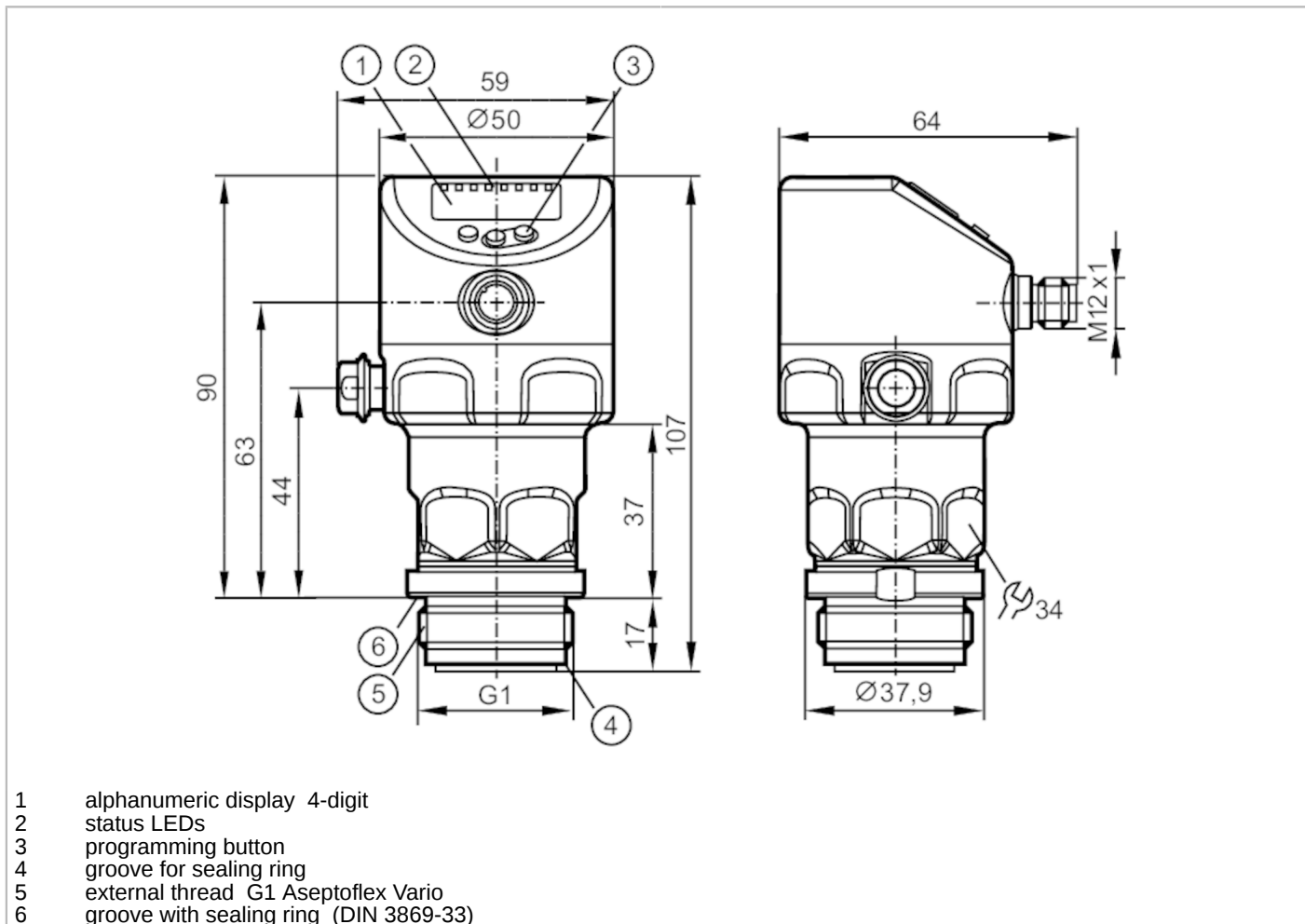


PI1789



Flush pressure sensor with display

PI-10BREA01-MFRKG/US/ IP



Product characteristics

| | | | |
|------------------------------|---|---------------|------------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1 | | |
| Measuring range | -0.005...0.1 bar | -5...100 mbar | -2...40.15 inH2O |
| Process connection | threaded connection G 1 external thread Aseptoflex Vario | | |

