**DMP 331**

**Industrial Pressure Transmitter for Low Pressure**

**Stainless Steel Sensor**

accuracy according to IEC 60770:
- standard: 0.35 % FSO
- option: 0.25 / 0.1 % FSO

**Nominal pressure**
- from 0 ... 100 mbar up to 0 ... 60 bar

**Output signals**
- 2-wire: 4 ... 20 mA
- 3-wire: 0 ... 20 mA / 0 ... 10 V
- others on request

**Special characteristic**
- perfect thermal behaviour
- excellent long term stability
- pressure port
  - G 1/2" flush from 100 mbar

**Optional versions**
- IS-version
  - Ex ia = intrinsically safe for gases and dusts
- SIL 2-according to
  - IEC 61508 / IEC 61511
- welded pressure sensor
- customer specific versions

The pressure transmitter DMP 331 can be used in all industrial areas when the medium is compatible with stainless steel 1.4404 (316 L) or 1.4435 (316 L). Additional are different elastomer seals as well as a helium tested welded version available.

The modular concept of the device allows to combine different stainless steel sensors and electronic modules with a variety of electrical and mechanical versions. Thus a diversity of variations is created, meeting almost all requirements in industrial applications.

**Preferred areas of use are**
- Plant and machine engineering
- Environmental engineering (water - sewage - recycling)
- Energy industry
### Input pressure range

<table>
<thead>
<tr>
<th>Nominal pressure gauge / abs. [bar]</th>
<th>-1 ... 0</th>
<th>0.10</th>
<th>0.16</th>
<th>0.25</th>
<th>0.40</th>
<th>0.60</th>
<th>1</th>
<th>1.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overpressure [bar]</td>
<td>0</td>
<td>0.05</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.4</td>
<td>0.6</td>
<td>0.8</td>
</tr>
<tr>
<td>Burst pressure ≥ [bar]</td>
<td>7.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>3</td>
<td>7.5</td>
<td>7.5</td>
</tr>
</tbody>
</table>

### Vacuum resistance

- \( P_{vk} \geq 1 \text{ bar: unlimited vacuum resistance} \)
- \( P_{vk} < 1 \text{ bar: on request} \)

### Output signal / Supply

- **Standard**
  - 2-wire: 4 ... 20 mA / \( V_S = 8 ... 32 \text{ V}_{DC} \)
  - SIL-version: \( V_S = 14 ... 28 \text{ V}_{DC} \)
- **Option IS-protection**
  - 2-wire: 4 ... 20 mA / \( V_S = 10 ... 28 \text{ V}_{DC} \)
  - SIL-version: \( V_S = 14 ... 28 \text{ V}_{DC} \)
- **Options 3-wire**
  - 3-wire: 0 ... 20 mA / \( V_S = 14 ... 30 \text{ V}_{DC} \)
  - 0 ... 10 V / \( V_S = 14 ... 30 \text{ V}_{DC} \)

### Performance

#### Accuracy

- **Option 1:** \( \pm \leq 0.25 \% \text{ FSO} \)
- **Option 2:** \( \leq \pm 0.1 \% \text{ FSO} \)

### Permissible load

- **2-wire:**
  \( R_{\text{max}} = \left( \frac{V_S - V_{\text{min}}}{0.02 \text{ A}} \right) \Omega \)
- **3-wire:**
  - \( R_{\text{max}} = 240 \Omega \)
  - \( V_S = 10 \text{ k\Omega} \)

### Influence effects

- Supply: 0.05 % FSO / 10 V
- Load: 0.05 % FSO / k\Omega

### Long term stability

- \( \leq \pm 0.1 \% \text{ FSO} \) / year at reference conditions

### Response time

- 2-wire: \( \leq 10 \text{ msec} \)
- 3-wire: \( \leq 3 \text{ msec} \)

