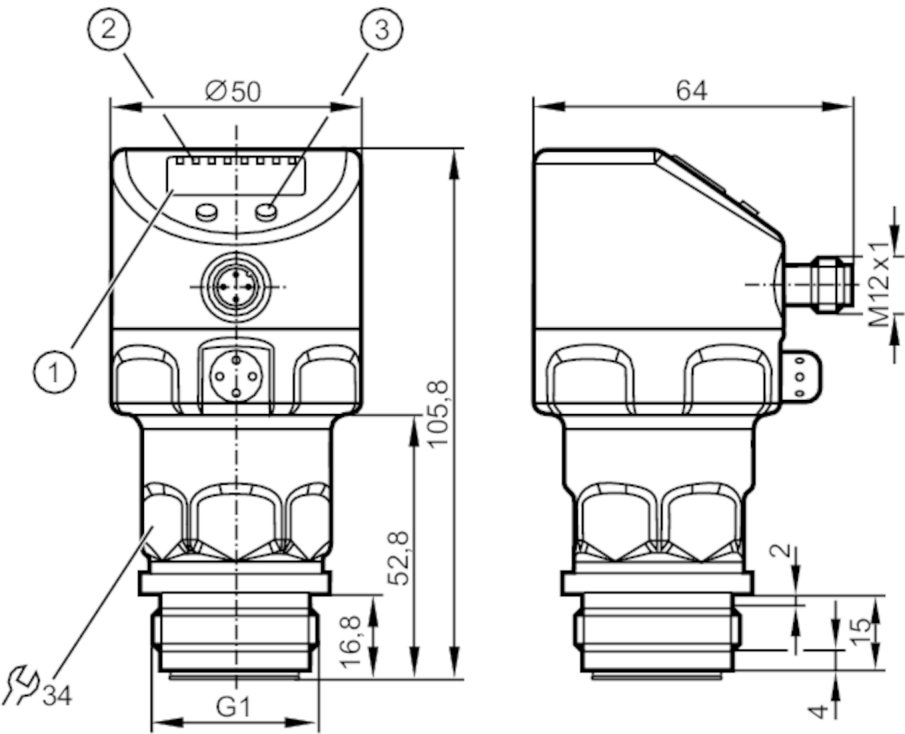




Flush pressure sensor with display

PI-1-1BREA01-MFRKG/US/    /P

Alternative articles: PI1709  
When selecting an alternative article and accessories please note that technical data may differ!



- 1    alphanumeric display 4-digit
- 2    status LEDs
- 3    programming button



| Product characteristics                        |                                                                       |                   |                  |                |
|------------------------------------------------|-----------------------------------------------------------------------|-------------------|------------------|----------------|
| Number of inputs and outputs                   | Number of digital outputs: 2; Number of analogue outputs: 1           |                   |                  |                |
| Measuring range                                | -1...1 bar                                                            | -1000...1000 mbar | -14.5...14.5 psi | -100...100 kPa |
| 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...125; (145 max. 1h)                                              |                   |                  |                |
| Min. bursting pressure                         | 30000 mbar                                                            | 435 psi           | 3000 kPa         |                |
| Pressure rating                                | 10000 mbar                                                            | 145 psi           | 1000 kPa         |                |
| Vacuum resistance [mbar]                       | -1000                                                                 |                   |                  |                |
| Type of pressure                               | relative pressure; vacuum                                             |                   |                  |                |
| No dead space                                  | yes                                                                   |                   |                  |                |
| MAWP (for applications according to CRN) [bar] | 10                                                                    |                   |                  |                |



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PI-1-1BREA01-MFRKG/US/ /P

| Electrical data                                 |      |                                                             |                   |                                    |
|-------------------------------------------------|------|-------------------------------------------------------------|-------------------|------------------------------------|
| Min. insulation resistance                      | [MΩ] | 100; (500 V DC)                                             |                   |                                    |
| Protection class                                |      | III                                                         |                   |                                    |
| Reverse polarity protection                     |      | yes                                                         |                   |                                    |
| Measuring principle                             |      | hydrostatic                                                 |                   |                                    |
| Integrated watchdog                             |      | yes                                                         |                   |                                    |
| 2-wire                                          |      |                                                             |                   |                                    |
| Operating voltage                               | [V]  | 20...32 DC                                                  |                   |                                    |
| Current consumption                             | [mA] | 3.6...21                                                    |                   |                                    |
| Power-on delay time                             | [s]  | 1                                                           |                   |                                    |
| 3-wire                                          |      |                                                             |                   |                                    |
| Operating voltage                               | [V]  | 18...32 DC                                                  |                   |                                    |
| Current consumption                             | [mA] | < 45                                                        |                   |                                    |
| 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; (configurable)  |                   |                                    |
| 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] | 250                                                         |                   |                                    |
| Switching frequency DC                          | [Hz] | 125                                                         |                   |                                    |
| Max. load                                       | [Ω]  | (Ub - 10 V) / 20 mA                                         |                   |                                    |
| Measuring/setting range                         |      |                                                             |                   |                                    |
| Measuring range                                 |      | -1...1 bar                                                  | -1000...1000 mbar | -14.5...14.5 psi    -100...100 kPa |
| Set point SP                                    |      | -998...1000 mbar                                            | -14.45...14.5 psi | -99.8...100 kPa                    |
| Reset point rP                                  |      | -1000...998 mbar                                            | -14.5...14.45 psi | -100...99.8 kPa                    |
| Analogue start point                            |      | -1000...500 mbar                                            | -14.5...7.25 psi  | -100...50 kPa                      |
| Analogue end point                              |      | -500...1000 mbar                                            | -7.25...14.5 psi  | -50...100 kPa                      |
| In steps of                                     |      | 1 mbar                                                      | 0.05 psi          | 0.1 kPa                            |



