

# Pressure transmitters MBS 5100 and 5150

**Danfoss block components**



The block concept has been developed to save space, weight, and costs. The product is intended for use in many applications, for example: monitoring, alarm indication, shut-down, diagnosing on equipment such as motors, gears, thrusters, pumps, filters, compressors, etc.

The range contains pressure controls, pressure transmitters, test valves and accessories.

The concept meets the strict demands on marine equipment, including EU stipulations on such products.

**MBS 5100 and MBS 5150 block transmitters**

MBS 5100 and MBS 5150 are block transmitters designed for use in the marine industry. MBS 5150 has a built-in pulse-snubber. The transmitters can be easily mounted directly on the MBV 5000 block test valve or the threaded pressure connection can be used.

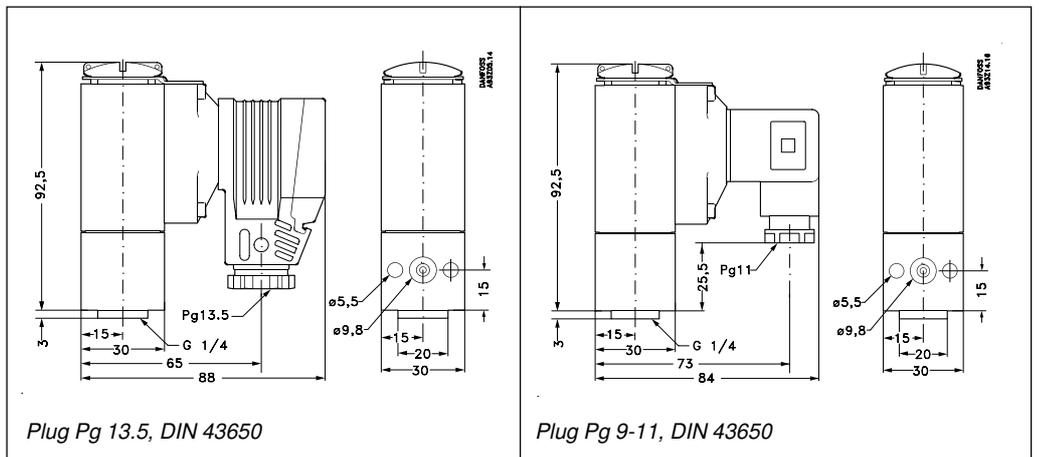
*Advantages*

- Compact design
- Low installation costs
- Fast and easy to operate
- Version with pulse-snubber (MBS 5150)
- Zero point and span adjustment
- Ten ship approvals
- High accuracy and small thermal drift

**Approvals**

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

**Dimensions**



## Technical data

## Performance

Accuracy (Incl. non-linearity, hysteresis and repeatability)	±0.1% FS (typ.) ±0.3% FS (max.)
Non-linearity (Best fit straight line)	< ±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	≤ ±0.01% FS/K (typ.) ≤ ±0.02% FS/K (max.)
Response time	< 4 ms
Max. operating pressure	See ordering table, page 4
Burst pressure	See ordering table, page 4

## Electrical specification

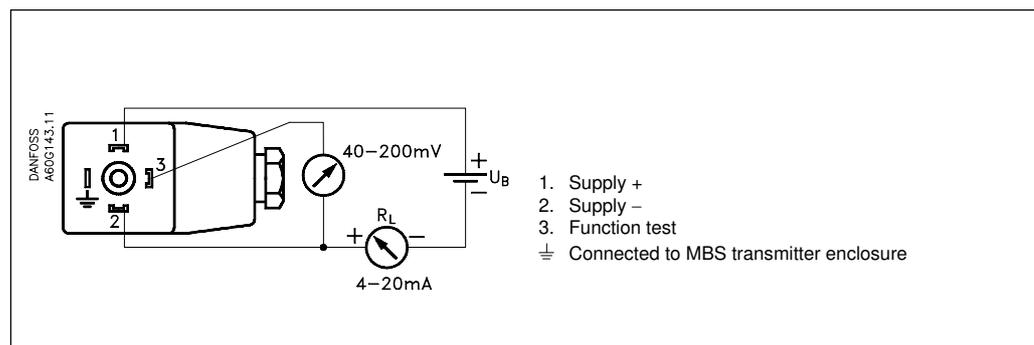
Rated output signal	4 to 20 mA
Supply voltage, $V_{\text{supply}}$ (polarity protected)	10 to 32 V d.c.
Voltage dependency	< 0.01% FS/V
Current limitation (linear output signal up to $1.5 \times \text{nom range}$ )	28 mA (typ.)
Max. load, $R_L$	$R_L \leq \frac{V_{\text{supply}} - 10 \text{ V}}{0.02 \text{ A}} - 10 [\Omega]$