### Thermal effects (Offset and Span)

<table>
<thead>
<tr>
<th>Nominal pressure ( P_N ) [bar]</th>
<th>-1 ... 0</th>
<th>&lt; 0.40</th>
<th>( \geq \leq 0.40 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolerance band [% FSO]</td>
<td>( \leq \pm 0.75 )</td>
<td>( \leq \pm 1 )</td>
<td>( \leq \pm 0.75 )</td>
</tr>
<tr>
<td>in compensated range [°C]</td>
<td>-20 ... 85</td>
<td>0 ... 70</td>
<td>-20 ... 85</td>
</tr>
</tbody>
</table>

### Electrical protection

- **Short-circuit protection:** permanent
- **Reverse polarity protection:** no damage, but also no function

### Mechanical stability

- **Vibration:** 10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
- **Shock:** 500 g / 1 msec according to DIN EN 60068-2-27

### Materials

- **Pressure port:** stainless steel 1.4404 (316 L)
- **Housing:** stainless steel 1.4404 (316 L)
- **Option compact field housing:** stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm)
- **Seals:** standard: FKM, welded version 2 (for \( P_N \leq 40 \text{ bar} \))
  - **Options:** EPDM, others on request
- **Diaphragm:** stainless steel 1.4435 (316 L)
- **Media wetted parts:** pressure port, seals, diaphragm

### Approvals

- **DX19-DMP 331**
  - **IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X**
  - zone 0: II 1G Ex ia IIC T4 Ga
  - zone 20: II 1D Ex ia IIC T 85°C Da
- **Safety technical maximum values**
  - \( U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C = 0 \text{ nF}, L_i = 0 \mu\text{H}, \) the supply connections have an inner capacity of max. 27 nF to the housing
- **Permissible temperatures for environment**
  - in zone 0: \( -20 ... 60 \text{ °C} \) with \( P_{\text{env}} \leq 0.8 \text{ bar} \) up to 1.1 bar
  - in zone 1 or higher: \( -20 ... 70 \text{ °C} \)
- **Explosion protection (only for 4 ... 20 mA / 2-wire)**
  - **Diaphragm:**
    - **cable capacitance:** signal line/shield also signal line / signal line: 160 pF/m
    - **cable inductance:** signal line/shield also signal line / signal line: 1 \( \mu\text{H} / \text{m} \)
### Miscellaneous

<table>
<thead>
<tr>
<th>Option</th>
<th>according to IEC 61508 / IEC 61511</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption</td>
<td>signal output current: max. 25 mA</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 200 g</td>
</tr>
<tr>
<td>Installation position</td>
<td>any</td>
</tr>
<tr>
<td>Operational life</td>
<td>100 million load cycles</td>
</tr>
<tr>
<td>CE-conformity</td>
<td>EMC Directive: 2014/30/EU</td>
</tr>
<tr>
<td>ATEX Directive</td>
<td>2014/34/EU</td>
</tr>
</tbody>
</table>

### Current consumption

- Signal output current: max. 25 mA
- Signal output voltage: max. 7 mA

### Weight

- approx. 200 g

### Installation position

- Any

### CE-conformity

- EMC Directive: 2014/30/EU

### Wiring Diagrams

#### 2-wire-system (current)

- Supply +
- Supply –
- Signal + (for 3-wire)

#### 3-wire-system (current / voltage)

- Supply +
- Supply –
- Signal +
- IN +
- IN –
- OUT +
- WH (white)
- BN (brown)
- GN (green)

