The high accuracy flush diaphragm pressure transmitter MBS 4510 is designed for use in non-uniform, high viscous or crystallizing media within 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 – 0.25 to 0 – 25 bar zero and span adjustment. A rotatable plug connection and a G1A conic pressure connection with flush mounted diaphragm.

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 up to 25 bar
- Output signal: 4 – 20 mA
- Temperature compensated and laser calibrated
- Accuracy 0.5% FS
- Zero and span adjustment
- USDA-H1 approved oil filling
- For use in Zone 2 explosive atmosphere
Technical data

### Performance (EN 60770)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Specification Range</th>
<th>Specification Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy (incl. non-linearity, hysteresis and repeatability)</td>
<td>≤ ± 0.2% FS (typ.)</td>
<td>≤ ± 0.5% FS (max.)</td>
</tr>
<tr>
<td>Non-linearity BFSL (conformity)</td>
<td>≤ ± 0.2% FS</td>
<td></td>
</tr>
<tr>
<td>Hysteresis and repeatability</td>
<td>≤ ± 0.1% FS</td>
<td></td>
</tr>
<tr>
<td>Thermal zero point shift</td>
<td>Measuring range:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 – 250 mbar</td>
<td>≤ ± 0.4% FS / 10K</td>
</tr>
<tr>
<td></td>
<td>0 – 400 mbar</td>
<td>≤ ± 0.3% FS / 10K</td>
</tr>
<tr>
<td></td>
<td>≥ 0 – 600 mbar</td>
<td>≤ ± 0.2% FS / 10K</td>
</tr>
<tr>
<td>Thermal sensitivity (span) shift</td>
<td>Measuring range:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 – 250 mbar</td>
<td>≤ ± 0.4% FS / 10K</td>
</tr>
<tr>
<td></td>
<td>0 – 400 mbar</td>
<td>≤ ± 0.35% FS / 10K</td>
</tr>
<tr>
<td></td>
<td>≥ 0 – 600 mbar</td>
<td>≤ ± 0.2% FS / 10K</td>
</tr>
<tr>
<td>Response time</td>
<td>&lt; 4 ms</td>
<td></td>
</tr>
<tr>
<td>Durability, P: 10 – 90% FS</td>
<td>&gt; 10 × 10⁶ cycles</td>
<td></td>
</tr>
<tr>
<td>Zero point adjustment</td>
<td>Measuring range:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 – 0.25 to 0 – 10 bar</td>
<td>≤ ± 20% FS</td>
</tr>
<tr>
<td></td>
<td>0 – 16 to 0 – 25 bar</td>
<td>≤ ± 10% FS</td>
</tr>
<tr>
<td>Span adjustment</td>
<td>Measuring range:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 – 0.25 to 0 – 25 bar</td>
<td>≤ ± 5% FS</td>
</tr>
</tbody>
</table>

### Available measuring ranges

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-0.25 – 0.50</td>
<td>2</td>
<td>50</td>
</tr>
<tr>
<td>0.00 – 0.25</td>
<td>2</td>
<td>50</td>
</tr>
<tr>
<td>0.00 – 0.40</td>
<td>2</td>
<td>50</td>
</tr>
<tr>
<td>0.00 – 0.60</td>
<td>2</td>
<td>50</td>
</tr>
<tr>
<td>0.00 – 1.00</td>
<td>2</td>
<td>50</td>
</tr>
<tr>
<td>0.00 – 1.60</td>
<td>8</td>
<td>50</td>
</tr>
<tr>
<td>0.00 – 2.50</td>
<td>8</td>
<td>50</td>
</tr>
<tr>
<td>0.00 – 4.00</td>
<td>8</td>
<td>50</td>
</tr>
<tr>
<td>0.00 – 6.00</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>0.00 – 10.00</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>0.00 – 16.00</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>0.00 – 25.00</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

