ENGINEERING TOMORROW

Data sheet

Pressure transmitters for heavy duty applications
MBS 8200 and MBS 8250

MBS 8200 is a series of compact pressure transmitters developed to withstand the pressure pulsations and vibrations known in mobile and industrial hydraulic 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 tough applications with severe media influences like cavitation, liquid hammer or pressure peaks.

Features

- Designed for use in harsh industrial environments
- EMC protection 100 V/m up to 2 GHz; 20 V/m up to 4 GHz
- For media and ambient temperatures up to 125 °C
- 3.3 mA sink / source
- 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
- Output clipping
- Fault indication / monitoring
- RoHS conformity

Approvals

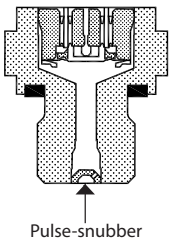
UL 508: Industrial control equipment, file no. E311982

UL 873: Temperature indicating equipment, file no. E31024

UL 1604 Hazloc: Class I, Div. 2, Group A, B, C and D, file no. E227388

CRN 0F18477.5CL

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.

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.

Technical data

Performance (EN 60770)

Accuracy @ 25 °C (incl. non-linearity, hysteresis and repeatability)		± 0.5% FS
Non-linearity BFSL (conformity)		≤ ± 0.2% FS
Hysteresis and repeatability		≤ ± 0.1% FS
Total error band inside the compensated temperature range		≤ ± 1% FS
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 × FS (max. 1400 bar)
Burst pressure		> 6 × FS (max. 1800 bar)
Durability, P: 10 – 90% FS		> 10 × 10^6 cycles

Electrical specifications

Nom. output signal (short-circuit protected)	4 – 20 mA (2-wire)	Ratiometric 10 – 90% of supply
Supply voltage [U_B], polarity protected	9 – 32 V DC > 32 V: Contact Danfoss	5 V DC ± 0.5 V
Supply – current consumption	–	≤ 6 mA
Supply voltage dependency	≤ ± 0.05% FS / 10 V	–
Current limitation	22 mA ± 0.5 mA	–
Sink / source	–	3.3 mA
Output impedance	–	≤ 25 Ω
Max load [R_L] (load connected to 0 V)	R_L ≤ (U_B - 9 V) / 0.02 A	R_L ≥ 1.5 kΩ

Technical data
(continued)

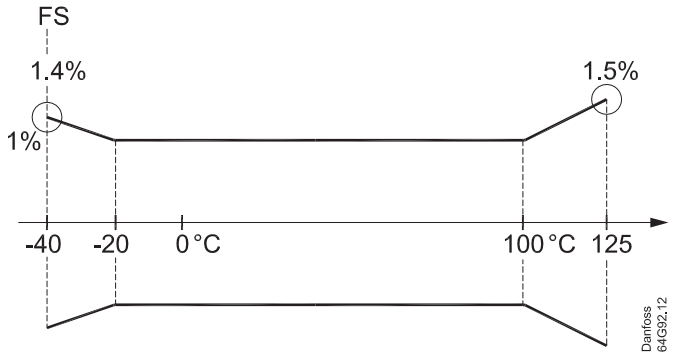
Environmental conditions

Media temperature range			-40 – 125 °C
Ambient temperature range			See page 6
Storage temperature			-50 – 125 °C
EMC - Emission			EN 61000-6-3
EMC Immunity	20 V/m, 80 MHz – 4 GHz		EN 61000-6-2
	100 V/m, 20 MHz – 2 GHz		ISO 11452-2
Surge protection	1 Kv @ 42 Ω; Line-Earth and Line-Line		EN 61000-6-2
Insulation resistance			> 100 MΩ at 500 V DC
Vibration stability	Sinusoidal	15.9 mm-pp, 5 Hz-25 Hz	IEC 60068-2-6
		25 g, 25 Hz - 2 kHz	
	Random	7.5 g_{rms}, 5 Hz – 1 kHz	IEC 60068-2-64
Shock resistance	Shock	500 g / 1ms	IEC 60068-2-27
	Free fall	1 m	IEC 60068-2-32
Enclosure (depending on electrical connection)			See page 6

