

Data sheet

Pressure transmitter for industrial applications

Type 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
- Enclosure 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 atmospheres

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 × 10 ⁶ 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 [UB], polarity protected	10 – 30 V d.c.
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)	$R_L \leq (U_B - 10 \text{ V}) / 0.02 \text{ A} [\Omega]$

Technical data
(continued)
Environmental conditions

Sensor temperature range		-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	$\frac{15.9 \text{ mm-pp}, 5 \text{ Hz-25 Hz}}{20 \text{ g}, 25 \text{ Hz} - 2 \text{ kHz}}$	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	II 3G Ex nA IIA T3 Gc -40C<Ta<+85C	EN60079-0; EN60079-15
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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 - 1 C B 1 2	
Measuring range		Pressure connection G1A, ISO 228-1, Flush male
0.25 – 0.5 bar	A 4	Electrical connection Plug Pg 9 (EN 175301-803-A)
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	

Preferred version

Electrical connections

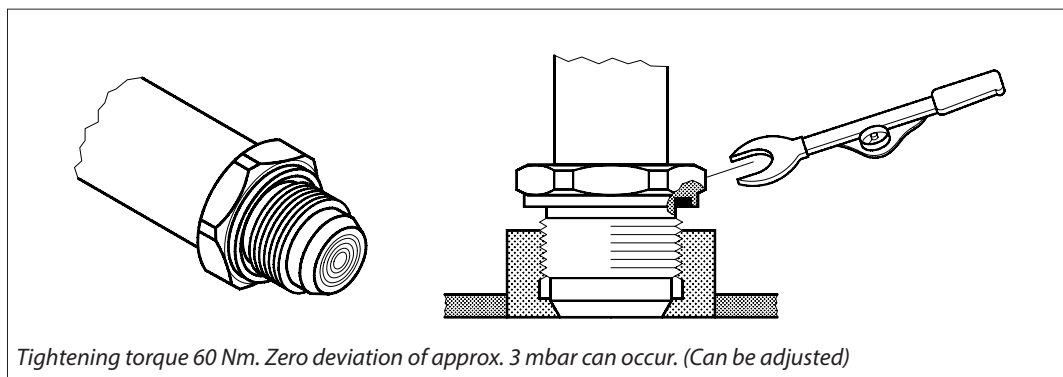
Electrical connection	4 – 20 mA output (2 wire)
<p>EN 175301-803-A, Pg 9</p>	Pin 1: + supply Pin 2: ÷ supply Pin 3: Not used
	<p>Earth: Connected to MBS enclosure</p>

Dimensions

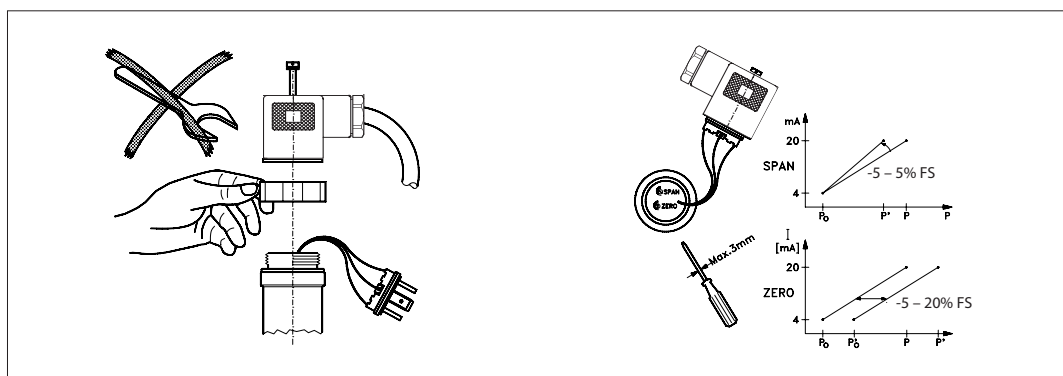
$\phi 23.8^{+0.1}_0$
 $\phi 39.9$
 G1A
 $\phi 29.6$
 10
 3
 27
 108
 36
 36
 $\phi 44.5$
 NV41

Threaded hole
 (Sealing above thread)
 $\phi 33.5^{-0.2}_0$
 G1A
 27

Installation



Adjustment



Accessories

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