Data Sheet

Pressure transmitter
Type **MBS 4000**

Offers high accuracy

The high accuracy pressure transmitter MBS 4000 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 – 1.6 to 0 – 400 bar. 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
- Enslosure and wetted parts of acid-resistant stainless steel (AISI 316L)
- Pressure ranges in relative (gauge) or absolute from 0 up to 400 bar
- Output signal: 4 – 20 mA
- A wide range of pressure connections
- Fully digitally compensated
- Accuracy 0.5% FS max.
- UL approved

Product specification

Technical data

Table 1: Performance (EN 60770)

Description	Values
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/10 K (typ.)
	≤ ± 0.2% FS/10 K (max.)
Thermal sensitivity (span) shift	≤ ± 0.1% FS/10 K (typ.)
	≤ ± 0.2% FS/10 K (max.)
Response time	< 4 ms
Overload pressure	6 × FS (max. 1500 bar)
Burst pressure	6 × FS (max. 2000 bar)
Power-up time	< 50 ms
Durability, P: 10 – 90% FS	> 10 ×10^6 cycles

Table 2: Electrical specifications

Description	Values
Nom. output signal (short-circuit protected)	4 – 20 mA
Supply voltage [U_B], polarity protected	9 – 32 V DC
Supply voltage dependency	< 0.1% FS / 10 V
Output limitation	22.4 mA
Load [R_L] (load connected to 0 V)	$R_L \leq \dfrac{(U_B - 9\ V)}{0.02\ A} [\Omega]$

Table 3: Enviromental conditions

Description		Values
Sensor operating temperature	Normal	-40 – 85 ℃
Media temperature range		-40 – 85 ℃
Ambient temperature range		-40 – 85 ℃
Compensated temperature range		0 – 80 ℃
Transport / Storage temperature range		-50 – 85 ℃
EMC – Emission		EN 61000-6-3
EMC – Immunity		EN 61000-6-2
Insulation resistance		> 100 MΩ at 500 V DC
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	7.5g $_{rms}$, 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 (IP protection fulfilled together with mating connector)		IP65

Table 4: Mechanical characteristics

Description		Values
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

Table 5: Explosive atmospheres

Description		Values
Zone 2 applications [1]	$C\epsilon \langle\epsilon x\rangle$ II 3G Ex ce IIA T3 Gc -10°C<Ta<+85°C	EN60079-0; EN60079-7

[1] When used in ATEX Zone 2 areas at low temperatures the cable and plug must be protected against impact.

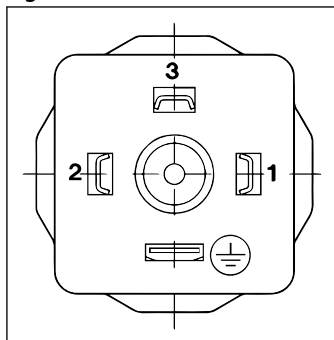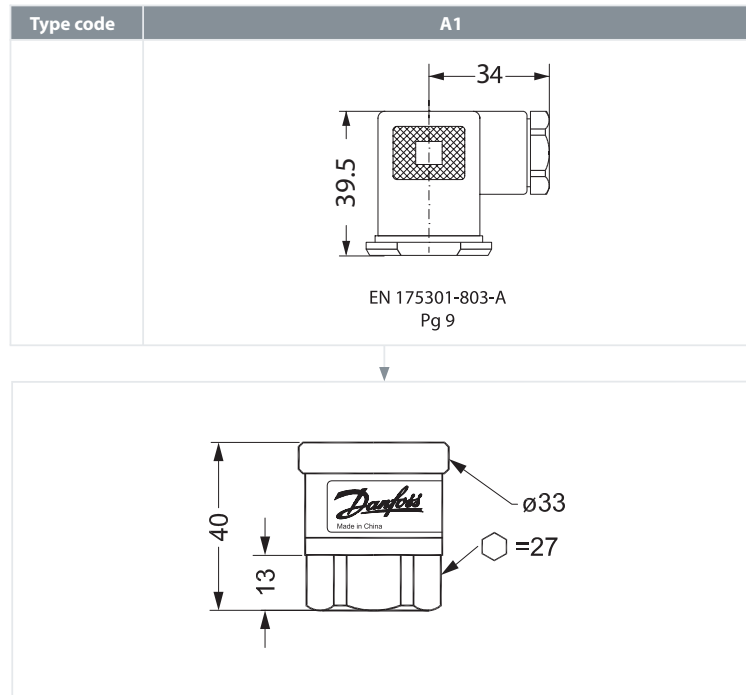## Electrical connection

