**DMD 331**

**Differential Pressure Transmitter for Liquids and Gases**

**Stainless Steel Sensor**

accuracy according to IEC 60770: 0.5 % FSO

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**Differential pressure**

from 0 ... 20 mbar up to 0 ... 16 bar

**Output signals**

2-wire: 4 ... 20 mA  
3-wire: 0 ... 10 V

**Special characteristics**

► differential pressure wet / wet  
► permissible static pressure -onesided-up to 30 times of differential pressure range  
► compact design  
► mechanical robust and reliable at dynamic pressures as well as shock and vibration

**Optional versions**

► IS-version  
   Ex ia = intrinsically safe version for gases and dust  
► different electrical and mechanical connections  
► customer specific versions

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The DMD 331 is a differential pressure transmitter for industrial applications and is based on a piezoresistive stainless steel sensor, which can be pressurized on both sides with fluids or gases compatible with SST 1.4404 (316L) and 1.4435 (316L).

The compact design allows an integration of the DMD 331 in machines and applications with limited space. The DMD 331 calculates the difference between the pressure on the positive and the negative side and converts it into a proportional electrical signal.

**Preferred areas of use are**

- Plant and Machine Engineering  
- Energy Industry

**Preferred used for**

- Water

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The company BD SENSORS s.r.o. is certified by TÜV SÜD Czech according to the standard ISO 9001.
## Differential Pressure Transmitter Technical Data

### Input pressure range

<table>
<thead>
<tr>
<th>Nominal pressure [bar]</th>
<th>0.2</th>
<th>0.4</th>
<th>1</th>
<th>2.5</th>
<th>6</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differential pressure range [bar]</td>
<td>TD 1 : 1 up to TD 1 : 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TD 1 : 1 up to TD 1 : 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 ... 0.02</td>
<td>0 ... 0.04</td>
<td>0 ... 0.1</td>
<td>0 ... 0.25</td>
<td>0 ... 0.6</td>
<td>0 ... 1.6</td>
<td></td>
</tr>
<tr>
<td>Permissible static pressure, one-sided [bar]</td>
<td>0.5</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>20</td>
<td>60</td>
</tr>
</tbody>
</table>

### Output signal / Supply

<table>
<thead>
<tr>
<th>Standard</th>
<th>2-wire: 4 ... 20 mA / V&lt;sub&gt;S&lt;/sub&gt; = 12 ... 36 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option IS-version</td>
<td>2-wire: 4 ... 20 mA / V&lt;sub&gt;S&lt;/sub&gt; = 14 ... 28 VDC</td>
</tr>
<tr>
<td>Option 3-wire</td>
<td>3-wire: 0 ... 10 V / V&lt;sub&gt;S&lt;/sub&gt; = 14 ... 36 VDC</td>
</tr>
</tbody>
</table>

### Performance

#### Accuracy

For ranges of max. input pressure + PN > 1 bar (codes C,D,E):

- ± 0.5 \% FSO (differential pressure range with TD from 1:1 up to 1:5)
- ± 1 \% FSO (differential pressure range with TD > 1:5 up to 1:10)

For ranges of max. input pressure + PN > 1 bar (codes A,B,F):

- ± 0.5 \% FSO (differential pressure range with TD from 100 to 50 \% from static pressure)
- ± 1 \% FSO (differential pressure range with TD > 50 to 10 \% from static pressure)

#### Permissible load

- current 2-wire: R<sub>max</sub> = \[(V<sub>S</sub> – V<sub>min</sub>) / 0.02 A\] Ω
- voltage 3-wire: R<sub>min</sub> = 10 kΩ

#### Influence effects

- supply: 0.05 \% FSO / 10 V
- load: 0.05 \% FSO / kΩ

#### Long term stability

≤ ± 0.5 \% FSO / year

### Influence effects

- ± 0.5 \% FSO / 10 V
- ± 0.5 \% FSO / kΩ

#### Response time

≤ 5 msec

#### Thermal effects

<table>
<thead>
<tr>
<th>Nominal pressure P&lt;sub&gt;N&lt;/sub&gt; [bar]</th>
<th>0.2</th>
<th>0.4</th>
<th>≥ 1.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolerance band [% FSO]</td>
<td>± ≤ 2.5</td>
<td>± ≤ 2</td>
<td>± ≤ 1.5</td>
</tr>
<tr>
<td>TC, average [% FSO / 10 K]</td>
<td>± 0.4</td>
<td>± 0.3</td>
<td>± 0.2</td>
</tr>
<tr>
<td>in compensated range [°C]</td>
<td>0 ... 50</td>
<td>0 ... 70</td>
<td></td>
</tr>
</tbody>
</table>

#### Permissible temperatures

- medium: -25 ... 125 °C
- electronics / environment: -25 ... 85 °C
- storage: -40 ... 100 °C

### Electrical protection

- Short-circuit protection: permanent
- Reverse polarity protection: no damage, but also no function
- Electromagnetic compatibility: emission and immunity according to EN 61326

