

# High temperature pressure transmitters for heavy-duty applications

## Type MBS 2250

### Features



- Designed for use in harsh industrial environments
- For medium and ambient temperatures up to 125 °C
- With integrated pulse-snubber. Protected against cavitation, liquid hammering and pressure peaks.
- Ratiometric out put signal: 10 - 90% of supply voltage
- Enclosure and wetted parts of AISI 316L
- A wide range of pressure and electrical connections
- Temperature compensated, linearized and laser adjusted

### Description

The compact heavy duty pressure transmitter MBS 2250 with integrated pulse-snubber is designed for use in hydraulic applications with severe medium influences like cavitation, liquid hammer or pressure peaks and offers a reliable pressure measurement, even under harsh environmental conditions.

The flexible program of pressure transmitters with ratiometric output covers absolute and gauge

(relative) versions, measuring ranges from 0-1 to 0-600 bar and a wide range of pressure and electrical connections.

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

**Technical data**
*Performance (IEC 60770)*

Accuracy		±0.5% FS (typ.) ±1% FS (max.)
Non-linearity (best fit straight line)		≤ ±0.2% FS
Hysteresis and repeatability		≤ ±0.1% FS
Thermal error band (compensated temperature range)		≤ ±1% FS
Response time	Liquids with viscosity < 100 cSt	< 4 ms
	Air and gases	< 35 ms
Overload pressure (static)		Min. 6×FS (max. 1500 bar)
Burst pressure		>6×FS (max. 2000 bar)
Durability, P: 10-90% FS		>10×10 <sup>6</sup> cycles

*Electrical specifications*

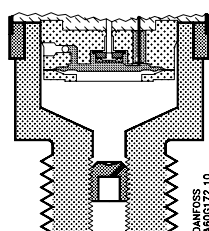
Nom. output signal		10-90% of V <sub>supply</sub>
Supply voltage V <sub>supply</sub> , polarity protected		4.75 to 8 V dc 5 V dc (nom.)
Power consumption		≤ 5 mA at 5 V dc
Output impedance		≤ 25Ω
Load [R <sub>L</sub> ] (load connected to ground)		R <sub>L</sub> ≥ 10 kΩ at 5 V dc

*Environmental conditions*

Medium temperature range (depending on gasket material)		-40 to +125°C
Ambient temperature range (depending on electrical connection)		see page 4
Compensated temperature range		0 to +100°C
Transport temperature range		-50 to +125°C
EMC - Emission		EN 61000-6-3
EMC - Immunity		EN 61000-6-2
Insulation resistance		> 100 MΩ at 100 V dc
Mains frequency test	500 V, 50 Hz	SEN 361503
Vibration stability	Sinusoidal	20 g, 25 Hz - 2 kHz
	Random	7.5 g <sub>rms</sub> , 5 Hz - 1 kHz
Shock resistance	Shock	500 g / 1 ms
	Free fall	
Enclosure (depending on electrical connection)		see page 4

*Mechanical characteristics*

Materials	Wetted parts	EN 10088 - 1; 1.4404 (AISI316 L)
	Enclosure	EN 10088 - 1; 1.4404 (AISI 316 L)
	Electrical connections	See page 4
Weight (depending on pressure connection and electrical connection)		0.2-0.3 kg

**Application and media conditions**

*Application*

Cavitation, liquid hammer and pressure peaks may occur in liquid filled 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 condition*

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 (0.3 mm). The media viscosity has only little effect on the response time. Even at a viscosities up to 100 cSt, the response time will not exceed 4 ms.

