DMD 331

Differential Pressure Transmitter for Liquids and Gases

Stainless Steel Sensor

accuracy according to IEC 60770: 0.5 % FSO

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-
down 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 for gases and dust
► different electrical and mechanical connections
► customer specific versions

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

www.sensorone.com
### 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 0.2</td>
<td>TD 1:1 up to 0.4</td>
<td>TD 1:1 up to 0.04</td>
<td>TD 1:1 up to 0.1</td>
<td>TD 1:1 up to 0.25</td>
<td>TD 1:1 up to 0.6</td>
</tr>
</tbody>
</table>

### Differential pressure range [bar]

- TD 1:1 up to 0.2
- TD 1:1 up to 0.4
- TD 1:1 up to 0.04
- TD 1:1 up to 0.1
- TD 1:1 up to 0.25
- TD 1:1 up to 0.6

### Permissible static pressure, one-sided [bar]

| 0.5 | 1 | 3 | 6 | 20 | 60 |

### Output signal / Supply

- **Standard**
  - 2-wire: 4 ... 20 mA / V<sub>S</sub> = 12 ... 36 V<sub>DC</sub>
- **Option IS-version**
  - 2-wire: 4 ... 20 mA / V<sub>S</sub> = 14 ... 28 V<sub>DC</sub>
- **Option 3-wire**
  - 3-wire: 0 ... 10 V / V<sub>S</sub> = 14 ... 36 V<sub>DC</sub>

### Performance

- **Accuracy**
  - ≤ ± 0.5 % FSO (differential pressure range with TD ≤ 1:5)
  - ≤ ± 1 % FSO (differential pressure range with TD > 1:5 up to 1:10)
- **Permissible load**
  - Current 2-wire: R<sub>max</sub> = [(V<sub>S</sub> – V<sub>S</sub> min) / 0.02 A] Ω
  - Voltage 3-wire: R<sub>max</sub> = 10 kΩ
- **Influence effects**
  - Supply: 0.05 % FSO / 10 V
  - Load: 0.05 % FSO / kΩ
- **Long term stability**
  - ≤ ± 0.2 % FSO / year at reference conditions
- **Response time**
  - < 5 msec

### Thermal effects (Offset and Span) / Permissible temperatures

<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
  - Signal output voltage: max. 7 mA
- **Weight**: approx. 250 g
- **Operational life**: > 100 x 10<sup>6</sup> pressure cycles
- **Ingress protection**: IP 65
- **CE-conformity**: EMC Directive: 2014/30/EU
- **ATEX Directive**: 2014/34/EU

### Explosion protection (only for 4 ... 20 mA / 2 wire)

- **Approvals**
  - DX13A-DMD 331: IBExU 08 ATEX 1125 X
  - zone 1: II 2G Ex ia IIC T4 Gb
  - zone 21: II 2D Ex ia IIIC T85°C Db

### Safety technical maximum values

- U<sub>i</sub> = 28 V<sub>DC</sub>, 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>

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**www.sensorsone.com**
Wiring diagrams

2-wire-system (current)

3-wire-system (voltage)

Mechanical connection (dimensions in mm)

Standard

Option

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### DMD 331

#### Pressure

<table>
<thead>
<tr>
<th>Nominal pressure range</th>
<th>bar</th>
<th>F</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
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<td></td>
<td></td>
<td>F</td>
</tr>
<tr>
<td>0.4</td>
<td></td>
<td>A</td>
<td></td>
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<td></td>
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<tr>
<td>1.0</td>
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<td>B</td>
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<tr>
<td>2.5</td>
<td></td>
<td>C</td>
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<tr>
<td>6.0</td>
<td></td>
<td>D</td>
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<tr>
<td>16</td>
<td></td>
<td>E</td>
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</tr>
<tr>
<td>customer</td>
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<td>9</td>
</tr>
</tbody>
</table>

#### Differential pressure range

<table>
<thead>
<tr>
<th>Differential pressure range</th>
<th>F</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.02</td>
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<td>0.04</td>
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<td>0.10</td>
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<td>0.25</td>
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<td>0.40</td>
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<td>0.60</td>
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<tr>
<td>1.0</td>
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<td>2.5</td>
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<td>4.0</td>
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<td>customer</td>
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<td>9</td>
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</tbody>
</table>

#### Output

- 4 … 20 mA / 2-wire: 1
- Intrinsic safety 4 … 20 mA / 2 wire: E
- 0 … 10 V / 3-wire: 3
- customer: 9

#### Accuracy

- TD ≤ 1.5: 0.5 %: 5
- TD > 1.5 bis 1.10: 1.0 %: 8
- customer: 9

#### Electrical connection

- Male and female plug ISO 4400: 1
- G1/2" EN 837: 2
- 7/16" UNF DIN 3866: U
- G1/4" internal thread: J
- customer: 9

#### Mechanical connection

- FKM: 1
- customer: 9

#### Seals

- standard: 0
- customer: 9

#### Special version

- standard: 0
- customer: 9

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The specifications given in this document represent the state of engineering at the time of publishing. We reserve the right to make modifications to the specifications and materials.

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