



(1) **EC-TYPE EXAMINATION CERTIFICATE**

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

(3) EC-Type Examination Certificate Number: **KEMA 03ATEX1405 X**

(4) Equipment or protective system: **Coriolis Massflow Transmitter type CFT50-B1...M. and type CFT50-B1...Q.**

(5) Manufacturer: **Invensys Systems Incorporated**

(6) Address: **33 Commercial Street, Foxboro, MA 02035, U.S.A.**

(7) This equipment or protective system 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 or protective system 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 report no. 2023864.

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

EN 50014 : 1997 EN 50018 : 2000 EN 50019 : 2000
EN 50020 : 2002 EN 50021 : 1999

(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 according 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 this certificate.

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



II 3 (2) G EEx nA[L] [ib] IIB T4 (for CFT50-B1...M.)
 or
II 2 G EEx de [ib] IIB T6 (for CFT50-B1...Q.)

Arnhem, 20 October 2003
 KEMA Quality B.V.

C.G. van Es
 Certification Manager

® This Certificate may only be reproduced in its entirety and without any change



SCHEDULE

(13)

(14)

to EC-Type Examination Certificate KEMA 03ATEX1405 X

(15) **Description**

The Coriolis Massflow Transmitters type CFT50-B1....M. and type CFT50-B1....Q. convert the signal of a Coriolis Massflow tube into analogue and digital signals.

The Transmitter is designed to operate with the Massflow Tubes of the CFS10 and CFS20 series as approved per EC-Type Examination Certificate KEMA 03ATEX1408 X. The circuits to the Massflow tube are intrinsically safe.

Ambient temperature range -20 °C ... +60 °C.

Electrical data

For type CFT50-B1....M. and type CFT50-B1....Q.

Signal/Supply circuit Supply voltage: max. 253 Vac
(terminals 11, 12 and GND) Input current: 0 - 72 mA

Signal circuits..... Supply voltage: max. 60 Vdc.
(terminals 4, 4.1, 5 and 6) Output current: 0 - 150 mA

Sensor circuits in type of explosion protection intrinsic safety EEx ib IIB,
(terminals 1 .. 12 in the only for connection of the intrinsically safe Coriolis Massflow
junction box) Tubes of the CFS10 and CFS20 series as approved per
EC-Type Examination Certificate KEMA 03ATEX1408 X.

For type CFT50-B1....Q.

Contact Output Voltage: max. 27 V
(terminals 4.2 and 5) Current: max 100 mA

For type CFT50-B1....M.

Contact Output in type of explosion protection energy limitation EEx nL IIB,
(terminals 4.2 and 5) only for connection to an energy-limited circuit, with the
following maximum values:

$$\begin{aligned}
 U_i &= 30 \text{ V} \\
 I_i &= 100 \text{ mA} \\
 C_i &= 0 \text{ nF} \\
 L_i &= 0 \text{ } \mu\text{H}
 \end{aligned}$$

Installation instructions

1. For type CFT50-B1....M. the cable or conduit entries and the closing elements of unused openings shall provide a degree of ingress protection of at least IP 54 according to EN 60529 and shall be correctly installed.
2. For type CFT50-B1....Q. the cable entries and the closing elements of unused openings shall be of a certified flameproof type, suitable for the conditions of use and shall be correctly installed.

SCHEDULE

- (13)
- (14) **to EC-Type Examination Certificate KEMA 03ATEX1405 X**

(16) **Report**

KEMA No. 2023864.

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

1. The enclosure of the Coriolis Massflow Transmitter shall be connected to the potential equalizing system within the hazardous area in which the Coriolis Massflow Tubes are located.
2. For ambient temperature range and electrical data, see (15).

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

Covered by the standards listed at (9).

