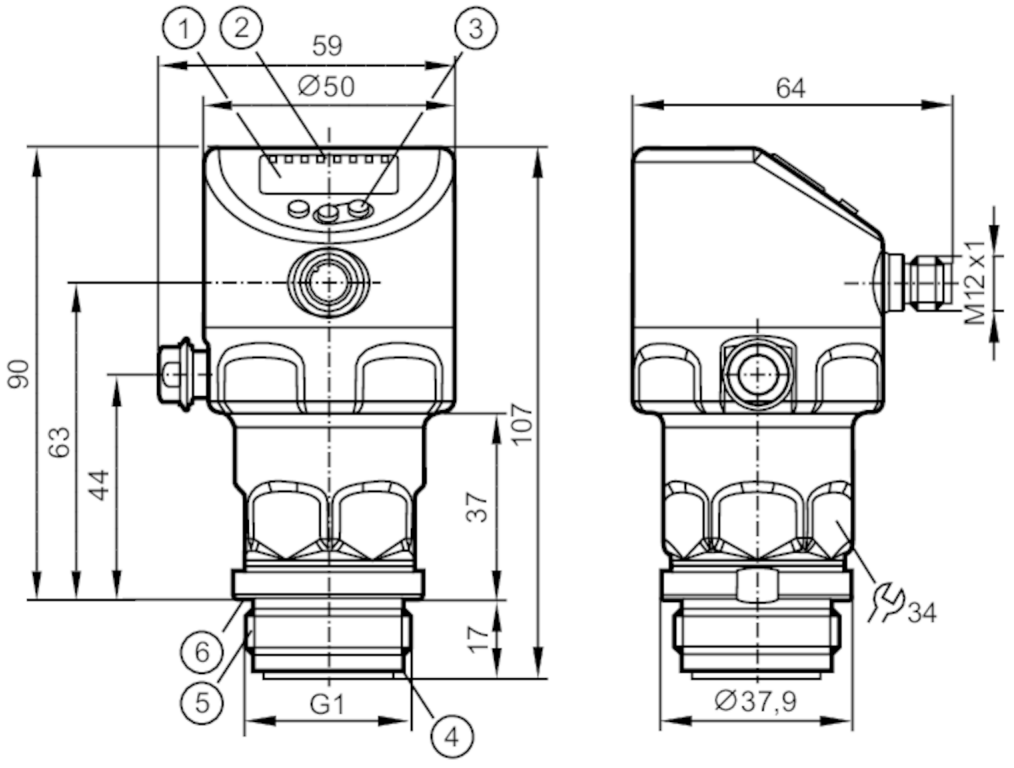
# PI1708

## Flush pressure sensor with display

PI-,25BREA01-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)

3A ACS CE CRN cULus LISTED EC 1935/2004 EHEDG Certified FCM FDA IO-Link Reg31 UKCA

| | | | | |
|---|---|---|---|---|
| **Product characteristics** | | | | |
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1 | | | |
| Measuring range | -12.4...250 mbar | -5...100.4 inH2O | -1.24...25 kPa | -126...2550 mmWS |
| 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] | -25...150 | | | |
| Min. bursting pressure | 30000 mbar | 12044 inH2O | 3000 kPa | |
| Pressure rating | 6000 mbar | 2400 inH2O | 600 kPa | |
| Vacuum resistance [mbar] | -1000 | | | |
| Type of pressure | relative pressure; vacuum | | | |
| No dead space | yes | | | |
| MAWP (for applications according to CRN) [bar] | 6 | | | |
| **Electrical data** | | | | |
| Min. insulation resistance [MΩ] | 100; (500 V DC) | | | |

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| | | | | | |
|---|---|---|---|---|---|
| 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 | | | |
| **Inputs / outputs** | | | | | |
| Number of inputs and outputs | | Number of digital outputs: 2; Number of analogue outputs: 1 | | | |
| **Outputs** | | | | | |
| 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) | | | |
| **Measuring/setting range** | | | | | |
| Measuring range | | -12.4...250 mbar | -5...100.4 inH2O | -1.24...25 kPa | -126...2550 mmWS |
| Set point SP | | -12...250 mbar | -4.8...100.4 inH2O | -1.2...25 kPa | -122...2549 mmWS |
| Reset point rP | | -12.4...249.6 mbar | -5...100.2 inH2O | -1.24...24.96 kPa | -126...2545 mmWS |
| Analogue start point | | -12.4...199.4 mbar | -5...80.1 inH2O | -1.24...19.94 kPa | -126...2033 mmWS |
| Analogue end point | | 38.2...250 mbar | 15.3...100.4 inH2O | 3.82...25 kPa | 390...2549 mmWS |
| Min. difference between SP and rP | | 0.5 mbar | 0.2 inH2O | 0.05 kPa | 5 mmWS |
| In steps of | | 0.1 mbar | 0.1 inH2O | 0.01 kPa | 1 mmWS |

