

# Pressure transmitters for heavy duty applications

## Type MBS 3250

### Features



- Designed for use in harsh industrial environments
- For medium and ambient temperatures up to 125 °C
- With integrated pulse-snobber. Protected against cavitation, liquid hammering and pressure peaks
- All standard output signals: 4-20 mA, 0-5 V, 1-5 V, 1-6 V, 0-10 V
- 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 3250 with integrated pulse-snobber 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 pressure transmitter programme covers different output signals, 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.

### Ordering

#### standard versions

Output: 4 - 20mA  
 Pressure connection :  
 DIN 3852-E-G¼  
 Plug: EN 175301-803,Pg9

Measuring range Pe [bar]	Overload pressure (Static) [bar]	Burst pressure Pe [bar]	Type	Code no.
0-1.6	12	100	MBS 3250-1211-1GB04-1	<b>060G1860</b>
0-2.5	24	100	MBS 3250-1411-1GB04-1	<b>060G1861</b>
0-4	24	100	MBS 3200-1611-1GB04-1	<b>060G1862</b>
0-6	60	100	MBS 3200-1811-1GB04-1	<b>060G1863</b>
0-10	60	100	MBS 3200-2011-1GB04-1	<b>060G1791</b>
0-16	150	150	MBS 3200-2211-1GB04-1	<b>060G1864</b>
0-25	150	150	MBS 3200-2411-1GB04-1	<b>060G1885</b>
0-40	300	400	MBS 3200-2611-1GB04-1	<b>060G1790</b>
0-60	360	800	MBS 3200-2811-1GB04-1	<b>060G1866</b>
0-100	600	1200	MBS 3200-3011-1GB04-1	<b>060G1867</b>
0-160	1200	1200	MBS 3200-3211-1GB04-1	<b>060G1868</b>
0-250	1500	2000	MBS 3200-3411-1GB04-1	<b>060G1779</b>
0-400	1500	2000	MBS 3200-3611-1GB04-1	<b>060G1869</b>
0-600	1500	2000	MBS 3200-3811-1GB04-1	<b>060G1778</b>

**Technical data**
*Performance (EN 60770)*

Accuracy (incl. non-linearity, hysteresis and repeatability)	±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
	Air and gases
Overload pressure (static)	< 4 ms < 35 ms
Burst pressure	Min. 6×FS (max. 1500 bar)
Durability, P: 10-90% FS	>6×FS (max. 2000 bar) >10×10 <sup>6</sup> cycles

*Electrical specifications*

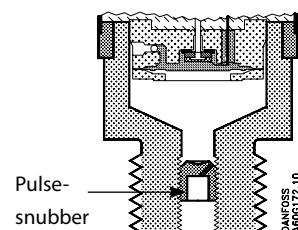
U <sub>B</sub>	Nom. output signal (short-circuit protected)		
	4-20 mA	0-5, 1-5, 1-6 V	0-10 V, 1-10 V
Supply voltage [U <sub>BV</sub> , polarity protected]	9 → 32 V	10 → 30 V	15 → 30 V
Supply – current consumption	–	≤ 5 mA	≤ 8 mA
Supply voltage dependency	≤ ±0.05% FS/10 V		
Current limitation	28 mA (typ.)	–	
Output impedance	–	≤ 25 Ω	
Load [R <sub>L</sub> ] (load connected to 0 V)	R <sub>L</sub> ≤ (U <sub>B</sub> - 9V)/0.02 A	R <sub>L</sub> ≥ 10 kA	R <sub>L</sub> ≥ 15 kA

*Environmental conditions*

Medium temperature range	-40 → +125°C		
Ambient temperature range (depending on electrical connection)	see page 4		
Compensated temperature range	0 → +100°C		
Transport temperature range	-50 → +125°C		
EMC – Emission	EN 61000-6-3		
EMC – Immunity	EN 61000-6-2		
Insulation resistance	> 100 MA at 100 V		
Mains frequency test	SEN 361503		
Vibration stability	Sinusoidal	15.9 mm-pp, 5 Hz-25 Hz 20 g, 25 Hz-2 kHz	IEC 600068-2-6
	Random	7.5 grms, 5 Hz-1 kHz	
	Shock resistance	Shock	500 g/1 ms
Free fall			IEC 60068-2-32
Enclosure (depending on electrical connection)	see page 4		

*Mechanical conditions*

Materials	Wetted parts	EN 10088-1 ; 1.4404 (AISI316L)
	Enclosure	EN 10088-1 ; 1.4404 (AISI316L)
	Pressure connection	see page 3
	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 3250 -

