

EC-TYPE EXAMINATION CERTIFICATE



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[2]

**Equipment or Protective System intended for use
in Potentially Explosive Atmospheres
Directive 94/9/EC**

[3]

EC-Type Examination Certificate Number: **DEMKO 01 ATEX 127938X Rev. 1**

[4]

Equipment or Protective System: **Pressure Transmitter MBS Type 4xx1-xxxx-xxxx**

[5]

Manufacturer: **Danfoss A/S**

[6]

Address: **Bldg E14-S1A, Nordborgvej 81, 6430 Nordborg, Denmark**

[7]

This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

[8]

UL International Demko A/S, notified body number 0539 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. **4786186782**

[9]

Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012

EN 60079-11:2012

EN 60079-26:2007

[10]

If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11]

This EC-Type examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system.

These are not covered by the certificate.

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The marking of the equipment or protective system shall include the following:

 **II 1 G Ex ia IIC T4 Ga**

 **II 1 G Ex ia IIC T6...T4 Ga**

Certification Manager
Jan-Erik Storgaard

This is to certify that the sample(s) of the Equipment described herein ("Certified Equipment") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Equipment Certification Program Requirements. This certificate and test results obtained apply only to the equipment sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured equipment. UL has not established Follow-Up Service or other surveillance of the equipment. The Manufacturer is solely and fully responsible for conformity of all equipment to all applicable Standards, specifications, requirements or Directives. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

Date of issue: 2001-01-31

Re-issued: 2014-01-27

Notified Body

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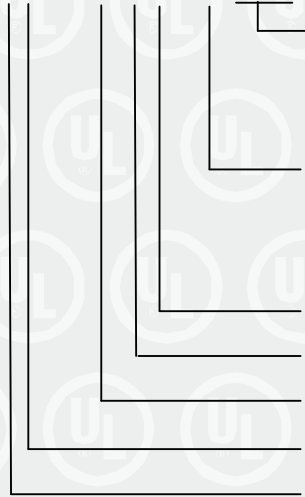
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[15] Description of Equipment or protective system

The pressure transmitter consists of a cylindrical electronic case of stainless steel, which contains the pressure sensor and circuit board with the electronic components. The circuit board is embedded in casting compound. The transmitter converts the measured pressure into a current loop signal 4-20mA. The pressure connection is available in different shape and size. The connection to the transmitter can be through a plug or with a fixed cable.

Nomenclature:

MBS 4xx1 – xx x x – x xxxx



Pressure connection -

- tight standardised industry flange (e.g. DIN, ANSI, JIS)
- tight standardised tube fitting (e.g. DIN, ISO)
- tight standardised tread connection (e.g. DIN, NPT)

- 1: Plug Version according to DIN 43650, PG9
- 3: Fixed Cable, length 2 m
- 4: Fixed Cable, length 5 m
- 5: Fixed Cable, length 10 m
- 7: Plug Version according to DIN 72585-A1-3.2-Sn

1: Output 4-20mA

1: (Gauge); 2: (Absolute)

nn: Measuring range, up to 600 bar

0: (No Cavitation Filter) or 5: (Integral Cavitation Filter)

2: (Standard Version) or 7: (Zero and Span Adjustment)

Temperature range

The relation between ambient temperature and the assigned temperature class is as follows:

Adjustable Types (MBS47x1-xxxx-1xxxx; MBS47x1-xxxx-7xxxx)

Temperature class	Ambient temperature range	Medium temperature
T4	-40 °C to +100 °C	-40 °C to +125 °C

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

Temperature class	Ambient temperature range	Medium temperature
T4	-40 °C to +100 °C	-40 °C to +125 °C
T5	-40 °C to +75 °C	-40 °C to +95 °C
T6	-40 °C to +50 °C	-40 °C to +50 °C

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

Temperature class	Ambient temperature range (fixed installations)	Ambient temperature range (cables flexed during installation or operation)	Medium temperature
T4	-40 °C to +80 °C	-5 °C to +70 °C	-40 °C to +125 °C
T5	-40 °C to +75 °C	-5 °C to +70 °C	-40 °C to +95 °C
T6	-40 °C to +50 °C	-5 °C to +50 °C	-40 °C to +50 °C



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Electrical data

Intrinsically safe specifications:

For all types:

U_i : 28 V
 I_i : 100 mA
 P_i : 0.7 W
 L_i : 8 µH
 C_i : 50 nF

Maximum length of the fixed cable is 10 metres.

The fixed cable shall be of the type Ölflex EB CY no.: 0012 550 R+T

Installation instructions

For ambient temperatures below -10 °C and above +60 °C use field wiring suitable for both minimum and maximum ambient temperature.

Mounting instructions

Refer to "Instructions".

Routine tests

Not applicable

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Report No.