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| | | | |
|---|---|---|---|
| Factory setting | | SP1 =62.5 mbar | rP1 = 57.5 mbar |
| | | SP2 = 187.5 mbar | rP2 = 182.5 mbar |
| | | ASP = 0.00 mbar | AEP = 250 mbar |
| | | dAP = 2.00 s | dAA =2.00 s |
| Temperature monitoring | | | |
| Measuring range | -25...150 °C | -13...302 °F | |

## Accuracy / deviations

| | | |
|---|---|---|
| Switch point accuracy [% of the span] | < ± 0,2; (DIN EN IEC 62828-1; Turn down 1:1) | |
| Repeatability [% of the span] | < ± 0,1; (with temperature fluctuations < 10 K; Turn down 1:1) | |
| Characteristics deviation [% of the span] | < ± 0,2; (DIN IEC EN 62828-1 incl. zero point and span error, non-linearity, hysteresis; Turn down 1:1) | |
| 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 | **Temperature range** | **total deviation** |
| | -25...15 °C | Characteristics deviation ± 0,1 % of the span / 10 K |
| | 15...80 °C | Characteristics deviation |
| | 80...150 °C | Characteristics deviation ± 0,15 % of the span / 10 K |
| Notes on the accuracy / 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 | |

## Response times

| | |
|---|---|
| Damping process value dAP [s] | 0...99.99 |
| Damping for the analogue output dAA [s] | 0...99.99 |
| 2-wire | |
| Step response time analogue output [ms] | 30 |
| 3-wire | |
| Min. response time of switching output (dAP) [ms] | 3 |
| Step response time analogue output [ms] | 7 |
| Temperature monitoring | |
| Dynamic response T05 / T09 [s] | < 35 / < 135; (DIN EN 60751 water ; > 0,9 m/s) |

## Interfaces

| | |
|---|---|
| Communication interface | IO-Link |
| Transmission type | COM2 (38,4 kBaud) |

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| | | | |
|---|---|---|---|
| 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 | [mbar] | 0.01 | |
| IO-Link resolution temperature | [K] | 0.2 | |
| IO-Link process data (cyclical) | | **function** | **bit length** |
| | | pressure | 32 |
| | | temperature | 32 |
| | | device status | 4 |
| | | binary switching information | 2 |
| IO-Link functions (acyclical) | | application specific tag; internal temperature; operating hours counter; switching cycles counter; Pressure peak counter | |
| Supported DeviceIDs | | **Type of operation** | **DeviceID** |
| | | default | 1152 |
| **Operating conditions** | | | |
| Ambient temperature | [°C] | -25...80 | |
| Storage temperature | [°C] | -40...100 | |
| Protection | | IP 67; IP 68; IP 69K | |
| **Tests / approvals** | | | |
| 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 www.factory-certificate.ifm | |
| UL approval | | UL Approval no. | J048 |
| | | File number UL | E174189 |
| **Mechanical data** | | | |
| Weight | [g] | 375.6 | |
| 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 | |
| **Displays / operating elements** | | | |
| Display | | Display unit | LED, green |
| | | switching status | LED, yellow |
| | | function display | alphanumeric display, 4-digit |
| | | measured values | alphanumeric display, 4-digit |
| Display unit | | mbar; kPa; inH2O; mmWS | |
| **Remarks** | | | |
| Pack quantity | | 1 pcs. | |