Ordering

**MBS 2250-**

**Measuring range**

0 - 1 bar.....	1 0
0 - 1.6 bar.....	1 2
0 - 2.5 bar.....	1 4
0 - 4 bar.....	1 6
0 - 6 bar.....	1 8
0 - 10 bar.....	2 0
0 - 16 bar.....	2 2
0 - 25 bar.....	2 4
0 - 40 bar.....	2 6
0 - 60 bar.....	2 8
0 - 100 bar.....	3 0
0 - 160 bar.....	3 2
0 - 250 bar.....	3 4
0 - 400 bar.....	3 6
0 - 600 bar.....	3 8

**Pressure reference**

Gauge (relative).....	1
Absolute.....	2

**Output signal**

Ratiometric, 10-90%.....	6
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**Gasket / O-ring material**

0	....	No gasket (see pressure connections)
1	....	Viton (medium temp.: -20 to +125 °C)

**Pressure connection**

A B 0 6	.....	DIN 3852-A-G <sup>3</sup> / <sub>8</sub>	excl. gasket
A B 0 8	.....	G <sup>1</sup> / <sub>2</sub> A (EN 837)	excl. gasket
A C 0 4	.....	1/4 -18 NPT	excl. gasket
F A 0 9	.....	DIN 3852-E-M14x1.5,	gasket: DIN 3869-14
G A 1 2	.....	DIN 3852-A-M18x1.5	excl. gasket
G B 0 4	.....	DIN 3852-E-G <sup>1</sup> / <sub>4</sub> ,	gasket: DIN 3869-14

**Electrical connection**

Figures refer to plug and standard PIN configuration see page 4

1	.....	Plug Pg 9 (EN175301-803)
2	.....	Plug, AMP Econoseal, J series, male, excl. female plug
3	.....	Screened cable, 2 m
5	.....	Plug, EN 60947-5-2, M12x1, 4 PIN male, excl. female plug
7	.....	Plug, ISO 15170-A1-3.2-Sn male, excl. female plug
8	.....	Plug, AMP Superseal 1.5 series male, excl. female plug

*Gauge versions only available as sealed gauge versions*

■ 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 for request on other versions.

Dimensions / Combinations

Type code	1	2	3	5	7	8
	EN175301-803, Pg 9	AMP Econoseal	2 m screened cable	EN 60947 - 5 - 2 M12x1; 4-pin	ISO 15170-A1-3.2-Sn (Bayonet plug)	AMP Superseal
Type Code	AB 0 6	GA 1 2	AB 0 8	AC 0 4	FA 0 9	GB 0 4

Electrical connections

Type code, page 3					
1	2	3	5	7	8
EN 175301-803, Pg 9	AMP Econoseal J series (male)	2 m screened cable	EN 60497-5 M12x1; 4-pin	ISO 15170-A1-3.2-Sn (Bayonet plug)	AMP Superseal 1.5 series (male)
<i>Ambient temperature</i>					
-40 → +125 °C	-40 → +105 °C	-30 → +85 °C	-25 → +90 °C	-40 → +125 °C	-40 → +125 °C
<i>Enclosure</i>					
IP 65	IP 67	IP 67	IP 67	IP 67 / IP 69K	IP 67
<i>Materials</i>					
Glass filled polyamid, PA 6.6	Glass filled polyamid, PA 6.6 <sup>1)</sup>	Poliolyfin cable with PE shrinkage tubing	Nickel plated brass, CuZn/Ni	Glass filled polyester, PBT	Glass filled polyamid, PA 6.6 <sup>2)</sup>
<i>Electrical connection, Ratiometric output 10-90% of supply voltage</i>					
Pin 1: + supply Pin 2: ÷ supply Pin 3: Output Earth: Connected to MBS enclosure	Pin 1: + supply Pin 2: ÷ supply Pin 3: Output	Brown wire: Output Black wire: ÷ supply Red wire: + supply Orange: Not used Screen: Not connected to MBS enclosure	Pin 1: + supply Pin 2: Not used Pin 3: Output Pin 4: ÷ supply	Pin 1: + supply Pin 2: Output Pin 3: Ventilation Pin 4: ÷ supply	Pin 1: + supply Pin 2: ÷ supply Pin 3: Output

<sup>1)</sup> Female plug: Glass filled polyester, PBT

<sup>2)</sup> Wire: PETFE (teflon)  
Protection sleeve: PBT mesh (polyester)

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