



Pressure transmitter

MBS 3200 / MBS 3250

For heavy duty applications

Description

The compact high temperature pressure transmitter MBS 3200 is designed for use in hydraulic and almost all industrial applications, and offers a reliable pressure measurement, even under harsh environmental conditions.

MBS 3250 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 pressure transmitter programme covers different output signals, absolute or gauge (relative) versions, measuring ranges from 0 – 1 to 0 – 600 bar and a wide range of pressure and electrical connections.

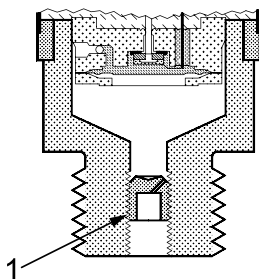
A robust design, an excellent vibration stability and a high degree of EMC / EMI protection equip the pressure transmitter to meet the most stringent industrial requirements.

Features & benefits

- Designed for use in harsh industrial and hydraulic environments
- For media and ambient temperatures up to 125 °C
- With integrated pulse-snubber. Protected against cavitation, liquid hammering and pressure peaks (MBS 3250)
- All standard output signals: 4 – 20 mA, 0 – 5 V, 1 – 5 V, 1 – 6 V, 0 – 10 V, 1 – 10 V and ratiometric output signal: 10 - 90% of supply voltage
- Enclosure and wetted parts of AISI 316L
- A wide range of pressure and electrical connections
- Fully digitally compensated
- For use in Zone 2 explosive atmospheres
- UL approved

Applications

MBS 3250



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 3250)

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 limited to the start-up period until the dead volume behind the nozzle orifice is filled.

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.

Product code numbers

Product details

General data

Performance (EN 60770)

Accuracy (incl. non-linearity, hysteresis and repeatability)		$\leq \pm 0.5\%$ FS (typ.)
		$\leq \pm 1\%$ FS (max.)
Non-linearity BFSL (conformity)		$\leq \pm 0.2\%$ FS
Hysteresis and repeatability		$\leq \pm 0.1\%$ FS
Thermal error band (compensated temperature range)		$\leq \pm 1.0\%$ FS
Response time	Liquids with viscosity < 100 cSt	< 4 ms
	Air and gases (MBS 3250)	< 35 ms
Overload pressure (static)		6 × FS (max. 1500 bar)
Burst pressure		6 × FS (max. 2000 bar)
Power-up time		< 50 ms
Durability, P: 10 – 90% FS		> 10 × 10 ⁶ cycles

Electrical specifications

Nom. output signal (short-circuit protected)	4 – 20 mA	0 – 5, 1 – 5, 1 – 6 V	0 – 10 V, 1 – 10 V	Ratiometric 10 – 90% of [U _B]
Supply voltage [U _B], polarity protected	9 – 32 V DC	9 – 32 V DC	15 – 32 V DC	4.5 – 5.5 V DC
Supply – current consumption	–	≤ 5 mA	≤ 8 mA	≤ 5 mA at 5 V DC
Supply voltage dependency	< 0.1% FS / 10 V	< 0.05% FS / 10 V		–
Ratiometricity	–	–		< 0.05% FS / 4.5 – 5.5 V
Output limitation	22.4 mA	0-5 V: 5.75 V 1-5 V: 5.6 V 1-6 V: 6.75 V	0-10V: 11.5 V	≈ supply voltage
Sink / Source	–	< 1 mA		
Load [R _L] (load connected to 0 V)	R _L ≤ (U _B - 9 V) / 0.02 A	R _L ≥ 10 kΩ	R _L ≥ 15 kΩ	R _L ≥ 10 kΩ at 5 V DC

Environmental conditions

Sensor operating temperature (depending on gasket material)	4 – 20 mA		-40 – 100 °C
	10 – 90% of supply voltage 0 – 5 V, 1 – 5 V, 1 – 6 V, 0 – 10 V		-40 – 125 °C
Media temperature range			-40 – 125 °C
Ambient temperature range (depending on electrical connection)			See Electrical connections
Compensated temperature range			0 – 100 °C
Transport/storage temperature range			-50 – 125 °C
EMC – Emission			EN 61000-6-3
EMC – Immunity			EN 61000-6-2
Insulation resistance			> 100 mΩ at 500 V DC
Mains frequency test			Based on SEN 361503
Vibration stability	Sinusoidal	15.9 mm-pp, 5 Hz – 25 Hz	IEC 60068-2-6
		20 g, 25 Hz – 2 kHz	
	Random	7.5 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

Explosive atmospheres

Zone 2 applications ⁽¹⁾	  II 3G Ex ec IIA T3 Gc -20°C<Ta<+85°C	EN60079-0; EN60079-7
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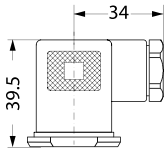
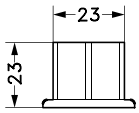
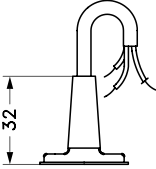
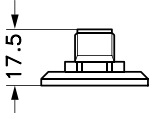
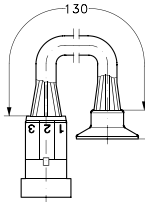
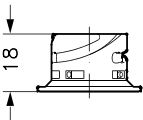
⁽¹⁾When used in ATEX Zone 2 areas at low temperatures the cable and plug must be protected against impact.