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PI-1-1BREA01-MFRKG/US/ /P

|                                              |       |                                                                                                                      |                 |
|----------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------|-----------------|
| Factory setting                              |       | SP1 = -500 mbar                                                                                                      | rP1 = -540 mbar |
|                                              |       | SP2 = 500 mbar                                                                                                       | rP2 = 460 mbar  |
|                                              |       | ASP = -1000 mbar                                                                                                     | AEP = 1000 mbar |
| Accuracy / deviations                        |       |                                                                                                                      |                 |
| Switch point accuracy                        | [X21] | < ± 0,2; (Turn down 1:1)                                                                                             |                 |
| Repeatability                                | [X21] | < ± 0,1; (with temperature fluctuations < 10 K; Turn down 1:1)                                                       |                 |
| Characteristics deviation                    | [X21] | < ± 0,2; (Turn down 1:1 , linearity, incl. hysteresis and repeatability , limit value setting to DIN EN IEC 62828-1) |                 |
| Linearity deviation                          | [X21] | < ± 0,15; (Turn down 1:1)                                                                                            |                 |
| Hysteresis deviation                         | [X21] | < ± 0,15; (Turn down 1:1)                                                                                            |                 |
| Long-term stability                          | [X21] | < ± 0,1; (Turn down 1:1; per year)                                                                                   |                 |
| Temperature coefficient zero point           | [X22] | < ± 0,05; (0...70 °C)                                                                                                |                 |
| Temperature coefficient span                 | [X22] | < ± 0,15; (0...70 °C)                                                                                                |                 |
| Response times                               |       |                                                                                                                      |                 |
| Damping process value dAP                    | [s]   | 0...30                                                                                                               |                 |
| Damping for the analogue output dAA          | [s]   | 0.01...99.99                                                                                                         |                 |
| 2-wire                                       |       |                                                                                                                      |                 |
| Step response time analogue output           | [ms]  | 45                                                                                                                   |                 |
| 3-wire                                       |       |                                                                                                                      |                 |
| Min. response time of switching output (dAP) | [ms]  | 3                                                                                                                    |                 |
| Step response time analogue output           | [ms]  | 7                                                                                                                    |                 |
| Interfaces                                   |       |                                                                                                                      |                 |
| Communication interface                      |       | IO-Link                                                                                                              |                 |
| Transmission type                            |       | COM2 (38,4 kBaud)                                                                                                    |                 |
| IO-Link revision                             |       | 1.0                                                                                                                  |                 |
| Profiles                                     |       | no profile                                                                                                           |                 |
| SIO mode                                     |       | yes                                                                                                                  |                 |
| Required master port type                    |       | A                                                                                                                    |                 |
| Process data analogue                        |       | 1                                                                                                                    |                 |
| Process data binary                          |       | 2                                                                                                                    |                 |
| Min. process cycle time                      | [ms]  | 2.3                                                                                                                  |                 |
| Supported DeviceIDs                          |       | Type of operation                                                                                                    | DeviceID        |
|                                              |       | default                                                                                                              | 258             |
| Operating conditions                         |       |                                                                                                                      |                 |
| Ambient temperature                          | [°C]  | -25...80                                                                                                             |                 |
| Storage temperature                          | [°C]  | -40...100                                                                                                            |                 |
| Protection                                   |       | IP 67; IP 68; IP 69K                                                                                                 |                 |



