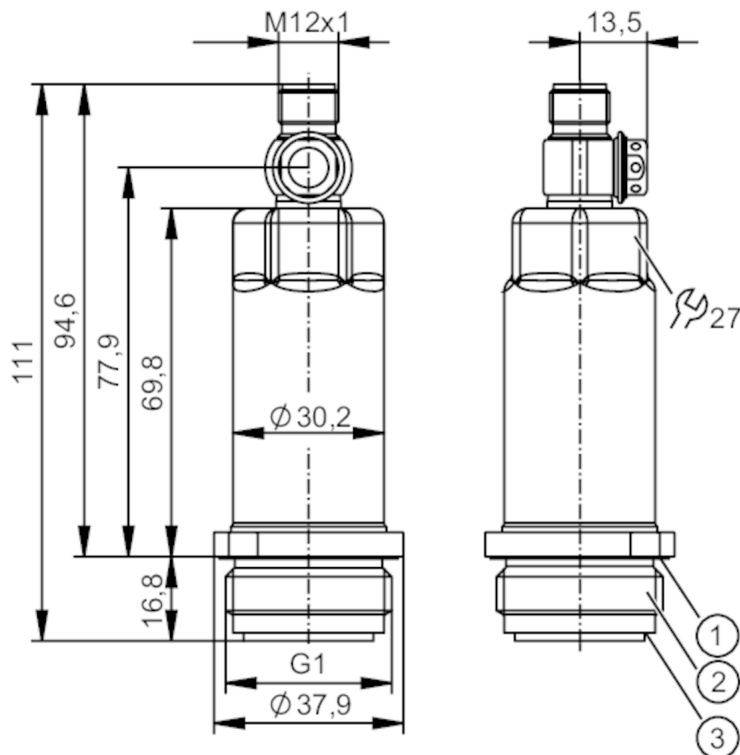


# PM1705



## Flush pressure sensor

PM-004-REA01-E-ZVG/US



- 1 groove with sealing ring (DIN EN ISO 1179-2)
- 2 external thread G1 (Aseptoflex Vario)
- 3 groove for sealing ring



| Product characteristics                        |                                                                                                                           |                |                |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------|----------------|
| Number of inputs and outputs                   | Number of digital outputs: 1; Number of analog outputs: 1                                                                 |                |                |
| Measuring range                                | -1...4 bar                                                                                                                | -14.5...58 psi | -100...400 kPa |
| Process connection                             | threaded connection G 1 external thread with Aseptoflex Vario sealing contour                                             |                |                |
| Note                                           | G1 Gewinde nach ISO 228. Alternativ dichtend über rückwärtige Dichtkontur mit Dichtung in Anlehnung an DIN EN ISO 1179-2. |                |                |
| Application                                    |                                                                                                                           |                |                |
| Special feature                                | gold-plated contacts                                                                                                      |                |                |
| Measuring element                              | ceramic-capacitive pressure measuring cell                                                                                |                |                |
| Temperature monitoring                         | no                                                                                                                        |                |                |
| Application                                    | flush mountable for the food and beverage industry                                                                        |                |                |
| Media                                          | viscous media and liquids with suspended particles; liquids and gases                                                     |                |                |
| Medium temperature [°C]                        | -25...150                                                                                                                 |                |                |
| Min. burst pressure                            | 100 bar                                                                                                                   | 1450 psi       | 10000 kPa      |
| Pressure rating                                | 30 bar                                                                                                                    | 435 psi        | 3000 kPa       |
| Vacuum resistance [mbar]                       | -1000                                                                                                                     |                |                |
| Type of pressure                               | relative pressure; vacuum                                                                                                 |                |                |
| No dead space                                  | yes                                                                                                                       |                |                |
| MAWP (for applications according to CRN) [bar] | 30                                                                                                                        |                |                |