(19) **Test documentation**

1. EC-Type Examination Certificate PTB 97 ATEX 1047 U
 EC-Type Examination Certificate PTB 01 ATEX 1047 U
 Type Examination Certificate KEMA 03ATEX1407 X

dated

2. Drawing No.

10111LG (14 sheets), Rev. E	03.07.2003
10111LV (11 sheets Film), Rev. D	29.08.2003
10111LV, Rev. D	28.08.2003
10115ZA (3 sheets), Rev.D	14.07.2001
10123XM (6 sheets), Rev. 0C	25.05.1995
10137AU (13 sheets), Rev. E	12.09.2003
B0189XA (5 sheets), Rev. G	12.09.2003
B0125QY, Rev. D	11.07.1991
D0157XM (2 sheets), Rev. D	12.11.1996
D0164YD (on D0164YD, Rev. D)	14.07.2003
D0164YN, Rev. A	05.06.2003
D0164YQ, Rev. A	05.06.2003
D0164YS, Rev. D	10.04.2003
D0164ZC, Rev. A	20.09.2002
D0164ZD, Rev. B	07.10.2002
D0164ZT, Rev. B	11.04.2003
D0164ZU, Rev. B	21.11.2002
D0164ZY, Rev. C	05.12.2002
D0168AK, Rev. B	05.12.2002
L0123FR (2 sheets Parts Lst), Rev. E	29.08.2003
L0123FR (2 sheets), Rev. E	28.08.2003
L0123FS, Rev. D	28.08.2003
P0178HL (on P0178GJ, Rev. A)	08.10.2002
P0178HM (on P0178GJ, Rev. A)	08.10.2002
X0180DH (2 sheets), Rev. B	16.09.1994

AMENDMENT 1

to EC-Type Examination Certificate KEMA 03ATEX1405 X

Manufacturer: **Invensys Systems Incorporated**

Address: **33 Commercial Street, Foxboro, MA 02035, U.S.A.**

Description

In future, the Coriolis Massflow Transmitter type CFT50-B1...M. and type CFT50-B1...Q. may also be manufactured in accordance with the documentation listed below.

This includes the following new types:

CFT50-B1.B..M-..	CFT20-B1.A..Q-..
CFT50-B1.B..Q-..	CFT20-B1.B..M-..
CFT20-B1.A..M-..	CFT20-B1.B..Q-..

The marking for type CFT50-B1.B..M-.., CFT20-B1.A..M-.. and CFT20-B1.B..M-.. includes the same as applicable to type CFT50-B1...M..

The marking for type CFT50-B1.B..Q-.., CFT20-B1.A..Q-.. and CFT20-B1.B..Q-.. includes the same as applicable to type CFT50-B1...Q..

The electrical data has been changed as shown below.

Electrical data

Supply circuit For types CFT50-B1.B..M-.., CFT50-B1.B..Q-.., CFT20-B1.B..M-.. and CFT20-B1.B..Q-..
(terminals 11, 12 and GND) Supply voltage and power: 24 Vdc nominal, 12 W
 $U_m = 253 \text{ Vac}$

For types CFT20-B1.A..M-.. and CFT20-B1.A..Q-..
Supply voltage and power: 100..240 Vac, 15 W
 $U_m = 253 \text{ Vac}$

All other data remain unchanged.

The other data of type CFT50-B1...M also apply to types CFT50-B1.B..M-.. and CFT20-B1.B..M-..

The other data of type CFT50-B1...Q also apply to types CFT50-B1.B..Q-.., CFT20-B1.A..Q-.. and CFT20-B1.B..Q-..

Test documentation

- | | | |
|----|---|--------------------------|
| 1. | Type Examination Certificate KEMA 03ATEX1404 X | <u>dated</u> |
| 2. | Drawing Number 10137CF, Rev. A (13 sheets)
B0189XP, Rev. A | 03.10.2003
12.09.2003 |

Amham, 3 December 2003
KEMA Quality B.V.

