

(1) EC-TYPE EXAMINATION CERTIFICATE

(2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC

- (3) EC-Type Examination Certificate Number: **KEMA 04ATEX1339 X** Issue Number : **3**
- (4) Equipment: **2-Wire Programmable Transmitter Type MBT 9110 084Z 7441 and Type MBT 9110 084Z 7443**
- (5) Manufacturer: **Danfoss A/S**
- (6) Address: **Nordborgvej 81, 6430 Nordborg, Denmark**
- (7) This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- (8) KEMA Quality B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the 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 test report number 2096562.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
- | | | |
|---------------------------------|------------------------|------------------------|
| EN 50014 : 1997 + A1, A2 | EN 50020 : 2002 | EN 50284 : 1999 |
|---------------------------------|------------------------|------------------------|
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment 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 according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:



**II 1 GD EEx ia IIC T4 or T6
T 80 °C ... T105 °C**

This certificate is issued on 9 October 2006 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

KEMA Quality B.V.

C.G. van Es
Certification Manager



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(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 04ATEX1339 X** Issue No. 3

(15) **Description**

The 2-wire Programmable Transmitters Type MBT 9110 084Z 7441 and Type MBT 9110 084Z 7443, suitable for mounting in an enclosure form B according to DIN 43729, are used to convert the temperature measurement signal of a temperature sensor or a mV signal into a 4 ... 20 mA current signal.

The relation between ambient temperature range, temperature class and maximum surface temperature "T" is shown in the table below.

Ambient temperature range	Temperature class	Maximum surface temperature "T"
-40 °C ... +85 °C	T4	105 °C
-40 °C ... +60 °C	T6	80 °C

Electrical data

Transmitter Type MBT 9110 084Z 7443

Supply and input circuit in type of protection intrinsic safety EEx ia IIC, only (terminals 1 and 2) for connection to a certified intrinsically safe circuit, with the following maximum values:

U_i	=	30	V
I_i	=	120	mA
P_i	=	0,84	W
C_i	=	1	nF
L_i	=	10	μ H

Sensor circuit Thermocouple, RTD, resistance or mV; in type of protection (terminals 3, 4, 5 and 6) intrinsic safety EEx ia IIC, with the following maximum values:

U_o	=	9,6	V
I_o	=	25	mA
P_o	=	60	mW
C_o	=	2,4	μ F
L_o	=	33	mH

The sensor circuit of the Transmitter Type MBT 9110 084Z 7443 is not infallibly galvanically isolated from the input circuit. However, the galvanic isolation between the circuits is capable of withstanding a test voltage of 500 Vac during 1 minute.

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 04ATEX1339 X** Issue No. 3

Transmitter Type MBT 9110 084Z 7441

Supply and input circuit in type of protection intrinsic safety EEx ia IIC, only
(terminals 1 and 2) for connection to a certified intrinsically safe circuit,
with the following maximum values:

U_i	=	30	V
I_i	=	120	mA
P_i	=	0,84	W
C_i	=	1	nF
L_i	=	10	μ H

Sensor circuit in type of protection intrinsic safety EEx ia IIC,
(terminals 3, 4 and 6) with the following maximum values:

U_o	=	27	V
I_o	=	7	mA
P_o	=	45	mW
C_o	=	90	nF
L_o	=	35	mH

The above mentioned circuits are galvanically connected with each other.

Installation instructions

The transmitters must be mounted in an enclosure in order to provide a degree of protection of at least IP20.

In explosive atmospheres caused by air/dust mixtures:

The transmitters may only be installed in a potentially explosive atmosphere caused by the presence of combustible dust when mounted in a metal enclosure form B according to DIN 43729 that is providing a degree of protection of at least IP 6X in accordance with EN 60529, that is suitable for the application and is correctly installed.

Cable entries and blanking elements shall be used that are suitable for the application and correctly installed.

For an ambient temperature ≥ 60 °C, heat resistant cables shall be used with a rating of at least 20 K above the ambient temperature.

The surface temperature of the enclosure is equal to the ambient temperature plus 20 K, for a dust layer with a thickness up to 5 mm.

(16) **Test Report**

KEMA No. 2096562.

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 04ATEX1339 X** Issue No. 3

(17) **Special conditions for safe use**

If the transmitter is installed in a potentially explosive atmosphere where equipment category 1G is required and if the enclosure in which the transmitter is mounted is made of aluminium, then the requirements of EN 50284, clause 4.3.1 shall be taken into account.

If the transmitter is installed in a potentially explosive atmosphere caused by air/dust mixtures and if the enclosure in which the transmitter is mounted is made of aluminium, then the requirements of IEC61241-0, clause 6.2.1 shall be taken into account.

(18) **Essential Health and Safety Requirements**

Assured by compliance with the standards listed at (9).

The application of intrinsically safe circuits in a potentially explosive atmosphere caused by the presence of combustible dust has been assessed using IEC 61241-0 : 2004 and IEC 61241-11 : 2005 as a guide.

(19) **Test documentation**

As listed in Test Report No. 2096562.