ENGINEERING
TOMORROW

Data sheet

Pressure transmitter for industrial applications
MBS 4510

The high accuracy flush diaphragm pressure transmitter MBS 4510 is designed for use in non-uniform, high viscous or crystallizing media within industrial applications, and offers a reliable pressure measurement, even under harsh environmental conditions.

The flexible pressure transmitter programme covers a 4 – 20 mA output signal, absolute or gauge (relative) versions, measuring ranges from 0 – 0.25 to 0 – 25 bar zero and span adjustment. A rotatable plug connection and a G1A conic pressure connection with flush mounted diaphragm.

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

- Designed for use in severe industrial environments
- Enslosure and wetted parts of acid-resistant stainless steel (AISI 316L)
- Pressure ranges in relative (gauge) or absolute up to 25 bar
- Output signal: 4 – 20 mA
- Temperature compensated and laser calibrated
- Accuracy 0.5% FS
- Zero and span adjustment
- USDA-H1 approved oil filling
- For use in Zone 2 explosive atmosphere

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Technical data

Performance (EN 60770)

Accuracy (incl. non-linearity, hysteresis and repeatability)			≤ ± 0.2% FS (typ.)
			≤ ± 0.5% FS (max.)
Non-linearity BFSL (conformity)			≤ ± 0.2% FS
Hysteresis and repeatability			≤ ± 0.1% FS
Thermal zero point shift	Measuring range:	0 – 250 mbar	≤ ± 0.4% FS / 10K
		0 – 400 mbar	≤ ± 0.3% FS / 10K
		≥ 0 – 600 mbar	≤ ± 0.2% FS / 10K
Thermal sensitivity (span) shift	Measuring range:	0 – 250 mbar	≤ ± 0.4% FS / 10K
		0 – 400 mbar	≤ ± 0.35% FS / 10K
		≥ 0 – 600 mbar	≤ ± 0.2% FS / 10K
Response time			< 4 ms
Durability, P: 10 – 90% FS			> 10×10⁶ cycles
Zero point adjustment	Measuring range:	0 – 0.25 to 0 – 10 bar	-5 – 20% FS
		0 – 16 to 0 – 25 bar	-5 – 10% FS
Span adjustment	Measuring range:	0 – 0.25 to 0 – 25 bar	-5 – 5% FS

Available measuring ranges

Pressure range [bar]	Max. Overload pressure [bar]	Burst pressure [bar]
-0.25 – 0.50	2	50
0.00 – 0.25	2	50
0.00 – 0.40	2	50
0.00 – 0.60	2	50
0.00 – 1.00	2	50
0.00 – 1.60	8	50
0.00 – 2.50	8	50
0.00 – 4.00	8	50
0.00 – 6.00	20	50
0.00 – 10.00	20	50
0.00 – 16.00	100	100
0.00 – 25.00	100	100

Electrical specifications

Nom. output signal (short-circuit protected)	4 – 20 mA
Supply voltage [U_B], polarity protected	10 – 30 V DC
Supply voltage dependency	≤ ± 0.1% FS / 10 V
Current limitation (linear output signal up to 1.5 × rated range)	28 mA (typ.)
Load [R_L] (load connected to 0 V)	$R_L \leq (U_B - 10\,V) / 0.02\,A\,[\Omega]$

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Technical data
(continued)

Environmental conditions

Sensor temperature range	Normal		-40 – 85 °C
	ATEX Zone 2		-10 – 85 °C
Media temperature			115 - (0.35 × ambient temperature)
Ambient temperature range			-10 – 85 °C
Compensated temperature range			0 – 80 °C
Transport / Storage temperature range			-25 – 85 °C
EMC – Emission			EN 61000-6-3
EMC – Immunity			EN 61000-6-2
Insulation resistance			> 100 MΩ at 100 V
Mains frequency test			Based on SEN 361503
Vibration stability	Sinusoidal	15.9 mm-pp, 5 Hz – 25 Hz 20 g, 25 Hz – 2 kHz	IEC 60068-2-6
	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)			IP65

Explosive atmospheres

Zone 2 applications	CE Ex II 3G Ex nA IIA T3 Gc -20C<Ta<85C	EN60079-0; EN60079-15

When used in ATex Zone 2 areas at temperatures <-10 °C the cable and plug must be protected against impact

Mechanical characteristics

Materials	Wetted parts	EN 10088-1; 1.4404 (AISI 316 L)
	Enclosure	EN 10088-1; 1.4404 (AISI 316 L)
	Electrical connections	Glass filled polyamid PA 6.6
Gasket (above thread)		DIN 3869-33-NBR
Net weight (depending on pressure connection and electrical connection)		0.4 kg

Ordering standard

MBS 4510

			1	–	A1	C	B	1	2

Measuring range

0.25 – 0.5 bar	A 4
0 – 0.25 bar	0 4
0 – 0.4 bar	0 6
0 – 0.6 bar	0 8
0 – 1.0 bar	1 0
0 – 1.6 bar	1 2
0 – 2.5 bar	1 4
0 – 4.0 bar	1 6
0 – 6.0 bar	1 8
0 – 10 bar	2 0
0 – 16 bar	2 2
0 – 25 bar	2 4

