# DMP 333

## Industrial Pressure Transmitter For High Pressure

### Stainless Steel Sensor

Accuracy according to IEC 60770:
- Standard: 0.35 % FSO
- Option: 0.25 / 0.1 % FSO

## Nominal Pressure

From 0 ... 100 bar up to 0 ... 600 bar

## Output Signals

- 2-wire: 4 ... 20 mA
- 3-wire: 0 ... 20 mA / 0 ... 10 V
- Others on request

## Special Characteristics

- Excellent long-term stability, also with high dynamic pressure loads
-Insensitive to pressure peaks
- High overpressure capability

## Optional Versions

- IS-version
  - Ex ia = intrinsically safe for gases and dusts
- SIL 2 version
  - According to IEC 61508 / IEC 61511
- Customer specific versions

The pressure transmitter type **DMP 333** has been especially designed for use in hydraulic applications with high static and dynamic pressure. The transmitter is characterized by an excellent long-term stability, also under fast changing pressure as well as positive and negative pressure peaks.

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 hydraulic applications.

**Preferred areas of use are**

- Plant and Machine Engineering
  - Machine tools
  - Hydraulic presses
  - Injection moulding machine
  - Handling equipment
  - Elevated platforms
  - Test benches
- Mobile Hydraulics
## Technical Data

### Input pressure range

<table>
<thead>
<tr>
<th>Nominal pressure gauge</th>
<th>[bar]</th>
<th>100</th>
<th>160</th>
<th>250</th>
<th>400</th>
<th>600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overpressure</td>
<td>[bar]</td>
<td>210</td>
<td>600</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Burst pressure ≥</td>
<td>[bar]</td>
<td>1000</td>
<td>1500</td>
<td>2250</td>
<td>3000</td>
<td>4000</td>
</tr>
</tbody>
</table>

1 measurement starts with ambient pressure

### Output signal / Supply

<table>
<thead>
<tr>
<th>Standard</th>
<th>2-wire:</th>
<th>4 ... 20 mA / V_b = 8 ... 32 V_DC</th>
<th>SIL-version:</th>
<th>V_b = 14 ... 28 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option IS-protection</td>
<td>2-wire:</td>
<td>4 ... 20 mA / V_b = 10 ... 28 V_DC</td>
<td>SIL-version:</td>
<td>V_b = 14 ... 28 V DC</td>
</tr>
<tr>
<td>Options 3-wire</td>
<td>3-wire:</td>
<td>0 ... 20 mA / V_b = 14 ... 30 V DC</td>
<td>0 ... 10 V</td>
<td>V_b = 14 ... 30 V DC</td>
</tr>
</tbody>
</table>

### Performance

- **Accuracy**:
  - standard: ≤ ± 0.35 % FSO
  - option 1: ≤ ± 0.25 % FSO
  - option 2: ≤ ± 0.1 % FSO

- **Permissible load**:
  - current 2-wire: R_{max} = ([V_{b} – V_{b} min] / 0.02 A) Ω
  - current 3-wire: R_{max} = 500 Ω
  - voltage 3-wire: R_{Vin} = 10 kΩ

- **Influence effects**:
  - supply: 0.05 % FSO / 10 V
  - load: 0.05 % FSO / kΩ

- **Long term stability**: ≤ ± 0.1 % FSO / year at reference conditions

- **Response time**:
  - 2-wire: ≤ 10 msec
  - 3-wire: ≤ 3 msec

2 accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

### Thermal effects

- **Tolerance band**: ≤ ± 0.75 % FSO
- **in compensated range**: 0 ... 70 °C

### Permissible temperatures

<table>
<thead>
<tr>
<th>Medium / Environment</th>
<th>-40 ... 125 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>-40 ... 100 °C</td>
</tr>
</tbody>
</table>

### 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 (25 ... 2000 Hz) according to DIN EN 60068-2-6
- **Shock**: 100 g / 11 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 1.4305 (303), brass, nickel plated options on request
- **Seals (media wetted)**:
  - standard: FKM
  - options: EPDM (for P
  - others on request
- **Diaphragm**: stainless steel 1.4435 (316 L)
- **Media wetted parts**: pressure port, seals, diaphragm

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

- **Approvals**:
  - DX19-DMP 333
  - IBEEx T ATEX 1068 X / IECEx IBE 12.0027X
  - zone 0:
  - II 1G Ex ia IIC T4 Ga
  - zone 20:
  - II 1D Ex ia IIIC T85°C Da

- **Safety technical maximum values**:
  - U_{i} = 28 V_{DC}, I_{i} = 93 mA, P_{i} = 660 mW, C = 0 nF, L = 0 μH
  - the supply connections have an inner capacity of max. 27 nF to the housing

- **Permissible temperatures for environment**:
  - in zone 0: -20 ... 60 °C with p_{amb} 0.8 bar up to 1.1 bar
  - in zone 1 or higher: -20 ... 70 °C

- **Connecting cables (by factory)**:
  - cable capacitance: signal line/shield also signal line/signal line: 160 pF/m
  - cable inductance: signal line/shield also signal line/signal line: 1μH/m
## DMP 333
### Industrial Pressure Transmitter

#### Technical Data

### Miscellaneous

| Option SIL | according to IEC 61508 / IEC 61511 |
| Weight | approx. 140 g |
| Installation position | any |
| Operational life | > 100 x 10⁶ pressure cycles |
| Pressure Equipment Directive | 97/23/EC (module A) |
| ATEX Directive | 94/9/EG |

