

Data sheet

Pressure transmitter for industrial applications

Type MBS 4500



The high accuracy pressure transmitter MBS 4500 is designed for use in almost all 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 – 1 to 0 – 600 bar zero and span adjustment. A rotatable plug connection and a wide range of pressure connections.

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 from 0 up to 600 bar
- Output signal: 4 – 20 mA
- A wide range of pressure connections
- Temperature compensated and laser calibrated
- Accuracy 0.5% FS
- Zero and span adjustment
- 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	≤ ± 0.1% FS / 10K (typ.)	
	≤ ± 0.2% FS / 10K (max.)	
Thermal sensitivity (span) shift	≤ ± 0.1% FS / 10K (typ.)	
	≤ ± 0.2% FS / 10K (max.)	
Response time	< 4 ms	
Overload pressure	6 × FS (max. 1500 bar)	
Burst pressure	6 × FS (max. 2000 bar)	
Durability, P: 10 – 90% FS	> 10 × 10 ⁶ cycles	
Zero point adjustment	0 – 1 to 0 – 10 bar measuring range	-5 – 20% FS
	0 – 16 to 0 – 40 bar measuring range	-5 – 10% FS
	0 – 60 to 0 – 600 bar measuring range	-2.5 – 5% FS
Span adjustment	0 – 1 to 0 – 600 bar measuring range	-5 – 5% FS

Electrical specifications

Nom. output signal (short-circuit protected)	4 – 20 mA
Supply voltage [U _B], 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)	$R_L \leq \frac{(U_B - 10 V)}{0.02 A} [\Omega]$

Environmental conditions

Sensor temperature range	Normal	-40 – 85 °C
	ATEX Zone 2	-10 – 85 °C
Medium temperature range	115 – (0.35 × Ambient temp.)	
Ambient temperature range	-40 – 85 °C	
Compensated temperature range	0 – 80 °C	
Transport / Storage temperature range	-50 – 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
	Random	7.5 g _{rms} , 5 Hz – 1 kHz
Shock resistance	Shock	500 g / 1 ms
	Free fall	1 m
Enclosure (IP protection fulfilled together with mating connector)	IP65	

Technical data

(continued)

Explosive atmospheres

Zone 2 applications	II 3G Ex nA IIA T3 Gc -40C<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
Net weight (depending on pressure connection)		0.2 – 0.3 kg

Ordering standard

MBS 4500

Measuring range	
0 – 1.0 bar	10
0 – 1.6 bar	12
0 – 2.5 bar	14
0 – 4.0 bar	16
0 – 6.0 bar	18
0 – 10 bar	20
0 – 16 bar	22
0 – 25 bar	24
0 – 40 bar	26
0 – 60 bar	28
0 – 100 bar	30
0 – 160 bar	32
0 – 250 bar	34
0 – 400 bar	36
0 – 600 bar	38

Pressure connection	
A B 0 4	G ¼ A (EN 837)
A B 0 6	G ¾ A (EN 837)
A B 0 8	G ½ A (EN 837)
A C 0 4	¼ – 18 NPT
A C 0 8	½ – 14 NPT
G B 0 4	DIN 3852-E-G ¼; Gasket: DIN 3869-14 NBR

Electrical connection
 Figures refer to plug and standard PIN configuration - see page 5
 Plug Pg 9 (EN175301-803-A)

