

# Pressure transmitter for marine applications

## Type MBS 3100 and MBS 3150

### Features



- Designed for use in severe maritime environments
- All relevant marine approvals
- Enclosure and wetted parts of acid-resistant stainless steel (AISI 316L)
- Pressure ranges in relative (gauge) or absolute from 0 up to 600 bar
- Standard output signal: 4 - 20 mA
- A wide range of pressure connections
- Temperature compensated and laser calibrated

### Description

The compact ship approved pressure transmitter MBS 3100 is designed for use in almost all marine applications. MBS 3150 with integrated pulse-snubber is designed for use in marine applications with severe medium influences like cavitation, liquid hammer or pressure peaks and offers a reliable pressure measurement, even under harsh environmental conditions.

The flexible pressure transmitter programme covers, absolute and gauge (relative) versions, measuring ranges from 0-1 to 0-600 bar 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.

### Ordering standard versions MBS 3100

Plug: Pg 11 (EN 175301-803)  
Output signal: 4-20mA

Pressure connection	Measuring range Pe <sup>1)</sup> [bar]	Type no.	Code no.
G 1/4 A (EN 837)	0 - 4	MBS 3100 - 1611 - 6AB04	<b>060G1367</b>
	0 - 6	MBS 3100 - 1811 - 6AB04	<b>060G1368</b>
	0 - 10	MBS 3100 - 2011 - 6AB04	<b>060G1369</b>
	0 - 16	MBS 3100 - 2211 - 6AB04	<b>060G1370</b>
	0 - 25	MBS 3100 - 2411 - 6AB04	<b>060G1371</b>
G 1/4 A, O-ring DIN 3852	0 - 4	MBS 3100 - 1611 - 6BB04	<b>060G1463</b>
	0 - 6	MBS 3100 - 1811 - 6BB04	<b>060G1464</b>
	0 - 10	MBS 3100 - 2011 - 6BB04	<b>060G1465</b>
	0 - 16	MBS 3100 - 2211 - 6BB04	<b>060G1466</b>
	0 - 25	MBS 3100 - 2411 - 6BB04	<b>060G1467</b>
G 1/2 A (EN 837)	0 - 40	MBS 3100 - 2611 - 6BB04	<b>060G1468</b>
	-1 - 1.5 <sup>2)</sup>	MBS 3100 - 8411 - 6AB08	<b>060G5600</b>
	-1 - 5 <sup>2)</sup>	MBS 3100 - 8711 - 6AB08	<b>060G5601</b>
	0 - 4	MBS 3100 - 1611 - 6AB08	<b>060G1469</b>
	0 - 6	MBS 3100 - 1811 - 6AB08	<b>060G1470</b>
	0 - 10	MBS 3100 - 2011 - 6AB08	<b>060G1471</b>
	0 - 16	MBS 3100 - 2211 - 6AB08	<b>060G1472</b>
	0 - 25	MBS 3100 - 2411 - 6AB08	<b>060G1473</b>
0 - 40	MBS 3100 - 2611 - 6AB08	<b>060G3388</b>	

<sup>1)</sup> Gauge/relative

<sup>2)</sup> Sealed gauge

**Ordering  
standard versions  
MBS 3150**
*Plug: Pg 11 (EN 175 301-803*
*Output signal: 4-20 mA*

Pressure connection	Measuring range Pe <sup>1)</sup> [bar]	Type no.	Code no.
G 1/4 A, O-ring DIN 3852	0 - 6	MBS 3150 - 1811 - 6BB04	<b>060G1474</b>
	0 - 10	MBS 3150 - 2011 - 6BB04	<b>060G1475</b>
G ½ A (EN 837)	0 - 6	MBS 3150 - 1811 - 6AB08	<b>060G1476</b>
	0 - 10	MBS 3150 - 2011 - 6AB08	<b>060G1477</b>

<sup>1)</sup> Gauge/relative

**Technical data**
*Performance (EN 60770)*

Accuracy (incl. non-linearity, hysteresis and repeatability)		±0.5% FS (typ.) ±1% FS (max.)
	For range -1 to xx bar	±1.5% FS (typ.) ±3% FS (max)
Non-linearity BFSL (conformity)		≤ ±0.5% 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 MBS 3100		< 4 ms
Response time MBS 3150	liquids with viscosity <100 Cst	< 4 ms
	Air and gases	< 35 ms
Overload pressure (Static)		6 × FS (max. 1500 bar)
Burst pressure		> 6 × FS (max. 2000 bar)
Durability, P: 10-90% FS		>10×10 <sup>6</sup> cycles

*Electrical specifications*

Nom. output signal (short circuit protected)	4 to 20 mA
Supply voltage (polarity protected)	9 to 32 V dc
Voltage dependency	< 0.2 %FS/10V
Current limitation	28 mA (typ.)
Load [R <sub>L</sub> ] (load connected to 0V)	$R_L \leq \frac{V_{\text{supply}} - 9 \text{ V}}{0.02 \text{ A}} [\Omega]$

