

## Data sheet

# Pressure transmitters for CO<sub>2</sub> food retail applications

## Type MBS 8250



MBS 8250 is a series of compact pressure transmitters developed and thoroughly tested to ensure excellent operation in CO<sub>2</sub> applications. It monitors the suction and discharge pressure in a CO<sub>2</sub> 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 CO<sub>2</sub> 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 leave the pressure transmitters unaffected by electromagnetic fields up to 100 V/m.

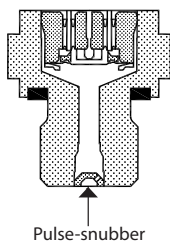
MBS 8250 with integrated pulse-snubber is designed for protection against cavitation, liquid hammering and pressure peaks.

### Features

- Designed for use in CO<sub>2</sub> 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 873  
 UL 508  
 UL Hazloc; Class I, Div. 2, Group A – D (UL 1604)

**MBS 8250**

**Application**

Cavitation, liquid hammer and pressure peaks may occur in CO<sub>2</sub> 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 CO<sub>2</sub> 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)	Min. 6 × FS	
Burst pressure	> 6 × FS	
Durability, P: 10 – 90% FS	> 10 × 10 <sup>6</sup> cycles	

**Electrical specifications**

Nom. output signal (short-circuit protected)	4 – 20 mA (2-wire)	Ratiometric 10 – 90% of supply
Supply voltage [U <sub>g</sub> ], polarity protected	9 – 32 V d.c. > 32 V: Contact Danfoss	5 V d.c. ± 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 <sub>L</sub> ] (load connected to 0 V)	R <sub>L</sub> ≤ (U <sub>g</sub> - 9 V) / 0.02 A	R <sub>L</sub> ≥ 1.5 kΩ

**Technical data**  
(continued)

*Environmental conditions*

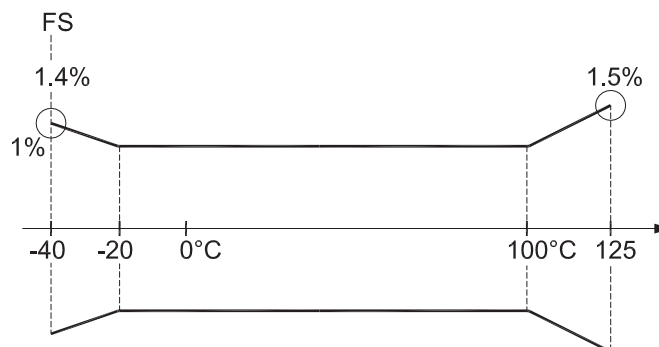
Media temperature range		-40 – 125 °C
Ambient temperature range		See page 6
Storage temperature		-50 – 125 °C
EMC - Emission		EN 61000-6-3
EMC Immunity	20 V/m, 80 MHz – 4 GHz	EN 61000-6-2
	100 V/m, 20 MHz – 2 GHz	ISO 11452-2
Surge protection		1 Kv @ 42 Ω; Line-Earth and Line-Line
Insulation resistance		> 100 MΩ at 500 V d.c.
Vibration stability	Sinusoidal	15.9 mm-pp, 5 Hz-25 Hz
		25 g, 25 Hz - 2 kHz
	Random	11 g <sub>rms</sub> , 5 Hz – 1 kHz (3 × 8 h)
Shock resistance	Shock	500 g / 1ms
	Free fall	1 m
Enclosure		IP67

*Mechanical characteristics*

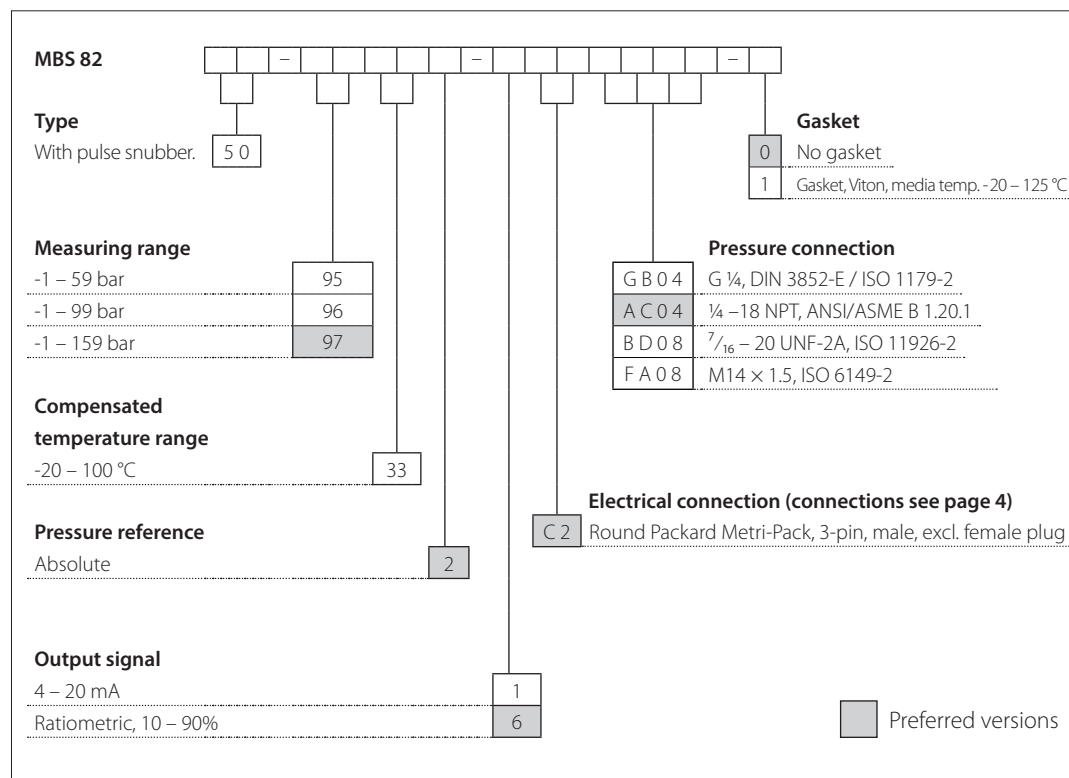
Materials	Wetted parts	EN 10088-1; 1.4404 (AISI 316 L)
	Enclosure	EN 10088-1; 1.4404 (AISI 316 L)
	Pressure connection	EN 10088-1; 1.4404 (AISI 316 L)
	Electrical connections	Glass filled polyamide, PA 6.6 Sn-coated contacts
Net weight (depending on pressure connection)		< 0.07 kg

*Compensated temperature range: -20 – 100 °C.*

*Thermal shift outside the compensated temperature range: ≤ ± 0.2% FS / 10 °K*



Ordering



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

Dimensions/Combinations

Type code	C2				
Electrical connection	Round Packard Metri-Pack				
Housing: ∅ = 19 mm					
Pressure connection	<p>22 mm</p>	<p>G<math>\frac{1}{4}</math> – DIN 3852-E Gasket: DIN 3869-14</p>	<p><math>\frac{1}{4}</math> – 18 NPT</p>	<p><math>\frac{7}{16}</math> – 20 UNF-2A O-ring</p>	<p>M14 x 1,5 – ISO 6149-2 O-ring</p>
Type code	GB04	AC04	BD08	FA08	
Recommended torque <sup>2)</sup>	30 – 35 Nm	2 – 3 turns after finger teightend	30 – 35 Nm	30 – 35 Nm	

<sup>2)</sup> 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