

Instructions

Pressure transmitters

type MBS 4201, MBS 4251, MBS 4701 MBS 4751

060R9345

060R9345

Content

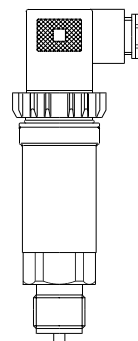
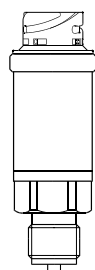
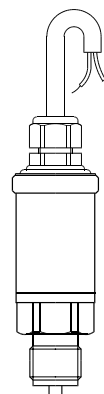
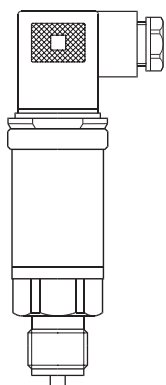
Page	
1	Description/application
2	Identification
3	Specifications
4	Safety instructions
5	Installation/dimensions
6	Electrical connection
6	Maintenance/adjustment

Description/Application

Application: Pressure measurement in potentially explosive areas.

Approval: Ex ia IIC T6...T4 (MBS 42xx series) and Ex ia IIC T4 (MBS 47xx series) in accordance with ATEX directive 94/9/EC.

Function: Pressure transmitters type MBS 4201, MBS 4251, MBS 4701 and MBS 4751 convert the pressure measured to a 4-20 mA current signal.



Identification

Danfoss
6430 Nordborg Denmark

PRESSURE TRANSMITTER
MBS 4701-2011-1AB08
060G4307

3316

Range P_e : 0...10 bar
0...1 Mpa

PB/MWP : 2 MPa/20 bar

SUPPLY : 10...28 V d.c.