## Environmental conditions

Operating temperature range	-40 to 85°C		
Compensated temperature range	0 to 80°C		
Transport temperature range	-50 to 85°C		
EMC - Emission	EN 50081-1		
EMC - Immunity	Electrostatic discharge	Air 8 kV Contact 4 kV	EN 50082-1 (IEC 801-2) EN 50082-1 (IEC 801-2)
	field	10 V/m, 26 MHz - 1 GHz	EN 50082-1 (IEC 801-3)
	RF conducted	3 $V_{\text{rms}}$ , 150 kHz - 30 MHz	EN 50082-1 (IEC 801-6)
	conducted	1 $V_{\text{rms}}$ , 10 kHz - 50 MHz	RINA, Lloyds Reg.
	LF conducted	3 $V_{\text{rms}}$ , 50 Hz - 10 kHz	RINA, Lloyds Reg.
	Transient	burst 4 kV (CM), Clamp surge 1 kV (CM,DM) at $R_g = 42\Omega$	EN 50082-1 (IEC 801-4) EN 50082-1 (IEC 801-5)
Insulation resistance		> 100 M $\Omega$ at 100 V d.c.	
Mains frequency	500 V, 50 Hz	SEN 361503	
Vibration stability	Sinusoidal	20 g, 25 Hz - 2 kHz	IEC 68-2-6
	Random	7,5 $g_{\text{rms}}$ , 5 Hz - 1 kHz	IEC 68-2-34, IEC 68-2-36
Shock resistance	Shock	500 g / 1 ms	IEC 68-2-27
	Free fall		IEC 68-2-32
Enclosure		IP 65 - IEC 529	

## Mechanical specification

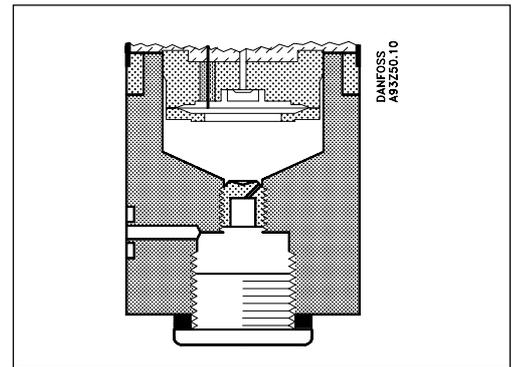
Pressure connection	G 1/4, ISO 228/1 or flange		
Electrical connection	DIN 43650 plug		
Wetted parts, material	versions without flange connection	AISI 316L, W.no 1.4404	
	versions with flange connection	Pressure connection	AISI 316L
		Plug	ETG 88 Zn 10F
		Plug gasket	W.no. 1.0388 Sn5
		O-ring for flange	NBR
Housing material	Anodized AlMgSiPb		
Weight	0.4 kg		

