Data sheet

Pressure transmitters for wind turbine applications
Types MBS 8200 and MBS 8250

MBS 8200 is a series of compact pressure transmitters developed to withstand the pressure pulsations and vibrations known in wind turbine applications. A new technology combining piezo resistive sensor element and programmable gain amplifiers makes the MBS 8200 the obvious choice for applications demanding highest accuracy and insensitiveness against temperature variations. Further this technology enhances the functional safety by limiting the output signal at excess pressure conditions, it allows excellent sink/source capabilities and it leave the pressure transmitters unaffected by electromagnetic fields up to 100 V/m.

MBS 8250 with integrated pulse-snubber is designed for use in hydraulic applications with severe media influences like cavitation, liquid hammer or pressure peaks, and offers a reliable pressure measurement, even under harsh environmental conditions.

Features

- Designed for use in harsh industrial environments
- EMC protection 100 V/m
- For media and ambient temperatures up to 125 °C
- Reverse polarity protected
- Version with integrated pulse-snubber. Protected against cavitation, liquid hammering and pressure peaks
- Enclosure and wetted parts of AISI 316L
- Digitally temperature calibrated
- RoHS conformity
# Pressure transmitters for wind turbine applications, types MBS 8200 and MBS 8250

## Technical data

### MBS 8250

**Application**  
Cavitation, liquid hammer and pressure peaks may occur in hydraulic systems with changes in flow velocity, e.g. fast closing of a valve or pump starts and stops.  
The problem may occur on the inlet and outlet side, even at rather low operating pressures.

### MBS 8250 (10-90%)

- **Performance (EN 60770)**
  - Non-linearity BFSL (conformity) \(\leq \pm 0.2\%\) FS
  - Hysteresis and repeatability \(\leq \pm 0.1\%\) FS
  - Total error band inside the compensated temperature range \(\leq \pm 1\%\) FS
  - Thermal shift outside the compensated temperature range \(\leq \pm 0.65\%\) FS / 10 K
  - Response time MBS 8200 (10-90%) < 2 ms
  - Response time MBS 8250 (10-90%)
    - Liquids with viscosity < 100 cSt < 4 ms
    - Air and gases < 35 ms
  - Overload pressure (static) Min. 6 × FS (max. 1400 bar)
  - Burst pressure > 6 × FS (max. 2000 bar)
  - Durability, P: 10 – 90% FS > 10 × 10^6 cycles

### Electrical specifications

- **Nom. output signal (short circuit protected)** 4 – 20 mA (2-wire)
- **Supply voltage, \(U_B\) (polarity protected)** 9 – 32 V d.c.  
  > 32 V: Contact Danfoss
- **Supply voltage dependency** \(\leq \pm 0.05\%\) FS / 10 V
- **Current limitation (linear output signal up to 1.5 × rated range)** 22 mA ± 0.5 mA
- **Load \(R_L\) (load connected to 0 V)** \(R_L \leq \frac{U_B - 9 V}{0.02 A}\) [Ω]

### Environmental conditions

- **Media temperature range** -40 – 125 °C
- **Ambient temperature range** -40 – 105 °C
- **Compensated temperature span** Δ 80 °C
- **Compensated temperature range default** -10 – 70 °C
- **Storage temperature** -50 – 125 °C
- **EMC - Emission** EN 61000-6-3
- **EMC Immunity**  
  - RF Field: 100 V/m, 20 MHz – 2 GHz  
  - 20 V/m, 2 GHz – 4 GHz ISO 11452-2
- **Insulation resistance** > 100 MΩ at 500 V d.c.
- **Vibration stability**  
  - Sinusoidal 15.9 mm-pp, 5 Hz–25 Hz  
  - 25 g, 25 Hz – 2 kHz  
  - Random 15 g, 5 Hz – 1 kHz  
  - IEC 60068-2-6
- **Shock resistance**  
  - Shock 500 g / 1ms  
  - Free fall 1 m  
  - IEC 60068-2-27
- **Enclosure (depending on electrical connection)**  
  - See page 5

