

Data Sheet

Pressure transmitter Type **MBS 4010**

For use in non-uniform, high viscous or crystallizing media within industrial applications



The high accuracy flush diaphragm pressure transmitter MBS 4010 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 – 60 bar.

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 60 bar
- Output signal: 4 – 20 mA
- Fully digitally compensated
- Accuracy 0.8% FS max
- USDA-H1 approved oil filling
- For use in ATEX Zone 2 explosive atmosphere
- UL approved

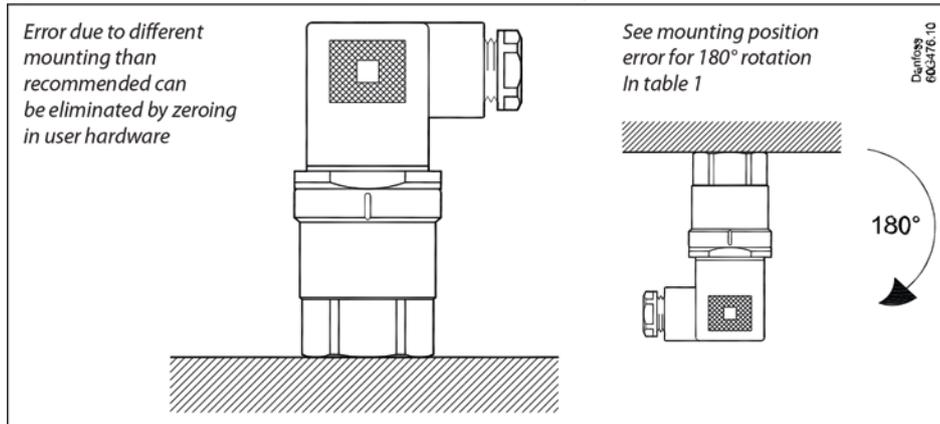
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Applications

Recommended mounting position

Figure 1: Recommended mounting position for G1A only



Product specification

Technical data

Table 1: Performance (EN 60770)

Accuracy (incl. non-linearity, hysteresis and repeatability)	≤ ± 0.3% FS (typ.) ≤ ± 0.8% FS (max.) See Accuracy overview below
Non-linearity BFSL (conformity)	≤ ± 0.2% FS
Hysteresis and repeatability	≤ ± 0.1% FS
Response time	< 4 ms
Power-up time	< 50 ms
Durability, P: 10 – 90% FS	> 10 × 10 ⁶ cycles

Table 2: Available measuring ranges

Pressure range [bar]	G1/2			G1A			
	Accuracy FS (max.)	Max. Overload pressure [bar]	Burst pressure [bar]	Accuracy FS (max.) ⁽¹⁾	Mounting influence for 180 °C rotation ⁽²⁾	Max. Overload pressure [bar]	Burst pressure [bar]
-0.25 – 0.50	-	-	-	≤ ± 1.0%	+ 1.2%	2	50
0.00 – 0.25	-	-	-	≤ ± 1.0%	+ 2.4%	2	50
0.00 – 0.40	-	-	-	≤ ± 1.0%	+ 1.2%	2	50
0.00 – 0.60	-	-	-	≤ ± 1.0%	+ 1.2%	2	50
0.00 – 1.00	-	-	-	≤ ± 1.0%	+ 0.6%	2	50
0.00 – 1.60	-	-	-	≤ ± 0.8%	+ 0.4%	8	50
0.00 – 2.50	-	-	-	≤ ± 0.8%	+ 0.3%	8	50
0.00 – 4.00	≤ ± 0.8%	2 x FS	4 x FS	≤ ± 0.8%	-	8	50
0.00 – 6.00	≤ ± 0.8%	2 x FS	4 x FS	≤ ± 0.8%	-	20	50
0.00 – 10.00	≤ ± 0.8%	2 x FS	4 x FS	≤ ± 0.8%	-	20	50
0.00 – 16.00	≤ ± 0.8%	2 x FS	4 x FS	≤ ± 0.8%	-	100	100
0.00 – 25.00	≤ ± 0.8%	2 x FS	4 x FS	≤ ± 0.8%	-	100	100
0.00 – 40.00	≤ ± 0.8%	2 x FS	4 x FS	-	-	-	-
0.00 – 60.00	≤ ± 0.8%	2 x FS	4 x FS	-	-	-	-

⁽¹⁾ At recommended mounting position

⁽²⁾ For other mounting angles please contact Danfoss for detailed calculations

Table 3: Electrical specifications

Nom. output signal (short-circuit protected)	4 – 20 mA
Supply voltage [U _B], polarity protected	9 - 32 V DC
Supply voltage dependency	4 - 20 mA: < 0.1% FS / 10 V
Output limitation (linear output signal up to 1.5 × rated range)	22.4 mA (typ.)
Load [R _L] (load connected to 0 V)	R _L ≤ (U _B - 9 V) / 0.02 A [Ω]

Table 4: Environmental conditions

Sensor operating temperature	Normal	-40 – 85 °C
	ATEX Zone 2	-10 – 85 °C
Media temperature		-40 – 85 °C
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 500 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
	Random	7.5 g _{rms} , 5 Hz – 1 kHz