Application

| | | | |
|--|---|-------------|----------|
| Special feature | Gold-plated contacts | | |
| Application | flush mountable for the food and beverage industry | | |
| Media | viscous media and liquids with suspended particles; liquids and gases | | |
| Medium temperature [°C] | -25...150 | | |
| Min. bursting pressure | 30000 mbar | 12044 inH2O | 3000 kPa |
| Pressure rating | 4000 mbar | 1606 inH2O | 400 kPa |
| Vacuum resistance [mbar] | -1000 | | |
| Type of pressure | relative pressure; vacuum | | |
| No dead space | yes | | |
| MAWP (for applications according to CRN) [bar] | 4 | | |

Electrical data

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



Flush pressure sensor with display

PI-,10BREA01-MFRKG/US/ /P

| | |
|-----------------------------|-----|
| Protection class | III |
| Reverse polarity protection | yes |
| Integrated watchdog | yes |

| 2-wire | |
|--------------------------|------------|
| Operating voltage [V] | 20...30 DC |
| Current consumption [mA] | 3.5...21.5 |
| Power-on delay time [s] | < 1 |

| 3-wire | |
|--------------------------|----------------------------------|
| Operating voltage [V] | 18...30 DC |
| Current consumption [mA] | 5...45; (430 bei max. Laststrom) |
| Power-on delay time [s] | < 0.5 |

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] | ($U_b - 10 \text{ V}$) / 21,5 mA; 650 Ω ($U_b = 24 \text{ V}$) |

Measuring/setting range

| | | | | |
|-----------------------------------|--------------------|-----------------|---------------------|-----------------|
| Measuring range | -0.005...0.1 bar | -5...100 mbar | -2...40.15 inH2O | -0.5...10 kPa |
| Set point SP | -0.0049...0.1 bar | -4.9...100 mbar | -1.95...40.15 inH2O | -0.49...10 kPa |
| Reset point rP | -0.005...0.099 bar | -5...99.9 mbar | -2.01...40.09 inH2O | -0.5...9.99 kPa |
| Analogue start point | -0.005...0.08 bar | -5...80 mbar | -2.01...32.12 inH2O | -0.5...8 kPa |
| Analogue end point | 0.015...0.1 bar | 15...100 mbar | 6.02...40.15 inH2O | 1.5...10 kPa |
| Min. difference between SP and rP | 0.0002 bar | 0.2 mbar | 0.06 inH2O | 0.02 kPa |
| In steps of | 0.0001 bar | 0.1 mbar | 0.01 inH2O | 0.01 kPa |

PI1789



Flush pressure sensor with display

PI-,10BREA01-MFRKG/US/ /P

| | | |
|-----------------|---------------|----------------|
| Factory setting | SP1 = 25 mbar | rP1 = 23 mbar |
| | SP2 = 75 mbar | rP2 = 73 mbar |
| | ASP = 0 mbar | AEP = 100 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] | < ± 0,5; (DIN EN IEC 62828-1; Turn down 1:1) | |
| Repeatability [% of the span] | < ± 0,2; (with temperature fluctuations < 10 K; Turn down 1:1) | |
| Characteristics deviation [% of the span] | < ± 0,5; (DIN IEC EN 62828-1 incl. zero point and span error, non-linearity, hysteresis; Turn down 1:1) | |
| Linearity deviation [% of the span] | < ± 0,25; (Turn down 1:1) | |
| Hysteresis deviation [% of the span] | < ± 0,2; (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 ± 0,15 % of the span / 10 K |
| | 15...80 °C | Characteristics deviation |
| | 80...150 °C | Characteristics deviation ± 0,2 % 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

PI-,10BREA01-MFRKG/US/ /P

| | | |
|------------------------------------|--|-------------------|
| IO-Link revision | 1.1 | |
| SDCI standard | IEC 61131-9 | |
| Profiles | Identification and Diagnosis (0x4000), Measurement Data Channel (0x800A) | |
| SIO mode | yes | |
| Required master port type | A | |
| Min. process cycle time [ms] | 5.6 | |
| IO-Link resolution pressure [mbar] | 0.005 | |
| 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 | 1158 |

| 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] | 357 | |
| Materials | stainless steel (316L/1.4404); FKM; PTFE; PBT; PEI; PFA | |
| Materials (wetted parts) | ceramics (99.9 % Al ₂ O ₃); 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; inH ₂ O | |