### Mechanical stability

- Vibration: 10 g RMS (20 ... 2000 Hz)
- Shock: 100 g / 11 msec

### Materials

- Pressure port: stainless steel 1.4404 (316L)
- Housing: aluminium, black anodized
- Seals (media wetted): FKM / others on request
- Diaphragm: stainless steel 1.4435 (316L)
- Media wetted parts: pressure port, seals, diaphragm

### Miscellaneous

- Current consumption: signal output current: max. 25 mA
- Weight: approx. 250 g
- Operational life: 100 million load cycles
- Ingress protection: IP 65
- Explosion protection (only for 4 ... 20 mA / 2 wire)
  - Approvals DX3A-DMD 331
  - IBEExU08ATEX1124 X
  - zone 0: II 2G Ex ia IIC T4 Gb, II 2D Ex ia IIIIC T85 °C Db
  - zone 0: II 1G Ex ia IIC T4 Ga, II 1D Ex ia IIIIC T85 °C Da
  - Safety technical maximum values: U<sub>I</sub> = 28 VDC, I<sub>I</sub> = 93 mA, P<sub>I</sub> = 660 mW, C<sub>I</sub> ≤ 1 nF, L<sub>I</sub> ≤ 10 µH
  - the supply connections have an inner capacity of max. 27 nF to the housing
- Permissible temperatures for environment: -25 ... 65 °C

### Pin configuration

<table>
<thead>
<tr>
<th>Electrical connection</th>
<th>ISO 4400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply +</td>
<td>1</td>
</tr>
<tr>
<td>Supply –</td>
<td>2</td>
</tr>
<tr>
<td>Signal + (only 3-wire)</td>
<td>3</td>
</tr>
<tr>
<td>Shield</td>
<td>ground pin</td>
</tr>
</tbody>
</table>
DMD 331
Differential Pressure Transmitter

**Wiring diagrams**

2-wire-system (current)

![2-wire-system diagram](image)

3-wire-system (voltage)

![3-wire-system diagram](image)

**Electrical connection**

<table>
<thead>
<tr>
<th>Standard</th>
<th>male and female plug ISO 4400 (IP 65)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>on request</td>
</tr>
</tbody>
</table>

**Mechanical connection (dimensions in mm)**

<table>
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<tr>
<th>Standard</th>
<th>male and female plug ISO 4400 (IP 65)</th>
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<tr>
<td>Others</td>
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This data sheet contains product specification, properties are not guaranteed. Subject to change without notice.

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## Differential Pressure Range

<table>
<thead>
<tr>
<th>Pressure Level</th>
<th>Differential Pressure Range</th>
<th>Max. Permissible Static Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 mbar</td>
<td>(0 ... 20 / 200 mbar)</td>
<td>1 bar</td>
</tr>
<tr>
<td>400 mbar</td>
<td>(0 ... 40 / 400 mbar)</td>
<td>1 bar</td>
</tr>
<tr>
<td>1,0 bar</td>
<td>(0 ... 100 mbar / 1,0 bar)</td>
<td>3 bar</td>
</tr>
<tr>
<td>2,5 bar</td>
<td>(0 ... 250 mbar / 2,5 bar)</td>
<td>6 bar</td>
</tr>
<tr>
<td>6,0 bar</td>
<td>(0 ... 60 / 6,0 bar)</td>
<td>20 bar</td>
</tr>
<tr>
<td>16,0 bar</td>
<td>(0 ... 160 / 16,0 bar)</td>
<td>60 bar</td>
</tr>
</tbody>
</table>

### Customer Range
- 0 ... 20 mbar
- 0 ... 40 mbar
- 0 ... 100 mbar
- 0 ... 250 mbar
- 0 ... 400 mbar
- 0 ... 60 mbar
- 0 ... 1,0 bar
- 0 ... 1,6 bar
- 0 ... 2,5 bar
- 0 ... 4,0 bar
- 0 ... 6,0 bar

### Output
- 4 ... 20 mA / 2-wire
- 0 ... 10 V / 3-wire
- 0 ... 5 V / 3-wire

### Electrical Connection
- Connector DIN 43650 (ISO 4400) (IP 65)
- Connector ISO 4400 (IP 65) + silicone seals
- Connector DIN 43650 (ISO 4400) - potting compound inside (IP 67)

### Mechanical Connection
- G 1/2" EN 837
- G 1/4" internal thread
- 7/16 UNF DIN 3866
- M 12 x 1 special

### Seals
- Viton (FKM)
- EPDM
- FFKM

### Special Version
- Standard
The span of differential pressure can be selected on an individual basis from 10% to 100% max. pressure on input +.

X - selected version of max. pressure on input + and differential pressure is producible.

Surcharge for calibration are not subject to any discounts. Subject to change.

This document contains the specification for ordering the product; detailed technical parameters of the product and its possible variants are given in the data sheet. BD SENSORS reserves the right to change sensor specifications without further notice.