

# MBS 3050 pressure transmitter for heavy-duty applications

## Features



- Designed for use in severe industrial environments
- Resistant to cavitation, liquid hammer and pressure peaks
- Enclosure and wetted parts of acid-resistant stainless steel (AISI 316L)
- Pressure ranges in relative (gauge) or absolute from 1 up to 600 bar
- All standard output signals: 4 - 20 mA, 0 - 5 V, 1 - 5 V, 1 - 6 V, 0 - 10 V, 1 - 10 V
- A wide range of pressure and electrical connections
- Temperature compensated and laser calibrated
- Typical applications:
  - Hydraulics
  - Power packs

## Description

The compact heavy duty pressure transmitter MBS 3050 with integrated pulse-snubber is designed for use in hydraulic 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 different output signals, absolute and

gauge (relative) versions, measuring ranges from 0-1 to 0-600 bar and a wide range of pressure and electrical 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 programme

Plug: Pg 9 (EN 175301-803)  
Pressure connection: DIN 3852-E-G1/4

Output signal	Pressure range <sup>1)</sup> Pe	Type	Code no.
4 - 20 mA	0 - 250 bar	MBS 3050-3411-1GB04	<b>060G3582</b>
4 - 20 mA	0 - 400 bar	MBS 3050-3611-1GB04	<b>060G3583</b>
1 . 5 V	0 - 250 bar	MBS 3050-3413-1GB04	<b>060G3584</b>
1 - 5 V	0 - 400 bar	MBS 3050-3613-1GB04	<b>060G3585</b>
0 - 10 V	0 - 250 bar	MBS 3050-3415-1GB04	<b>060G3557</b>
0 - 10 V	0 - 400 bar	MBS 3050-3615-1GB04	<b>060G3586</b>

<sup>1)</sup> Relative/ sealed gauge

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

Accuracy (incl. non-linearity, hysteresis and repeatability)	±0.5% FS (typ.) ±1% 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	< 4 ms
Overload pressure	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*

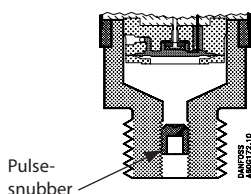
	Nom. output signal (short-circuit protected)		
	4 – 20 mA	0 - 5, 1 - 5, 1 - 6 V	0 - 10 V, 1 - 10 V
Supply voltage [U <sub>B</sub> ], polarity protected	9 → 32 V	9 → 30 V	15 → 30 V
Supply - current consumption	–	≤ 5 mA	≤ 8 mA
Supply voltage dependency	≤ ±0.05% FS/10 V		
Current limitation	28 mA (typ.)	–	
Output impedance	–		
Load [R <sub>L</sub> ] (load connected to 0V)	R <sub>L</sub> ≤ (U <sub>B</sub> - 9V)/0.02Ω	R <sub>L</sub> ≥ 10 kΩ	R <sub>L</sub> ≥ 15 kΩ

*Environmental conditions*

Medium temperature range	–40 → +85°C		
Ambient temperature range (depending on electrical connection)	see page 3		
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	IEC 60068-2-6
		20 g, 25 Hz - 2 kHz	
Shock resistance	Shock	500 g / 1 ms	IEC 60068 - 2 - 27
	Free fall		IEC 60068 - 2 - 32
Enclosure (depending on electrical connection)	see page 3		

*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

**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 the 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 fills, and furthermore because 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.

