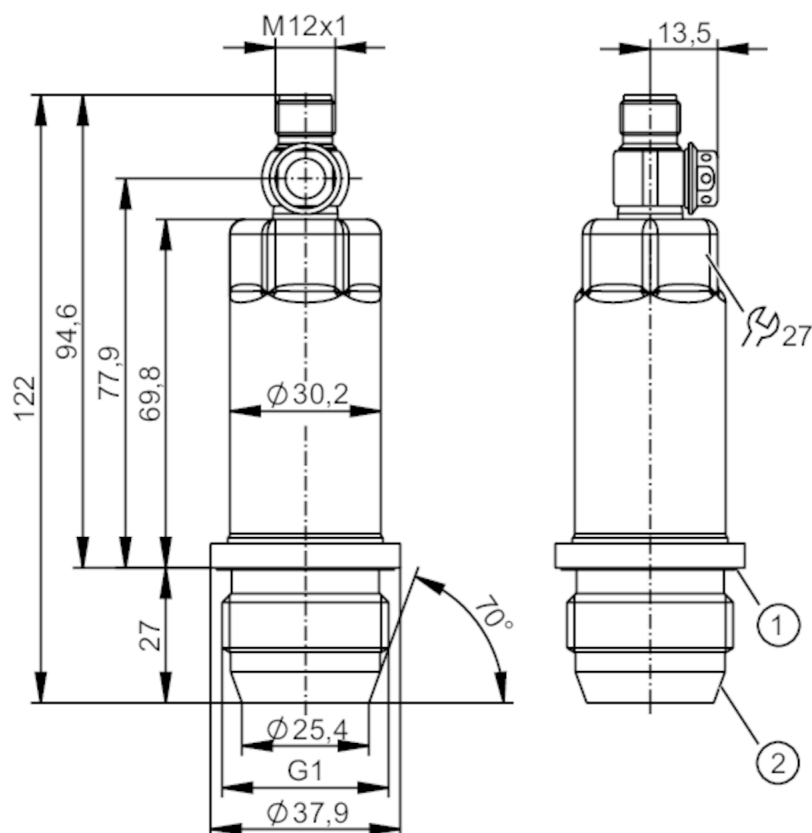


# PM1617



## Flush pressure sensor

PM-1,6-REA01-E-ZVG/US



- 1 groove with sealing ring (DIN EN ISO 1179-2)  
2 G1 sealing cone external thread



ACS



CRN



EC 1935/2004

EHEDG

Tested

FCM



Reg31

UK

CA

### Product characteristics

|                              |                                                           |                  |                   |               |
|------------------------------|-----------------------------------------------------------|------------------|-------------------|---------------|
| Number of inputs and outputs | Number of digital outputs: 1; Number of analog outputs: 1 |                  |                   |               |
| Measuring range              | -0.1...1.6 bar                                            | -100...1600 mbar | -1.45...23.21 psi | -10...160 kPa |
| Process connection           | threaded connection G 1 external thread sealing cone      |                  |                   |               |

### Application

|                                                |                                                                       |         |          |
|------------------------------------------------|-----------------------------------------------------------------------|---------|----------|
| System                                         | 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. bursting pressure                         | 40000 mbar                                                            | 580 psi | 4000 kPa |
| Pressure rating                                | 15000 mbar                                                            | 215 psi | 1500 kPa |
| Vacuum resistance [mbar]                       | -1000                                                                 |         |          |
| Type of pressure                               | relative pressure                                                     |         |          |
| No dead space                                  | yes                                                                   |         |          |
| MAWP (for applications according to CRN) [bar] | 15                                                                    |         |          |

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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                        |                 | -0.1...1.6 bar                                                                                     | -100...1600 mbar  | -1.45...23.21 psi    -10...160 kPa                    |
| Analog start point                     |                 | -100...1280 mbar                                                                                   | -1.45...18.56 psi | -10...128 kPa                                         |
| Analog end point                       |                 | 220...1600 mbar                                                                                    | 3.19...23.21 psi  | 22...160 kPa                                          |
| In steps of                            |                 | 1 mbar                                                                                             | 0.01 psi          | 0.1 kPa                                               |
| Factory setting                        |                 | ASP = 0.0 mbar                                                                                     | AEP = 1600 mbar   |                                                       |
| 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)                                                                 |                   |                                                       |
| Total deviation over temperature range |                 | <b>Temperature range</b>                                                                           |                   | <b>total deviation</b>                                |
|                                        |                 | -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  |



## Flush pressure sensor

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Notes on the accuracy / deviation

for further details see section Diagrams and graphs

## Reaction times

|                                   |     |       |
|-----------------------------------|-----|-------|
| 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 |
|----------------------------------|------|---|

## Interfaces

|                                 |                                                                          |                   |
|---------------------------------|--------------------------------------------------------------------------|-------------------|
| Communication interface         | IO-Link                                                                  |                   |
| Transmission type               | COM2 (38,4 kBaud)                                                        |                   |
| IO-Link revision                | 1.1                                                                      |                   |
| SDCI standard                   | IEC 61131-9                                                              |                   |
| Profiles                        | Digital Measuring Sensor (0x000A), Identification and Diagnosis (0x4000) |                   |
| SIO mode                        | no                                                                       |                   |
| Required master port class      | A                                                                        |                   |
| Process data analog             | 3                                                                        |                   |
| Min. process cycle time         | [ms]                                                                     | 3.2               |
| IO-Link resolution pressure     | [mbar]                                                                   | 0.5               |
| IO-Link process data (cyclical) | <b>Function</b>                                                          | <b>bit length</b> |
|                                 | pressure                                                                 | 16                |
|                                 | device status                                                            | 4                 |
| IO-Link functions (acyclical)   | application specific tag; internal temperature                           |                   |
| Supported DeviceIDs             | <b>Type of operation</b>                                                 | <b>DeviceID</b>   |
|                                 | default                                                                  | 666               |

## Operating conditions

|                     |                      |           |
|---------------------|----------------------|-----------|
| Ambient temperature | [°C]                 | -25...80  |
| Storage temperature | [°C]                 | -40...100 |
| Protection          | IP 67; IP 68; IP 69K |           |

## 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]                                                                                                                   | 323                 |
| 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 number                                                                                                        | J022                |

## Mechanical data

|                          |                                                                                                                                    |       |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------|
| Weight                   | [g]                                                                                                                                | 337.4 |
| Material                 | stainless steel (1.4404 / 316L); PBT                                                                                               |       |
| Materials (wetted parts) | ceramics (99.9 % Al <sub>2</sub> O <sub>3</sub> ); stainless steel (1.4435 / 316L); surface characteristics: Ra < 0,4 / Rz 4; PTFE |       |
| Min. pressure cycles     | 100 million                                                                                                                        |       |

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|                    |                                                      |    |
|--------------------|------------------------------------------------------|----|
| Tightening torque  | [Nm]                                                 | 20 |
| Process connection | threaded connection G 1 external thread sealing cone |    |
| Remarks            |                                                      |    |
| Pack quantity      | 1 pcs.                                               |    |

Electrical connection

Connector: 1 x M12; coding: A; Contacts: 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