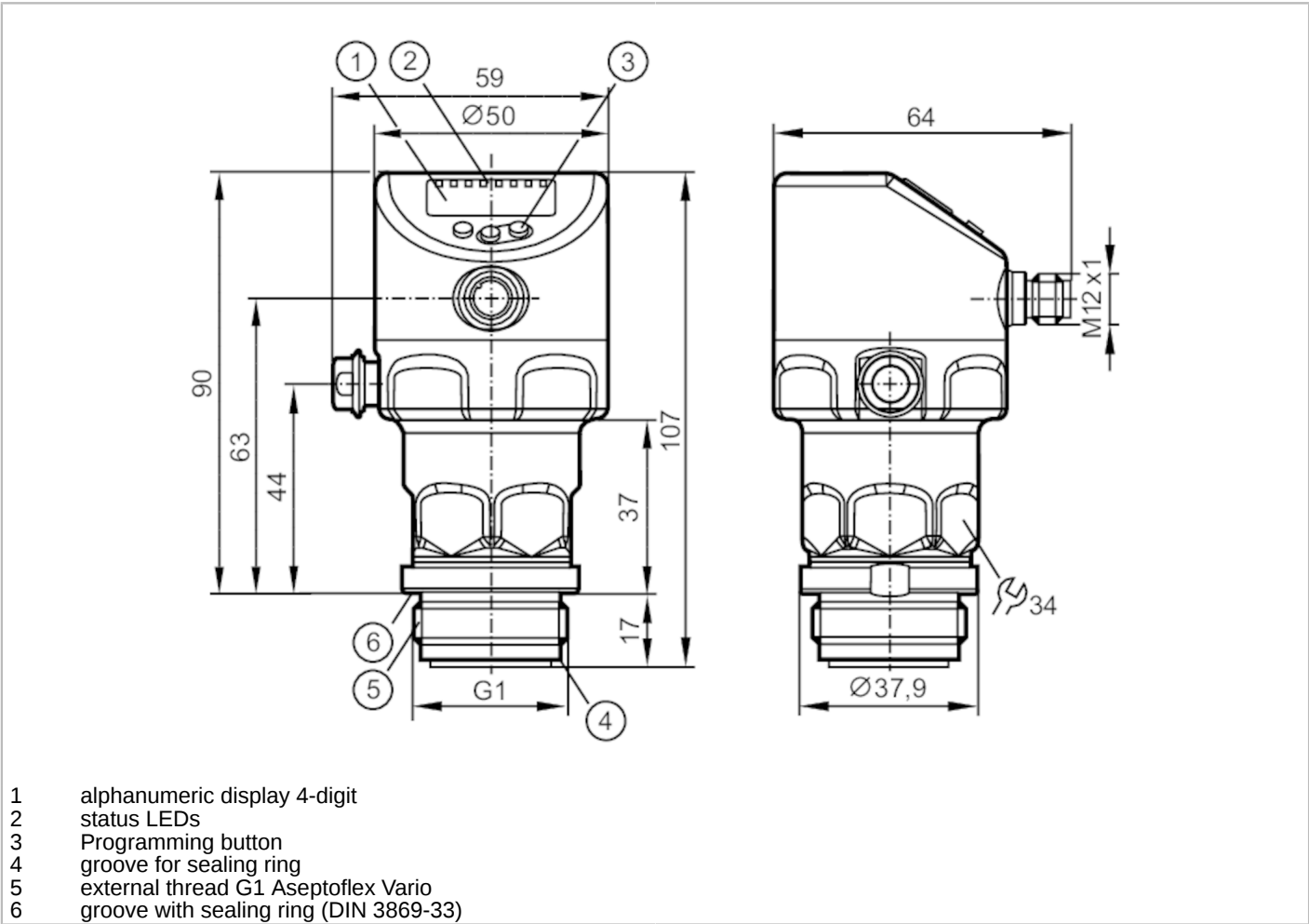




Flush pressure sensor with display

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



ACS CRN LISTED EHEDG Certified FDA Reg31

TSDP/TÜV

| Product characteristics      |                                                                                                                           |                   |             |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------|-------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analog outputs: 1                                                                 |                   |             |
| Measuring range              | -50...400 mbar                                                                                                            | -20...160.6 inH2O | -5...40 kPa |
| Process connection           | threaded connection G 1 external thread mit Dichtkontur Aseptoflex Vario                                                  |                   |             |
| Note                         | G1 Gewinde nach ISO 228. Alternativ dichtend über rückwärtige Dichtkontur mit Dichtung in Anlehnung an DIN EN ISO 1179-2. |                   |             |
| Application                  |                                                                                                                           |                   |             |
| System                       | 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           | -25...150                                                                                                                 |                   |             |
| Min. burst 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                                                                                                                       |                   |             |



