

Data sheet

Pressure transmitters for CO₂ food retail applications

MBS 8250



MBS 8250 is a series of compact pressure transmitters developed and thoroughly tested to ensure excellent operation in CO₂ applications. It monitors the suction and discharge pressure in a CO₂ sub- and transcritical cycle and offers a reliable pressure measurement.

The technology combining piezo resistive sensor element and programmable gain amplifiers makes the MBS 8250 the obvious choice for applications demanding highest accuracy and insensitiveness like controlling the pressures in CO₂ applications. Further this technology enhances the functional safety by limiting the output signal at excess pressure conditions, it allows excellent sink/source capabilities and it leaves the pressure transmitters unaffected by electromagnetic fields up to 100 V/m.

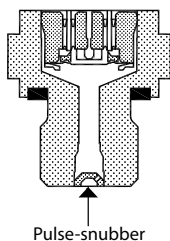
MBS 8250 with integrated pulse-snubber is designed for protection against cavitation, liquid hammering and pressure peaks.

Features

- Designed for use in CO₂ plants and demanding 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
- Self-diagnostic features on demand (with output clipping)
- 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 CO₂ systems with changes in the flow velocity of the gas e.g. fast closing of a valve or compressor 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 with CO₂ in gas form, the response time will not exceed 35 ms (liquid state < 4ms).

Technical data
Performance (EN 60770)

Accuracy @ 25 °C (incl. non-linearity, hysteresis and repeatability)	± 0.5% FS (max.)	
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 8250 (10 – 90%)	Liquids with viscosity < 100 cSt	< 4 ms
	Air and gases	< 35 ms
Overload pressure (static)	6 × FS	
Burst pressure	> 6 × FS	
Durability, P: 10 – 90% FS	> 10 × 10 ⁶ cycles	

Electrical specifications

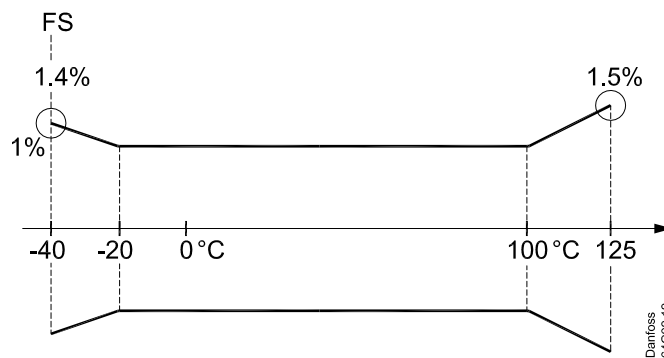
Nom. output signal (short-circuit protected)	4 – 20 mA (2-wire)	Ratiometric 10 – 90% of supply
Supply voltage [U _s], polarity protected	9 – 32 V DC > 32 V: Contact Danfoss	5 V DC ± 0.5 V
Supply – current consumption	–	≤ 6 mA
Supply voltage dependency	≤ ± 0.05% FS / 10 V	–
Current limitation	22 mA ± 0.5 mA	–
Sink / source	–	3.3 mA
Output impedance	–	≤ 25 Ω
Max load [R _L] (load connected to 0 V)	R _L ≤ (U _s - 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
		25 g, 25 Hz – 2 kHz
	Random	11 g _{rms} , 5 Hz – 1 kHz (3 × 8 h)
Shock resistance	Shock	500 g / 1ms
	Free fall	1 m
Enclosure		IP67

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	Glass filled polyamide, PA 6.6 Sn-coated contacts
Net weight (depending on pressure connection)		< 0.07 kg

Compensated temperature range: -20 – 100 °C.
Thermal shift outside the compensated temperature range: $\leq \pm 0.2\% FS / 10^\circ K$


Ordering

MBS 82	
Type	With pulse snubber. 5 0
Measuring range	-1 – 59 bar 95 -1 – 99 bar 96 -1 – 159 bar 97
Compensated temperature range	-20 – 100 °C 33
Pressure reference	Absolute 2
Output signal	4 – 20 mA 1 Ratiometric, 10 – 90% 6
	Gasket 0 No gasket 1 Gasket, Viton, media temp. -20 – 125 °C
	Pressure connection GB 04 G ¼, DIN 3852-E / ISO 1179-2 AC 04 ¼ – 18 NPT, ANSI/ASME B 1.20.1 BD 08 7/16 – 20 UNF-2A, ISO 11926-2 FA 08 M14 × 1.5, ISO 6149-2
	Electrical connection (connections see page 4) C 2 Round Packard Metri-Pack, 3-pin, male, excl. female plug

Preferred versions

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

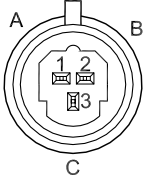
Dimensions/Combinations

Type code	C 2	
Electrical connection	Round Packard Metri-Pack	
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		C2
		 <p>Round Packard Metri-Pack, male</p>
Ambient temperature	4 – 20 mA	-40 – 105 °C
	Ratiometric	-40 – 125 °C
Enclosure (IP protection fulfilled together with mating connector)		IP67
Materials		Glass filled polyamide, PA 6.6 Sn-coated contacts
Electrical connection	4 – 20 mA (2 wire)	Pin 1(A): ÷ supply Pin 2(B): + supply Pin 3(C): not used
	Ratiometric	Pin 1(A): + supply Pin 2(B): + supply Pin 3(C): output