**Ordering of special versions**

MBS 3050 -

**Measuring range**

0 - 1 bar .....	1 0
0 - 1.6 bar .....	1 2
0 - 2.5 bar .....	1 4
0 - 4 bar .....	1 6
0 - 6 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
0 - 600 bar .....	3 8

**Pressure reference**

Gauge (relative) .....	1
Absolute .....	2

**Pressure connection**

E B 0 8 .....	G 1/2 A (EN 837)
E C 0 4 .....	1/4 - 18 NPT
F A 0 9 .....	DIN 3852-E-M14x1.5,Gasket:DIN3869-14-NBR
G B 0 4 .....	DIN 3852-E-G 1/4 Gasket: DIN 3869-14 NBR

**Electrical connection**

Figures refer to plug and standard PIN configuration - see page 4  
 Plug Pg 9 (EN175301-803)  
 \*) Plug, AMP Econoseal, J series, male, excl. female plug  
 Screened cable, 2 m  
 \*) Plug, IEC 947-5-2, M12 x 1, male, excl. female plug  
 Plug ISO 15170-A1-3.2-Sn, male, excl. female plug  
 \*) Plug, AMP Superseal 1.5 series male, excl. female plug

**Output signal**

1 .....	4 - 20 mA
2 .....	0 - 5 V
3 .....	1 - 5 V
4 .....	1 - 6 V
5 .....	0 - 10 V
7 .....	1 - 10 V

\*) Gauge versions only available as sealed gauge versions

Preferred versions

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

**Dimensions / Combinations**

Type code	1	2	3	5	7	8
	EN175301-803, Pg 9	AMP Econoseal	2 m screened cable	EN 60947 - 5 - 2 M12x1; 4-pin	ISO 15170 - A1 - 3.2 - Sn	AMP Superseal
Type code			EB08	EC04	FA09	GB04

**Electrical connections**

Type code, page 3					
1	2	3	5	7	8
EN 175301-803, Pg 9 	AMP Econoseal J series (male) 	2 m screened cable 	EN 60497-5-2 M12x1; 4-pin 	ISO 15170-A1-3.2-Sn (Bayonet plug) 	AMP Superseal 1.5 series (male) 
<b>Ambient temperature</b>					
-40 → +85 °C	-40 → +85 °C	-30 → +85 °C	-25 → +85 °C	-40 → +85 °C	-40 → +85 °C
<b>Enclosure</b>					
IP 65	IP 67	IP 67	IP 67	IP 67 / IP 69K	IP 67
<b>Materials</b>					
Glass filled polyamid, PA 6.6	Glass filled polyamid, PA 6.6 <sup>1)</sup>	Poliolyfin cable with PE shrinkage tubing	Nickel plated brass, CuZn/Ni	Glass filled polyester, PBT	Glass filled polyamid, PA 6.6 <sup>2)</sup>
<b>Electrical connection, 4 - 20 mA output (2 wire)</b>					
Pin 1: + supply Pin 2: ÷ supply Pin 3: Not used Earth: Connected to MBS enclosure	Pin 1: + supply Pin 2: ÷ supply Pin 3: not used	Brown wire: + supply Black wire: ÷ supply Red wire: Not used Orange: Not used Screen: Not connected to MBS enclosure	Pin 1: + supply Pin 2: Not used Pin 3: Not used Pin 4: ÷ supply	Pin 1: + supply Pin 2: ÷ supply Pin 3: Ventilation Pin 4: Not used	Pin 1: + supply Pin 2: ÷ supply Pin 3 Not used
<b>Electrical connection, 0 - 5V, 1 - 5 V, 1 - 6 V, 0 - 10 V, 1 - 10 V output</b>					
Pin 1: + supply Pin 2: ÷ supply Pin 3: Output Earth: Connected to MBS enclosure	Pin 1: + supply Pin 2: ÷ supply Pin 3: Output	Brown wire: Output Black wire: ÷ supply Red wire: + supply Orange: Not used Screen: Not connected to MBS enclosure	Pin 1: + supply Pin 2: Not used Pin 3: Output Pin 4: ÷ supply	Pin 1: + supply Pin 2: Output Pin 3: Ventilation Pin 4: ÷ supply	Pin 1: + supply Pin 2: ÷ supply Pin 3: Output

<sup>1)</sup> Female plug: Glass filled polyester, PBT

<sup>2)</sup> Wire: PETFE (teflon)  
Protection sleeve: PBT mesh (polyester)

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