OUTPUT : 4...20 mA

+SUPPLY : PIN 1

COMMON : PIN 2

CE 0539 Ex II 1G

DEMKO 01 ATEX 127938X
Ex ia IIC T4 Ga
IECEx ULD 12.0005X

Ui : 28V
Ii : 100 mA
Pi : 0,7 W
Li : 8 μ H
Ci : 50 nF

For:
Ambient temperature
See:
user instruction

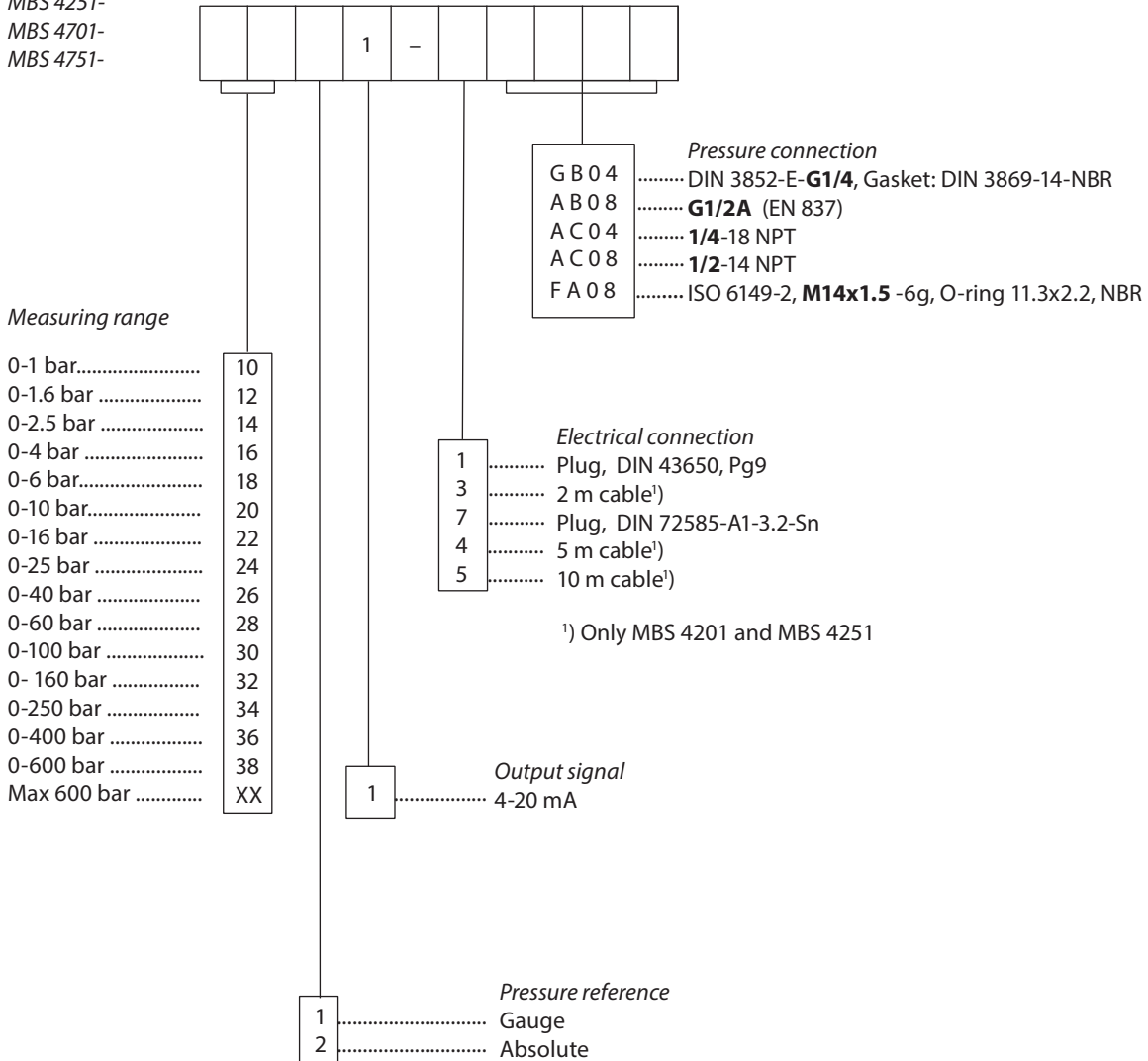
02803111
Made in China

111=WWY
Production-week/year (WW/Y)

02803=
Serial no.

Type no. (Indicates transmitter specification - see key below)

- Type no.
MBS 4201-
MBS 4251-
MBS 4701-
MBS 4751-



Specifications

Output current	4 - 20 mA	
Supply voltage	10 - 28 V	

Safety specifications

Electrical

Max. supply voltage	U_i	28 V
Max. Input current	I_i	100 mA
Max. Input power	P_i	0.7 W
Internal capacity	C_i	50 nF
Internal inductance	L_i	8 μ H

Adjustable Type (MBS47x1-xxxx-1xxxx, MBS47x1-xxxx-7xxxx):

Ambient temperature	T4	-40 -> 100 °C
Media temperature	T4	-40 -> 125 °C

Plug Type, non-adjustable (MBS42x1-xxxx-1xxxx;; MBS42x1-xxxx-7xxxx):

Ambient temperature	T4	-40 -> 100 °C
	T5	-40 -> 75 °C
	T6	-40 -> 50 °C
Media temperature	T4	-40 -> 125 °C
	T5	-40 -> 95 °C
	T6	-40 -> 50 °C

Fixed Cable Types, non-adjustable, MBS 42x1-xxxx-Yxxxx (Y =3, 4, 5 are indicative cable lengths, max. 10 m)

Ambient temperature (fixed installations)	T4	-40 -> 80 °C
	T5	-40 -> 75 °C
	T6	-40 -> 50 °C
Ambient temperature (cables flexed during installation or operation)	T4	-5 -> 70 °C
	T5	-5 -> 70 °C
	T6	-5 -> 50 °C
Media temperature	T4	-40 -> 125 °C
	T5	-40 -> 95 °C
	T6	-40 -> 50 °C

Pressure specification

Measuring range	bar	0-1	0-1.6	0-2.5	0-4	0-6	0-10	0-16	0-25	0-40	0-60	0-100	0-160	0-250	0-400	0-600
Overload (Static)	bar	6	12	24	24	60	60	150	150	300	360	600	1200	1500	1500	1500
Burst pressure	bar	100	100	100	100	100	100	150	150	400	800	1200	1200	2000	2000	2000