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| Electrical data              |                 |                                                                                                    |                |
|------------------------------|-----------------|----------------------------------------------------------------------------------------------------|----------------|
| Operating voltage            | [V]             | 18...30 DC                                                                                         |                |
| Min. insulation resistance   | [MΩ]            | 100; (500 V DC)                                                                                    |                |
| Protection class             |                 | III                                                                                                |                |
| Reverse polarity protection  |                 | yes                                                                                                |                |
| Integrated watchdog          |                 | yes                                                                                                |                |
| 2-wire                       |                 |                                                                                                    |                |
| Current consumption          | [mA]            | 3.5...21.5                                                                                         |                |
| Power-on delay time          | [s]             | 1                                                                                                  |                |
| 3-wire                       |                 |                                                                                                    |                |
| Current consumption          | [mA]            | < 45                                                                                               |                |
| Power-on delay time          | [s]             | 0.5                                                                                                |                |
| Inputs / outputs             |                 |                                                                                                    |                |
| Number of inputs and outputs |                 | Number of digital outputs: 1; Number of analog outputs: 1                                          |                |
| Outputs                      |                 |                                                                                                    |                |
| Total number of outputs      |                 | 2                                                                                                  |                |
| Output signal                |                 | analog signal; IO-Link; (configurable)                                                             |                |
| Number of digital outputs    |                 | 1; (IO-Link)                                                                                       |                |
| Number of analog outputs     |                 | 1                                                                                                  |                |
| Analog current output        | [mA]            | 4...20; (scalable)                                                                                 |                |
| Max. load                    | [Ω]             | 700; (Ub = 24 V; (Ub - 9 V) / 21.5 mA)                                                             |                |
| Short-circuit proof          |                 | yes                                                                                                |                |
| Overload protection          |                 | yes                                                                                                |                |
| Measuring/setting range      |                 |                                                                                                    |                |
| Measuring range              | -1...4 bar      | -14.5...58 psi                                                                                     | -100...400 kPa |
| Analog start point           | -1...3.2 bar    | -14.5...46.4 psi                                                                                   | -100...320 kPa |
| Analog end point             | -0.2...4 bar    | -2.9...58 psi                                                                                      | -20...400 kPa  |
| In steps of                  | 0.002 bar       | 0.05 psi                                                                                           | 0.2 kPa        |
| Factory setting              | ASP             |                                                                                                    | 0.0 bar        |
|                              | AEP             |                                                                                                    | 4.0 bar        |
| Accuracy / deviations        |                 |                                                                                                    |                |
| Repeatability                | [% of the span] | < ± 0,1; (with temperature fluctuations < 10 K; Turn down 1:1)                                     |                |
| Characteristics deviation    | [% of the span] | < ± 0,2; (linearity incl. hysteresis and repeatability, limit value setting to DIN EN IEC 62828-1) |                |
| Linearity deviation          | [% of the span] | < ± 0,15; (Turn down 1:1)                                                                          |                |
| Hysteresis deviation         | [% of the span] | < ± 0,15; (Turn down 1:1)                                                                          |                |
| Long-term stability          | [% of the span] | < ± 0,1; (Turn down 1:1; per year)                                                                 |                |