Output signal
 4 – 20 mA

Pressure reference

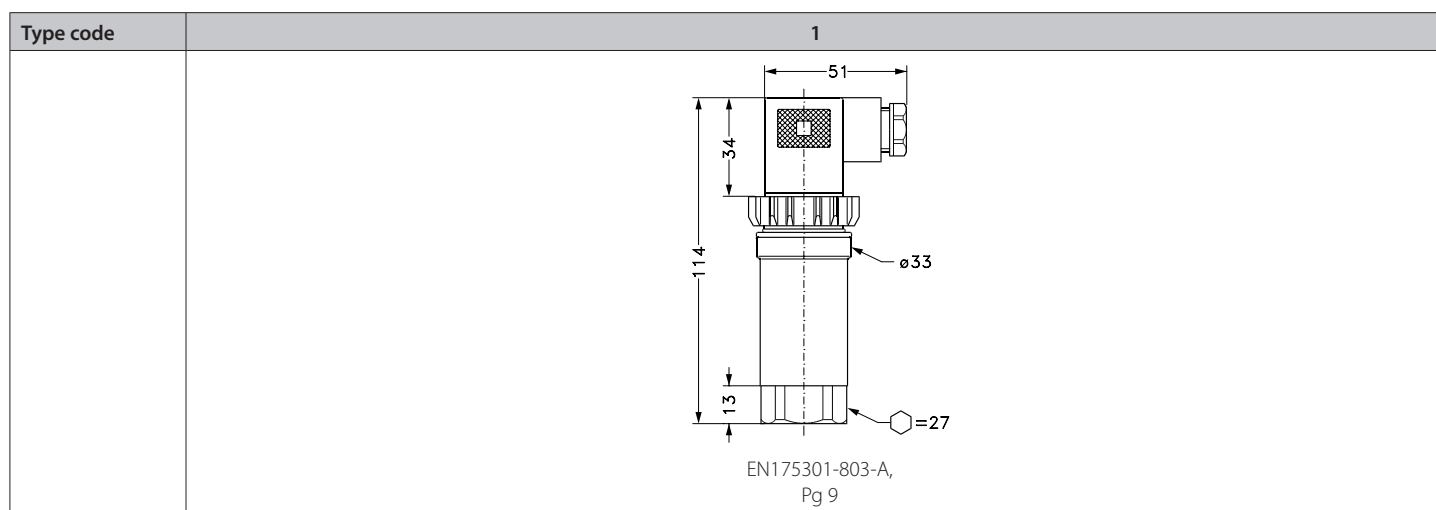
Gauge (relative)	1
Absolute	2

Preferred version

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.

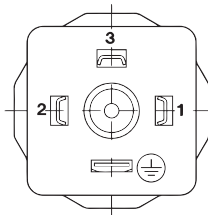

Dimensions/Combinations



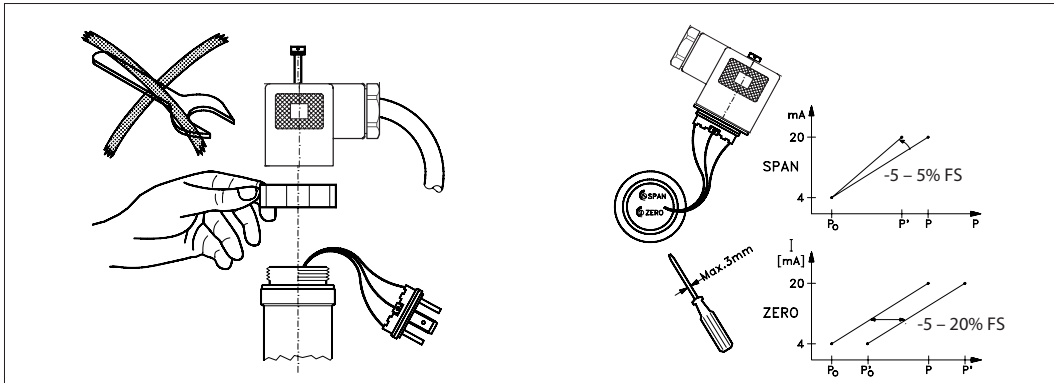
	G 1/4 A (EN 837)	G 3/8 A (EN 837)	G 1/2 A (EN 837)	1/4 - 18 NPT	1/2 - 14 NPT	DIN 3852-E-G 1/4 Gasket: DIN 3869-14
Type code	AB04	AB06	AB08	AC04	AC08	GB04
Recommended torque ¹⁾	30 – 35 Nm	30 – 35 Nm	30 – 35 Nm	2 – 3 turns after finger tightened	2 – 3 turns after finger tightened	30 – 35 Nm

¹⁾ Depends on different parameters such as gasket material, mating material, thread lubrication and pressure level

Electrical connection

<p>Type code, page 4</p>	<p style="text-align: center;">1</p>  <p style="text-align: center;">EN 175301-803-A, Pg 9</p>
<p>Electrical connection, 4-20 mA output (2 wire)</p>	<p>Pin 1: + supply Pin 2: + supply Pin 3: not used</p>  <p>Earth: Connected to MBS enclosure</p>

Adjustment



The adjustment section includes a diagram of a hand adjusting a screw on the transmitter's top cover. To the right, two graphs illustrate the adjustment process. The top graph, labeled 'SPAN', shows current (mA) on the y-axis (0 to 20) and pressure (P) on the x-axis. It shows two parallel lines representing the output current for different pressure points (P₀, P₁, P, P₁, P). The slope of the lines is labeled '-5 - 5% FS'. The bottom graph, labeled 'ZERO', shows current (mA) on the y-axis (0 to 20) and pressure (P) on the x-axis. It shows two parallel lines representing the output current for different pressure points (P₀, P₀, P, P₁). The vertical shift between the lines is labeled '-5 - 20% FS'. A screwdriver is shown with a 'Max. 3mm' label, indicating the maximum adjustment range.