Project Report No.: 4786186782 (Hazardous Location Testing)

Documents:

Description:	Drawing No.:	Rev. Level:	Date:
Instructions, Pressure transmitters type MBS4201, MBS4251, MBS4701, MBS4751 (7 pages)	060R9345	IC.PI.P20.C5.02	2013-09
Markings/Label			
Control Instruction (2 pages)	060R3151	00	27-09-2013
Label Roll 4	060A3316	04 (ECM500000066027)	-
Critical Components			
Critical components/processes for EX ATEX Zone 0 (11 pages)	060R3150	00	2013-09-27
Transmitter Assemblies			
Transmitter AKS/MBS 47X1/4751	060G9281	03 (ECM500000009222)	-
Transmitter AKS/MBS 42X1	060G9282	04 (ECM500000017535)	-
Pressure Transmitter MBS4500 Dimension sketch	060R3065	- (ECM500000066027)	-
Pressure Transmitter MBS4500 Material Specification	060R3066	- (ECM500000066027)	-
Sensor Top – DIN43650 Type (adjustable)			
Sml stiktop N&S Assemb. N&S plug	060G9271	03 (ECM500000030292)	2007-02-05
Omlober IP67 Nut	060G2610	01 (ECM500000030952)	2007-04-04



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Stopplug	060G2623	01 (ECM500000030296)	2007-02-05
Stobt Gevindtop Moulded Thread Plug	060G2625	02	2007-02-05
Sensor Top - Fixed Cable Types			
Lead-plug assembly	060G9283	03 (ECM500000031214)	2007-04-25
Sensor Top - DIN43650 Type (non-adjustable)			
Sml Plaststik Assembl. Plastic-Plug	060G9276	03 (ECM500000045647)	2010-04-06
PE Apparat Plug	060G2266	05 (ECM500000048244)	2009-08-10
PA Apparat Plug	060G2269	05 (ECM500000058837)	2006-12-19
DIN72585 Bayonet Top			
Sml Bajonetstiktop Assy. Bayonet con.	060G9269	02 (ECM500000000843)	00-01-26
Bajonetstik Bayonet Connector	060G2612	02 (ECM500000003580)	00-03-13
Pressure Element Assembly			
Header "ABS-LP"	060G3300	06 (ECM500000026063)	05-09-07
Header "ABS-HP"	060G3308	06 (ECM500000026063)	05-09-07
Header "Rel"	060G3312	06 (ECM500000059146)	-
Transmitter Body			
Kapsel 48 Housing 48	060G2384	05 (ECM500000039473)	2010-03-05
Kapsel-P 47,6 Housing-P 47,6	060G2327	04 (ECM500000032119)	2005-11-30
Internal Wiring			
2 polet ledningsjumper 2 wire cable jumper	613F4118	02 (ECM500000030055)	2007-01-17
Wire, red	060G0398	00 (ECM500000070806)	2013-07-11
Wire, black	060G0399	00 (ECM500000070806)	2013-07-11
Core, red	060G2393	01 (ECM500000048231)	2009-10-19
Core, yellow	060G2394	01 (ECM500000048231)	2009-10-19
Core, black	060G2395	01 (ECM500000048231)	2009-10-19



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Hybrid PCB Assembly			
Assembly Drawing (2 pages)	060G0454	Iss 02 Rev 02 (ECM500000014954)	04-05-19
PCB Assembly (15 pages)	060G0453	Iss 02 Rev 00 (ECM500000002870)	01-06-21
Master Specification (2 pages)	060G0453	Iss 02 Rev 01 (ECM500000002870)	02-04-03
Diagram MBS Ex Transmitter	060C0343	Iss 02 Rev 02 (ECM500000014954)	04-05-19
CMAC FE 21550/08 Sheet 1	060G8053	02	17-10-11
CMAC FE 21550/08 Sheet 2	060G8053	02	17-10-11
CMAC FE 21550/08 Sheet 3	060G8053	02	17-10-11
Bottom PCB Assembly			
Assembly Drawing (2 pages)	060G0464	Iss 01 Rev 02 (ECM500000014954)	04-05-19
PCB (10 pages)	060G0456	Iss 01 Rev 01 (ECM500000003685)	01-08-23
Diagram	060C0344	Iss 01 Rev 02 (ECM500000014954)	04-05-19
EMI Filter PCBA Ex			
Assembly Drawing	060G2741	Iss 07 Rev 06 (ECM500000014954)	04-05-03
PCB (9 pages)	060G0334	Iss 07 Rev 01	98-03-10
Diagram	060C0335	Iss 07 Rev 06 (ECM500000014954)	04-05-03
EMI Filter PCBA Adjustable			
Assembly Drawing	060G2743	Iss 04 Rev 01 (ECM500000014954)	04-05-04
PCB (10 pages)	060G0342	Iss 04 Rev 00 (ECM500000004238)	01-10-11
Diagram	060C0328	Iss 04 Rev 01 (ECM500000014954)	04-05-04
EMI Filter PCBA Bayonet			
Assembly Drawing	060G0495	Iss 01 Rev 02 (ECM500000014954)	04-05-11
PCB (9 pages)	060G0446	Iss 01 Rev 00	00-03-07
Diagram	060C0342	Iss 01 Rev 02 (ECM500000014954)	04-05-11



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[17] Special conditions for safe use:

- For installations in which both the Ci and Li of the connected apparatus exceeds 1% of the 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. Refer to the installation/operation instructions.
- 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 6.3.13.
- 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. Refer to the user instructions.

[18] Essential Health and Safety Requirements

Concerning ESR this Schedule verifies compliance with the Annex III of ATEX directive only. The manufacturer's Declaration of Conformity declares compliance with other relevant Directives.

Additional information

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in ANNEX III to Directive 94/9/EC of the European Parliament and the Council of 23 March 1994.