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| Total deviation over temperature range | <table> <tr> <th>Temperature range</th><th>total deviation</th></tr> <tr> <td>-25...15 °C</td><td>Characteristics deviation <math>\pm 0,05</math> % 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 <math>\pm 0,1</math> % of the span / 10 K</td></tr> </table> | Temperature range      | total deviation  | -25...15 °C      | Characteristics deviation $\pm 0,05$ % of the span / 10 K | 15...80 °C    | Characteristics deviation | 80...150 °C | Characteristics deviation $\pm 0,1$ % of the span / 10 K |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------|------------------|-----------------------------------------------------------|---------------|---------------------------|-------------|----------------------------------------------------------|
| Temperature range                      | total deviation                                                                                                                                                                                                                                                                                                                                                      |                        |                  |                  |                                                           |               |                           |             |                                                          |
| -25...15 °C                            | Characteristics deviation $\pm 0,05$ % of the span / 10 K                                                                                                                                                                                                                                                                                                            |                        |                  |                  |                                                           |               |                           |             |                                                          |
| 15...80 °C                             | Characteristics deviation                                                                                                                                                                                                                                                                                                                                            |                        |                  |                  |                                                           |               |                           |             |                                                          |
| 80...150 °C                            | Characteristics deviation $\pm 0,1$ % of the span / 10 K                                                                                                                                                                                                                                                                                                             |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Notes on the accuracy / deviation      | for further details see section Diagrams and graphs                                                                                                                                                                                                                                                                                                                  |                        |                  |                  |                                                           |               |                           |             |                                                          |
| <b>Reaction times</b>                  |                                                                                                                                                                                                                                                                                                                                                                      |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Damping for the analog output dAA [s]  | 0...4                                                                                                                                                                                                                                                                                                                                                                |                        |                  |                  |                                                           |               |                           |             |                                                          |
| 2-wire                                 |                                                                                                                                                                                                                                                                                                                                                                      |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Step response time analog output [ms]  | 30                                                                                                                                                                                                                                                                                                                                                                   |                        |                  |                  |                                                           |               |                           |             |                                                          |
| 3-wire                                 |                                                                                                                                                                                                                                                                                                                                                                      |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Step response time analog output [ms]  | 7                                                                                                                                                                                                                                                                                                                                                                    |                        |                  |                  |                                                           |               |                           |             |                                                          |
| <b>Interfaces</b>                      |                                                                                                                                                                                                                                                                                                                                                                      |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Communication interface                | IO-Link                                                                                                                                                                                                                                                                                                                                                              |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Transmission type                      | COM2 (38,4 kBaud)                                                                                                                                                                                                                                                                                                                                                    |                        |                  |                  |                                                           |               |                           |             |                                                          |
| IO-Link revision                       | 1.1                                                                                                                                                                                                                                                                                                                                                                  |                        |                  |                  |                                                           |               |                           |             |                                                          |
| SDCI standard                          | IEC 61131-9                                                                                                                                                                                                                                                                                                                                                          |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Profiles                               | <table> <tr> <td>Smart Sensor - SSP 3.1</td><td>Measuring Sensor</td></tr> <tr> <td>Common - I&amp;D</td><td>Identification and Diagnosis</td></tr> </table>                                                                                                                                                                                                         | Smart Sensor - SSP 3.1 | Measuring Sensor | Common - I&D     | Identification and Diagnosis                              |               |                           |             |                                                          |
| Smart Sensor - SSP 3.1                 | Measuring Sensor                                                                                                                                                                                                                                                                                                                                                     |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Common - I&D                           | Identification and Diagnosis                                                                                                                                                                                                                                                                                                                                         |                        |                  |                  |                                                           |               |                           |             |                                                          |
| SIO mode                               | no                                                                                                                                                                                                                                                                                                                                                                   |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Required master port class             | A                                                                                                                                                                                                                                                                                                                                                                    |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Process data analog                    | 3                                                                                                                                                                                                                                                                                                                                                                    |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Min. process cycle time [ms]           | 3.2                                                                                                                                                                                                                                                                                                                                                                  |                        |                  |                  |                                                           |               |                           |             |                                                          |
| IO-Link resolution pressure [bar]      | 0.001                                                                                                                                                                                                                                                                                                                                                                |                        |                  |                  |                                                           |               |                           |             |                                                          |
| IO-Link process data (cyclical)        | <table> <tr> <th>Function</th><th>bit length</th></tr> <tr> <td>pressure</td><td>16</td></tr> <tr> <td>device status</td><td>4</td></tr> </table>                                                                                                                                                                                                                    | Function               | bit length       | pressure         | 16                                                        | device status | 4                         |             |                                                          |
| Function                               | bit length                                                                                                                                                                                                                                                                                                                                                           |                        |                  |                  |                                                           |               |                           |             |                                                          |
| pressure                               | 16                                                                                                                                                                                                                                                                                                                                                                   |                        |                  |                  |                                                           |               |                           |             |                                                          |
| device status                          | 4                                                                                                                                                                                                                                                                                                                                                                    |                        |                  |                  |                                                           |               |                           |             |                                                          |
| IO-Link functions (acyclical)          | application specific tag; internal temperature                                                                                                                                                                                                                                                                                                                       |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Supported DeviceIDs                    | <table> <tr> <th>Type of operation</th><th>DeviceID</th></tr> <tr> <td>default</td><td>664</td></tr> </table>                                                                                                                                                                                                                                                        | Type of operation      | DeviceID         | default          | 664                                                       |               |                           |             |                                                          |
| Type of operation                      | DeviceID                                                                                                                                                                                                                                                                                                                                                             |                        |                  |                  |                                                           |               |                           |             |                                                          |
| default                                | 664                                                                                                                                                                                                                                                                                                                                                                  |                        |                  |                  |                                                           |               |                           |             |                                                          |
| <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                                    | <table> <tr> <td>DIN EN 61000-6-2</td><td></td></tr> <tr> <td>DIN EN 61000-6-3</td><td></td></tr> </table>                                                                                                                                                                                                                                                           | DIN EN 61000-6-2       |                  | DIN EN 61000-6-3 |                                                           |               |                           |             |                                                          |
| 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]                           | 323                                                                                                                                                                                                                                                                                                                                                                  |                        |                  |                  |                                                           |               |                           |             |                                                          |
| Note on approval                       | Factory certificate available as download at <a href="http://www.factory-certificate.ifm">www.factory-certificate.ifm</a>                                                                                                                                                                                                                                            |                        |                  |                  |                                                           |               |                           |             |                                                          |
| UL approval                            | <table> <tr> <td>UL approval number</td><td>J021</td></tr> </table>                                                                                                                                                                                                                                                                                                  | UL approval number     | J021             |                  |                                                           |               |                           |             |                                                          |
| UL approval number                     | J021                                                                                                                                                                                                                                                                                                                                                                 |                        |                  |                  |                                                           |               |                           |             |                                                          |