Electrical connection  
2-wire, 4 - 20 mA

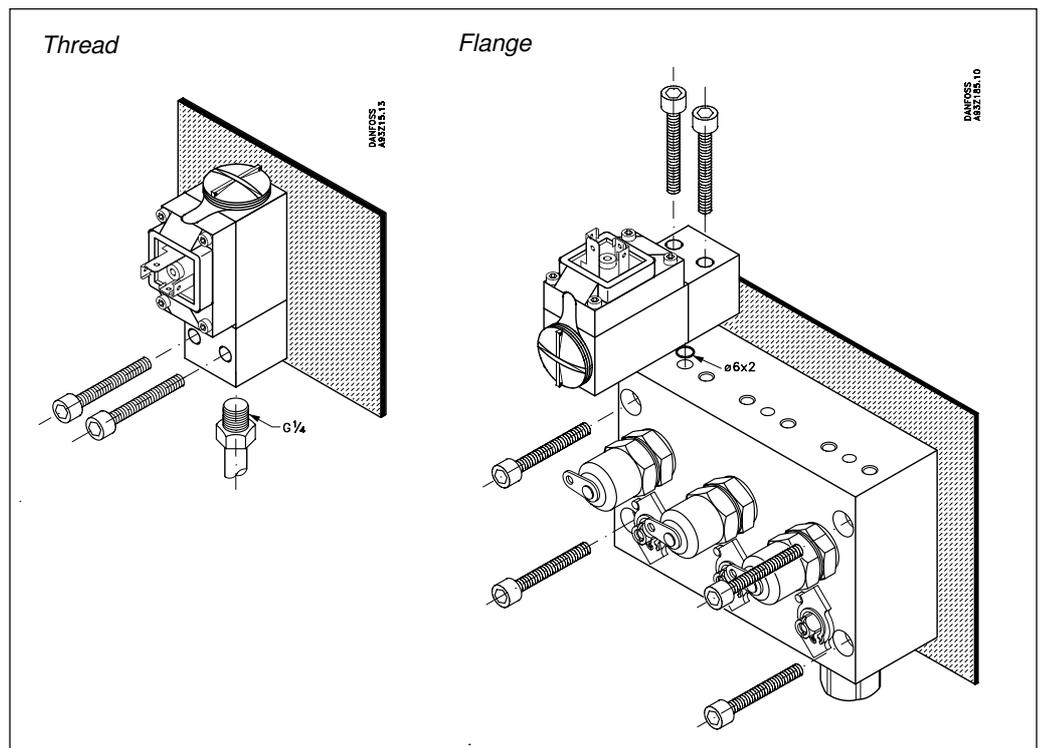
**MBS 5150 with integrated pulse snubber**

MBS 5150 has an integrated pulse snubber for protection of the sensor element against extreme pressure peaks and pulsations. Such conditions may be caused by pumps or fast operating valves in both high and low pressure plants.

The integrated pulse snubber is designed as an 0.3 mm orifice mounted in the pressure connection. The medium should not contain particles which may clog up in the orifice. The viscosity has only little effect on the response time. Even at viscosities up to 100 Cst. the response time will not exceed 4 msec.



**Mechanical connection**



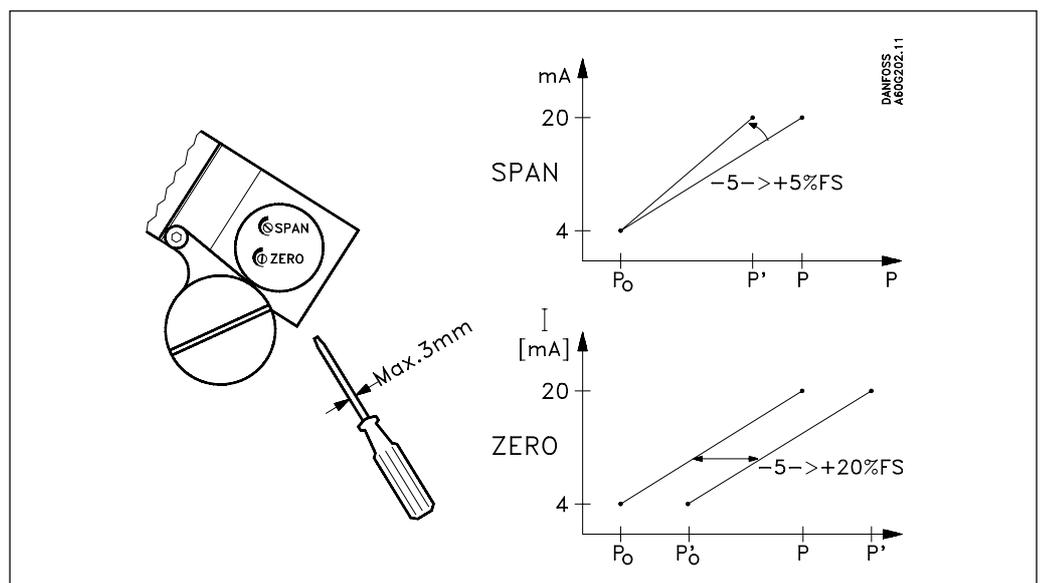
**Adjustment**

*Span*

-5 ... +5 % FS

*Zero*

Pressure range	Adjustment
0-1 to 0-10 bar	-5 ... +20 % FS
0-16 to 0-40 bar	-5 ... +10 % FS
0-60 to 0-600 bar	-5 ... +2.5 % FS



**Ordering of standard  
MBS 5100 and MBS 5150**
*Relative pressure version, G 1/4 with flange connection, DIN 43650 Pg 11 plug, 4 - 20 mA output*