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|                                                 |                  |                                                           |                |
|-------------------------------------------------|------------------|-----------------------------------------------------------|----------------|
| MAWP (for applications according to CRN)        | [bar]            | 8                                                         |                |
| 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 analog outputs: 1 |                |
| Outputs                                         |                  |                                                           |                |
| Total number of outputs                         |                  | 2                                                         |                |
| Output signal                                   |                  | switching signal; analog signal; IO-Link                  |                |
| Electrical design                               |                  | PNP/NPN                                                   |                |
| Number of digital outputs                       |                  | 2                                                         |                |
| Output function                                 |                  | normally open / closed; (configurable)                    |                |
| Number of analog outputs                        |                  | 1                                                         |                |
| Analog current output                           | [mA]             | 4...20, invertible; (scalable)                            |                |
| Short-circuit protection                        |                  | yes                                                       |                |
| Type of short-circuit protection                |                  | yes (non-latching)                                        |                |
| 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 |
| Analog start point                              | -50...320 mbar   | -20.1...128.5 inH2O                                       | -5...32 kPa    |
| Analog end point                                | 30...400 mbar    | 12...160.6 inH2O                                          | 3...40 kPa     |



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|                                   |          |                 |                |
|-----------------------------------|----------|-----------------|----------------|
| 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       |
| 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<br>[% 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)                                                                               |                                                        |
| Zero-point stabilization<br>[% of the span]  | IO-Link, analog output                                                                                  | 0,15; (see operating instructions zero-point behavior) |
|                                              | Display, Switching output                                                                               | 0,2                                                    |
| 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       | <b>Temperature range</b>                                                                                | <b>total deviation</b>                                 |
|                                              | -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                                                        |

### Reaction times

|                                   |     |           |
|-----------------------------------|-----|-----------|
| Damping process value dAP         | [s] | 0...99.99 |
| Damping for the analog output dAA | [s] | 0...99.99 |

|                                  |      |    |
|----------------------------------|------|----|
| 2-wire                           |      |    |
| Step response time analog output | [ms] | 30 |

|                                              |      |   |
|----------------------------------------------|------|---|
| 3-wire                                       |      |   |
| Min. response time of switching output (dAP) | [ms] | 3 |
| Step response time analog output             | [ms] | 7 |



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|                                 |                                                                                                                                                              |                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Temperature monitoring          |                                                                                                                                                              |                                                |
| Dynamic response T05 / T09      | [s]                                                                                                                                                          | < 45 / < 200; (DIN EN 60751 water ; > 0,9 m/s) |
| Interfaces                      |                                                                                                                                                              |                                                |
| Communication interface         | IO-Link                                                                                                                                                      |                                                |
| Transmission type               | COM2 (38,4 kBaud)                                                                                                                                            |                                                |
| IO-Link revision                | 1.1                                                                                                                                                          |                                                |
| SDCI standard                   | IEC 61131-9                                                                                                                                                  |                                                |
| Profiles                        | Common - I&D                                                                                                                                                 | Identification and Diagnosis                   |
|                                 | Function                                                                                                                                                     | Measurement data, high resolution              |
| SIO mode                        | yes                                                                                                                                                          |                                                |
| Required master port class      | 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; measuring cell diagnosis           |                                                |
| 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                                            |
| UL approval                     | UL approval number                                                                                                                                           | J048                                           |
|                                 | File number UL                                                                                                                                               | E174189                                        |
| Mechanical data                 |                                                                                                                                                              |                                                |
| Weight                          | [g]                                                                                                                                                          | 356.4                                          |
| Housing                         | tubular                                                                                                                                                      |                                                |
| Dimensions                      | [mm]                                                                                                                                                         | Ø 50 / L = 107                                 |
| Material                        | Housing: stainless steel (1.4404 / 316L); Pushbuttons: PBT; sealings: FKM; M12 connector: PEI; Display: PFA; ventilation diaphragm: PTFE                     |                                                |
| Materials (wetted parts)        | measuring cell: ceramics (99.9 % Al2O3); Process connection: stainless steel (1.4435 / 316L) surface characteristics: Ra < 0,4 µm / Rz = 4 µm; sealing: PTFE |                                                |
| Min. pressure cycles            | 100 million                                                                                                                                                  |                                                |
| Tightening torque               | [Nm]                                                                                                                                                         | 35                                             |
| Process connection              | threaded connection G 1 external thread mit Dichtkontur Aseptoflex Vario                                                                                     |                                                |