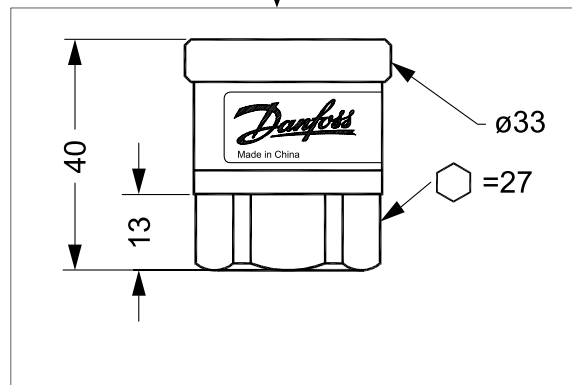
Mechanical characteristics

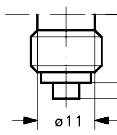
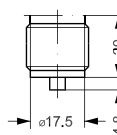
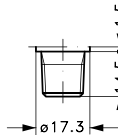
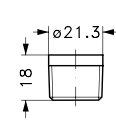
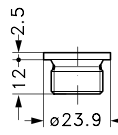
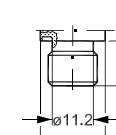
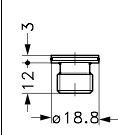
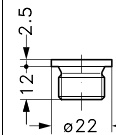
Materials	Wetted parts	EN 10088-1; 1.4404 (AISI 316 L)
	Enclosure	EN 10088-1; 1.4404 (AISI 316 L)
	Electrical connections	See Electrical connections
	Pressure connection	See Dimensions/Combinations
Net weight (depending on pressure connection and electrical connection)		0.2 – 0.3 kg

Dimensions

Dimensions/Combinations

Type code	A1	G1	A3	E3	A8	C8
	EN175301-803-A Pg 9	AMP Econoseal	2 m screened cable	EN 60947-5-2 M12 x 1; 4-pin	AMP Superseal	ISO 15170-A1-3-2-Sn Bayonet
						



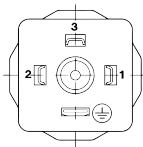
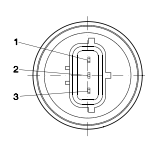
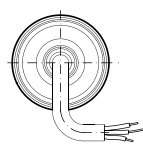
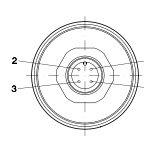
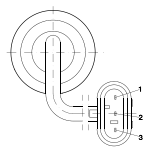
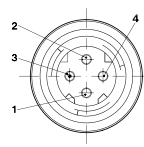
								
	G1/4 A (EN 837)	G1/2 A (EN 837)	1/4 - 18 NPT	1/2 - 14 NPT	DIN 3852-A-M 18 x 1.5	DIN 3852-E-G1/4	DIN 3852-E-M 14 x 1.5	Din 3852-A-G 3/8
Type code	AB04	AB08	AC04	AC08	GA12	GB04	FA09	GB06
Recommended torque ⁽¹⁾	30 - 35 Nm	30 - 35 Nm	2-3 turns after finger tightened	2-3 turns after finger tightened	30 - 35 Nm	30 - 35 Nm	30 - 35 Nm	30 - 35 Nm

⁽¹⁾ Depends on various parameters such as seal material, coupling material, thread lubrication and pressure level

Note: Dimensions are in mm, unless stated otherwise.