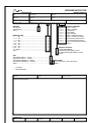
Pressure range bar	Max. operating pressure bar <sup>2)</sup>	Min. burst pressure bar <sup>1)</sup>	MBS 5100		MBS 5150	
			Type no.	Code no.	Type no.	Code no.
0 to 1	2	50	MBS 5100-1011-1DB04	<b>060N1032</b>	MBS 5150-1011-1DB04	<b>060N1081</b>
0 to 2,5	8	50	MBS 5100-1411-1DB04	<b>060N1033</b>	MBS 5150-1411-1DB04	<b>060N1083</b>
0 to 4	8	50	MBS 5100-1611-1DB04	<b>060N1034</b>	MBS 5150-1611-1DB04	<b>060N1084</b>
0 to 6	20	50	MBS 5100-1811-1DB04	<b>060N1035</b>	MBS 5150-1811-1DB04	<b>060N1063</b>
0 to 10	20	50	MBS 5100-2011-1DB04	<b>060N1036</b>	MBS 5150-2011-1DB04	<b>060N1064</b>
0 to 16	50	100	MBS 5100-2211-1DB04	<b>060N1037</b>	MBS 5150-2211-1DB04	<b>060N1065</b>
0 to 25	50	100	MBS 5100-2411-1DB04	<b>060N1038</b>	MBS 5150-2411-1DB04	<b>060N1085</b>
0 to 40	80	800	MBS 5100-2611-1DB04	<b>060N1039</b>	MBS 5150-2611-1DB04	<b>060N1066</b>
0 to 60	200	800	MBS 5100-2811-1DB04	<b>060N1040</b>	MBS 5150-2811-1DB04	<b>060N1086</b>
0 to 100	200	800	MBS 5100-3011-1DB04	<b>060N1041</b>	MBS 5150-3011-1DB04	<b>060N1087</b>

<sup>1)</sup> 200 bar for abs. pressure versions

<sup>2)</sup> FS ≤ 300 bar min. 2 x FS; FS > 300 bar min. 1,5 x FS

**Ordering of customized types**

Type no: MBS 5100-	xx	x	x-	x	xxxx			
Type no: MBS 5150-	xx	x	x-	x	xxxx			
<b>Measuring range</b>	0 - 1 bar	<b>10</b>				<b>CA05</b> M 10 × 1 female	<b>Pressure connection</b>	
	0 - 1.6 bar	<b>12</b>				<b>CA07</b> M 12 × 1.5 female		
	0 - 2.5 bar	<b>14</b>				<b>CB02</b> G 1/8 female		
	0 - 4 bar	<b>16</b>				<b>CB04</b> G 1/4 female		
	0 - 6 bar	<b>18</b>				<b>CC04</b> NPT 1/4 female		
	0 - 10 bar	<b>20</b>				<b>DA05</b> M 10 × 1 female with flange		
	0 - 16 bar	<b>22</b>				<b>DA07</b> M 12 × 1.5 female with flange		
	0 - 25 bar	<b>24</b>				<b>DB02</b> G 1/8 female with flange connection		
	0 - 40 bar	<b>26</b>				<b>DB04</b> G 1/4 female with flange connection		
	0 - 60 bar	<b>28</b>				<b>DC04</b> NPT 1/4 female with flange connection		
	0 - 100 bar	<b>30</b>						
	0 - 160 bar	<b>32</b>						
	0 - 250 bar	<b>34</b>						
	0 - 400 bar	<b>36</b>						
	0 - 600 bar	<b>38</b>						
	Others	<b>xx</b>						
<b>Pressure reference</b>	Relative	<b>1</b>	<b>1</b>			<b>0</b> No plug (DIN 43650 A)	<b>Electrical connection</b>	
	Absolute	<b>2</b>				<b>1</b> Pg 11 plug (DIN 43650 A)		
						<b>2</b> Pg 13.5 plug (DIN 43650 A)		
						<b>3</b> Pg 9 plug (DIN 43650 A)		
							<b>4-20 mA</b>	<b>Output signal</b>

**Specification form**


An order form has been worked out to facilitate specification of special MBS block transmitters.

The order form with code no. 991L1099 can be ordered from Danfoss.

**ISO 9001 quality approval**


Danfoss A/S is certificated in accordance with international standard ISO 9001. This means that Danfoss fulfils the international standard in respect of product development, design, production and sale.

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