

Data sheet

Low pressure transmitter for marine applications

MBS 9300



Compact pressure transmitter programme, MBS 9300 is designed for use in marine applications e.g. crankcase and turbocharger filters monitoring as well as applications within level measurement.

The programme covers 4 – 20 mA output signal, gauge versions, pressure span from 40 – 250 mbar as well as bidirectional ranges e.g. -70 – 70 mbar etc.

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 – 250 mbar and bidirectional range available, e.g. -70 – 70 mbar (lowest zero point – 100 mbar)
- Digital temperature compensated
- Output signal: 4 – 20 mA
- Excellent shock and vibration robustness
- Reverse polarity protection
- With build-in clipping function and self-diagnostic features on request
- Enclosure and wetted parts of stainless steel (AISI 316L)
- 10 international marine approvals
- Customer specific versions on request
- For use in Zone 2 explosive atmosphere

Approvals

Lloyds Register of Shipping, LRS
Germanischer Lloyd, GL (Pending)
Det Norske Veritas, DNV
Registro Italiano Navale, RINA
Bureau Veritas, BV

Nippon Kaiji Kyokai, NKK (Pending)
American Bureau of Shipping, ABS
Korean Register of Shipping, KR
China Classification Society, CCS (Pending)
Russian Maritime Register of Shipping, RMRS (Pending)

Technical data
Performance (EN 60770)

						Units
Full-scale span (FSS)	40	60	100/140	150	250	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					

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 = 30 – (-30) = 60 mbar.)

Electrical specifications

Nom. output signal (short circuit protected)	4 – 20 mA
Supply voltage [U _s], reverse polarity protected	9 – 32 V DC
Supply voltage dependency	< ± 0.05% FSS / 10 V
Load [R _L] (load connected to 0 V)	R _L ≤ (U _s - 8 V) / 0.02 A

Environmental specifications

Sensor temperature range		Normal	-40 – 85 °C
		ATEX Zone 2	20 – 85 °C ¹⁾
Media temperature range ¹⁾			-25 – 100 °C
Ambient temperature range			See page 3
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 page 3

Explosive atmospheres

Zone 2 applications ²⁾	II 3G Ex nA IIA T3 Gc -20C<Ta<85C	EN60079-0; EN60079-15
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²⁾When used in ATEX Zone 2 areas at temperatures <-10 °C the cable and plug must be protected against impact.

Mechanical specifications

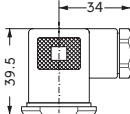
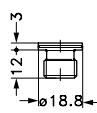
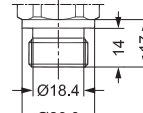
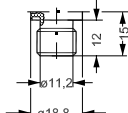
Net weight	0.2 – 0.3 kg
Electrical connector	See page 3
Pressure connection	see page 3
Materials, wetted parts	EN 10088; 1.4404 (AISI 316 L)

¹⁾ Depending gasket material

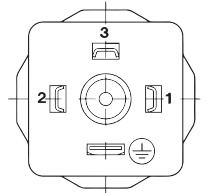
FPM: -20 – 100 °C

NBR: -25 – 85 °C

Dimensions / Combinations

Type code: Electrical connection	1	2	3
	EN 175301-803-A, Pg 9	EN 175301-803-A, Pg 11	EN 175301-803-A, Pg 13.5
			
			
			
Type code: Pressure connection	FA09 DIN 3852-E-M 14x1.5, Gasket: DIN 3869-14	GB08 DIN 3852-E-G½ Gasket: DIN 3869-21	GB04 DIN 3852-E-G1/4 Gasket: DIN 3869-14
Recommended torque:	20 – 25 Nm		

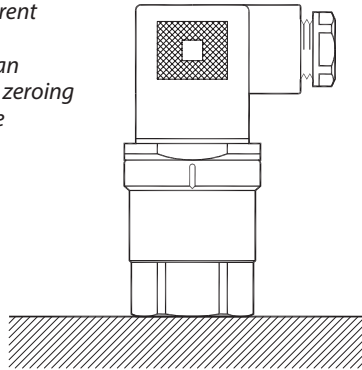
Electrical connection

Type code:	0 and 1, 2, 3
	EN 175301-803-A
	
Ambient temperature	-25 – 100 °C
Enclosure	IP65
Materials	Glass filled polyamid, PA 6.6
Electrical connection 4 – 20 mA (2 wire)	Pin 1: + supply Pin 2: - supply Pin 3: Not used Earth: Connected to transmitter enclosure

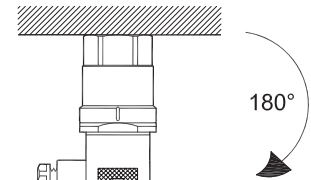
For proper ventilation of atmospheric reference pressure a vented cable is recommended.

Recommended mounting position

Error due to different mounting than recommended can be eliminated by zeroing in user hardware



See mounting position error for 180° rotation on page 2



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90C476.10

Ordering

Type 9300

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

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

0	No plug (EN175301-803-A)
1	Plug Pg 9 (EN 175301-803-A)
2	Plug Pg 11 (EN175301-803-A)
3	Plug Pg 13.5 (EN175301-803-A)

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