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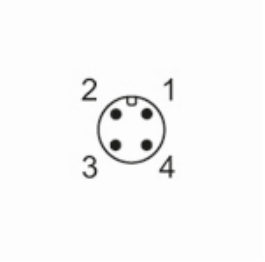
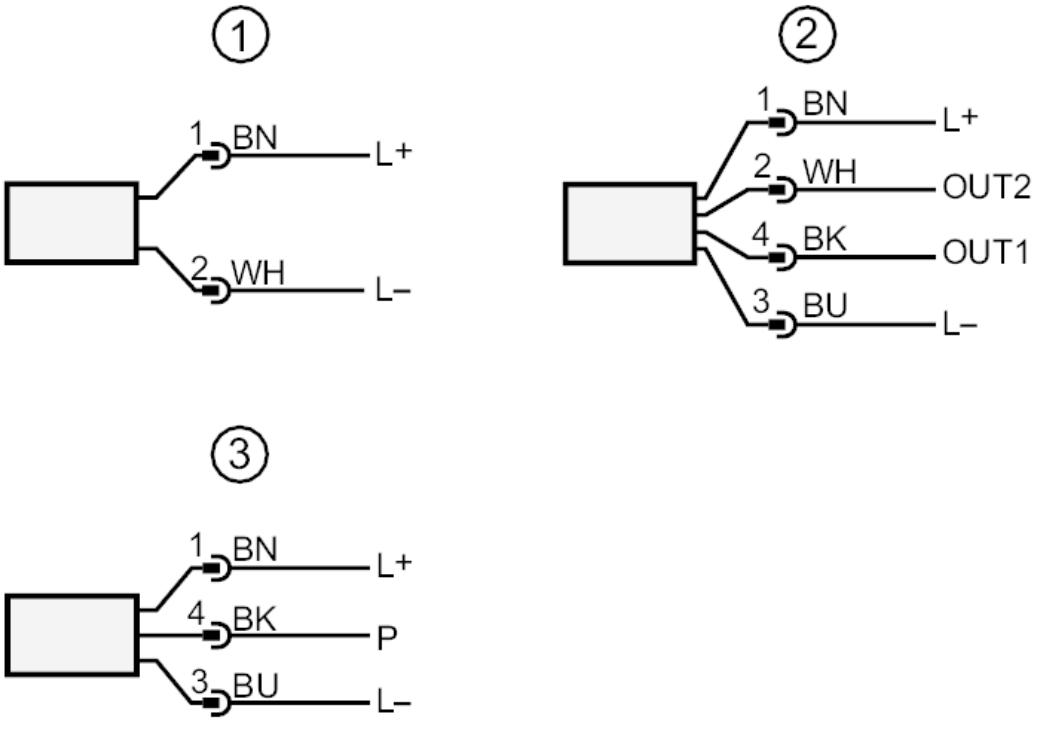
## Electrical connection

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) |
| | colours to DIN EN 60947-5-2 |
| | Core colours |
| BK = | black |
| BN = | brown |
| BU = | blue |
| WH = | white |

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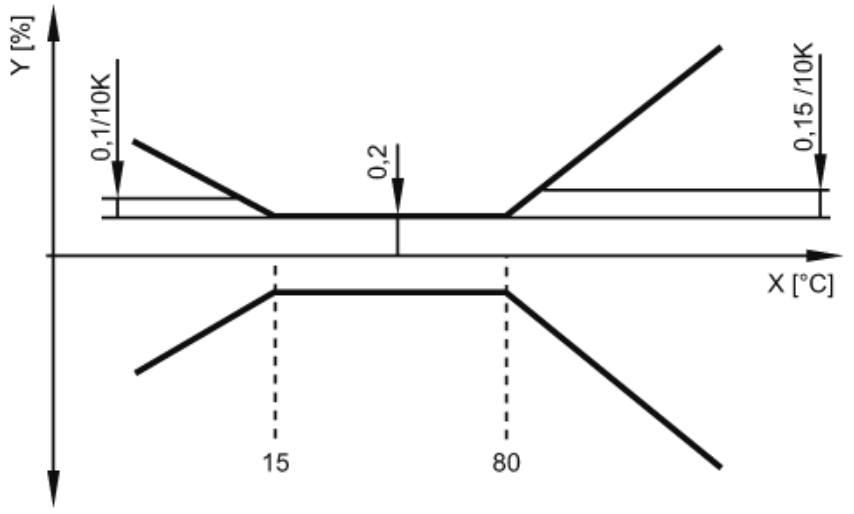
## Diagrams and graphs

ambient temperature influence on the accuracy




X temperature

Y total deviation