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Flush pressure sensor

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| Mechanical data          |      |                                                                                                                    |
|--------------------------|------|--------------------------------------------------------------------------------------------------------------------|
| Weight                   | [g]  | 306.65                                                                                                             |
| Housing                  |      | tubular                                                                                                            |
| Dimensions               | [mm] | Ø 30.2 / L = 111                                                                                                   |
| Material                 |      | stainless steel (1.4404 / 316L); PBT                                                                               |
| Materials (wetted parts) |      | ceramics (99.9 % Al2O3); stainless steel (1.4435 / 316L)<br>surface characteristics: Ra < 0,4 µm / Rz = 4 µm; PTFE |
| Min. pressure cycles     |      | 100 million                                                                                                        |
| Tightening torque        | [Nm] | 35                                                                                                                 |
| Process connection       |      | threaded connection G 1 external thread with Aseptoflex Vario sealing contour                                      |

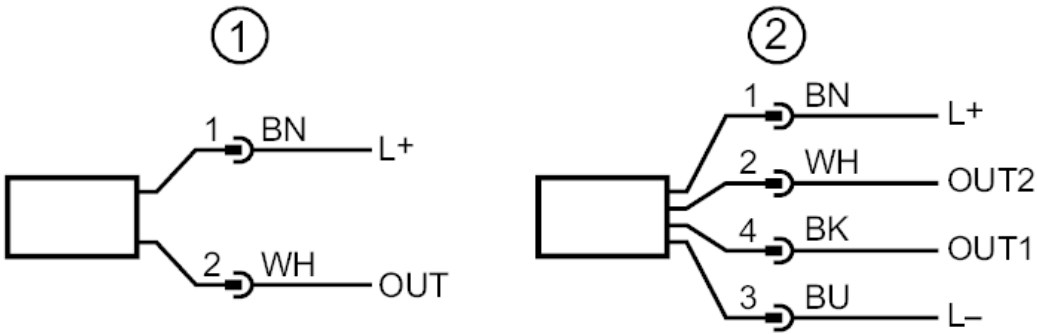
| Remarks       |        |
|---------------|--------|
| Pack quantity | 1 pcs. |

Electrical connection

Connector: 1 x M12; coding: A; Contacts: 4, gold-plated



Connection



- 1
- connection for 2-wire operation ( analog )
- 2
- connection for 3-wire operation ( analog / IO-Link )  
OUT1 : IO-Link  
OUT2 : analog output

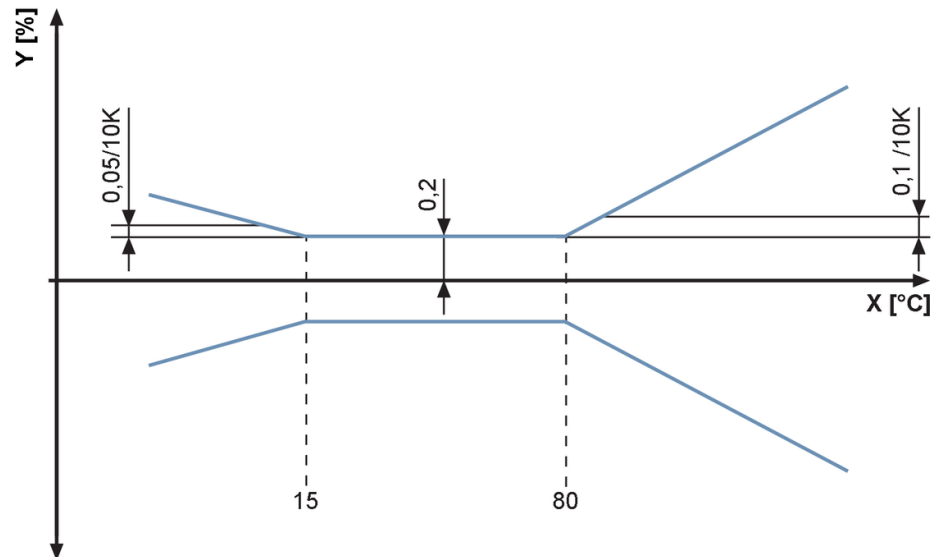


## Flush pressure sensor

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### Diagrams and graphs

ambient temperature influence on the accuracy



X temperature  
Y total deviation