

Data Sheet

Pressure Transmitter Type **MBS 8200** and **MBS 8250**

For Wind Turbine Applications



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 leaves the pressure transmitters unaffected by electromagnetic fields up to 100 V/m.

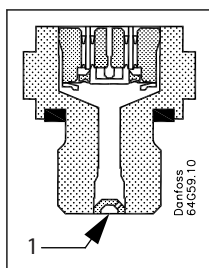
MBS 8250 with integrated pulse-snubber is designed for use in hydraulic applications with severe media influences like cavitation, liquid hammer or pressure peaks, and offers a reliable pressure measurement, even under harsh environmental conditions.

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

Applications

Applications (MBS 8250)



1 Pulse-snubber

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.

Media conditions (MBS 8250)

Clogging of the nozzle may occur in liquids containing particles. Mounting the transmitter in an upright position minimizes the risk of clogging, because the flow in the nozzle is restricted to the start-up period when the dead volume behind the nozzle fills, and furthermore because the nozzle orifice is relatively big (0.4 mm). The media viscosity has only little effect on the response time. Even at viscosities up to 100 cSt, the response time will not exceed 4 ms.

Product specification

Technical data

Table 1: 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)		6 x FS (max. 1400 bar)
Burst pressure		> 6 x FS (max 1800 bar)
Durability, P: 10 – 90% FS		> 10 x 10 ⁶ cycles

Table 2: Electrical specifications

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

Table 3: 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

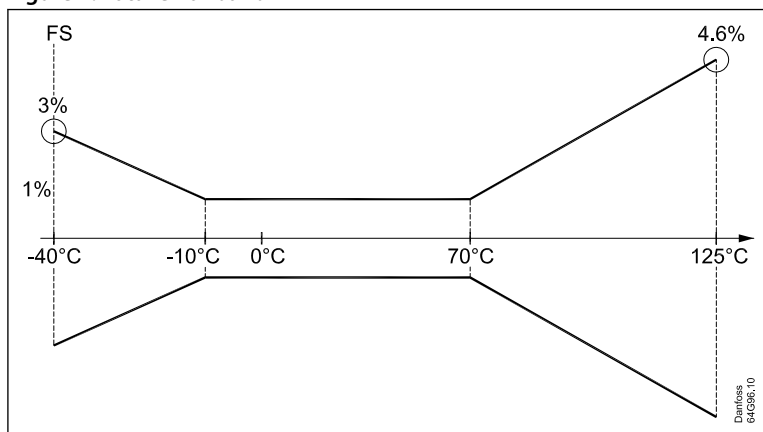
Pressure Transmitter, type MBS 8200 and MBS 8250

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 DC
Vibration stability	Sinusoidal	15.9 mm-pp, 5 Hz – 25 Hz 25 g, 25 Hz – 2 kHz	IEC 60068-2-6
	Random	15 g _{rms} , 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)			See Electrical connections

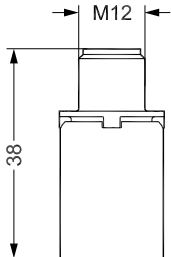
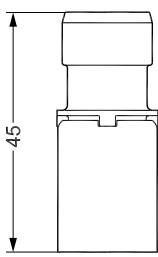
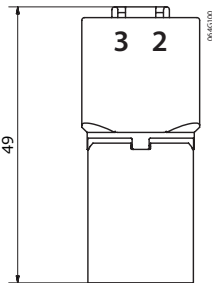
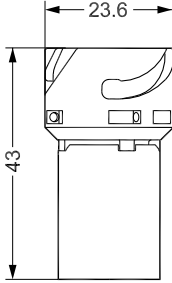
Table 4: Mechanical characteristics

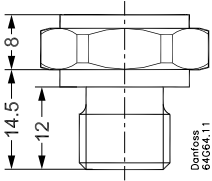
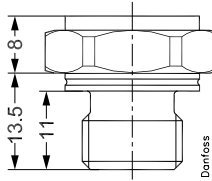
Materials	Wetted parts	EN 10088-1; 1.4404 (AISI 316 L)
	Enclosure	EN 10088-1; 1.4404 (AISI 316 L)
	Pressure connection	EN 10088-1; 1.4404 (AISI 316 L)
	Electrical connections	See Electrical connections
Net weight (depending on pressure connection)		< 0.07 kg

Figure 1: Total error band



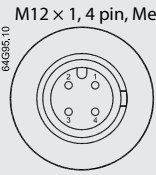
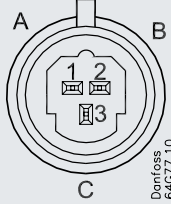
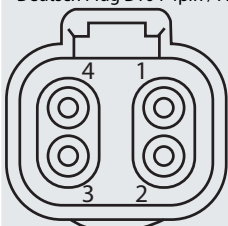
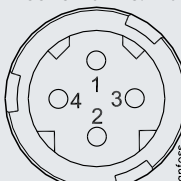
Dimensions / Combinations

Type code	C1	C2	C3	C6
Electrical connections	M12 x 1, 4-pin, metal, Au	Round Packard, Sn	Deutsch Plug DT04 4pin/AU	ISO 15170 A1-3.1 Au
Housing Ø = 19 mm				