<b>Measuring range</b>	1 0	0	
0-1 bar .....	1 2	1	
0-1.6 bar .....	1 4		
0-2.5 bar .....	1 6		
0-4 bar .....	1 8		
0-6 bar .....	2 0		
0-10 bar .....	2 2		
0-16 bar .....	2 4		
0-25 bar .....	2 6		
0-40 bar .....	2 8		
0-60 bar .....	3 0		
0-100 bar .....	3 2		
0-160 bar .....	3 4		
0-250 bar .....	3 6		
0-400 bar .....	3 8		
<b>Pressure reference</b>			
Gauge (relative) .....	1		
Absolute .....	2		
<b>Output signal</b>			
4-20 mA .....	1		
0-5 V .....	2		
1-5 V .....	3		
1-6 V .....	4		
0-10 V .....	5		

<b>Gasket/O-ring material</b>	
0 .....	No gaskets (see pressure connections)
1 .....	Viton (medium temp.: -20 to +125°C)
<b>Pressure connection</b>	
E B 0 8 .....	G½ A (EN 837), excl. gasket
E C 0 4 .....	¼" - 18 NPT, excl. gasket
F A 0 9 .....	DIN 3852-E-M14×1.5, gasket: DIN 3869-14
G A 1 2 .....	DIN 3852-A-M18×1.5, excl. gasket
G B 0 4 .....	DIN 3852-E-G¼, gasket: DIN 3869-14
<b>Electrical connection</b>	
1 .....	Plug EN175301-803, Pg9
2 .....	*) Plug, AMP Econoseal, J series, male, excl. female plug
3 .....	Screened cable, 2 m
5 .....	*) Plug, IEC 947-5-2, M12×1, male, excl. female plug
8 .....	*) Plug, AMP Superseal 1.5 series male, excl. female plug

\* Gauge versions only available as sealed gauge versions

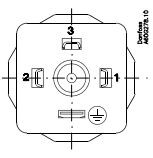
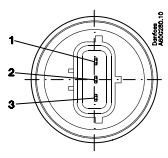
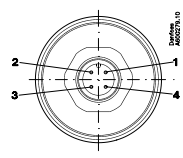
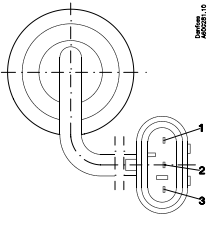
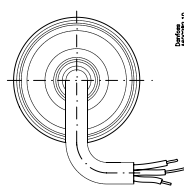
Preferred versions

*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	8
	EN175301-803, Pg9	AMP Econoseal	2 m screened cable	EN 60947 - 5 - 2 4-pin; M12 x 1	AMP Superseal
	G ½ A (EN 837)	¼ - 18 NPT		DIN 3852-E-M14×1.5 Gasket: DIN 3869-14-NBR	DIN 3852-E-G ¼ Gasket: DIN 3869-14-NBR
<b>Type Code</b>	<b>EB08</b>	<b>EC04</b>		<b>FA09</b>	<b>GB04</b>

**Electrical connections**

Type code page 3				
1	2	5	8	3
EN 175301-803, Pg9 	AMP Econoseal J series (male) 	IEC 947-5-2 4-pin; M12 x 1 	AMP Superseal 1.5 series (male) 	2 m screened cable 
<i>Ambient temperature, 4-20 mA output</i>				
-40 to +100 °C	-40 to +100 °C	-25 to +90 °C	-40 to +100 °C	-30 to +85 °C
<i>Ambient temperature, 0-5 V, 1-5 V, 1-6 V and 0-10 V output</i>				
-40 to +125 °C	-40 to +105 °C	-25 to +90 °C	-40 to +125 °C	-30 to +85 °C
<i>Enclosure</i>				
IP 65	IP 67	IP 67	IP 67	IP67
<i>Materials</i>				
Glass filled polyamid, PA 6.6	Glass filled polyamid, PA 6.6 <sup>1)</sup>	Nickel plated brass, CuZn/Ni	Glass filled polyamid, PA 6.6 <sup>2)</sup>	Polyolifin cable with PE shrinkage tubing
<i>Electrical connection, 4-20 mA output (2 wire)</i>				
Pin 1: +supply Pin 2: ÷supply Pin 3: Not used Earth: Connected to MBS enclosure	Pin 1: +supply Pin 2: ÷supply Pin 3: Not used	Pin 1: +supply Pin 2: Not used Pin 3: Not used Pin 4: ÷supply	Pin 1: +supply Pin 2: ÷supply Pin 3: Not used	Brown wire: +supply Black wire: ÷supply Red wire: Not used Orange: Not used Screen: Not connected to MBS enclosure
<i>Electrical connection, 0-5 V, 1-5 V, 1-6 V, 0-10 V output</i>				
Pin 1: +supply Pin 2: ÷supply Pin 3: Output Earth: Connected to MBS enclosure	Pin 1: +supply Pin 2: ÷supply Pin 3: Output	Pin 1: +supply Pin 2: not used Pin 3: Output Pin 4: ÷supply	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

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

<sup>2)</sup> Wire: PETFE (teflon)

Protection sleeve: PBT mesh (polyester)

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