

Data Sheet

# Pressure transmitter Type **MBS 4510**

For industrial applications



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 atmosphere

## Product specification

### Technical data

**Table 1: 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 <sup>6</sup> 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

**Table 2: 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

**Table 3: Electrical specifications**

Nom. output signal (short-circuit protected)	4 – 20 mA
Supply voltage [U <sub>B</sub> ], 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 <sub>L</sub> ] (load connected to 0 V)	R <sub>L</sub> ≤ (U <sub>B</sub> - 10 V) / 0.02 A [Ω]

**Table 4: Environmental conditions**

Sensor temperature range	Normal	-40 – 85 °C	
	ATEX Zone 2	-10 – 85 °C	
Media temperature range		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	IEC 60068-2-6
		20 g, 25 Hz – 2 kHz	
	Random	7.5 g <sub>rms</sub> , 5 Hz – 1 kHz	IEC 60068-2-64

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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

**Table 5: Explosive atmospheres**

Zone 2 applications <sup>(1)</sup>	II 3G Ex nA IIA T3 Gc -20C<Ta<85C	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

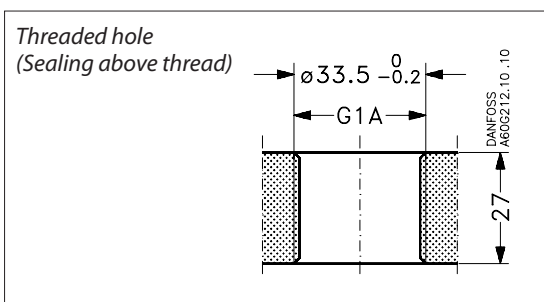
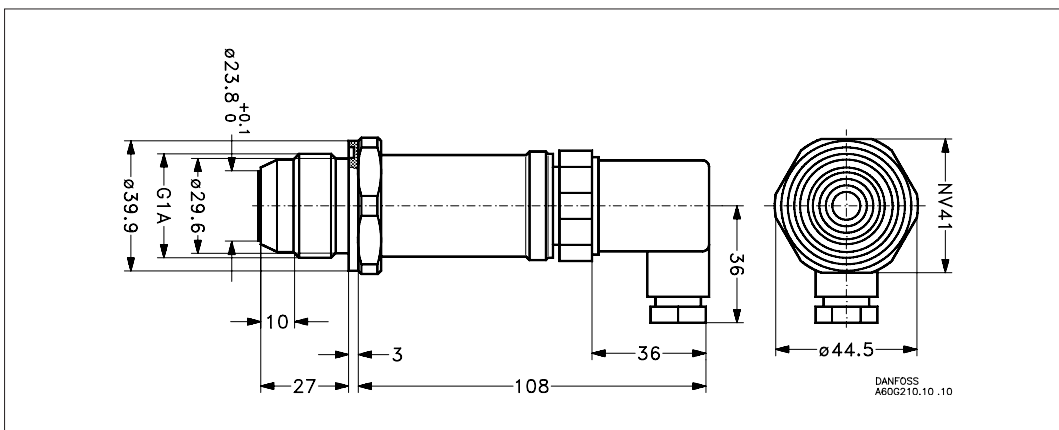
**Table 6: Mechanical characteristics**

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

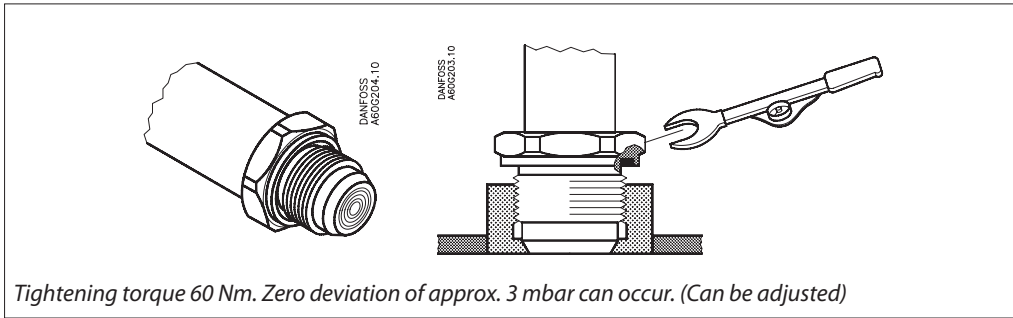
## Electrical connections

Electrical connection	4 – 20 mA output (2 wire)
	<p>Pin 1: + supply            Pin 2: + supply            Pin 3: Not used</p> <p>Earth: Connected to MBS enclosure</p>