---

© Danfoss A/S (IA-MS / IM) 2013-nov

IC_PD.P21.V2.02 / 52085747
Data sheet
Pressure transmitters for wind turbine applications, types MBS 8200 and MBS 8250

Technical data
(continued)

### Mechanical characteristics

| Wetted parts | EN 10088-1; 1.4404 (AISI 316 L) |
| Enclosure | EN 10088-1; 1.4404 (AISI 316 L) |
| Pressure connection | EN 10088-1; 1.4404 (AISI 316 L) |
| Electrical connections | See page 5 |

| Net weight (depending on pressure connection) | < 0.07 kg |

### Ordering

**MBS 82**

<table>
<thead>
<tr>
<th>Type</th>
<th>Measuring range</th>
<th>Compensated temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>0 - 6 bar</td>
<td>-10 to 70°C</td>
</tr>
<tr>
<td>With pulse snubber</td>
<td>0 - 10 bar</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>0 - 16 bar</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>0 - 25 bar</td>
<td>00</td>
</tr>
<tr>
<td></td>
<td>0 - 40 bar</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>0 - 60 bar</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>0 - 100 bar</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>0 - 160 bar</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>0 - 250 bar</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>0 - 400 bar</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>0 - 600 bar</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>0 - 1000 bar</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>0 - 1600 bar</td>
<td>36</td>
</tr>
</tbody>
</table>

**Gasket**

- No gasket
- Gasket, Viton, medium temp. -20°C-125°C

**Pressure Connection**

- G1/4, DIN3852-E / ISO 1179-2
- M14x1.5, ISO 6149-2

**Electrical Connection**

- *Sealed gauge versions

- M12x1, metal, IEC 947-5-2, 4 pin, Au, male, excl. female plug
- Round Packard Metric-Pack 3-pin, Sn, male, excl. female plug

Please contact your local Danfoss office for further information or request on other versions.

© Danfoss A/S (IA-MS / IM) 2013-nov

IC.PD.P21.V2.02 / 52085747
# Pressure transmitters for wind turbine applications, types MBS 8200 and MBS 8250

**Dimensions/Combinations**

<table>
<thead>
<tr>
<th>Type code</th>
<th>C1</th>
<th>C2</th>
<th>C6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical connections</td>
<td>M12 × 1, 4-pin, metal, Au</td>
<td>Round Packard, Sn</td>
<td>ISO 15170 A1-3.1 Au</td>
</tr>
</tbody>
</table>

**Housing Ø = 19 mm**

<table>
<thead>
<tr>
<th>Type code</th>
<th>GB04</th>
<th>FA08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure connections</td>
<td>G1/4 - DIN 3852-E</td>
<td>M14 x 1.5 - ISO 6149-2</td>
</tr>
<tr>
<td></td>
<td>Gasket: DIN 3869-14</td>
<td>O-ring</td>
</tr>
</tbody>
</table>

| Hex is 22 mm across flats | | |
| Recommended torque ¹) | 30 - 35 Nm | 30 - 35 Nm |

¹) Depends of different parameters such as gasket material, mating material, thread lubrication and pressure level
## Electrical connections

<table>
<thead>
<tr>
<th>Type code</th>
<th>C1</th>
<th>C2</th>
<th>C6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical connection</td>
<td>M12 × 1, 4 pin, Metal Au</td>
<td>Round Packard, Sn</td>
<td>ISO 15170 A1-3.1 Au</td>
</tr>
<tr>
<td>Enclosure (IP protection fulfilled together with mating connector)</td>
<td>IP67</td>
<td>IP67</td>
<td>IP69K</td>
</tr>
<tr>
<td>Material</td>
<td>Glass filled polyamide, PA 6.6, Au coated contacts</td>
<td>Glass filled polyamide, PA 6.6, Sn coated contacts</td>
<td>Glass filled polyester, PBT, Au coated contacts</td>
</tr>
</tbody>
</table>