PI1718



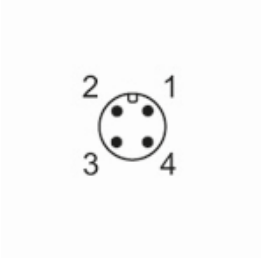
Flush pressure sensor with display

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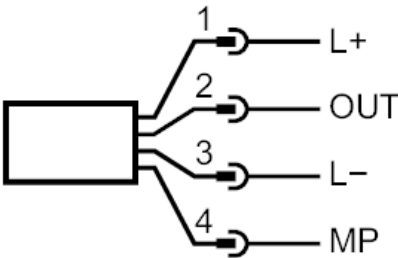
| Displays / operating elements |                  |                               |
|-------------------------------|------------------|-------------------------------|
| Display                       | Display unit     | LED, green                    |
|                               | Switching status | LED, yellow                   |
|                               | Function display | alphanumeric display, 4-digit |
|                               | Measured values  | alphanumeric display, 4-digit |
| Display unit                  | mbar; kPa; inH2O |                               |

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

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



Connection



| 2-wire |     |    |  |
|--------|-----|----|--|
| 1      | L+  |    |  |
| 2      | OUT | AO |  |

| 3-wire |     |                      |  |
|--------|-----|----------------------|--|
| 1      | L+  |                      |  |
| 2      | OUT | DO2 (NO/NC), AO      |  |
| 3      | L-  |                      |  |
| 4      | MP  | DO1 (NO/NC), IO-Link |  |

| Parameter setting |    |         |
|-------------------|----|---------|
| 1                 | L+ |         |
| 3                 | L- |         |
| 4                 | MP | IO-Link |

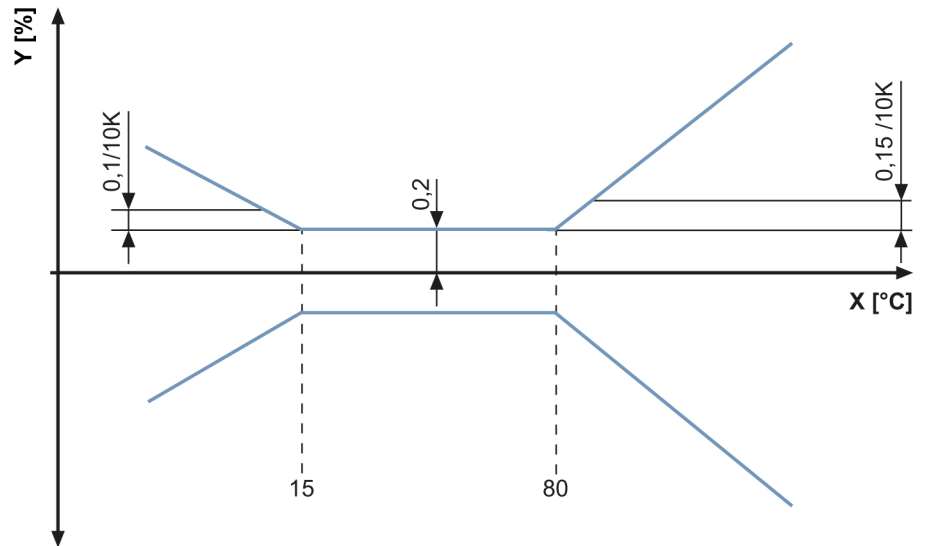


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### Diagrams and graphs

ambient temperature influence on the accuracy



X temperature  
Y total deviation