Safety Instructions

	<p>DIN 43650, Pg 9</p>	<p>DIN 72585-A1-3.2-Sn</p>	
Materialer Materials of electrical connections Werkstoffe Matériaux Materiales	Glasfyltdt polyamid, PA 6.6 Glass filled polyamid, PA 6.6 Glasgefülltes Plyamid, PA 6.6 Polyamid au verre, PA. 6.6 Poliamide reforzado con fibra de vidrio, PA 6.6	Glasfyltdt polyester, PBT Glass filled polyester, PBT Glasgefülltes Polyester, PBT Polyester au verre, PBT Poliester reforzado con fibra de vidrio, PBT	PVC kabel PVC cable PVC Kabel Câble PVC Cable de PVC
Kapsling Protection Schutzart Etanchéité Protección	IP65	IP67 / IP69K	IP67

Safety instructions

All national safety regulations must be complied with in connection with installation, start-up and operation of Danfoss pressure transmitters type MBS 4201, MBS 4251, MBS 4701 and MBS 4751. Furthermore, the requirements of the Declaration of Conformity and national regulations for installation in explosion areas apply. Disregarding such regulations involves a risk of serious personal injury or extensive material damage. Work in connection with the pressure transmitters mentioned must be performed only by suitably qualified persons.

Basic safety and health requirements are fulfilled through compliance with:

EN60079-0: 2012, IEC60079-0: 6th edition, EN60079-11: 2012, IEC60079-11: 6th edition, EN60079-26: 2007, IEC60079-26: 2nd edition.

Special Ex protection instructions: In the event of damage to enclosure or diaphragm, the pressure transmitter must be replaced.

The end user must ensure the installation is made in accordance to EN/IEC60079-25 and EN/IEC60079-14.

WARNING –Potential Electrostatic Charging Hazard. The transmitter must only be installed in surroundings with low wind speed, and where rubbing on the plug is unlikely. Cleaning with a damp cloth is recommended. To avoid build-up of electrostatic discharge it must be ensured the pressure connection of the pressure transmitter is having a reliable connection to earth with an impedance no exceeding 1 Gohm. The MBS transmitters do not provide isolation meeting the dielectric strength requirements of IEC/EN60079-11.

MBS transmitters contain 10 nF capacitance from any input terminal to earth.

Special conditions for safe use in accordance to the ATEX/IECEx certificate:

For installations in which both the Ci and Li of the connected apparatus exceeds 1% of Co and Lo parameters (excluding the cable), then 50% of Co and Lo parameters are applicable and shall not be exceeded.

Special precautions are necessary to reduce the risk due to electro-static discharge. The transmitter must only be installed in surroundings with low wind speed, and where rubbing the plug is unlikely. Cleaning with a damp cloth is recommended.

The installation shall ensure that the resistance to earth of metallic parts of the equipment enclosure is less than 1 GOhm.

The equipment does not provide 500 V isolation to earth as required by EN60079-11: clause 6.3.12.

Installations of the pressure connection across boundary walls requiring Category 1G equipment and a less hazardous area must be gas tight as required by EN60079-26. Gaskets and seals used at the pressure connection must be suitable for use with the process medium.

Special instruction when adjusting MBS 47xx series:

If possible only adjust the MBS in non-hazardous area or take precaution to avoid electrostatic discharge and ensure the earthen of the transmitter housing is maintained. The transmitter must always be supplied from an intrinsic safety barrier.

Demands on the medium:

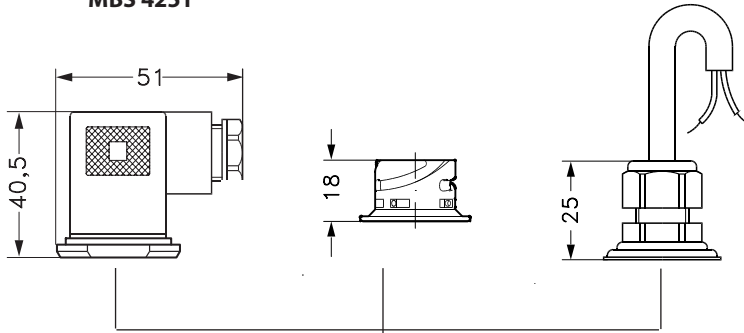
Parts in contact with the medium are made of stainless steel, EN 1088-1 1.4404 (AISI 316L). The user is responsible for a careful analysis of all process parameters when materials have to be specified and for ensuring the process medium is neutral to stainless steel as some media can be corrosive. The end user must ensure that the process connection is gas tight (as required by EN/IEC60079-26) which may require the use of a suitable gasket/seal in combination with the process connection to obtain a gas-tight connection. Gaskets and seals used at the pressure connection, including those supplied with the transmitters, must be determined as being suitable for use with the process medium and process pressure/temperature before use and alternative gasket material chosen if necessary. The end user must ensure the transmitter pressure connection is tightened with the correct torque as required for the specific thread type.