Type code	GB04	FA08
Pressure connections	G1/4 - DIN 3852-E Gasket: DIN 3869-14	M14 x 1.5 - ISO 6149-2 O-ring
Hex is 22 mm across flats		
Recommended torque ¹⁾	30 – 35 Nm	30 – 35 Nm

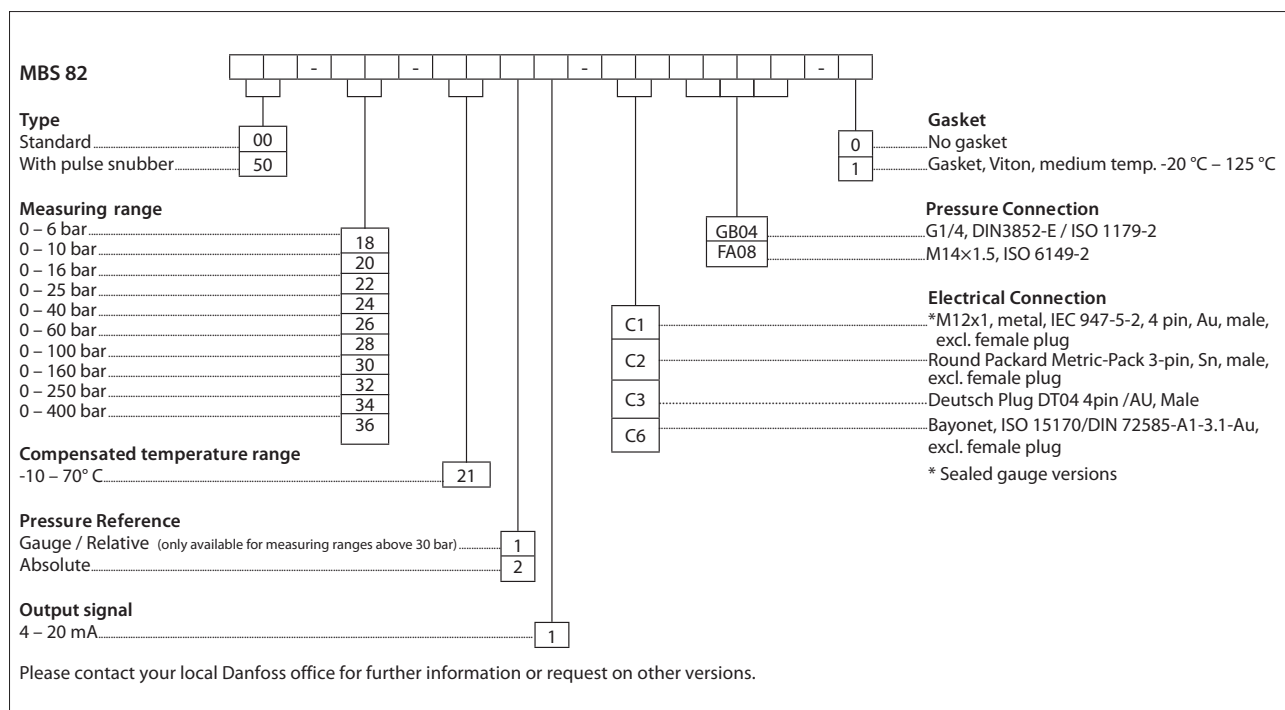
¹⁾ Depends of different parameters such as gasket material, mating material, thread lubrication and pressure level

Electrical connections

Type code	C1	C2	C3	C6
Electrical connection	 M12 x 1, 4 pin, Metal Au 4 pole	 Round Packard, Sn	 Deutsch Plug DT04 4pin / AU	 ISO 15170 A1-3.1 Au
Enclosure (IP protection fulfilled together with mating connector)	IP67	IP67	IP67	IP69K
Material	Glass filled polyamid, PA 6.6 Au coated contacts	Glass filled polyamide, PA 6.6 Sn coated contacts	Valox Resin with AU plated pins	Glass filled polyester, PBT Au coated contacts
Electrical connection, 4 – 20 mA output (2 wire)	Pin1: + supply Pin 2: - supply Pin 3: not used Pin 4: not used	Pin 1 (A): - supply Pin 2 (B): + supply Pin 3 (C): not used	Pin1: + supply Pin 2: - supply Pin 3: not used Pin 4: not used	Pin 1: + supply Pin 2: - supply Pin 3: not used Pin 4: not used

Ordering

Ordering standard



Certificates, declarations, and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

File name	Document type	Document topic	Approval authority
E227388	Explosive - Safety Certificate	Hazardous Locations	UL
E31024	Electrical - Safety Certificate	-	UL
E311982	Electrical - Safety Certificate	-	UL
060R9400.02	EU Declaration	EMCD/ROHS	Danfoss
CRN.0F18477.5123467890YTN	Pressure - Safety Certificate	CRN	TSSA
064R9401.00	Manufacturers Declaration	China RoHS	Danfoss
064R9402.00	Manufacturers Declaration	PED	Danfoss
1786330	Explosive - Safety Certificate	-	CSA

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