### Electrical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Specification Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom. output signal (short-circuit protected)</td>
<td>4 – 20 mA</td>
</tr>
<tr>
<td>Supply voltage [U₉], polarity protected</td>
<td>10 – 30 V DC</td>
</tr>
<tr>
<td>Supply voltage dependency</td>
<td>≤ ± 0.1% FS / 10 V</td>
</tr>
<tr>
<td>Current limitation (linear output signal up to 1.5 x rated range)</td>
<td>28 mA (typ.)</td>
</tr>
<tr>
<td>Load [Rᵢ] (load connected to 0 V)</td>
<td>Rᵢ ≤ (U₉ - 10 V) / 0.02 A [Ω]</td>
</tr>
</tbody>
</table>
Data sheet | Pressure transmitter for industrial applications, MBS 4510

Technical data
(continued)

Environmental conditions

<table>
<thead>
<tr>
<th>Sensor temperature range</th>
<th>Normal</th>
<th>-40 – 85 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATEX Zone 2</td>
<td>-10 – 85 °C</td>
<td></td>
</tr>
</tbody>
</table>

| Media temperature        | 115 - (0.35 x ambient temperature) |

| Ambient temperature range| -10 – 85 °C |

| Compensated temperature range| 0 – 80 °C |

| Transport / Storage temperature range| -25 – 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 |
|                            | 20 g, 25 Hz – 2 kHz |
|                            | IEC 60068-2-6 |

| Random                     | 7.5 g, 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 (depending on electrical connection) | IP65 |

Explosive atmospheres

Zone 2 applications | EN60079-0; EN60079-15

When used in ATEX Zone 2 areas at temperatures < -10 °C the cable and plug must be protected against impact

Mechanical characteristics

| Materials                   | Wetted parts | EN 10088-1; 14404 (AISI 316 L) |
|                            | Enclosure    | EN 10088-1; 14404 (AISI 316 L) |
|                            | Electrical connections | Glass filled polyamid PA 6.6 |
|                            | Gasket (above thread) | DIN 3869-33-NBR |
|                            | Net weight (depending on pressure connection and electrical connection) | 0.4 kg |
Data sheet | Pressure transmitter for industrial applications, MBS 4510

Ordering standard

MBS 4510

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>0.25 – 0.5 bar</th>
<th>A</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 – 0.25 bar</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>0 – 0.4 bar</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>0 – 0.6 bar</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>0 – 1.0 bar</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0 – 1.6 bar</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>0 – 2.5 bar</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>0 – 4.0 bar</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>0 – 6.0 bar</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>0 – 10 bar</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0 – 16 bar</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>0 – 25 bar</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Pressure connection

G1A, ISO 228-1, Flush male

Electrical connection

Plug Pg 9 (EN 175301-803-A)

Output signal

4 – 20 mA

Electrical connections

<table>
<thead>
<tr>
<th>Electrical connection</th>
<th>4 – 20 mA output (2 wire)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin 1: + supply</td>
<td></td>
</tr>
<tr>
<td>Pin 2: – supply</td>
<td></td>
</tr>
<tr>
<td>Pin 3: Not used</td>
<td></td>
</tr>
</tbody>
</table>

EN 175301-803-A, Pg 9

Earth: Connected to MBS enclosure

Dimensions

Threaded hole
(Sealing above thread)
Installation

Tightening torque 60 Nm. Zero deviation of approx. 3 mbar can occur. (Can be adjusted)

Adjustment

Accessories

<table>
<thead>
<tr>
<th>Welding nipple for conic metal/metal seal</th>
<th>DIN 11851 (dairy connection), DN40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code no.: 060G2501</td>
<td>Code no.: 060G2505</td>
</tr>
</tbody>
</table>

DIN 11851 (dairy connection), DN50

<table>
<thead>
<tr>
<th>Clamp, ISO 2852, 1½ in.</th>
<th>Code no.: 060G2502</th>
</tr>
</thead>
</table>

Clamp, ISO 2852, 2 in.

<table>
<thead>
<tr>
<th>Code no.: 060G2510</th>
<th>SMS 1145 connection, 1½ in.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code no.: 060G2503</td>
<td></td>
</tr>
</tbody>
</table>