

Data sheet

# Pressure transmitter for industrial applications

## MBS 4500



The high accuracy pressure transmitter MBS 4500 is designed for use in almost all industrial applications, and offers a reliable pressure measurement, even under harsh environmental conditions.

The flexible pressure transmitter programme covers a 4 – 20 mA output signal, absolute or gauge (relative) versions, measuring ranges from 0 – 1 to 0 – 600 bar zero and span adjustment. A rotatable plug connection and a wide range of pressure connections.

Excellent vibration stability, robust construction, and a high degree of EMC / EMI protection equip the pressure transmitter to meet the most stringent industrial requirements.

### Features

- Designed for use in severe industrial environments
- Enclosure and wetted parts of acid-resistant stainless steel (AISI 316L)
- Pressure ranges in relative (gauge) or absolute from 0 up to 600 bar
- Output signal: 4 – 20 mA
- A wide range of pressure connections
- Temperature compensated and laser calibrated
- Accuracy 0.5% FS
- Zero and span adjustment

**Technical data**
**Performance (EN 60770)**

|  |                                       |              |
|--|---------------------------------------|--------------|
| Accuracy (incl. non-linearity, hysteresis and repeatability) | ≤ ± 0.2% FS (typ.)                    |              |
|  | ≤ ± 0.5% FS (max.)                    |              |
| Non-linearity BFSL (conformity)                              | ≤ ± 0.2% FS                           |              |
| Hysteresis and repeatability                                 | ≤ ± 0.1% FS                           |              |
| Thermal zero point shift                                     | ≤ ± 0.1% FS/10 K (typ.)               |              |
|  | ≤ ± 0.2% FS/10 K (max.)               |              |
| Thermal sensitivity (span) shift                             | ≤ ± 0.1% FS/10 K (typ.)               |              |
|  | ≤ ± 0.2% FS/10 K (max.)               |              |
| Response time  | < 4 ms                                |              |
| Overload pressure  | 6 × FS (max. 1500 bar)                |              |
| Burst pressure   | 6 × FS (max. 2000 bar)                |              |
| Durability, P: 10 – 90% FS                                   | > 10 × 10 <sup>6</sup> cycles         |              |
| Zero point adjustment  | 0 – 1 to 0 – 10 bar measuring range   | -5 – 20% FS  |
|  | 0 – 16 to 0 – 40 bar measuring range  | -5 – 10% FS  |
|  | 0 – 60 to 0 – 600 bar measuring range | -2.5 – 5% FS |
| Span adjustment  | 0 – 1 to 0 – 600 bar measuring range  | -5 – 5% FS   |

**Electrical specifications**

|   |   |
|---|---|
| Nom. output signal (short-circuit protected)                      | 4 – 20 mA                                       |
| Supply voltage [U <sub>B</sub> ], polarity protected              | 10 – 30 V DC                                    |
| Supply voltage dependency   | ≤ ± 0.1% FS/10 V                                |
| Current limitation (linear output signal up to 1.5 × rated range) | 28 mA (typ.)                                    |
| Load [R <sub>L</sub> ] (load connected to 0 V)                    | $R_L \leq \frac{(U_B - 10 V)}{0.02 A} [\Omega]$ |

**Environmental conditions**

|  |            |                                     |                |
|--|------------|-------------------------------------|----------------|
| Sensor temperature range   | Normal     | -40 – 85 °C                         |                |
| Medium temperature range   |            | 115 – (0.35 × Ambient temp.)        |                |
| Ambient temperature range  |            | -40 – 85 °C                         |                |
| Compensated temperature range                                      |            | 0 – 80 °C                           |                |
| Transport / Storage temperature range                              |            | -50 – 85 °C                         |                |
| EMC – Emission   |            | EN 61000-6-3                        |                |
| EMC – Immunity   |            | EN 61000-6-2                        |                |
| Insulation resistance  |            | > 100 MΩ at 100 V                   |                |
| Mains frequency test   |            | Based on SEN 361503                 |                |
| Vibration stability  | Sinusoidal | 15.9 mm-pp, 5 Hz – 25 Hz            | IEC 60068-2-6  |
|  |            | 20 g, 25 Hz – 2 kHz                 |                |
|  | Random     | 7.5 g <sub>rms</sub> , 5 Hz – 1 kHz | IEC 60068-2-64 |
| Shock resistance   | Shock      | 500 g/1 ms                          | IEC 60068-2-27 |
|  | Free fall  | 1 m                                 | IEC 60068-2-32 |
| Enclosure (IP protection fulfilled together with mating connector) |            | IP65                                |                |

**Technical data**  
(continued)

*Mechanical characteristics*

|   |                        |                                 |
|---|------------------------|---------------------------------|
| Materials                                     | Wetted parts           | EN 10088-1; 1.4404 (AISI 316 L) |
|   | Enclosure              | EN 10088-1; 1.4404 (AISI 316 L) |
|   | Electrical connections | Glass filled polyamid, PA 6.6   |
| Net weight (depending on pressure connection) |                        | 0.2 – 0.3 kg                    |