#### Current consumption

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

#### Weight

approx. 140 g

#### Installation position

any

#### Operational life

> 100 x 10⁶ pressure cycles

#### CE-conformity


Pressure Equipment Directive: 97/23/EC (module A)

ATEX Directive 94/9/EG

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### Wiring diagrams

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

![2-wire-system diagram]

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

![3-wire-system diagram]

### Pin configuration

<table>
<thead>
<tr>
<th>Electrical connection</th>
<th>ISO 4400</th>
<th>Binder 723 (5-pin)</th>
<th>M12x1/metal (4-pin)</th>
<th>Bayonet MIL-C-26482 (10-6)</th>
<th>field housing</th>
<th>cable colours (DIN 47100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply +</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>A</td>
<td>A</td>
<td>IN +</td>
</tr>
<tr>
<td>Supply –</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>B</td>
<td>D</td>
<td>IN –</td>
</tr>
<tr>
<td>Signal + (for 3-wire)</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>B</td>
<td>OUT +</td>
</tr>
<tr>
<td>Shield</td>
<td>5</td>
<td>4</td>
<td>pressure port</td>
<td></td>
<td></td>
<td></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)
  - Cable outlet with PVC cable (IP 67)

- **Option**
  - Bayonet MIL-C-26482 (10-6) (IP 67)
  - Compact field housing (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

- **Standard**: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

- **Option**: Different cable types and lengths available, permissible temperature depends on kind of cable

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**Mechanical connections (dimensions in mm)**

- **standard for accuracy 0.35 / 0.25 %**
- **standard for accuracy 0.1 %**
- **SIL- and SIL-IS-version**

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**Option**

- G1/2" EN 837
- G1/4" DIN 3852
- G1/4" EN 837
- 1/2" NPT

- Metric threads and other versions on request

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**Spezifikationsblatt / specification sheet**

**DMP 333**

<table>
<thead>
<tr>
<th>Messgröße</th>
<th>Pressure</th>
<th>Gauge</th>
<th>Input 1</th>
<th>Input 2</th>
<th>Input 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eingang</td>
<td></td>
<td></td>
<td>100</td>
<td>160</td>
<td>255</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td>600</td>
<td>800</td>
</tr>
<tr>
<td>Sonderausführungen</td>
<td></td>
<td>customer</td>
<td></td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ausgang</th>
<th>Output</th>
<th>4 … 20 mA / 2-Leiter</th>
<th>4 … 20 mA / 2-wire</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 … 10 V / 3-Leiter</td>
<td>0 … 10 V / 3-wire</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIL2 4 … 20 mA / 2-Leiter</td>
<td>SIL2 4 … 20 mA / 2-wire</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIL2 mit Ex-Schutz</td>
<td>SIL2 with Intrinsische Safety</td>
<td>ES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 … 20 mA / 2-Leiter</td>
<td>4 … 20 mA / 2-wire</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ander</td>
<td>customer</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genauigkeit</th>
<th>Accuracy</th>
<th>Standard</th>
<th>0,35 % standard</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1</td>
<td>0,25 % option 1</td>
<td>0,25 %</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Option 2</td>
<td>0,1 % option 2</td>
<td>0,1 %</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>ander</td>
<td>customer</td>
<td></td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

**Elektrischer Anschluss**

- Stocker und Kabeldose ISO 4400: Male and female plug ISO 4400
- Stocker Binder Serie 723 (5-polig): Male plug Binder series 723 (5-pin)
- Kabelausgang mit PVC-Kabel: Cable outlet with PVC cable
- Stecker M12x1 (4-polig) / Metall: Male plug M12x1 (4-pin) / metal
- Bajonet MIL-C-26482 (10-6): 2-Leiter Bayonet MIL-C-26482 (10-6) 2 wire
- Bajonet MIL-C-26482 (10-6): 3-Leiter Bayonet MIL-C-26482 (10-6) 3 wire
- Stecker Binder Serie 723 (5-polig): Male plug Binder series 723 (5-pin)
- Kabelausgang mit PVC-Kabel: Cable outlet
- Edelstahl 1.4305: Stainless steel 1.4305

<table>
<thead>
<tr>
<th>Mechanischer Anschluss</th>
<th>Mechanical connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1/2&quot; DIN 3852</td>
<td>G1/2&quot; DIN 3852</td>
</tr>
<tr>
<td>G1/2&quot; EN 837</td>
<td>G1/2&quot; EN 837</td>
</tr>
<tr>
<td>G1/4&quot; DIN 3852</td>
<td>G1/4&quot; DIN 3852</td>
</tr>
<tr>
<td>G1/4&quot; EN 837</td>
<td>G1/4&quot; EN 837</td>
</tr>
<tr>
<td>1/2&quot; NPT</td>
<td>1/2&quot; NPT</td>
</tr>
<tr>
<td>andere</td>
<td>customer</td>
</tr>
</tbody>
</table>

**Dichtung**

- FKM
- EPDM

**Sonderausführungen**

- Standard | standard |
- andere | customer |

**Preise EXW Thierstein, ausschl. Verpackung / Prices EXW Thierstein, excluding package**

1. Messanfang bei Umgebungsdruck: measurement starts with ambient pressure
2. nicht in Verbindung mit SIL: not in combination with SIL
3. Standard: 2 m PVC-Kabel ohne Belüftungsschlauch: standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … +70 °C), optionally without ventilation tube
4. Kabel mit Luftschlauch (Code TR0 = PVC-Kabel): cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, permissible temperature depends on kind of cable, price without cable
5. nur möglich für PN ≤ 160 bar: only for nominal pressure ranges PN ≤ 160 bar