KEMA

(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 01ATEX2232 X**

(4) Equipment or protective system: **Compact Magnetic Inductive Flowmeter, types IFM 5080 K/CAP-EEx, IFM 5080 K/CAP/i-EEx, MGM 5090 K/CAP-EEx and MGM 5090 K/CAP/i-EEx**

(5) Manufacturer: **Krohne Altometer**

(6) Address: **Kerkeplaat 12, 3313 LC Dordrecht, The Netherlands**

(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. 2011381.

(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 : 1994 **EN 50281-1-1 : 1998**

(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 with 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 2 GD **EEx d IIC T6...T4** or **EEx de IIC T6...T4** or
EEx d [ia] IIC T6...T4 or **EEx de [ia] IIC T6...T4**
T85 ... 115 °C

Arnhem, 17 January 2002,

KEMA Quality B.V.

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ACCREDITED BY THE DUTCH COUNCIL FOR ACCREDITATION

(13)

SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 01ATEX2232 X**

(15) **Description**

The Compact Magnetic Inductive Flowmeter, types IFM 5080 K/CAP-EEx, IFM 5080 K/CAP/i-EEx, MGM 5090 K/CAP-EEx and MGM 5090 K/CAP/i-EEx is used for measuring, counting and displaying the linear flow of an electrical conductive liquid.

The flowmeter consists of a signal converter housing in type of explosion protection flameproof enclosure "d" with a terminal compartment in type of explosion protection flameproof enclosure "d" or increased safety "e". The integral primary heads (sizes DN 25 to DN100) are in type of explosion protection flameproof enclosure "d".

Within the flameproof signal converter housing various modules are fitted, some models contain intrinsically safe circuits for connection to external circuits as specified below.

Ambient temperature range -20 °C ... +60 °C (for flowmeter with electronics unit type IFC090i).
Ambient temperature range -40 °C ... +60 °C (for flowmeter with electronics unit type IFC090).

The maximum surface temperature T85 ... 115 °C is based on an ambient temperature of 60 °C.

Electrical data

IFC 5080 K/CAP-EEx / MGM 5090 K/CAP-EEx with IFC090-EEx electronics

Power supply ..... 100/200 Vac, 115/230 Vac -15/+10 %, 13 VA
24 Vdc -25/+30 %, 24 Vac -15/+10 %, 8 W

Signal I/O's ..... ≤ 36 Vdc

IFC 5080 K/CAP/i-EEx / MGM 5090 K/CAP/i-EEx with IFC090i-EEx electronics

Power supply ..... 100...230 Vac -15/+10 %, 15 VA
24 Vdc -25/+30 %, 24 Vac -15/+10 %, 10 W
U_m = 253 V

Signal circuit
Modules P-SA and FA-ST ..... in type of explosion protection intrinsic safety EEx ia IIC, only for connection to a certified intrinsically safe circuit in type of explosion protection intrinsic safety
EEx ia IIC or EEx ia IIB or
EEx ib IIC or EEx ib IIB,
with the following maximum values:

U_i	=	30	V
I_i	=	250	mA
P_i	=	1,0	W

the effective internal capacitance C_i = 5 nF
the effective internal inductance L_i is negligibly small.

(13) # SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 01ATEX2232 X**

Test documentation (continued)

Signal circuit
Modules F-PA and F-FF ..... in type of explosion protection intrinsic safety EEx ia IIC, only for connection to a certified intrinsically safe circuit (for instance a Supply of the FISCO Model in accordance with document CLC/SC31-3(SEC)155 of Dec. 2000) in type of explosion protection intrinsic safety
EEx ia IIC or EEx ia IIB or
EEx ib IIC or EEx ib IIB,
with the following maximum values:

U_i = 30 V
I_i = 300 mA
P_i = 4,2 W

The effective internal capacitance C_i = 5 nF,
the effective internal inductance L_i is negligibly small.

Signal/supply circuit
Module DC-I ..... in type of explosion protection intrinsic safety EEx ia IIC,
(24 Vac/dc version only) with the following maximum values:

U_o = 23,5 V
I_o = 98 mA
P_o = 0,6 W

Maximum allowed external capacitance C_o = 127 nF,
maximum allowed external inductance L_o = 4 mH.

Only for connection to certified intrinsically safe circuits in type of explosion protection EEx ia IIC or EEx ia IIB or EEx ib IIC or EEx ib IIB without supply (passive).

The applicable type of explosion protection of the aforementioned intrinsically safe circuits EEx ia IIC is determined by the type of protection of the intrinsically safe circuit which is connected to it, respectively EEx ia IIB or EEx ib IIC or EEx ib IIB.

The aforementioned intrinsically safe circuits shall, from the safety point of view, be considered to be connected to ground.

Installation instructions

For use in potentially explosive atmospheres of flammable gases, fluids or vapours:
The cable entry device shall be in type of protection flameproof enclosure "d" for the terminal compartment in type of protection flameproof enclosure “d” or increased safety “e" for the terminal compartment in type of protection increased safety “e", suitable for the conditions of use and correctly installed.

For use in the presence of combustible dust:
The cable entry device shall be in type of equipment Category II 2 D, suitable for the conditions of use and correctly installed.

Unused openings shall be closed with suitable certified closing elements.

(13) # SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 01ATEX2232 X**

Installation instructions (continued)

With the use of conduit, a suitable certified sealing device such as a stopping box with setting compound shall be provided immediately at the entrance to the flameproof enclosure.

Routine tests

Each welded primary head and feedthrough must be submitted to the routine overpressure test according to EN 50018, Clause 16, at a test pressure of 22,5 bar during one minute.

Routine tests according to EN 50018, Clause 16 are not required for the electronics enclosure since the type test has been made at a static pressure of four times the reference pressure.

(16) **Report**

KEMA No. 2011381.

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

The relation between temperature class, max. surface temperature, max. process temperature and ambient temperature is shown in following table:

Temperature class	Max. surface temperature	Max. process temperature		
		Ta ≤ 40 °C	Ta ≤ 50 °C	Ta ≤ 60 °C
T6	T 85 °C	60 °C	55 °C	not allowed
T5	T 100 °C	75 °C	75 °C	75 °C
T4	T 115 °C	115 °C	115 °C	75 °C

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

Covered by the standards listed at (9).

(19) **Test documentation**

1. Component Certificate KEMA No. Ex-99.E.8128 U
   Certificate of Conformity KEMA No. Ex-96.D.2713 X
   EC-Type Examination Certificate PTB 98 ATEX 2012 U

	dated
2. Description (15 pages)	05.04.2001, 05.12.2001, 13.12.2001 and 14.01.2002
3. Drawings index sheet	14.01.2002