



# DMP 304

## Industrial Pressure Transmitter for very high Pressure

accuracy according to IEC 60770:  
standard: 0.5 % FSO  
option: 0.25 % FSO



DMP 304  
High Pressure  
Transmitter

### **Nominal pressure ranges**

from 0 ... 2 000 bar  
up to 0 ... 6 000 bar

### **Output signals**

2-wire: 4 ... 20 mA  
3-wire: 0 ... 10 V (on request)

### **Special characteristics**

- ▶ adjustability of offset and span via front sided potentiometers
- ▶ pressure port 9/16" UNF
- ▶ 80 % calibration signal with MIL / Bendix plug

### **Optional versions**

- ▶ IS-version:  
Ex ia = intrinsically safe for gases
- ▶ Accuracy according to IEC 60770:  
0.25 % FSO
- ▶ pressure port M20x1.5 and M16x1.5



The high-pressure transmitter type DMP 304 has been especially designed for applications with highest demand on precision and reliability. DMP 304 series is based on a compensated strain gauge, bonded onto a stainless steel diaphragm.

Due to the rugged stainless steel housing usage under extreme conditions and in IS-required areas is no problem.

### **Preferred areas of use are**



hydraulic circuits



water jet torching



high pressure applications in  
chemical and petrochemical  
industry

| Input pressure range   |  |  |       |        |        |
|--|--|--|-------|--------|--------|
| Nominal pressure gauge [bar]   |  | 2 000  | 4 000 | 5 000  | 6 000  |
| Overpressure [bar]   |  | 3 000  | 5 000 | 6 000  | 7 000  |
| Burst pressure [bar]   |  | 4 000  | 8 000 | 10 000 | 10 000 |
| Output signal / Supply   |  |  |       |        |        |
| Standard   | 2-wire:  | 4 ... 20 mA / $V_s = 10 \dots 30 V_{DC}$                                 |       |        |        |
| IS-protection  | 2-wire:  | 4 ... 20 mA / $V_s = 10 \dots 28 V_{DC}$                                 |       |        |        |
| Option 3-wire (on request)   | 3-wire:  | 0 ... 10 V / $V_s = 14 \dots 36 V_{DC}$                                  |       |        |        |
| Performance  |  |  |       |        |        |
| Accuracy   | standard:  | IEC 60770 <sup>1</sup><br>$\leq \pm 0.50 \% \text{ FSO}$                 |       |        |        |
|  | option:  | $\leq \pm 0.25 \% \text{ FSO (on request)}$                              |       |        |        |
| Permissible load   | current 2-wire:  | $R_{\max} = [(V_s - V_{s \min}) / 0.02] \Omega$                          |       |        |        |
|  | voltage 3-wire:  | $R_{\min} = 10 \text{ k}\Omega$  |       |        |        |
| Influence effects  | supply   | 0.05 % FSO / 10 V  |       |        |        |
|  | load:  | 0.05 % FSO / k $\Omega$  |       |        |        |
| Long term stability  | $\leq \pm 0.2 \% \text{ FSO / year}$   |  |       |        |        |
| Response time  | < 2.5 msec   |  |       |        |        |
| Adjustability  | Via a front sided potentiometer is an adjustment of the offset possible within the range of $\pm 5 \%$ of the nominal pressure range, without an influence of characteristic curve and accuracy. |  |       |        |        |
| <sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) |  |  |       |        |        |
| Calibration (only with MIL / Bendix plug)  |  |  |       |        |        |
| Calibration signal accuracy  | $\leq \pm 0.25 \% \text{ FSO}$   |  |       |        |        |
| Calibration  | 80 % FSO calibration (e.g. for 4 ... 20 mA / 2-wire: signal = $0.8 \cdot 16 \text{ mA} + 4 \text{ mA} = 16.8 \text{ mA}$ )   |  |       |        |        |
| Thermal effects (Offset and Span)  |  |  |       |        |        |
| Thermal error  | $\leq \pm 0.2 \% \text{ FSO / 10 K}$<br>in compensated range -20 ... 85 °C   |  |       |        |        |
| Permissible temperatures   |  |  |       |        |        |
| Permissible temperatures   | medium:  | -40 ... 85 °C  |       |        |        |
|  | electronics / environment:   | -25 ... 85 °C  |       |        |        |
|  | storage:   | -40 ... 85 °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 / diaphragm  | stainless steel 1.4548 (17-4 PH)   |  |       |        |        |
| Housing  | standard: stainless steel 1.4301 (304)   |  |       |        |        |
| Seals (media wetted)   | none (welded version)  |  |       |        |        |
| Media wetted parts   | pressure port, diaphragm   |  |       |        |        |
| IS-protection (for 2-wire in IS-version) in preparation  |  |  |       |        |        |
| Approval DX17-DMP 304  | zone 0: II 1G Ex ia IIC T4   |  |       |        |        |
| Safety technical maximum values  | $U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}$  |  |       |        |        |
| Permissible temperatures for environment   | in zone 0:   | -20 ... 60 °C with $p_{\text{atm}}$ 0.8 bar up to 1.1 bar                |       |        |        |
|  | zone 1 and higher:   | -25 ... 70 °C  |       |        |        |
| Connecting cables (by factory)   | cable capacity:  | signal line/shield as well as signal line/signal line: 160 pF/m          |       |        |        |
|  | cable inductance:  | signal line/shield as well as signal line/signal line: 1 $\mu\text{H/m}$ |       |        |        |

