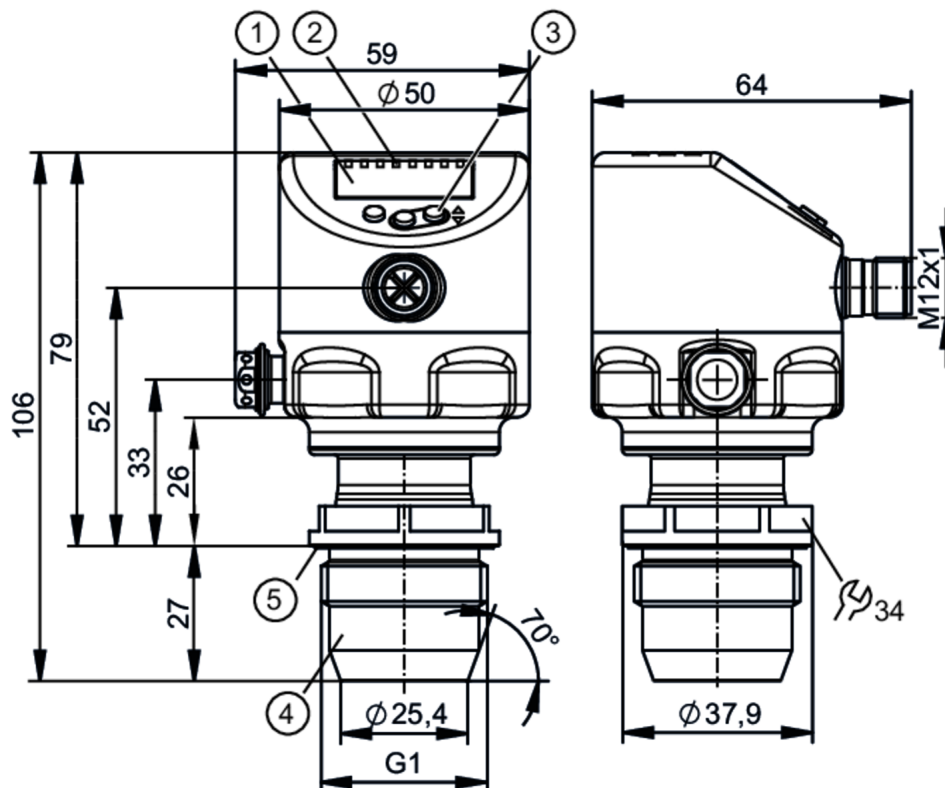




## Flush pressure sensor with display

PI-,40BREA01-MFRKG/US/ /P



- 1 alphanumeric display 4-digit
- 2 status LEDs
- 3 programming button
- 4 G1 sealing cone external thread  
Attention: The unit must only be installed in a process connection for G1 sealing cone.  
The G1A sealing cone of the unit is only suited for adapters with metal end stop.
- 5 groove with sealing ring



### Product characteristics

|                              |                                                                                                                                                                                                                                 |                   |             |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1                                                                                                                                                                     |                   |             |
| Measuring range              | -50...400 mbar                                                                                                                                                                                                                  | -20...160.6 inH2O | -5...40 kPa |
| Process connection           | threaded connection G 1 external thread sealing cone Attention: The unit must only be installed in a process connection for G1 sealing cone.; The G1A sealing cone of the unit is only suited for adapters with metal end stop. |                   |             |

### 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                                | 8000 mbar                                                             | 3200 inH2O  | 800 kPa  |
| Vacuum resistance                              | -1000 mbar                                                            | -0.1 MPa    |          |
| Type of pressure                               | relative pressure; vacuum                                             |             |          |
| No dead space                                  | yes                                                                   |             |          |
| MAWP (for applications according to CRN) [bar] | 8                                                                     |             |          |



## Flush pressure sensor with display

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| Electrical data                                 |                  |                                                             |                |
|-------------------------------------------------|------------------|-------------------------------------------------------------|----------------|
| Min. insulation resistance                      | [MΩ]             | 100; (500 V DC)                                             |                |
| 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                                 | -50...400 mbar   | -20...160.6 inH2O                                           | -5...40 kPa    |
| Set point SP                                    | -49.4...400 mbar | -19.8...160.6 inH2O                                         | -4.94...40 kPa |
| Reset point rP                                  | -50...399.4 mbar | -20.1...160.3 inH2O                                         | -5...39.94 kPa |
| Analogue start point                            | -50...320 mbar   | -20.1...128.5 inH2O                                         | -5...32 kPa    |
| Analogue end point                              | 30...400 mbar    | 12...160.6 inH2O                                            | 3...40 kPa     |
| Min. difference between SP and rP               | 0.6 mbar         | 0.3 inH2O                                                   | 0.06 kPa       |
| In steps of                                     | 0.1 mbar         | 0.1 inH2O                                                   | 0.01 kPa       |