Connections

Electrical connections

Type code	A1	G1	A3	E3	A8	C8
						
	EN 175301-803-A, Pg 9	AMP Econoseal J series (male)	2 m screened cable	EN 60947-5-2 M12 x 1; 4-pin	AMP Superseal 1.5 series (male)	ISO 15170-A1-3-2 Sn Bayonet
Ambient temperature 4 - 20 mA output	-40 – 100 °C	-30 – 100 °C	-30 – 85 °C	-25 – 90 °C	-30 – 100 °C	-40 – 100 °C
Ambient temperature 0 - 5 V, 1 - 5 V, 1 - 6 V, 0 - 10 V, 1 - 10 V output	-40 – 125 °C	-30 – 105 °C	-30 – 85 °C	-25 – 90 °C	-30 – 100 °C	-40 – 125 °C
Ambient temperature Ratiometric output, 10-80% of supply voltage	-40 – 125 °C	-30 – 105 °C	-30 – 85 °C	-25 – 90 °C	-30 – 100 °C	-40 – 125 °C
Enclosure (IP protection fulfilled together with mating connector)	IP65	IP67	IP67	IP67	IP67	IP67/IP69
Material	Glass filled polyamid, PA 6.6	Glass filled polyamid, PA 6.6 ⁽¹⁾	Poliolyfin cable with PE shrinkage tubing	Nickel plated brass, CuZn/Ni	Glass filled polyamid, PA 6.6 ⁽²⁾	Glass filled polyamid, PA 6.6 ⁽²⁾
Electrical connection, 4 – 20 mA output (2 wire)	Pin1: + supply Pin 2: ÷ supply Pin 3: not used  Earth: Connected to MBS enclosure	Pin1: + supply Pin 2: ÷ supply ⁽³⁾ Pin 3: not used	Brown wire: + supply Black wire: ÷ supply Red wire: not used Orange: not used Screen: not connected to MBS enclosure	Pin1: + supply Pin 2: not used Pin 3: not used Pin 4: ÷ supply	Pin1: + supply Pin 2: ÷ supply Pin 3: not used	Pin1: + supply Pin 2: ÷ supply Pin 3: not used Pin 4: not used
Electrical connection, 0 – 5 V, 1 – 5 V, 1 – 6 V, 0 – 10 V, 1 – 10 V output	Pin1: + supply Pin 2: ÷ supply Pin 3: + output  Earth: Connected to MBS enclosure	Pin1: + supply Pin 2: ÷ supply Pin 3: + output	Brown wire: + supply Black wire: ÷ supply ⁽³⁾ Red wire: not used Orange: not used Screen: not connected to MBS enclosure	Pin1: + supply Pin 2: not used Pin 3: + output Pin 4: ÷ supply ⁽³⁾	Pin1: + supply Pin 2: ÷ supply ⁽³⁾ Pin 3: + output	-
Electrical connection Ratiometric output, 10-90 % of supply voltage	Pin1: + supply Pin 2: ÷ supply Pin 3: output ⁽³⁾  Earth: Connected to MBS enclosure	Pin1: + supply Pin 2: ÷ supply ⁽³⁾ Pin 3: + output	Brown wire: output Black wire: ÷ supply Red wire: + supply ⁽³⁾ Orange: not used Screen: not connected to MBS enclosure	Pin1: + supply Pin 2: not used Pin 3: output Pin 4: ÷ supply ⁽³⁾	Pin1: + supply Pin 2: ÷ supply Pin 3: output ⁽³⁾	Pin 1: + supply Pin 2: + output Pin 3: Ventilation Pin 4: ÷ supply ⁽³⁾

⁽¹⁾ Female plug: Glass filled polyester, PBT

⁽²⁾ Wire: PTFE (teflon) Protection sleeve: PBT mesh (polyester)

⁽³⁾ Common

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.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Issuer	Approval topic
Electrical Safety Certificate	UL E311982	UL - Underwriters Laboratories inc.	
Electrical Safety Certificate	UL E510763	UL - Underwriters Laboratories inc.	
Manufacturer's Declaration	Danfoss MD 060R3160.00	Danfoss	China RoHS
Pressure Safety Certificate	TSSA CRN.0F18477.5123467890YTN	TSSA - Technical Standards & Safety Authority	CRN
Explosive Safety Certificate	UL E227388	UL - Underwriters Laboratories inc.	UL-CSA, Explosive
Electrical Safety Certificate	UL E494625	UL - Underwriters Laboratories inc.	
Electrical Safety Certificate	UL E31024	UL - Underwriters Laboratories inc.	
Hygienic Certificate	NSF C0252992	NSF International	Drinking Water
EU-UK Declaration	Danfoss EU-UK 064G9615.11	Danfoss	EMC, EU RoHS, ATEX, UK RoHS
UA Declaration	Danfoss UA 2023-01-10 Regulators PL01 PL04	Danfoss	Pressure, PED
Pressure Safety Certificate	LLC CDC EURO-TYSK UA.TR.089.1015.05-22	LLC CDC EURO TYSK - Ukraine	Pressure
UA Declaration	Danfoss UA 2024-07-25 cooling sensors	Danfoss	LVD, EMC
EAC Declaration	EAC KZ 7100841.13.12.00005	EAC - Eurasian Customs Union	EMC
Hygienic Certificate	NSF C863837	NSF International	Drinking Water
Export Control Declaration	Pressure & Temperature Sensors	Danfoss	
EU Declaration	PL 04 Packaging	Danfoss	Packaging

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Danfoss offers a wide range of support along with our products, including digital information, software, mobile apps and expert guidance. See the possibilities below.



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