

Data sheet

OEM Pressure Transmitters for heavy-duty applications

Type MBS 1200 and MBS 1250



The compact OEM pressure transmitter programme is designed for use in severe hydraulic applications. The programme consists of two series:

- MBS 1200 – without integrated pulse-snubber
- MBS 1250 – with integrated pulse-snubber

The integrated pulse-snubber offers a high degree of protection against cavitations and liquid hammer, and the well thought out design results in excellent vibration stability and an exceptional robustness.

The high degree of EMI protection equips the pressure transmitter to meet most requirements.

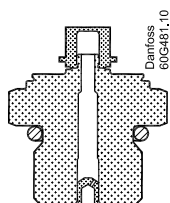
Features

- Designed for use in severe OEM applications
- For medium and ambient temperatures up to 125 °C
- All standard output signals:
4 – 20 mA, 0 – 5 V, 1 – 5 V, 1 – 6 V,
0 – 10 V, 10 – 90% ratiometric voltage
- Wetted parts made of stainless steel
- A wide range of pressure and electrical connections
- EMC protection up to 100 V/m
- Dual output transmitter – for further information please contact Danfoss

Approvals

- UL 508 recognized
ISO 7637 pulse 1 - 4

Pulse-snubber in MBS 1250



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 (incl. non-linearity, hysteresis and repeatability)	≤ ± 0.5% FS
Thermal zero point shift	≤ ± 0.15% FS / 10K
Thermal span shift	≤ ± 0.15% FS / 10K
Response time liquids (10 – 90%)	< 0.5 ms
Durability, P: 10 – 90% FS	>10 × 10 ⁶ cycles

Overload and burst pressure – without pulse-snubber (MBS 1200)

Nominal pressure [bar]	10	16	25	40	60	100	160	250	400	500	600	1000*	1600*	2200*
Overload pressure	30	48	80	80	140	200	320	500	800	1400	1400	2000	2500	3000
Burst pressure	400	640	800	800	1400	2000	1600	2500	4000	>4000	>4000	>4000	>4000	>4000

*) Only available with M12 × 1 1.5 P high pressure port, type FC06. Please contact Danfoss.

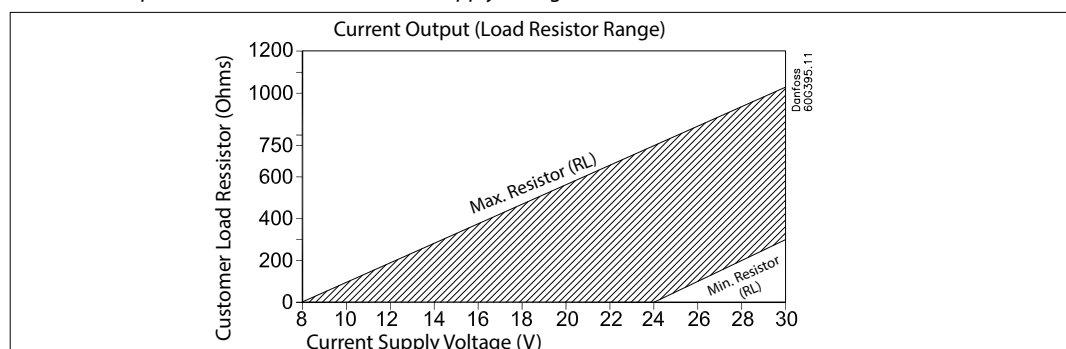
Overload and burst pressure – with integrated pulse-snubber (MBS 1250)

Nominal pressure [bar]	10	16	25	40	60	100	160	250	400	500	600
Overload pressure	30	48	120	120	210	300	480	750	1200	2100	2100
Burst pressure	400	640	800	800	1400	2000	1600	2500	4000	>4000	>4000

Electrical specifications

Nom. output signal (short-circuit protected)	4 – 20 mA (2 wire)	0 – 5, 1 – 5, 1 – 6 V	0 – 10 V	10 – 90% ratiometric
Supply voltage [U _B], polarity protected	8 – 30 V	8 – 30 V	12 – 30 V	5 V ± 0.5 V
Supply – current consumption	–	4.5 mA	4.5 mA	4.5 mA
Output impedance	–	≤ 90 Ω	≤ 90 Ω	≤ 90 Ω
Load [R _L] (connected to 0 V)	See chart below	RL ≥ 10 kΩ	RL ≥ 10 kΩ	RL ≥ 5 kΩ
Load [R _L] (connected to + V)	See chart below	Not possible	Not possible	RL ≥ 5 kΩ

4 – 20 mA output – min. / max. resistance vs. supply coltage



Note:
Loop current should not exceed 22 mA continuous or 25 mA temporarily due to pressure peaks.