In case of problems please contact: *Danfoss A/S*
 DK-6430 Nordborg
 Denmark

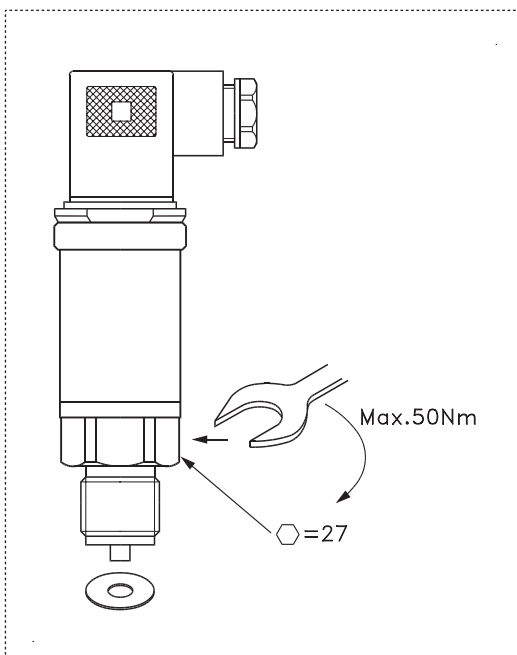
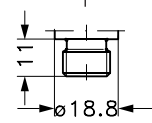
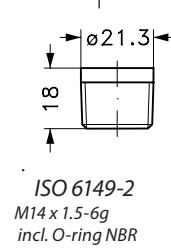
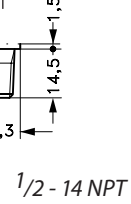
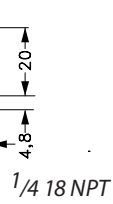
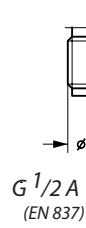
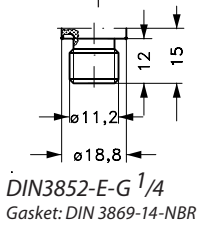
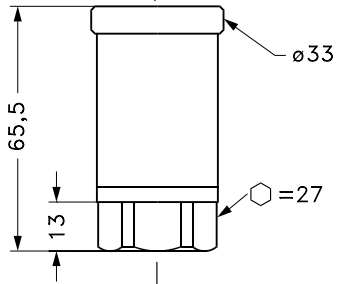
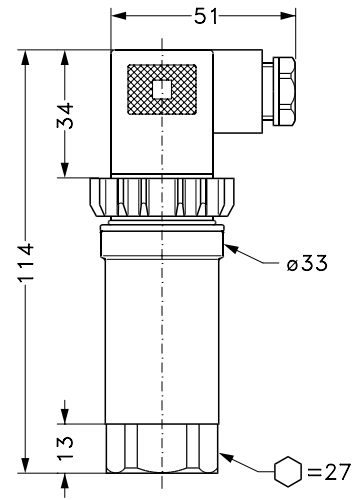
You find the EC-Type Examination Certificate at: www.ia.danfoss.com/ATEXcertificate

