ENGINEERING TOMORROW

Data Sheet

Pressure Transmitter Type **MBS 9200**

For industrial applications



Compact pressure transmitter program, MBS 9200 gauge verson is designed for use in industrial applications e.g. crankcase and turbocharger on industrial engines, filters monitoring as well as applications within level measurement.

The program covers 4 – 20 mA output signal or ratiometric 10-90% of supply output signals and with pressure span from 40 – 400 mbar as well as bidirectional ranges.

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

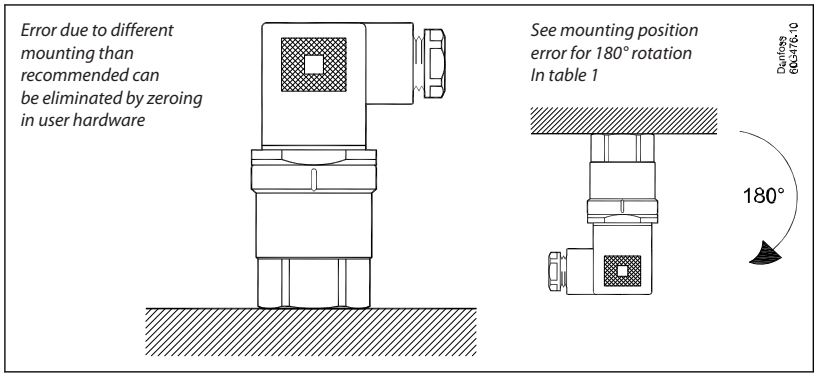
Features

- Compact design
- Full scale span from 40 – 400 mbar - bidirectional ranges available e.g. -70 – 70 mbar etc. (lowest zero point – 150 mbar)
- Digital temperature compensated
- Output signal: 4 – 20 mA or ratiometric 10-90% of supply
- Excellent shock and vibration robustness
- Reverse polarity protection
- With build-in clipping function and self-diagnostic on request
- Reverse output on request
- Enclosure and wetted parts of stainless steel (AISI 316L)
- Customer specific versions on request
- For use in Zone 2 explosive atmosphere

Applications

Recommended mounting position

Figure 1: Mounting position



Product specification

Technical specifications

Table 1: Performance (EN 60770)

Description	Value range					Units
Full-scale span (FSS) Full-Scale Span (FSS) is the difference between the upper limit and the lower limit of the pressure range. (e.g. for pressure range -30 – 30 mbar, FSS = 60 mbar.)	40	60	100/140	150	250/400	mbar
Accuracy @ 25 °C (incl. non-linearity, hysteresis and repeatability)	≤ ± 2	≤ ± 1.5	≤ ± 1	≤ ± 0.5	≤ ± 0.5	% FSS typ.
Non-linearity (BFSL)	≤ ± 0.2	≤ ± 0.2	≤ ± 0.2	≤ ± 0.2	≤ ± 0.2	% FSS
Hysteresis and repeatability	≤ ± 0.1	≤ ± 0.1	≤ ± 0.1	≤ ± 0.1	≤ ± 0.1	% FSS
Total error band (TEB) within compensated temperature range	≤ ± 5	≤ ± 3	≤ ± 2	≤ ± 1.5	≤ ± 1.5	% FSS
Mounting position error for 180° rotation	≤ ± 1.25	≤ ± 0.8	≤ ± 0.5	≤ ± 0.35	≤ ± 0.2	% FSS
Overload pressure (static)	3.5	3.5	3.5	3.5	3.5	bar
Burst pressure	50	50	50	50	50	bar
Response time				< 2 ms		
Resolution				Infinite		
Durability P: 10 – 90% FS				10×10^6 pressure cycles		

Table 2: Electrical specifications

Nom. output signal (short circuit protected)	4 – 20 mA	Ratiometric 10-90% supply
Supply voltage [U_B], reverse polarity protected	9 – 32 V DC	5 V DC +/- 10%
Supply voltage dependency	< ± 0.05% FSS / 10 V	-
Load [RL] (load connected to 0 V)	$R_L \leq (U_B - 8\ V) / 0.02\ A$	$R_L \geq 1.5\ k\Omega$
Supply current consumption	-	≤ 6 mA
Sink / Source	-	3.3 mA
Output impedance	-	≤ 25 Ω

Table 3: Environmental specifications

Media temperature range	FPM gasket	-20 – 100°C
	NBR gasket	-25 – 85 °C
Ambient temperature range		See Electrical connection
Compensated temperature range		0 – 80 °C
Transport / storage temperature range		-40 – 125 °C
EMC - Emission		EN 61000-6-3 and EN61236-1
EMC Immunity		EN 61000-6-2 and EN61236-1

Vibration stability	Sinusoidal	15.9 mm-pp, 2 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 connection

Table 4: Explosive atmospheres

Zone 2 applications[1]	CE Ex II 3G Ex nA IIA T3 Gc -10 °C < Ta < + 85 °C	EN60079-0; EN60079-15