Technical data
(continued)

Environmental conditions

Media temperature range		- 40 – 125 °C
Ambient temperature range		See page 5
Compensated temperature range		- 40 – 125 °C
Transport temperature range		-55 – 150 °C
EMC – Emission		EN 61326-2-3
EMC Directive		004 / 108 / Ec
EMC – Immunity RF field	100 V/m, 26 Mhz – 1 Ghz	EN 61326-2-3 Cable < 30 m
	3 V/m, 1.4 GHz – 2.7 GHz	
Electrical performance comply with		ISO 7637 pulse 1 – 4, 24V
Vibration stability	20 g, 10 – 2000 Hz, sinus	EN 60068-2-6
Shock resistance	100 g	EN 60068-2-27
Enclosure (depending on electrical connection)		See page 5

Mechanical characteristics

Materials	Wetted parts	17 – 4 PH
	Enclosure	AISI 304 or plastic
	Pressure connection	17 – 4 PH
	Electrical connection	See page 5

Ordering standard

MBS 12..

Standard	0 0
With pulse-snobber	5 0

Measuring range ¹⁾	
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 – 500 bar	3 7
0 – 600 bar	3 8

Pressure reference	
Gauge (relative)	1

1

Gasket
Defined type of pressure connection

Pressure connection (Hex 22 mm)

GB04	G ¼ A DIN 3852-E ²⁾
AC04	¼ – 18 NPT
AC02	⅜ – 27 NPT
BD08	7/16 – 20 UNF-2A ²⁾
AF04	¼ – 18 NPTF
AF02	⅜ – 27 NPTF
PT04	¼ – 19 PT

Electrical connection

C1	M12 × 1 EN60947-5-2
C2	Round Packard Metri-Pack
C3	Deutsch DT04-4P
C4	AMP superseal
C7	Deutsch DT04-3P

Output signal

1	4 – 20 mA
2	0 – 5 V
3	1 – 5 V
4	1 – 6 V
5	0 – 10 V
6	Ratiometric, 10 – 90%

¹⁾ For pressure range <10 bar or >600 bar, please contact Danfoss

²⁾ Incl. Viton gasket. Min. medium temperature is -25 °C

Dimensions / Combinations*)

Type code	C1	C2	C3	C4	C7
	M12 x 1 EN60947-5-2	Round Packard Metri-Pack	Deutsch DT04-4P	AMP Superseal 1.5	Deutsch DT04-3P
Note: The diameter of all housings is 19 mm.					

Note: HEX is 22 mm across flats					
	7/16 – 20 UNF-2A	1/4 – 19 Pt	1/4 – 18 NPT / NP	1/8 – 27 NPT / NPTF	G 1/4 A DIN 3852-E
Type code	BD08	PT04	AC04/AF04	AC02/AF02	GB04
Recommended torque ²⁾	18 – 20 Nm	2 – 3 turns after finger tightend	2 – 3 turns after finger tightend	2 – 3 turns after finger tightend	30 – 35 Nm

* For other combination please contact Danfoss

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

Electrical connections

Type code	C1	C2	C3	C4	C7
	<p>M12x1 EN60947-5-2</p>	<p>Round Packard Metri-Pack</p>	<p>Deutsch DT04-4P</p>	<p>AMP Superseal 1.5</p>	<p>Deutsch DT04-3P</p>
Ambient temperature 4 – 20 mA	- 40 – 100 °C	- 40 – 100 °C	- 40 – 100 °C	- 40 – 100 °C	- 40 – 100 °C
Ambient temperature, 0 – 5 V, 1 – 5 V, 1 – 6 V, 0 – 10 V, ratiometric 10 – 90%	- 40 – 125 °C	- 40 – 125 °C	- 40 – 125 °C	- 40 – 125 °C	- 40 – 125 °C
Enclosure (IP protection fulfilled together with mating connector)	IP67	IP67	IP67	IP67	IP67
Material	SS, PBT 30% GFR Gold (Au) plated	Glass filled PBT 30% GFR Tin (Sn) plated	Glass filled PBT 30% GFR Gold (Au) plated	Glass filled PBT 30% GFR Tin (Sn) plated	Glass filled PBT 30% GFR Tin (Sn) plated
Electrical connection, 4 – 20 mA (2 wire)	Pin 1: + supply Pin 2: not connect Pin 3: ÷ supply Pin 4: PE, connected to MBS enclosure	Pin A: ÷ supply Pin B: + supply Pin C: do not connect	Pin 1: ÷ supply Pin 2: + supply Pin 3: PE, connected to MBS enclosure Pin 4: do not connect	Pin 1: do not connect Pin 2: ÷ supply Pin 3: + supply	Pin A: + supply Pin B: ÷ supply Pin C: do not connect
Electrical connections, 0 – 5 V, 1 – 5 V, 1 – 6 V, 0 – 10 V, ratiometric 10 – 90%	Pin 1: + supply Pin 2: output Pin 3: ÷ supply Pin 4: PE, connected to MBS enclosure	Pin A: ÷ supply Pin B: + supply Pin C: output	Pin 1: ÷ supply Pin 2: + supply Pin 3: PE, connected to MBS enclosure Pin 4: output	Pin 1: output Pin 2: ÷ supply Pin 3: + supply	Pin A: + supply Pin B: ÷ supply Pin C: output