Figure 1: Electrical connection

Table 6: Electrical connection

Type code	A1
	EN 175301-803-A, Pg 9
Electrical connection, 4 – 20 mA output (2 wire)	Pin 1: + supply Pin 2: ÷ supply Pin 3: not used Earth: Connected to MBS enclosure

Dimensions and weights

Figure 2: Dimensions/Combinations

Type code	A1
	EN 175301-803-A Pg 9

G ¼ A (EN 837)	G ⅜ A (EN 837)	G ½ A (EN 837)	¼ – 18 NPT	½ – 14 NPT	G ¼ (DIN 3852-E)

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

Ordering

Figure 3: Ordering standard

| MBS 40 | | | | | | | 1 | – | A1 | | | | – | | |

Gasket / O-ring material

0	No gasket
2	Gasket, NBR -40 °C – 85 °C
4	O-ring, NBR -40 °C – 85 °C

Standard	0 0
With pulse-snubber	5 0

Pressure connection

A B 0 4	G ¼ A (EN 837)
A B 0 6	G ⅜ 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	G ¼ (DIN 3852-E)

Measuring range

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
0 – 40 bar	2 6
0 – 60 bar	2 8
0 – 100 bar	3 0
0 – 160 bar	3 2
0 – 250 bar	3 4
0 – 400 bar	3 6

Electrical connection

A1	Plug Pg9 (EN175301-803-A)

Output signal

1	4 – 20 mA

Pressure reference

Gauge (relative)	1
Absolute	2

▮	Preferred version

ℹ 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.

Online support

Danfoss offers a wide range of support along with our products, including digital product information, software, mobile apps, and expert guidance. See the possibilities below.

The Danfoss Product Store

The Danfoss Product Store is your one-stop shop for everything product related—no matter where you are in the world or what area of the cooling industry you work in. Get quick access to essential information like product specs, code numbers, technical documentation, certifications, accessories, and more.
Start browsing at store.danfoss.com.

Find technical documentation

Find the technical documentation you need to get your project up and running. Get direct access to our official collection of data sheets, certificates and declarations, manuals and guides, 3D models and drawings, case stories, brochures, and much more.

Start searching now at www.danfoss.com/en/service-and-support/documentation.

Danfoss Learning

Danfoss Learning is a free online learning platform. It features courses and materials specifically designed to help engineers, installers, service technicians, and wholesalers better understand the products, applications, industry topics, and trends that will help you do your job better.

Create your Danfoss Learning account for free at www.danfoss.com/en/service-and-support/learning.

Get local information and support

Local Danfoss websites are the main sources for help and information about our company and products. Find product availability, get the latest regional news, or connect with a nearby expert—all in your own language.

Find your local Danfoss website here: www.danfoss.com/en/choose-region.

Spare Parts

Get access to the Danfoss spare parts and service kit catalog right from your smartphone. The app contains a wide range of components for air conditioning and refrigeration applications, such as valves, strainers, pressure switches, and sensors.

Download the Spare Parts app for free at www.danfoss.com/en/service-and-support/downloads.

Coolselector®2 - find the best components for you HVAC/R system

Coolselector®2 makes it easy for engineers, consultants, and designers to find and order the best components for refrigeration and air conditioning systems. Run calculations based on your operating conditions and then choose the best setup for your system design.

Download Coolselector®2 for free at coolselector.danfoss.com.