### Pin Configuration

<table>
<thead>
<tr>
<th>Electrical connection</th>
<th>ISO 4400 Binder 723 (5-pin)</th>
<th>M12x1/ metal (4-pin)</th>
<th>Bayonet MIL-C-26482 (10-6)</th>
<th>compact field housing (IP 6757)</th>
<th>cable colours (IEC 60757)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply +</td>
<td>1</td>
<td>3</td>
<td>A</td>
<td>3-wire</td>
<td>WH (white)</td>
</tr>
<tr>
<td>Supply –</td>
<td>2</td>
<td>4</td>
<td>B</td>
<td></td>
<td>BN (brown)</td>
</tr>
<tr>
<td>Signal + (for 3-wire)</td>
<td>3</td>
<td>1</td>
<td>D</td>
<td></td>
<td>GN (green)</td>
</tr>
<tr>
<td>Shield ground pin</td>
<td>5</td>
<td>4</td>
<td></td>
<td>pressure port</td>
<td>(green-yellow)</td>
</tr>
</tbody>
</table>

### Electrical Connections (Dimensions in mm)

#### Standard

- ISO 4400 (IP 65)
- Binder series 723 5-pin (IP 67)
- M12x1 4-pin (IP 67)
- Bayonet MIL-C-26482 (10-6) (IP 67)

#### Options

- compact field housing (IP 67)
- cable outlet with PVC cable (IP 67)
- cable outlet, cable with ventilation tube (IP 68)

- Universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

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3 standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
4 different cable types and lengths available, permissible temperature depends on kind of cable
DMP 331
Industrial Pressure Transmitter
Technical Data

Mechanical connections (dimensions in mm)

**standard**

- G1/2" DIN 3852 with ISO 4400
- G1/2" EN 837
- G1/4" DIN 3852
- G1/4" EN 837

**SIL- and SIL-IS-version**

- G1/2" DIN 3852 with ISO 4400
- G1/2" DIN 3852 open port, PN ≤ 40 bar
- G1/2" DIN 3852 with flush sensor, PN ≤ 40 bar
- G1/4" DIN 3852
- 1/2" NPT
- 1/4" NPT

*metric threads and other versions on request*

* with electrical connection Bayonet MIL-C-26482 (10-6) increases the length of devices by 5 mm

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## DMP 331 Ordering Code

### Pressure
- **gauge**
  - 1
- **absolute**
  - 1

### Input
- **[bar]**
  - 0.10
  - 0.16
  - 0.25
  - 0.40
  - 0.60
  - 1.0
  - 1.6
  - 2.5
  - 4.0
  - 6.0
  - 10
  - 16
  - 25
  - 40
  - 60
  - -1…0

### Output
- **4 … 20 mA / 2-wire**
- **0 … 20 mA / 3-wire**
- **0 … 10 V / 3-wire**
- **4 … 20 mA / 2-wire**

### Accuracy
- **standard for P<sub>N</sub> < 0.4 bar:** 0.35 % FSO
- **standard for P<sub>N</sub> ≥ 0.4 bar:** 0.50 % FSO
- **option 1 for P<sub>N</sub> < 0.4 bar:** 0.25 % FSO
- **option 2:** 0.10 % FSO

### Electrical connection
- **male and female plug ISO 4400**
- **male plug Binder series 723 (5-pin)**
- **cable outlet with PVC cable (IP67)**
- **cable outlet, IP68**
- **cable with ventilation tube (IP68)**
- **male plug M12x1 (4-pin) / metal**
- **Bayonet MIL-C-26482 (10-6): 2 wire**
- **Bayonet MIL-C-26482 (10-6): 3 wire**
- **compact field housing**
- **stainless steel 1.4301 (304)**

### Mechanical connection
- **G1/2" DIN 3852**
- **G1/2" EN 837**
- **G1/4" DIN 3852**
- **G1/4" EN 837**
- **G1/2" DIN 3852 with flush sensor**
- **G1/2" DIN 3852 open pressure port**
- **1/2" NPT**
- **1/4" NPT**

### Seals
- **FKM**
- **EPDM**
- **without (welded version)**

### Special version
- **standard**
- **customer**

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1. absolute pressure possible from 0.4 bar
2. not in combination with SIL
3. standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70°C), others on request
4. code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
5. only for P<sub>N</sub> ≤ 40 bar
6. welded version only with pressure ports according to EN 837

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