Pressure reference

Gauge (relative)	1
Absolute	2

Output signal

1 4 – 20 mA

Pressure connection

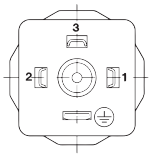
C B 1 2 G1A, ISO 228-1, Flush male

Electrical connection

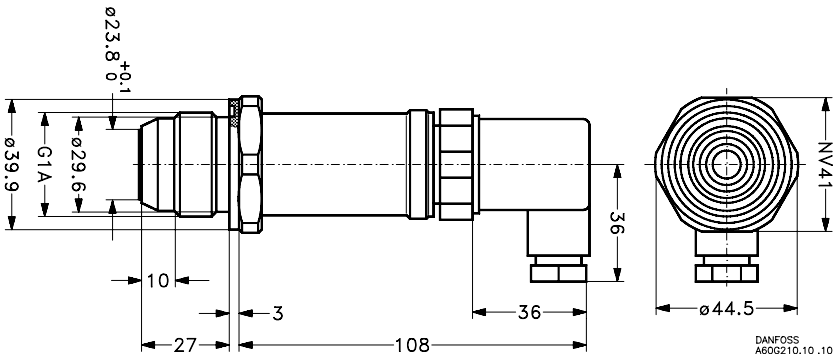
A1 Plug Pg 9 (EN 175301-803-A)

Prefered version

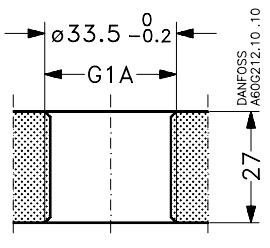
Electrical connections

Electrical connection	4 – 20 mA output (2 wire)
 EN 175301-803-A, Pg 9	Pin 1: + supply Pin 2: ÷ supply Pin 3: Not used  Earth: Connected to MBS enclosure

Dimensions



Threaded hole
(Sealing above thread)



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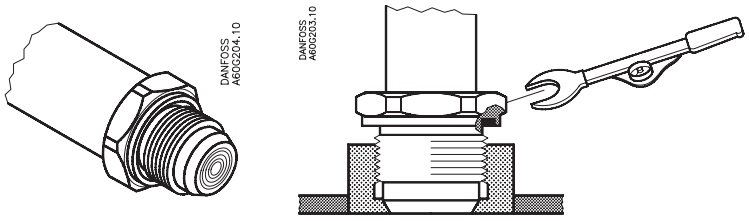
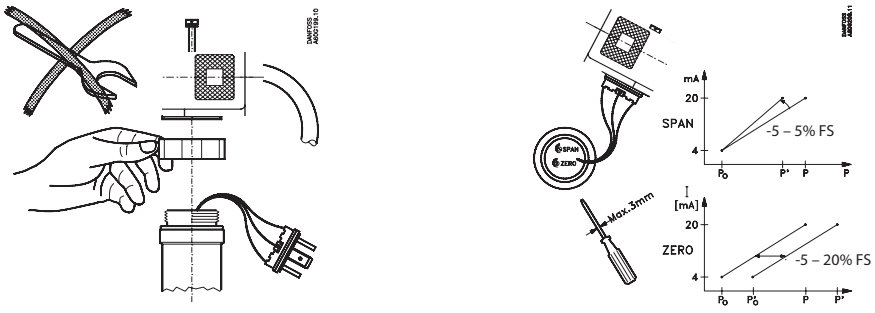
Installation

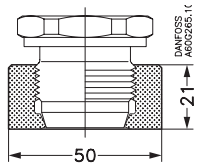
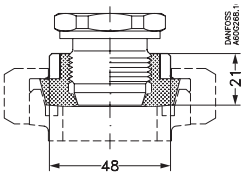
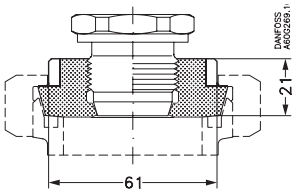
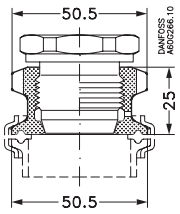
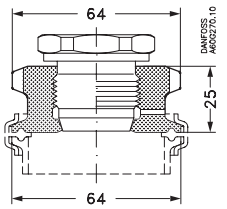
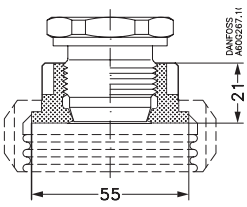


Tightening torque 60 Nm. Zero deviation of approx. 3 mbar can occur. (Can be adjusted)

Adjustment



Accessories

Welding nipple for conic metal/metal seal **Code no.: 060G2501**	DIN 11851 (dairy connection), DN40 **Code no.: 060G2505**
	
DIN 11851 (dairy connection), DN50 **Code no.: 060G2506**	Clamp, ISO 2852, 1½ in. **Code no.: 060G2502**
	
Clamp, ISO 2852, 2 in. **Code no.: 060G2510**	SMS 1145 connection, 1½ in. **Code no.: 060G2503**
	

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