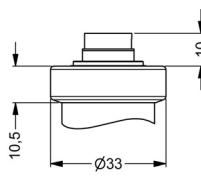
# DMP 304

High Pressure Transmitter

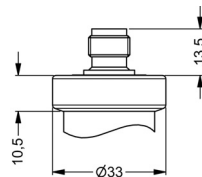
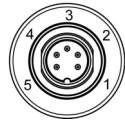
Technical Data

| <b>Miscellaneous</b>                                  |  |   |   |                           |               |               |
|---|--|---|---|---------------------------|---------------|---------------|
| Insulation strength / resistance                      | standard: insulation strength 100 M $\Omega$ @ 35 V<br>IS-version: insulation resistance 100 M $\Omega$ @ 35 V <sub>DC</sub><br>100 M $\Omega$ @ 500 V <sub>AC</sub> (relative to housing) |   |   |                           |               |               |
| Current consumption                                   | 2-wire signal output current: max. 28 mA<br>3-wire signal output voltage: max. 15 mA   |   |   |                           |               |               |
| Weight  | approx. 260 g  |   |   |                           |               |               |
| Installation position                                 | any  |   |   |                           |               |               |
| CE-conformity   | EMC Directive: 2004/108/EC   |   | Pressure Equipment Directive: 97/23/EC (module A) |                           |               |               |
| <b>Wiring diagrams</b>                                |  |   |   |                           |               |               |
| 2-wire-system (current)                               |  | 3-wire-system (voltage)                 |   |                           |               |               |
|   |  |   |   |                           |               |               |
| <b>Pin configuration</b>                              |  |   |   |                           |               |               |
| Electrical connections                                | Binder 723 (5-pin)   | M12x1 (4-pin)                           | ISO 4400  | cable colours (DIN 47100) |               |               |
| Supply +  | 3  | 1                                       | 1   | wh (white)                |               |               |
| Supply -  | 4  | 2                                       | 2   | bn (brown)                |               |               |
| Signal + (only for 3-wire)                            | 1  | 3                                       | 3   | gn (green)                |               |               |
| Shield  | 5  | ground                                  | pin   | gn/ye (green / yellow)    |               |               |
| 4   |  |   |   |                           |               |               |
| <b>Pin configuration MIL / Bendix plug (optional)</b> |  |   |   |                           |               |               |
| Version   | Pin A  | Pin B                                   | Pin C   | Pin D                     | Pin E         | Pin F         |
| 2-wire current signal 4 ... 20 mA                     | supply +/<br>signal +  | supply -/<br>signal -                   | -   | -                         | calibration + | calibration - |
| 3-wire  | signal +   | supply -/<br>signal -/<br>calibration - | supply +  | -                         | -             | calibration + |

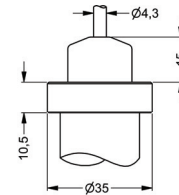
**Electrical connections (dimensions in mm)**



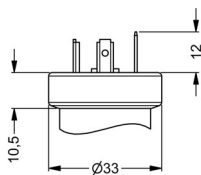
Binder series 723 (IP 67)



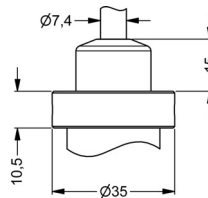
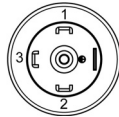
M12x1 4-pin (IP 67)



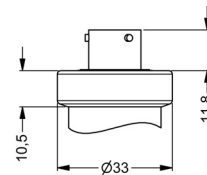
cable outlet with PVC-cable (IP 67) <sup>2</sup>



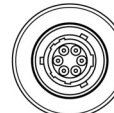
ISO 4400 (IP 65)



cable outlet (IP 68) <sup>3</sup>



MIL / Bendix plug  
(Typ PT 02 A 10-6 P)