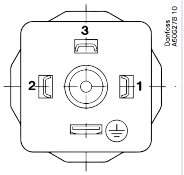
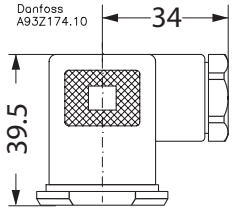
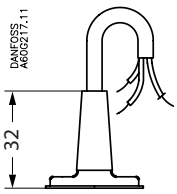
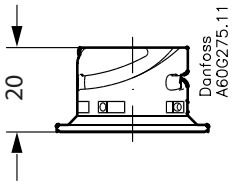
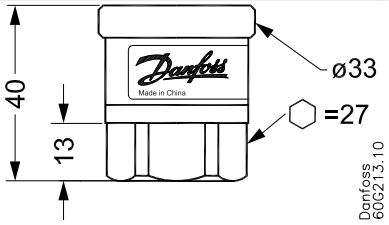
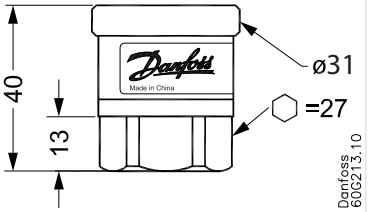
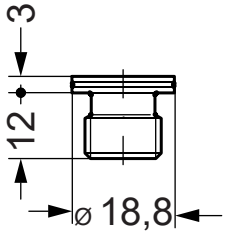
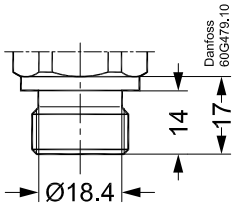
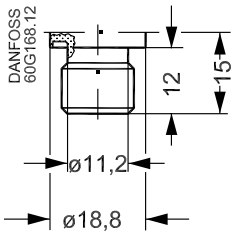
[1] When used in ATEX Zone 2 areas at low temperatures the cable and plug must be protected against impact.

Table 5: Mechanical specifications

Net weight	0.2 – 0.3 kg
Electrical connector	See Electrical connection
Pressure connection	See Type of Connections
Materials, wetted parts	EN 10088; 1.4404 (AISI 316 L)

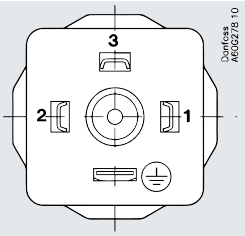
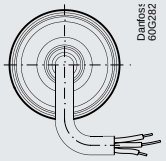
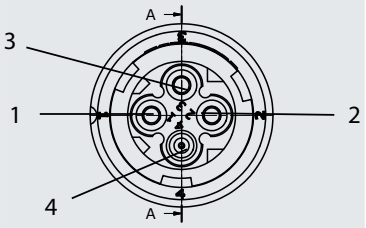
Type of Connections

Table 6: Type of Connections

Type code: Electrical connection	A0	A1	A6	A3	B3	G2
						
						
						
Type code: Pressure connection	**FA09** DIN 3852-E, M14x1.5 Gasket: DIN 3869-14		**GB08** DIN 3852-E, G½ Gasket: DIN 3869-21		**GB04** DIN 3852-E, G¼ Gaske: DIN 3869-14	
Recommended torque	20 - 25 Nm					

Electrical connection

Table 7: Electrical connection

Type code	A0 175301-803-A No plug	A1 175301-803-A Pg9	A6 175301-803-A Pg11	A3 2 m screened cable	B3	G2
						
Ambient temperature	-25 – 100 °C			-30 – 85 °C	-40 – 85 °C	
Enclosure	IP65			IP67	IP67	
Materials		Glass filled polyamid, PA 6.6		Cable screened, Poly-olefin 2 m	Glass filled polyester PBT (Black) Sn plated pins	Glass filled polyester PBT (Grey) Au plated pins
Electrical connection 4-20 mA (2 wire)	Pin 1: + supply Pin 2: - supply Pin 3: Not used Earth: Connected to transmitter enclosure			Brown wire: + supply Black wire: ÷ supply Red wire: not used Orange: not used Screen: not connected to MBS enclosure	Pin 1: + Supply Pin 2: - Supply Pin 3: Not used Pin 4: Ventilation	
Electrical connection Ratiometric 10-90% supply	Pin 1: + supply Pin 2: - common Pin 3: Output Earth: Connected to transmitter enclosure			Red wire: + supply Black wire: ÷ common Brown wire: Output Orange: Not used Screen: Not connected to MBS enclosure	Pin 1: + supply Pin 2: ÷ supply/common Pin 3: + output Pin 4: Ventilation	

For proper ventilation of atmospheric reference pressure a vented cable is recommended.

Ordering

Type 9200

		1		–							

Pressure range

-20 – 20 mbar	A 1
-30 – 30 mbar	A 2
-70 – 70 mbar	A 3
0 – 40 mbar	B 1
0 – 60 mbar	B 2
0 – 100 mbar	B 3
0 – 150 mbar	B 4
0 – 250 mbar	B 5

Pressure reference

Gauge (relative)	1

Output signal

4 – 20 mA	1
Ratiometric 10 - 90% of supply	6

Gasket

1	Gasket, FPM
2	Gasket, NBR

Pressure connection

G B 0 8	DIN 3852-E-G1/2, gasket DIN 3869-21
G B 0 4	DIN 3852-E-G1/4, gasket DIN 3869-14
F A 0 9	DIN 3852-E-M14 x1.5, gasket DIN 3869-14

Electrical connection

A 0	No plug (EN175301-803-A)
A 1	Plug Pg 9 (EN 175301-803-A)
A 6	Plug Pg 11 (EN 175301-803-A)
A 3	Cable screened, Polyolefin 2 m
B 3	Bayonet A1-3.1-Sn Ø31 ISO 151710
G 2	Bayonet A2-3.1-AU Ø31 - Grey ISO 15170

Non-standard build-up codes on request. However, minimum order quantities may apply.
Please contact your local Danfoss office for further information.

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.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

Valid approvals

Table 8: Certificates and declarations

File name	Document type	Document topic	Approval authority
064G9615.06	EU Declaration	ATEX/EMCD/RoHS	Danfoss
064R9401.00	Manufacturers Declaration	China RoHS	Danfoss
E311982	Electrical - Safety Certificate	-	UL
064R9402.00	Manufacturers Declaration	PED	Danfoss
E227388	Explosive - Safety Certificate	Hazardous Locations	UL
B-BK-60210-1170_19	Food and Health - Performance Certificate	-	PZH

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