

Data sheet

# Low pressure transmitter for marine applications, Type 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**

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| <ul style="list-style-type: none"> <li>Lloyds Register of Shipping, LRS</li> <li>Germanischer Lloyd, GL (Pending)</li> <li>Det Norske Veritas, DNV</li> <li>Registro Italiano Navale, RINA</li> <li>Bureau Veritas, BV</li> </ul> | <ul style="list-style-type: none"> <li>Nippon Kaiji Kyokai, NKK (Pending)</li> <li>American Bureau of Shipping, ABS</li> <li>Korean Register of Shipping, KR</li> <li>China Classification Society, CCS (Pending)</li> <li>Russian Maritime Register of Shipping, RMRS (Pending)</li> </ul> |
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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 <sup>6</sup> 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 <sub>8</sub> ], reverse polarity protected	9 – 32 V d.c.
Supply voltage dependency	< ± 0.05% FSS / 10 V
Load [R <sub>L</sub> ] (load connected to 0 V)	R <sub>L</sub> ≤ (U <sub>8</sub> - 8 V) / 0.02 A

Environmental specifications

Sensor temperature range	Normal	-40 – 85 °C
	ATEX Zone 2	20 – 85 °C <sup>1)</sup>
Media temperature range <sup>1)</sup>		-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
		20 g, 25 Hz – 2 kHz
	Random	7.5 g <sub>rms</sub> , 5 Hz – 1 kHz
Shock resistance	Shock	500 g / 1 ms
	Free fall	1 m
Enclosure (depending on electrical connection)		See page 3

Explosive atmospheres

Zone 2 applications <sup>1)</sup>		EN60079-0; EN60079-15
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<sup>1)</sup>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)

<sup>1)</sup> 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.

