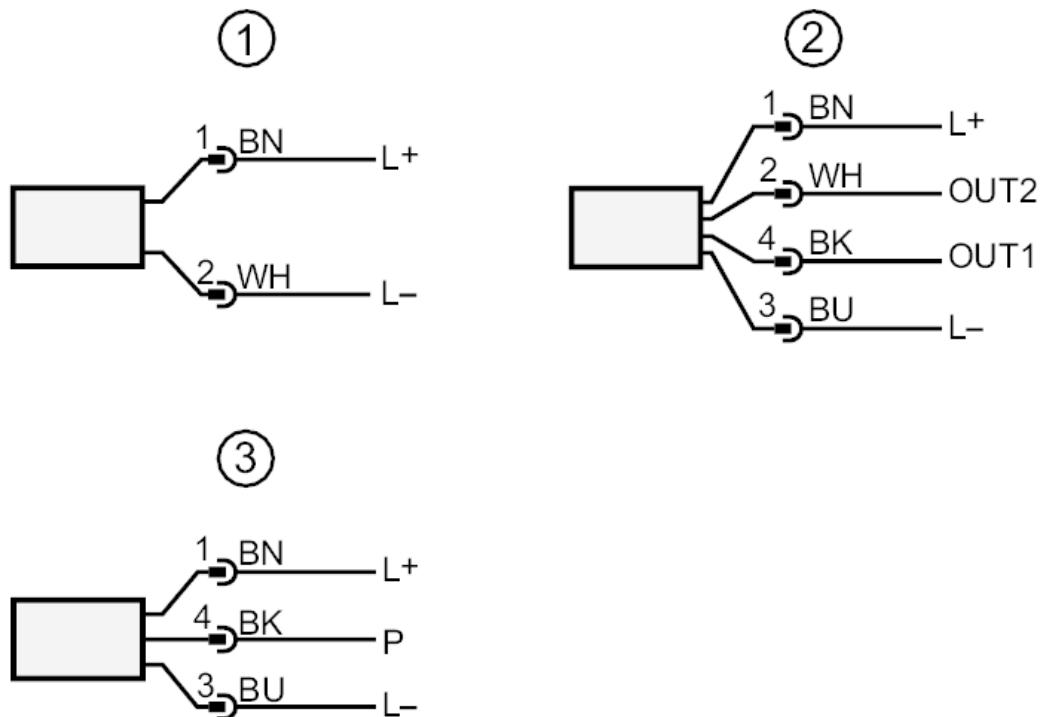
PI-2,5-REA01-MFRKG/US/ /P

### Electrical connection

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



### Connection



|      |   |
|------|---|
| 1    | connection for 2-wire operation   |
| 2    | connection for 3-wire operation   |
| OUT1 | switching output / IO-Link  |
| OUT2 | switching output / analogue output  |
| 3    | connection for IO-Link parameter setting (P = communication via IO-Link)<br>colours to DIN EN 60947-5-2<br>Core colours |
| BK = | black   |
| BN = | brown   |
| BU = | blue  |
| WH = | white   |

## Flush pressure sensor with display

PI-2,5-REA01-MFRKG/US/ /P

### Diagrams and graphs

ambient temperature influence on  
the accuracy