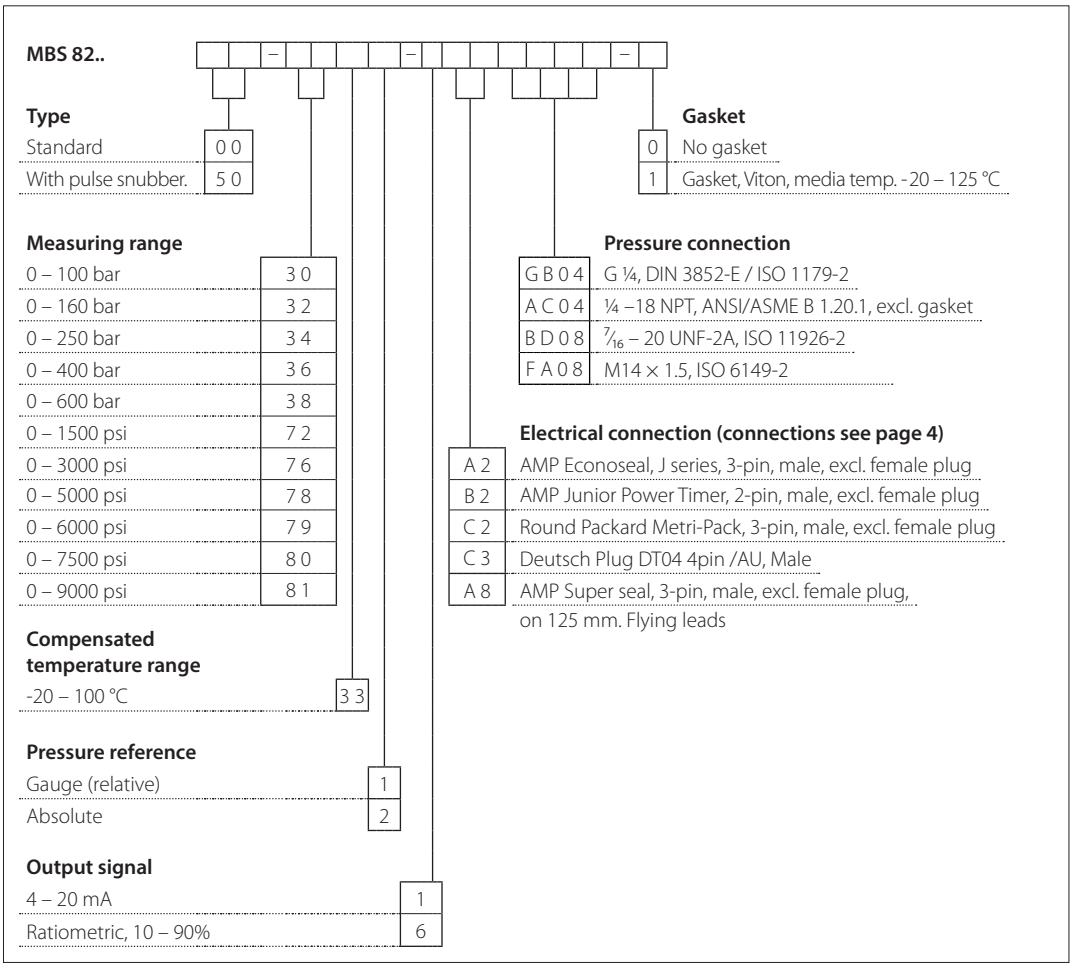
Mechanical characteristics

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 page 6
Net weight (depending on pressure connection)		< 0.07 kg

Compensated temperature range: -20 – 100 °C.
Thermal shift outside the compensated temperature range: ≤ ± 0.2% FS / 10 °K

