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 01ATEX2234**

(4) Equipment or protective system: **Electromagnetic signal converter, types IFC 090 F-EEx, IFC 090 F/i-EEx, MGC 090 F-EEx and MGC 090 F/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. 2016361.

(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:

Ex **II 2 GD** **EEx de [ib] IIC T6** or **EEx de [ib] [ia] IIC T6**
T85 °C

Arnhem, 25 January 2002,
KEMA Quality B.V.

T. Pijpker
Certification Manager

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ACCREDITED BY THE DUTCH COUNCIL FOR ACCREDITATION

(13)

SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 01ATEX2234**

(15) **Description**

The Electromagnetic signal converter, types IFC 090 F-EEx, IFC 090 F/i-EEx, MGC 090 F-EEx and MGC 090 F/i-EEx, when connected to a suitable certified flowmeter primary head, is used for measuring, counting and displaying the linear flow of an electrical conductive liquid. The signal converter unit supplies power to the field coils of a remote primary head and processes the electrical measurement signal.

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

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

Electrical data

IFC 090 F-EEx / MGC 090 F-EEx

Power supply ..... 100/200 Vac, 115/230 Vac, -15/+10 %, 13 VA
24 Vdc -25/+30 %, 24 Vac -15/+10 %, 8 W
U_m = 253 V

Signal I/O's ..... ≤36 Vdc

Field coil circuit ..... For connection to associated certified primary head:
U ≤40 V (pulsed)
I ≤160 mA (fuse protected)

Electrodes circuit ..... In type of explosion protection intrinsic safety EEx ib IIC, with the following maximum values:

U_o	=	9,0	V
I_o	=	38	mA
P_o	=	34	mW

Maximum allowed external capacitance C_o = 4,9 μF, maximum allowed external inductance L_o = 23 mH.

IFC 090 F/i-EEx / MGC 090 F/i-EEx

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

Field coil circuit ..... For connection to associated certified primary head:
U ≤40 V (pulsed)
I ≤160 mA (fuse protected)

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Electrical data (continued)

Electrodes circuit ..... In type of explosion protection intrinsic safety EEx ib IIC, with the following maximum values:

U_o = 9,0 V
I_o = 38 mA
P_o = 34 mW

Maximum allowed external capacitance C_o = 4,9 µF, maximum allowed external inductance L_o = 23 mH.

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.

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, with the following maximum values:
(24 Vac/dc version only)

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).

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Electrical data (continued)

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.

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

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

Each signal converter shall withstand a test voltage according to EN 50019, Clause 6.1, of 500 V during one minute without breakdown between the field coils circuit and the enclosure.

(16) **Report**

KEMA No. 2016361.

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

None.

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

Covered by the standards listed at (9).

(13) # SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 01ATEX2234**

(19) **Test documentation**

1. Component Certificate KEMA No. Ex-99.E.8128 U
   PTB No. Ex-98.E.1046 U
   KEMA No. Ex-01.E.2036 U
   Certificate of Conformity KEMA No. Ex-97.D.2241
   EC-Type Examination Certificate PTB 98 ATEX 2012 U

	dated
2. Description (14 pages)	05.04.2001, 10.12.2001, 14.12.2001, 19.12.2001 and 18.01.2002
3. Drawings index sheet	18.01.2002