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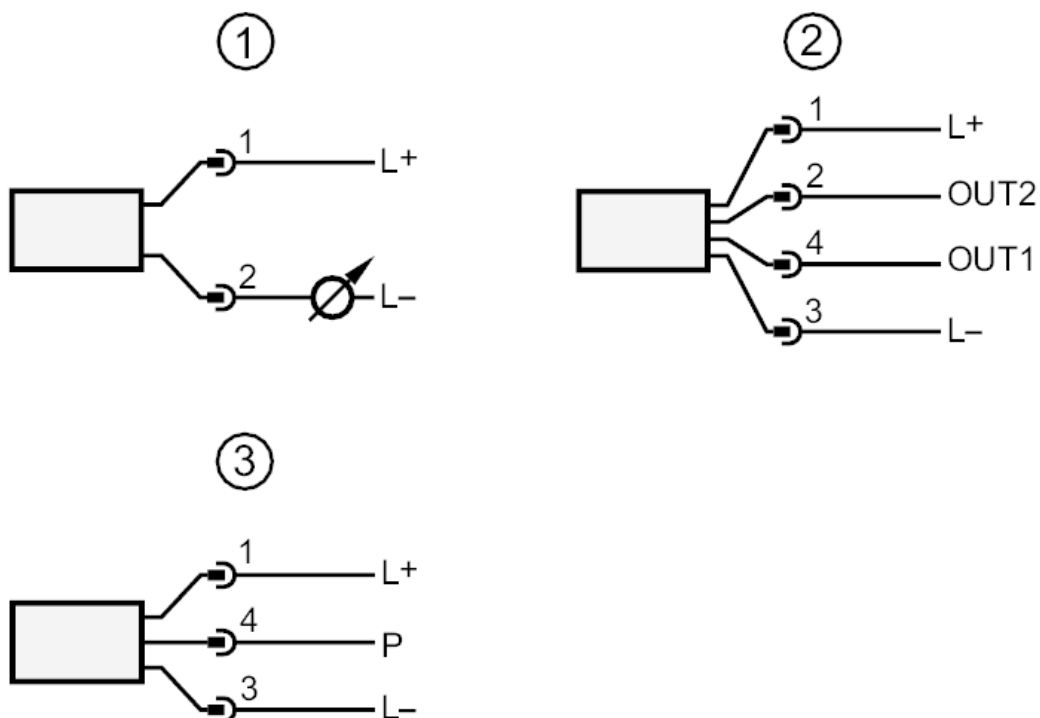
| Tests / approvals                                                                              |                                                                                                                           |                               |
|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| EMC                                                                                            | EN 61000-4-2 ESD                                                                                                          | 4 kV CD / 8 kV AD             |
|                                                                                                | EN 61000-4-3 HF radiated                                                                                                  | 10 V/m                        |
|                                                                                                | EN 61000-4-4 Burst                                                                                                        | 2 kV                          |
|                                                                                                | EN 61000-4-5 Surge                                                                                                        | 0,5/1 kV                      |
|                                                                                                | EN 61000-4-6 HF conducted                                                                                                 | 10 V                          |
| Shock resistance                                                                               | DIN IEC 68-2-27                                                                                                           | 50 g (11 ms)                  |
| Vibration resistance                                                                           | DIN IEC 68-2-6                                                                                                            | 20 g (10...2000 Hz)           |
| MTTF                                                                                           | [ANN]                                                                                                                     | 160                           |
| Note on approval                                                                               | factory certificate available as download at <a href="http://www.factory-certificate.ifm">www.factory-certificate.ifm</a> |                               |
| Mechanical data                                                                                |                                                                                                                           |                               |
| Weight                                                                                         | [g]                                                                                                                       | 359                           |
| Materials                                                                                      | stainless steel (316L/1.4404); FKM; PTFE; PBT; PEI; PFA                                                                   |                               |
| Materials (wetted parts)                                                                       | ceramics (99.9 % Al2O3); stainless steel (316L/1.4435);<br>surface characteristics: Ra < 0,4 / Rz 4; PTFE                 |                               |
| Min. pressure cycles                                                                           | 100 million                                                                                                               |                               |
| 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; psi; inH2O; mWS; % of the span                                                                                 |                               |
| Remarks                                                                                        |                                                                                                                           |                               |
| Pack quantity                                                                                  | 1 pcs.                                                                                                                    |                               |
| Electrical connection                                                                          |                                                                                                                           |                               |
| Connector: 1 x M12; coding: A; Contacts: gold-plated                                           |                                                                                                                           |                               |
| <div></div> |                                                                                                                           |                               |



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PI-1-1BREA01-MFRKG/US/ /P

### Connection



- |      |                                                                          |
|------|--------------------------------------------------------------------------|
| 1    | connection for 2-wire operation                                          |
| 2    | connection for 3-wire operation :                                        |
| OUT1 | switching output                                                         |
| OUT2 | switching output                                                         |
|      | analogue output                                                          |
| 3    | connection for IO-Link parameter setting (P = communication via IO-Link) |