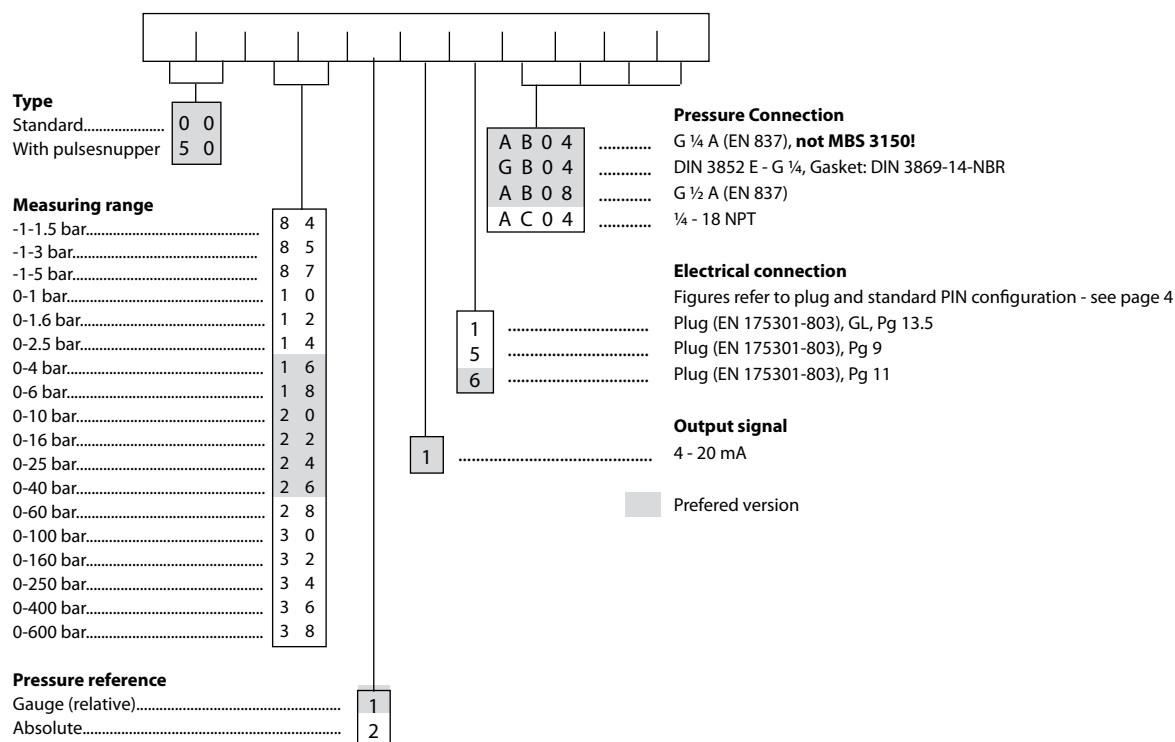
*Environmental conditions*

Medium temperature range	-40 → +85°C	
Ambient temperature range (depending on electrical connection)	see page 4	
Compensated temperature range	0 → +80°C	
Transport 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	SEN 361503	
Vibration stability	Sinusoidal 15.9 mm-pp, 5 Hz-25 Hz 20 g, 25 Hz - 2 kHz	IEC 60068-2-6
	Random 7.5 g <sub>rms</sub> , 5Hz-1kHz	IEC 60068-2-34, IEC 60068-2-36
Shock resistance	Shock 500 g / 1 ms	IEC 60068 - 2 - 27
	Free fall	IEC 60068 - 2 - 32
Enclosure (depending on electrical connection)	see page 4	

*Mechanical characteristics*

Materials	Wetted parts	EN 10088-1 ; 1.4404 (AISI 316 L)
	Enclosure	EN 10088-1 ; 1.4404 (AISI 316 L)
	Pressure connection	see page 3
	Electrical connections	see page 4
Weight (depending on pressure connection and electrical connection)		0.2 - 0.3 kg

Ordering of special versions



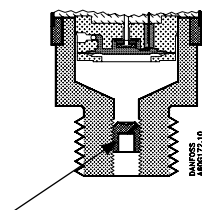
Non-standard build-up combinations may be selected. However, minimum order quantities may apply. Please contact your local Danfoss office for further information or request for other versions

Dimensions / Combinations

Type code	1	5	6
	EN175301-803, Pg 13.5	EN 175301-803, Pg 9	EN175301-803, Pg11
	G ½ A (EN 837)	¼ - 18 NPT	G ½ A (EN 837)
			DIN 3852-E-G ¼ Gasket: DIN 3869-14
Type code	AB08	AC04	AB04
			GB04

**Electrical connections**

Type code, page 3		
1	5	6
EN 175301-803, Pg 13.5	EN 175301-803, Pg 9	EN 175301-803, Pg 11
<i>Ambient temperature</i>		
-40 → + 85 °C	-40 → + 85 °C	-40 → + 85 °C
<i>Enclosure</i>		
IP 65	IP 65	IP 65
<i>Materials</i>		
Glass filled polyamid, PA 6.6	Glass filled polyamid, PA 6.6	Glass filled polyamid, PA 6.6
<i>Electrical connection, 4 - 20 mA output (2 wire)</i>		
Pin1: + supply Pin 2: ÷ supply Pin 3: Not used Earth: Connected to MBS enclosure	Pin1: + supply Pin 2: ÷ supply Pin 3: Not used Earth: Connected to MBS enclosure	Pin1: + supply Pin 2: ÷ supply Pin 3: Not used Earth: Connected to MBS enclosure

**MBS 3150  
Application and media conditions**

**Application**

Cavitation, liquid hammer and pressure peaks may occur in hydraulic systems with changes in flow velocity, e.g. fast closing of a valve or pump starts and stops.  
The problem may occur on inlet and outlet side, even at rather low operating pressures.

**Media condition**

Clogging of the nozzle may occur in liquids containing particles. Mounting the transmitter in an upright position minimizes the risk of clogging, because the flow in the nozzle is restricted to the start-up period when the dead volume behind the nozzle orifice is relatively big (0.3 mm). The media viscosity has only little effect on the response time. Even at a viscosities up to 100 cSt, the response time will not exceed 4 ms

**Approvals**

- Lloyd's Register of Shipping
- Det Norske Veritas
- Germanischer Lloyd
- RINA, Registro Italiano Navale
- American Bureau of Shipping
- Bureau Veritas
- Nippon Kaiji Kyokai
- MRS, Maritime Register of Shipping
- Korean Register of Shipping

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.