Installation/dimensions

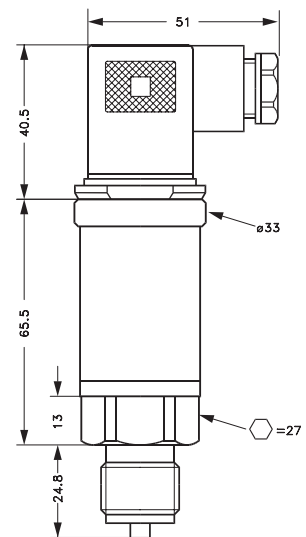
MBS 4201
MBS 4251



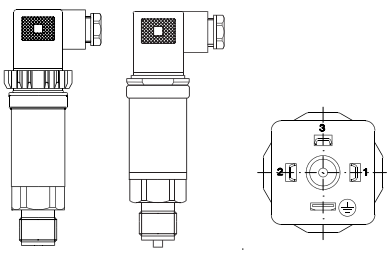
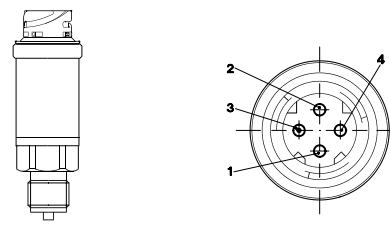
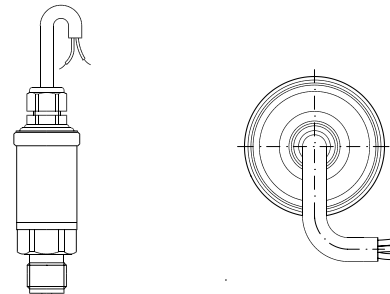
MBS 4701
MBS 4751

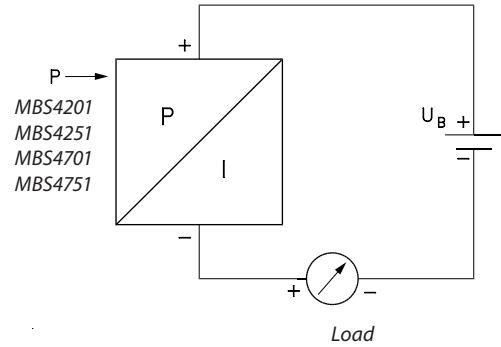


Dimensioned sketch - Example



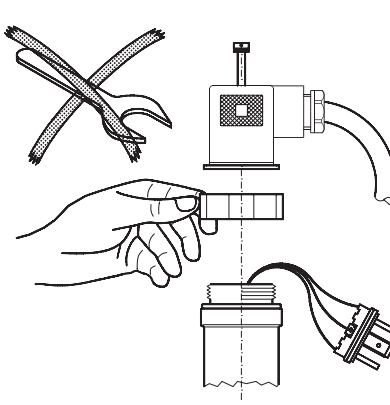
Electrical connection

	DIN 43650	
	+	-
	Pin 1	Pin 2
	DIN 72585	
	+	-
	Pin 1	Pin 2
	+	-
	Black 1	Black 2

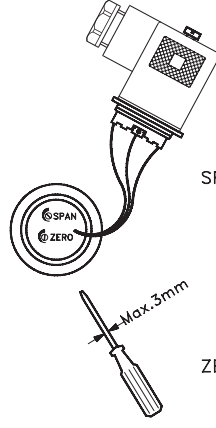


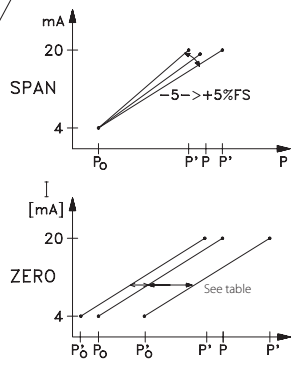
Cables must be specified for a minimum test voltage of 500 VAC between conductor/earth, conductor/screen and screen/earth. In addition, the total capacity and inductivity of the installation (transmitter + cable) must be taken into consideration.
In Zone 0 an intrinsically safe type Ex ia circuit must be used and national regulations for Zone 0 must be complied with. The pressure transmitter must only be used in Zone 0 at atmospheric pressure between 0.8 and 1.1 bar and at ambient temperatures between -20 and 50°C.

Maintenance/Adjustment



Zero adjustment	
0 - 1 to 0 - 10 bar	-5 to +20% FS
0 - 16 to 0 - 40 bar	-5 to +10% FS
0 - 60 to 0 - 600 bar	-2.5 to +2.5 FS
Span adjustment	-5 to +5% FS





Danfoss pressure transmitters type MBS 4201, MBS 4251, MBS 4701 and MBS 4751 are maintenance free.

Zero point and span (measurement area) adjustment is possible on MBS 4701 and MBS 4751.

Adjustment procedure (see drawing):

Loosen screw at top of the DIN 43650 plug. Remove plug.

Unscrew the black milled nut from the pressure transmitter and remove the DIN 43650 insert from the transmitter.

Install the plug on the DIN 43650 insert and connect the current measuring instrument.

Adjust the zero point on the potentiometer below the hole marked ZERO.

Adjust the span (measuring range) on the potentiometer below the hole marked SPAN (precise pressure reference must be used).

Do not remove the silicone during adjustment. Be sure that the potentiometer is covered with silicone after adjustment