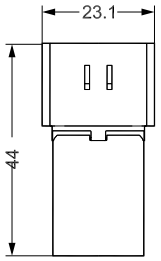
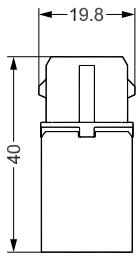
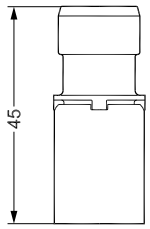
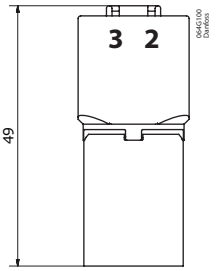
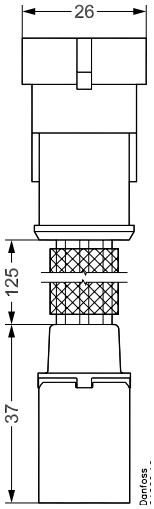


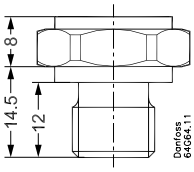
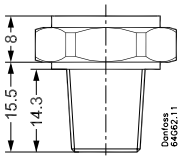
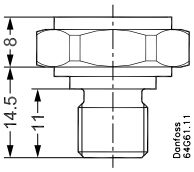
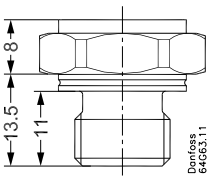
Ordering



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

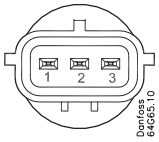
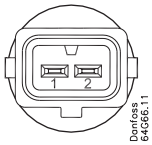
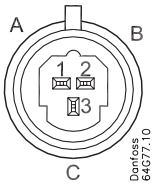
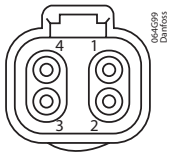
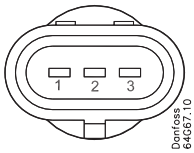
Dimensions/Combinations

Type code	A2	B2	C2	C3	A8
Electrical connection	AMP Econoseal	AMP Junior Power Timer	Round Packard Metri-Pack	Deutsch Plug DT04 4pin /AU	Flying leads with AMP superseal
Housing: ø = 19 mm					

Pressure connection				
 22 mm	 G¼ – DIN 3852-E Gasket: DIN 3869-14	 ¼ – 18 NPT	 7/16 – 20 UNF-2A O-ring	 M14 × 1,5 – ISO 6149-2 O-ring
Type code	**GB04**	**AC04**	**BD08**	**FA08**
Recommended torque [2]	30 – 35 Nm	2 – 3 turns after finger teightend	30 – 35 Nm	30 – 35 Nm

[2]) Depends of different parameters as packing material, mating material, thread lubrication and pressure level.

Electrical connections

Type code		A2	B2	C2	C3	A8
		 AMP Econoseal, J series male	 AMP Junior power timermale	 Round Packard Metri-Pack, male	 Deutsch Plug DT04 4pin /AU, Male	 Flying leads, 125 mm with AMP superseal 1.5 series, male
Ambient temperature	4 – 20 mA	-30 – 105 °C	-30 – 105 °C	-40 – 105 °C	-40 – 105 °C	- 40 – 105 °C
	Ratiometric	-30 – 105 °C	–	- 40 – 125 °C	-40 – 105 °C	- 40 – 125 °C
Enclosure (IP protection fulfilled together with mating connector)		IP67	IP67	IP67	IP67	IP67
Materials		Glass filled polyamide, PA 6.6 Sn-coated contacts	Glass filled polyamide, PA 6.6 Sn-coated contacts	Glass filled polyamide, PA 6.6 Sn-coated contacts	Valox Resin with AU plated pins	Glass filled polyamide, PA 6.6 Wire: PETFE (teflon) Protection sleeve: Polyester braided. Sn-coated contacts
Electrical connection	4 – 20 mA (2 wire)	Pin1: + supply Pin 2: ÷ supply Pin 3: not used	Pin 1: + supply Pin 2: ÷ supply	Pin1(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
	Ratiometric	Pin 1: + supply Pin 2: ÷ supply/ common Pin 3: output	–	Pin 1(A): ÷ supply/ common Pin 2(B): + supply Pin 3(C): output	Pin 1: + supply Pin 2: ÷ supply/ common Pin 3: not used Pin 4: output	Pin 1: + supply Pin 2: ÷ supply Pin 3: output