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



Flush pressure sensor with display

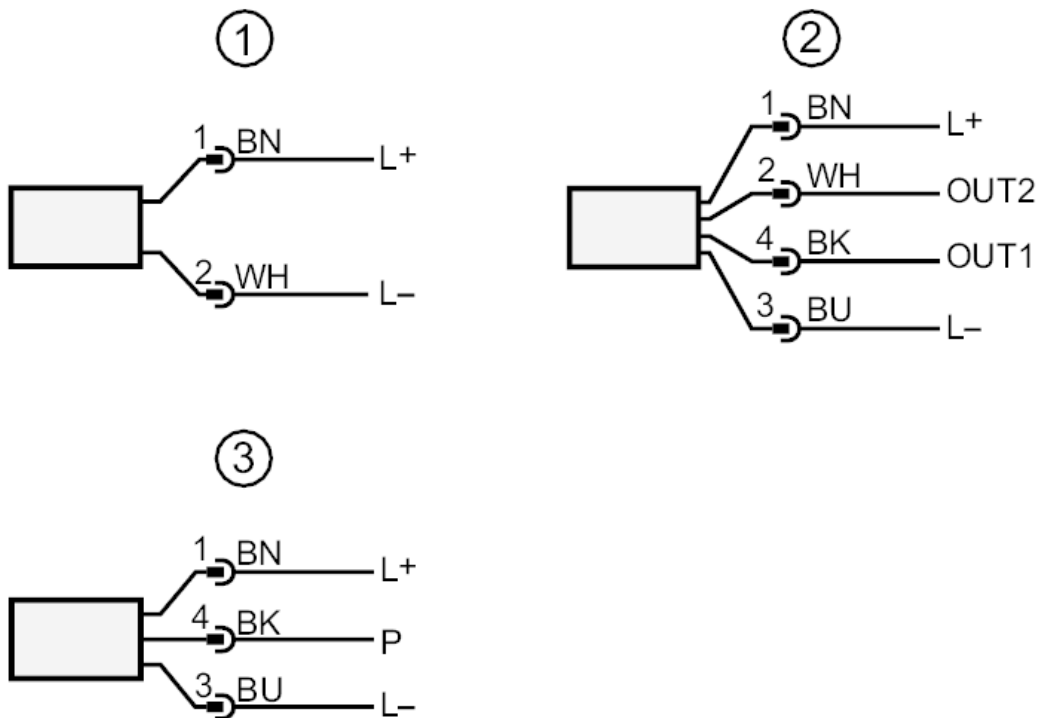
PI-,10BREA01-MFRKG/US/ /P

Electrical connection

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



Connection



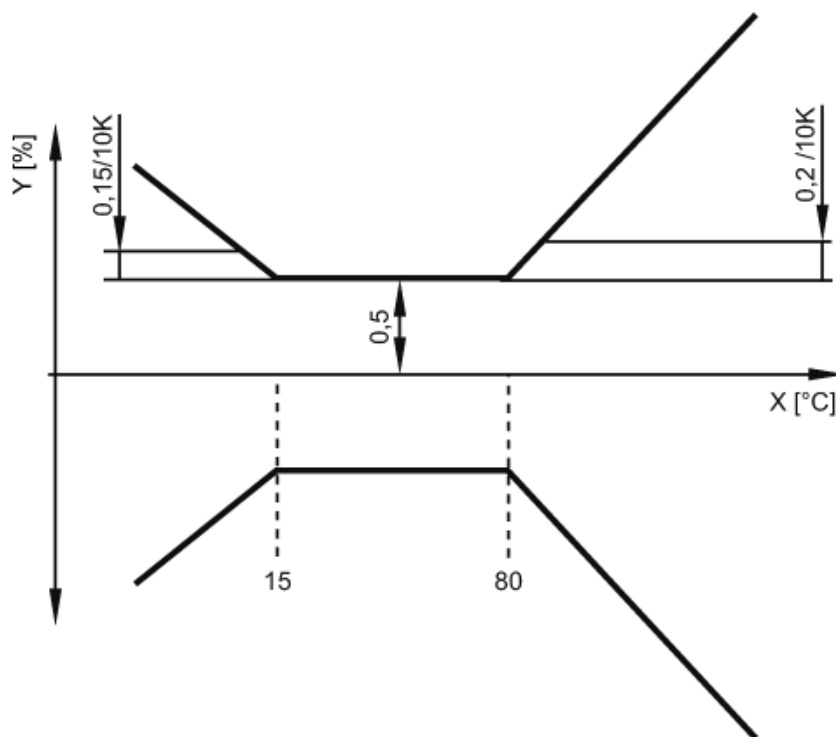
- 1 connection for 2-wire operation
 - 2 connection for 3-wire operation
 - OUT1 switching output / IO-Link
 - OUT2 switching output / analogue output
 - 3 connection for IO-Link parameter setting (P = communication via IO-Link)
- colours to DIN EN 60947-5-2
Core colours
- BK = black
 - BN = brown
 -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



Flush pressure sensor with display

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Diagrams and graphs



X temperature
Y total deviation