C.G. van Es
Certification Manager

[2060700]

AMENDMENT 2

to EC-Type Examination Certificate KEMA 03ATEX1405 X

Manufacturer: **Invensys Systems Incorporated**
 Address: **33 Commercial Street, Foxboro, MA 02035, U.S.A.**

Description

In future, for the Coriolis Massflow Transmitter types: CFT50-1...M, CFT50-1...Q, CFT50-1.B.M..., CFT50-1.B.Q..., CFT20-1.A.Q..., CFT20-1.B.M..., CFT20-1.A.M..., and CFT20-1.B.Q..., the entity parameters as shown below apply.

Electrical data

Sensor circuits:

Coil driver 1 circuit in type of protection intrinsic safety EEx ib IIB or EEx ib IIC,
 (terminals 11 and 12) with the following maximum values:

$$\begin{aligned}
 U_o &= 9,5 \text{ V} \\
 I_o &= 388 \text{ mA} \\
 P_o &= 92 \text{ mW} \\
 C_o &= 27 \text{ } \mu\text{F} \text{ for IIB} \quad \text{or} \quad 3,7 \text{ } \mu\text{F} \text{ for IIC} \\
 L_o &= 0,9 \text{ mH for IIB} \quad \text{or} \quad 0,2 \text{ mH for IIC}
 \end{aligned}$$

Coil driver 2 circuit in type of protection intrinsic safety EEx ib IIB or EEx ib IIC,
 (terminals 9 and 10) with the following maximum values:

$$\begin{aligned}
 U_o &= 9,5 \text{ V} \\
 I_o &= 388 \text{ mA} \\
 P_o &= 92 \text{ mW} \\
 C_o &= 27 \text{ } \mu\text{F} \text{ for IIB} \quad \text{or} \quad 3,7 \text{ } \mu\text{F} \text{ for IIC} \\
 L_o &= 0,9 \text{ mH for IIB} \quad \text{or} \quad 0,2 \text{ mH for IIC}
 \end{aligned}$$

Sensor A circuit in type of protection intrinsic safety EEx ib IIB or EEx ib IIC,
 (terminals 7 and 8) with the following maximum values:

$$\begin{aligned}
 U_o &= 9,2 \text{ V} \\
 I_o &= 21 \text{ mA} \\
 P_o &= 48 \text{ mW} \\
 C_o &= 34 \text{ } \mu\text{F} \text{ for IIB} \quad \text{or} \quad 4,3 \text{ } \mu\text{F} \text{ for IIC} \\
 L_o &= 300 \text{ mH for IIB} \quad \text{or} \quad 80 \text{ mH for IIC}
 \end{aligned}$$

Sensor B circuit in type of protection intrinsic safety EEx ib IIB or EEx ib IIC,
 (terminals 5 and 6) with the following maximum values:

$$\begin{aligned}
 U_o &= 9,2 \text{ V} \\
 I_o &= 21 \text{ mA} \\
 P_o &= 48 \text{ mW} \\
 C_o &= 34 \text{ } \mu\text{F} \text{ for IIB} \quad \text{or} \quad 4,3 \text{ } \mu\text{F} \text{ for IIC} \\
 L_o &= 300 \text{ mH for IIB} \quad \text{or} \quad 80 \text{ mH for IIC}
 \end{aligned}$$

AMENDMENT 2

to EC-Type Examination Certificate KEMA 03ATEX1405 X

RTD circuit in type of protection intrinsic safety EEx ib IIB or EEx ib IIC,
(terminals 1, 2, 3 and 4) with the following maximum values:


$U_o = 9,2 \text{ V}$
 $I_o = 52 \text{ mA}$
 $P_o = 106 \text{ mW}$
 $C_o = 34 \text{ } \mu\text{F}$ for IIB or $4,3 \text{ } \mu\text{F}$ for IIC
 $L_o = 50 \text{ mH}$ for IIB or 13 mH for IIC

All other data remain unchanged.

Test documentation

The test documentation remains unchanged.

Arnhem, 7 April 2005
KEMA Quality B.V.


C.G. van Es
Certification Manager