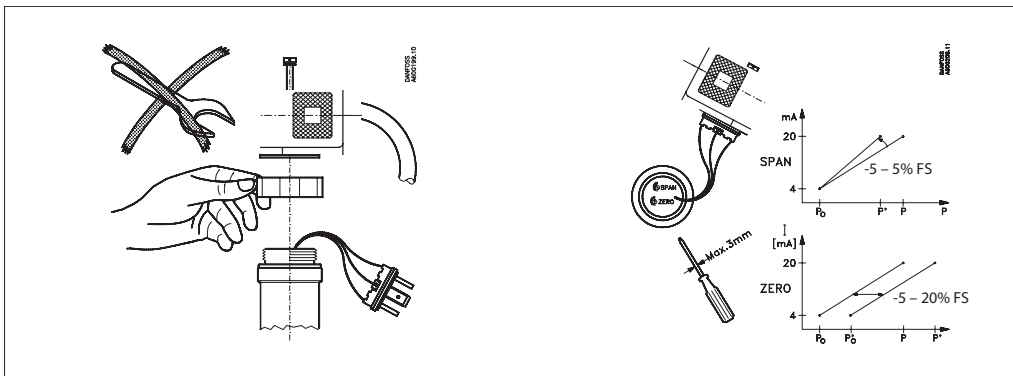
## Dimensions



## Installation

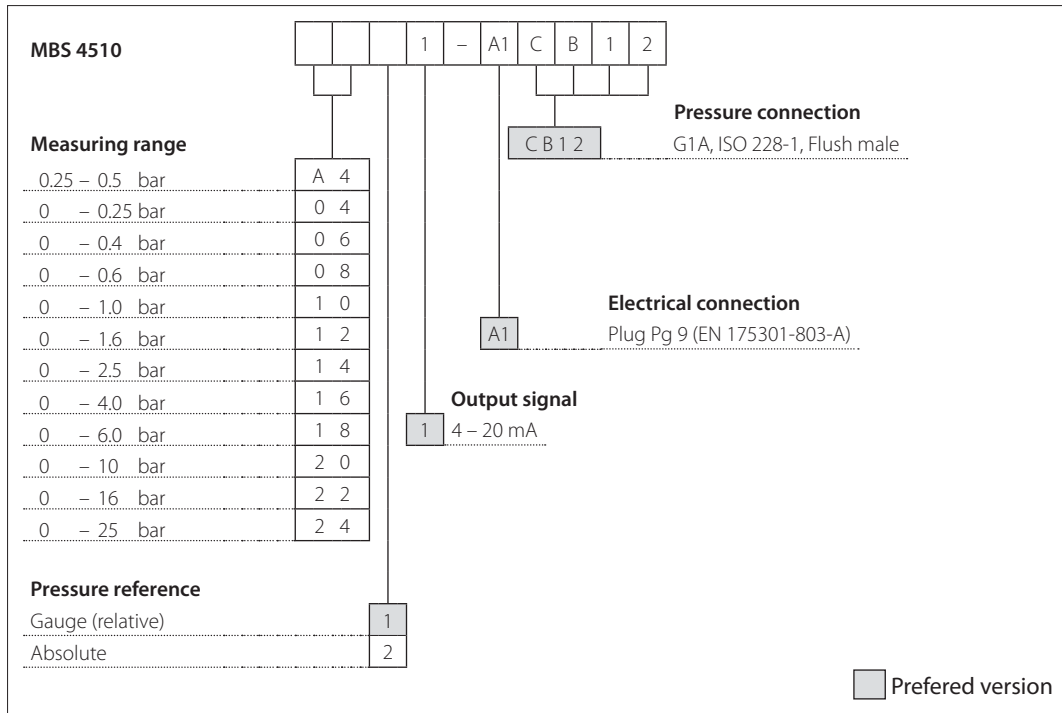


## Adjustment

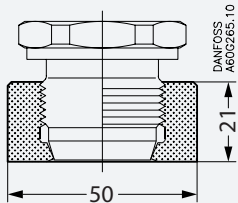
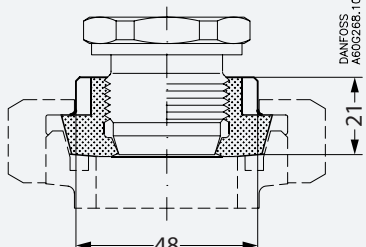
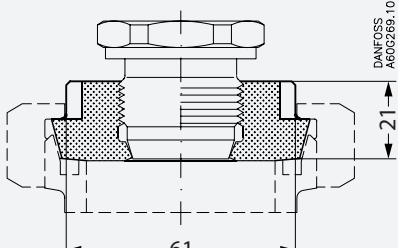
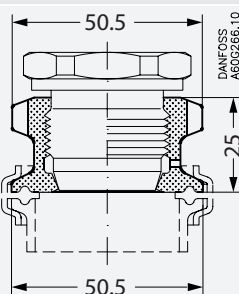
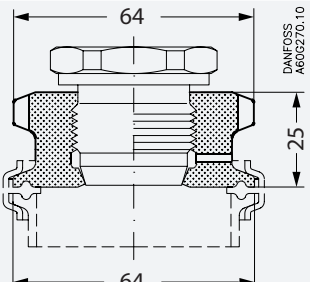
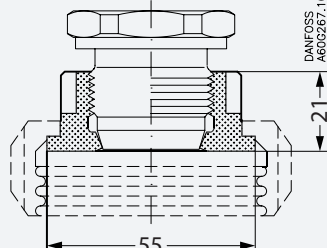


**Ordering**

**Ordering standard**



**Accessories**

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

## 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.

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**Table 7: Certificates and declarations**

File name	Document type	Document topic	Approval authority
E227388	Explosive - Safety Certificate	Hazardous Locations	UL
E31024	Electrical - Safety Certificate	-	UL
E311982	Electrical - Safety Certificate	-	UL
B-BK-60210-1170_19	Food and Health - Performance Certificate	-	PZH
DK.C.30.018.A 31316	Measuring - Performance Certificate	-	GOST
CN.C.30.004.A 59728-1	Measuring - Performance Certificate	-	GOST
060R3160.00	Manufacturers Declaration	China RoHS	Danfoss
064R9402.00	Manufacturers Declaration	PED	Danfoss
064G9615.06	EU Declaration	ATEX/EMCD/RoHS	Danfoss
1786330	Explosive - Safety Certificate	-	CSA

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