Pressure transmitter, type MBS 4010

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 ⁽³⁾	II 3G Ex ec IIA T3 Gc -10°C<Ta<+85°C	EN60079-0; EN60079-7
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⁽³⁾ When used in ATEX Zone 2 areas at low temperatures 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

Dimensions/Combinations

Table 7: Dimensions/Combinations

Type code	A1	A3
	EN175301-803-A, Pg 9	Screened cable 2m
	<p>Danfoss A93Z174.10</p>	<p>DANFOSS A60G217.11</p>
	<p>40 13 ø33 =27</p> <p>Danfoss 60G213.10</p>	
	<p>20,5</p> <p>G 1/2A (ISO 228-1)</p>	<p>ø23.8^{+0.1}₀</p> <p>ø29.6</p> <p>G1A</p> <p>ø39.9</p> <p>G 1A (ISO 228-1)</p> <p>27</p>
Type code	CB12	CB11
Recommended torque	60 Nm ⁽¹⁾	60 Nm ⁽¹⁾

⁽¹⁾ Zero deviation of approx. 3 mbar can occur.



Figure 2: Chamfer $\varnothing 19.4 +0.1$ after tapping

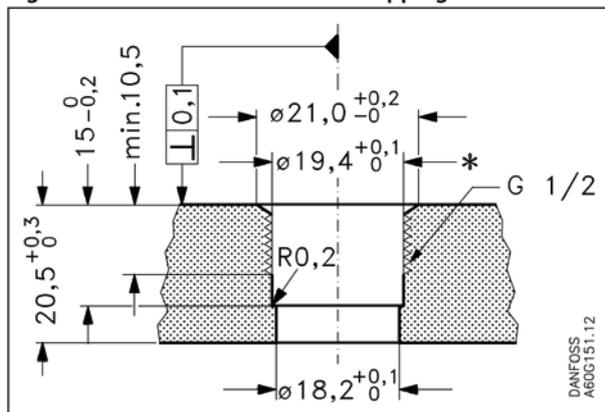
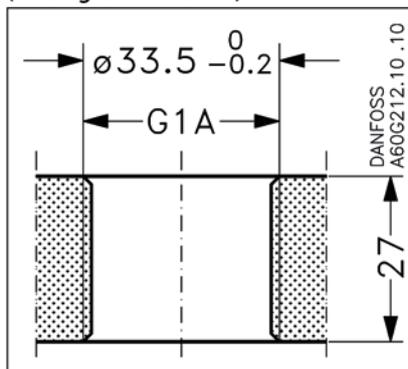


Figure 3: Thread hole for G 1A (Sealing above thread)



Electrical connections

Table 8: Electrical connections

Type code	A1	A3
	<p>EN 175301-803-A</p>	<p>2 m screened cable</p>
Ambient temperature	-40 – 85 °C	-40 – 85 °C
Enclosure (IP protection fulfilled together with mating connector)	IP65	IP67
Material	Glass filled polyamid, PA 6.6	Poliolyfin cable with PE shirkage tubing
Electrical connection, 4 – 20 mA output (2 wire)	Pin 1: + supply Pin 2: + supply Pin 3: not used Earth: Connected to MBS enclosure	Brown wire: + supply Black wire: + supply Red wire: not used Orange: not used Screen: not connected to MBS enclosure



Ordering

Ordering standard

MBS 4010

		1	-						
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Measuring range

0.25 – 0.5 bar Only G1A	A 4
0 – 0.25 bar Only G1A	0 4
0 – 0.4 bar Only G1A	0 6
0 – 0.6 bar Only G1A	0 8
0 – 1.0 bar Only G1A	1 0
0 – 1.6 bar Only G1A	1 2
0 – 2.5 bar Only G1A	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
0 – 40 bar Only G½A	2 6
0 – 60 bar Only G½A	2 8

Pressure connection

C B 1 2	G½A, ISO 228-1, Flush male
C B 1 1	G1A, ISO 228-1, Flush male

Electrical connection

A1	Plug Pg9 (EN 175301-803-A)
A3	Screened cable, 2 m, Only G1/2A

Output signal

1	4 – 20 mA
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Pressure reference

Gauge (relative)	1
Absolute	2

Preferred version

NOTE: Non-standard build-up combinations may be selected. However, minimum order quantities may apply. Please contact your local Danfoss office for further information or request on other versions.



Accessories

Accessories for G 1A, ISO 228-1

Table 9: 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>



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.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

Valid certificates and declarations

Table 10: Certificates and declarations

File name	Document type	Document topic	Approval authority
1786330	Explosive - Safety Certificate	Explosive	CSA
064R9402.00	Manufacturers Declaration	PED	Danfoss
064G9615.06	EU Declaration	ATEX/EMCD/RoHS	Danfoss
060R3160.00	Manufacturers Declaration	China RoHS	Danfoss
Д-ДК.БЛ08.В.00302_18	EAC RU	EAC Declaration	EAC RU
DK.C.30.018.A 31316	-	-	GOST
E311982	Electrical - Safety Certificate	-	UL
E494625	Electrical - Safety Certificate	-	UL
E227388	Electrical - Safety Certificate	Hazardous Locations	UL



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