## Flush pressure sensor with display

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|                                              |                   |                                                                                                         |                                                       |
|----------------------------------------------|-------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Factory setting                              |                   | SP1 =100 mbar                                                                                           | rP1 = 92 mbar                                         |
|                                              |                   | SP2 = 300 mbar                                                                                          | rP2 = 292 mbar                                        |
|                                              |                   | ASP = 0.00 mbar                                                                                         | AEP = 400 mbar                                        |
|                                              |                   | dAP = 2.00 s                                                                                            | dAA =2.00 s                                           |
| Temperature monitoring                       |                   |                                                                                                         |                                                       |
| Measuring range                              |                   | -25...150 °C                                                                                            | -13...302 °F                                          |
| Accuracy / deviations                        |                   |                                                                                                         |                                                       |
| Switch point accuracy<br>[% 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<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 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) |                                                                                                         |                                                       |



## Flush pressure sensor with display

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|                                    |                                                                                                                                                                                                                                 |                                                |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| IO-Link revision                   | 1.1                                                                                                                                                                                                                             |                                                |
| SDCI standard                      | IEC 61131-9                                                                                                                                                                                                                     |                                                |
| Profiles                           | Function class                                                                                                                                                                                                                  | Designation                                    |
|                                    | 0x4000                                                                                                                                                                                                                          | Identification and Diagnosis                   |
|                                    | 0x800A                                                                                                                                                                                                                          | Measurement Data Channel (standard resolution) |
| SIO mode                           | yes                                                                                                                                                                                                                             |                                                |
| Required master port type          | A                                                                                                                                                                                                                               |                                                |
| Min. process cycle time [ms]       | 5.6                                                                                                                                                                                                                             |                                                |
| IO-Link resolution pressure [mbar] | 0.02                                                                                                                                                                                                                            |                                                |
| 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                                                                                                                                                                                                                         | 1189                                           |
| 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 <a href="http://www.factory-certificate.ifm">www.factory-certificate.ifm</a>                                                                                                       |                                                |
| UL approval                        | UL Approval no.                                                                                                                                                                                                                 | J049                                           |
|                                    | File number UL                                                                                                                                                                                                                  | E174189                                        |
| Mechanical data                    |                                                                                                                                                                                                                                 |                                                |
| Weight [g]                         | 395                                                                                                                                                                                                                             |                                                |
| Housing                            | cylindrical                                                                                                                                                                                                                     |                                                |
| Dimensions [mm]                    | Ø 50 / L = 106                                                                                                                                                                                                                  |                                                |
| 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]             | 20                                                                                                                                                                                                                              |                                                |
| Process connection                 | threaded connection G 1 external thread sealing cone Attention: The unit must only be installed in a process connection for G1 sealing cone.; The G1A sealing cone of the unit is only suited for adapters with metal end stop. |                                                |

# PI1818



## Flush pressure sensor with display

PI-,40BREA01-MFRKG/US/ /P

| 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. |

### Electrical connection

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





## Flush pressure sensor with display

PI-,40BREA01-MFRKG/US/ /P

### 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

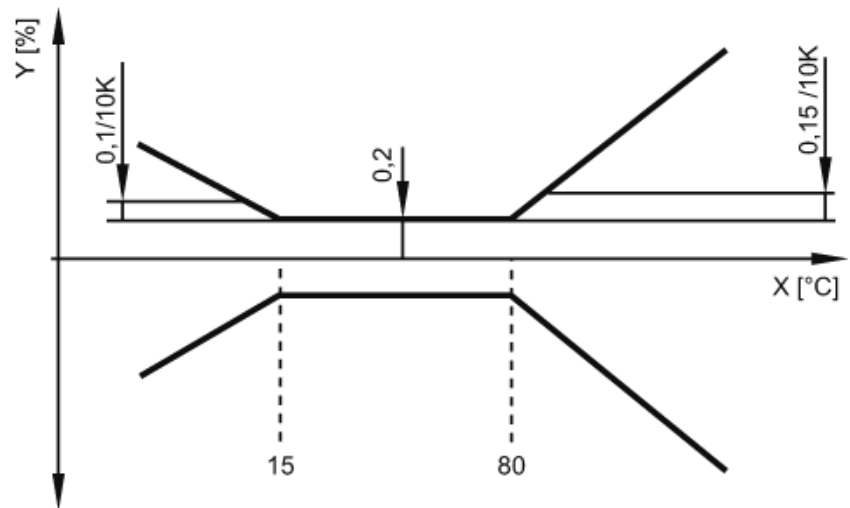


## Flush pressure sensor with display

PI-,40BREA01-MFRKG/US/ /P

### Diagrams and graphs

ambient temperature influence on the accuracy



X temperature  
Y total deviation