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 02ATEX2021 X**

(4) Equipment or protective system: **Compact Magnetic Inductive Flowmeter, types IFM 6080 K-EEx, IFM 6080 K/i-EEx, MGM 6090 K-EEx and MGM 6090 K/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. 2017354.

(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 50028 : 1987**	**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:

Ex **II 2 GD** **EEx d [ib] IIC T6...T3** or **EEx de [ib] IIC T6...T3** or
EEx dme [ib] IIC T6...T3 or **EEx d [ib] [ia] IIC T6...T3** or
EEx de IIC [ib] [ia] IIC T6...T3 or **EEx dme IIC [ib] [ia] IIC T6...T3**
T 80 ... 190 °C

Arnhem, 7 February 2002,
KEMA Quality B.V.

T. Pijpker
Certification Manager

KEMA Quality B.V.
Utrechtseweg 310, 6812 AR Arnhem, The Netherlands
P.O. Box 5185, 6802 ED Arnhem, The Netherlands
Telephone +31 26 3 56 20 08, Telefax +31 26 3 52 58 00

ACCREDITED BY THE DUTCH COUNCIL FOR ACCREDITATION

(13) # SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 02ATEX2021 X**

(15) **Description**

The Compact Magnetic Inductive Flowmeter, types IFM 6080 K-EEx, IFM 6080 K/i-EEx, MGM 6090 K-EEx and MGM 6090 K/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 are in type of explosion protection encapsulation "m" (sizes DN2,5 - DN15) or flameproof enclosure "d" (sizes DN25 - DN80) and are provided with measuring electrodes in type of explosion protection intrinsic safety EEx ib IIC.

Ambient temperature range -20 °C... +60 °C (for flowmeter with electronics unit type IFC 090i).
Ambient temperature range -40 °C ... +60 °C (for flowmeter with electronics unit type IFC090).

Electrical data

IFM6080 K-EEx / MGM 6090 K-EEx with IFC090-EEx electronics

Power supply ..... 100/200 Vac, 115/230 Vac -15/+10 %, 10 VA
24 Vdc -25/+30 %, 24 Vac -15/+10 %, 8 W
U_m = 253 V

Signal I/O's ..... ≤ 36 Vdc

IFM6080 K/i-EEx / MGM 6090 K/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 02ATEX2021 X**

Electrical data (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 .....
(24 Vac/dc version only) in type of explosion protection intrinsic safety EEx ia IIC, 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 02ATEX2021 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 of size DN25 - DN80 shall be submitted to the routine overpressure test according to EN 50018, Clause 16, at a test pressure of 13,5 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.

- Each primary head shall withstand a test voltage of 1500 V duing one minute without breakdown between the field coils circuit and the intrinsically safe sensor circuit. Each primary head of size DN2,5 - DN15 shall additionally withstand a test voltage of 1500 V during one minute without breakdown between the field coils circuit and the enclosure.

(16) **Report**

KEMA No. 2017354.

(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 ≤ 50 °C	Ta ≤ 60 °C
T6	T 80 °C	70 °C	70 °C
T5	T 95 °C	85 °C	85 °C
T4	T 130 °C	120 °C	100 °C
T3	T 190 °C	180 °C	100 °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
   KEMA No. Ex-01.E.2036 U
   Certificate of Conformity KEMA No. Ex-96.D.1850 X
   EC-Type Examination Certificate PTB 98 ATEX 2012 U

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 02ATEX2021 X**

Test documentation (continued)

		dated
2.	Description (25 pages)	12.04.2001, 21.01.2002 and 01.02.2002
3.	Drawings index sheet	01.02.2002