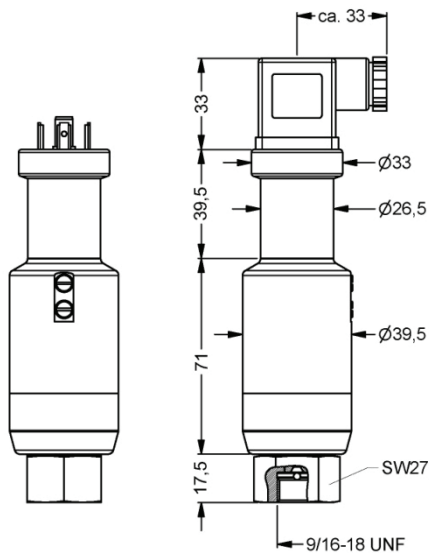


<sup>2</sup> Standard: 2 m PVC-cable (permissible temperature: -5 ... 70 °C)

<sup>3</sup> different cable types and lengths available, permissible temperature depends on kind of cable

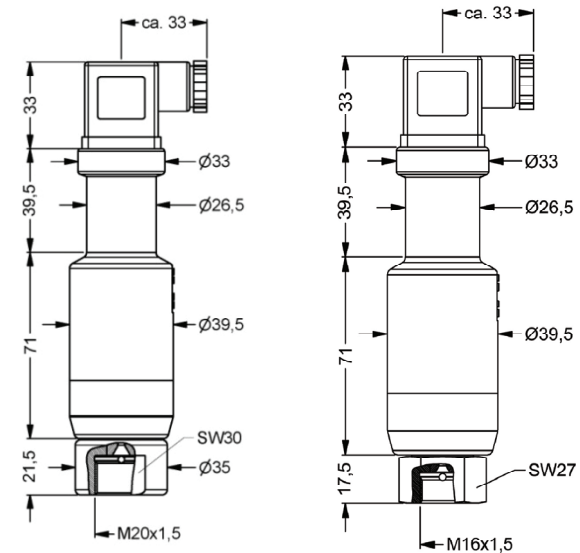
**Mechanical connection (dimensions in mm)**

**Standard**



9/16" UNF internal thread

**Option**



M20x1.5 internal thread

M16x1.5 internal thread

## Ordering code DMP 304

### DMP 304



| Pressure                                 |        | 2 | 2 | 0 |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         |         |
|--|--------|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---------|---|---------|---------|
| gauge                                    |        | 2 | 2 | 0 |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         |         |
| Input                                    |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         |         |
| [bar]                                    |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         |         |
| 2 000                                    |        | 2 | 0 | 0 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         |         |
| 4 000                                    |        | 4 | 0 | 0 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         |         |
| 5 000                                    |        | 5 | 0 | 0 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         |         |
| 6 000                                    |        | 6 | 0 | 0 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         |         |
| customer                                 |        | 9 | 9 | 9 | 9 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | consult |   |         |         |
| Output                                   |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         |         |
| 4 ... 20 mA / 2-wire                     |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         | 1 |         |         |
| Intrinsic safety 4 ... 20 mA / 2-wire    |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         | E |         |         |
| 0 ... 10 V / 3-wire                      |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         | 3 |         |         |
| customer                                 |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         | 9 |         |         |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | consult |         |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | consult |         |
| Accuracy                                 |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         |         |
| standard                                 | 0.5 %  |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 5       |         |
| option                                   | 0.25 % |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 2       |         |
| customer                                 |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 9       |         |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         | consult |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         | consult |
| Electrical connection                    |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         |         |
| Male and female plug ISO 4400            |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 1       |         |
| Male plug Binder series 723 (5-pin)      |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 2       |         |
| Cable outlet with PVC-cable <sup>1</sup> |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | T       |         |
| Cable outlet <sup>2</sup>                |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | A       |         |
| Male plug M12x1 (4-pin)                  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | T       |         |
| MIL-/Bendix (Typ PT 02 A 10-6 P)         |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | R       |         |
| customer                                 |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 0       |         |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 0       |         |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 0       |         |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 0       |         |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 8       |         |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 9       |         |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 9       |         |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | 9       |         |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   | consult |         |
| Special version                          |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         |         |
| standard                                 |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         | 0       |
| customer                                 |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         | 4       |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         | 1       |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         | 9       |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         | 9       |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         | 9       |
|  |        |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |   |         | consult |

<sup>1</sup> standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C), optionally cable with ventilation tube

<sup>2</sup> different cable types and lengths deliverable (permissible temperature depends on kind of cable)