**Ordering standard**

**MBS 4500**

| Measuring range |    |
|-----------------|----|
| 0 – 1.0 bar     | 10 |
| 0 – 1.6 bar     | 12 |
| 0 – 2.5 bar     | 14 |
| 0 – 4.0 bar     | 16 |
| 0 – 6.0 bar     | 18 |
| 0 – 10 bar      | 20 |
| 0 – 16 bar      | 22 |
| 0 – 25 bar      | 24 |
| 0 – 40 bar      | 26 |
| 0 – 60 bar      | 28 |
| 0 – 100 bar     | 30 |
| 0 – 160 bar     | 32 |
| 0 – 250 bar     | 34 |
| 0 – 400 bar     | 36 |
| 0 – 600 bar     | 38 |

**Pressure connection**

|         |   |
|---------|---|
| A B 0 4 | G ¼ A (EN 837)                          |
| A B 0 6 | G ⅜ A (EN 837)                          |
| A B 0 8 | G ½ A (EN 837)                          |
| A C 0 4 | ¼ – 18 NPT                              |
| A C 0 8 | ½ – 14 NPT                              |
| G B 0 4 | DIN 3852-E-G ¼; Gasket: DIN 3869-14 NBR |

**Electrical connection**  
Figures refer to plug and standard PIN configuration - see page 5  
Plug Pg 9 (EN175301-803-A)

**Output signal**  
4 – 20 mA

**Pressure reference**

|                  |   |
|------------------|---|
| Gauge (relative) | 1 |
| Absolute         | 2 |

☐ Preferred version

Non-standard build-up combinations may be selected. However, minimum order quantities may apply. Please contact your local Danfoss office for further information, or request on other versions.

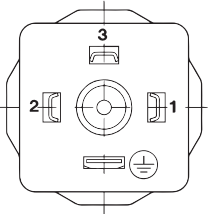
Dimensions/Combinations

| Type code | A1                              |
|-----------|---------------------------------|
|           | <p>EN175301-803-A,<br/>Pg 9</p> |

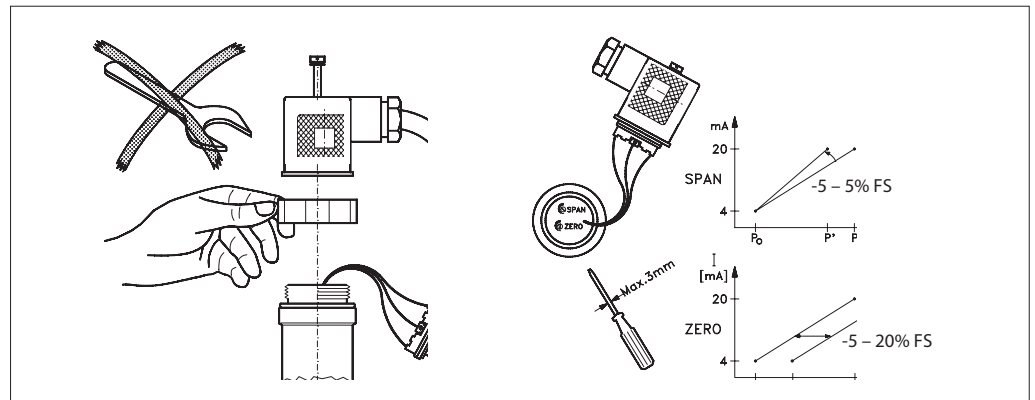
|                                  | G ¼ A<br>(EN 837) | G ⅜ A<br>(EN 837) | G ½ A<br>(EN 837) | ¼ – 18 NPT                            | ½ – 14 NPT                            | DIN 3852-E-G ¼<br>Gasket: DIN 3869-14 |
|----------------------------------|-------------------|-------------------|-------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Type code                        | AB04              | AB06              | AB08              | AC04                                  | AC08                                  | GB04                                  |
| Recommended torque <sup>1)</sup> | 30 – 35 Nm        | 30 – 35 Nm        | 30 – 35 Nm        | 2 – 3 turns after<br>finger tightened | 2 – 3 turns after<br>finger tightened | 30 – 35 Nm                            |

<sup>1)</sup> Depends on different parameters such as gasket material, mating material, thread lubrication and pressure level

**Electrical connection**

| Type code, page 4   | A1  |
|---|---|
|   |  <p data-bbox="1005 627 1165 683">EN 175301-803-A,<br/>Pg 9</p>                       |
| <p data-bbox="470 757 598 862">Electrical connection,<br/>4 – 20 mA<br/>output (2 wire)</p> | <p data-bbox="1021 721 1149 795">Pin 1: + supply<br/>Pin 2: ÷ supply<br/>Pin 3: not used</p> <p data-bbox="1013 873 1157 929">Earth: Connected<br/>to MBS enclosure</p> |

**Adjustment**



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