

Pressure transmitter for heavy-duty applications

Type MBS 3050

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 0 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

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 versions

Plug: Pg 9 (EN 175301-803)

Pressure connection:

DIN 3852-E-G1/4

Output signal	Measuring range $P_e^{1)}$ [bar]	Type	Code no.
4 - 20 mA	0 - 250	MBS 3050-3411-1GB04	060G3582
4 - 20 mA	0 - 400	MBS 3050-3611-1GB04	060G3583
1 . 5 V	0 - 250	MBS 3050-3413-1GB04	060G3584
1 - 5 V	0 - 400	MBS 3050-3613-1GB04	060G3585
0 - 10 V	0 - 250	MBS 3050-3415-1GB04	060G3557
0 - 10 V	0 - 400	MBS 3050-3615-1GB04	060G3586

¹⁾ Relative/ sealed gauge

Technical data
Performance (IEC 60770)

Accuracy	±0.5% FS (typ.) ±1% 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	≤ ±0.1% FS /10K (typ.) ≤ ±0.2% FS /10K (max.)	
Response time	Liquids with viscosity < 100 cSt	< 4 ms
	Air and gases	< 35 ms
Overload pressure (static)	Min. 6xFS (max. 1500 bar)	
Burst pressure	>6xFS (max. 2000 bar)	
Durability, P: 10-90% FS	>10x10 ⁶ cycles	

Electrical specifications

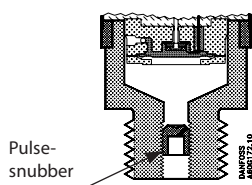
	Nom. output signal (short-circuit protected)		
	4 – 20 mA	0 - 5, 1 - 5, 1 - 6 V	0 - 10 V, 1 - 10 V
Supply voltage [U _B], polarity protected	9 → 32 V	9 → 30 V	15 → 30 V
Supply - current consumption	-	≤ 5 mA	≤ 8 mA
Supply voltage dependency	≤ ±0.05% FS/10 V		
Current limitation	28 mA (typ.)	-	
Output impedance	≤ 25Ω		
Load [R _L] (load connected to 0V)	R _L ≤ (U _B -9V)/0.02 A	R _L ≥ 10 kΩ	R _L ≥ 15 kΩ

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	IEC 60068-2-6
		20 g, 25 Hz - 2 kHz	
	Random	7.5 g _{rms} , 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)
	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 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

A B 0 8
A C 0 4
F A 0 9
G B 0 4

Pressure connection

.....	G ½ A (EN 837)
.....	¼ -18 NPT
.....	DIN 3852-E-M14x1.5,Gasket:DIN3869-14-NBR
.....	DIN 3852-E-G ¼
.....	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, 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

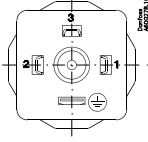
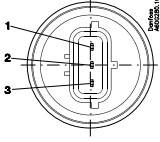
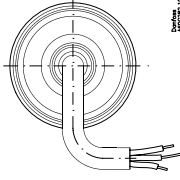
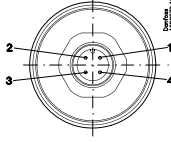
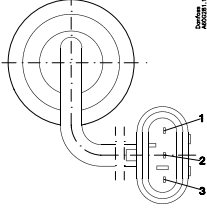
Preferred versions

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	8
	EN175301-803, Pg 9	AMP Econoseal	2 m screened cable	EN 60947 - 5 - 2 M12x1; 4-pin	AMP Superseal
	G ½ A (EN 837)	¼ - 18 NPT	DIN 3852-E-M14x1.5 Gasket:DIN3869-14-NBR	DIN 3852-E-G ¼ Gasket: DIN 3869-14	
Type code	AB08	AC04	FA09	GB04	

Electrical connections

Type code, page 3				
1	2	3	5	8
EN 175301-803, Pg 9 	AMP Econoseal J series (male) 	2 m screened cable 	EN 60497-5-2 M12x1; 4-pin 	AMP Superseal 1.5 series (male) 
<i>Ambient temperature</i>				
-40 → +85 °C	-40 → +85 °C	-30 → +85 °C	-25 → +85 °C	-40 → +85 °C
<i>Enclosure</i>				
IP 65	IP 67	IP 67	IP 67	IP 67
<i>Materials</i>				
Glass filled polyamid, PA 6.6	Glass filled polyamid, PA 6.6 ¹⁾	Poliolyfin cable with PE shrinkage tubing	Nickel plated brass, CuZn/Ni	Glass filled polyamid, PA 6.6 ²⁾
<i>Electrical connection, 4 - 20 mA output (2 wire)</i>				
Pin1: + 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 Not used
<i>Electrical connection, 0 - 5V, 1 - 5 V, 1 - 6 V, 0 - 10 V, 1 - 10 V output</i>				
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: ÷ supply Pin 3: Output

¹⁾ Female plug: Glass filled polyester, PBT

²⁾ Wire: PETFE (teflon)

Protection sleeve: PBT mesh (polyester)