

(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 04ATEX2166**
- (4) Equipment or protective system: **Signal Converter Type Optiflux IFC300 F-Ex**
- (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.

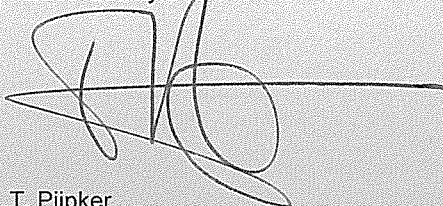
The examination and test results are recorded in confidential report no. 2074671.

- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
- |                                 |                                 |                        |
|---------------------------------|---------------------------------|------------------------|
| <b>EN 50014 : 1997 + A1, A2</b> | <b>EN 50018 : 2000 + A1</b>     | <b>EN 50019 : 2000</b> |
| <b>EN 50020 : 2002</b>          | <b>EN 50281-1-1 : 1998 + A1</b> | <b>EN 50284 : 1999</b> |
- (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 2 (1) GD or II 2 GD EEx de [ia] IIC T6 T85 °C**

Arnhem, 31 August 2004  
KEMA Quality B.V.



T. Pijpker  
Certification Manager

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

## SCHEDULE

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(14)

### to EC-Type Examination Certificate KEMA 04ATEX2166

(15) **Description**

The Signal Converter Type Optiflux IFC300 F-EEEx when connected to a suitable certified electromagnetic flowmeter primary head is used for measuring, counting and displaying the linear flow of an electrically conductive liquid and consists of a support bracket and a signal converter housing, with an electronics unit and a terminal compartment.

Depending on the electronics unit used, several signal output options like a 4 - 20 mA current signal, a fieldbus connection, pulse and status signals are available.  
The output signals are either intrinsically safe or non intrinsically safe.

The support bracket contains the field connection box with separated terminals for the field coil wiring in type of explosion protection increased safety "e" and the electrode wiring in type of explosion protection intrinsic safety "i".

The maximum surface temperature of the enclosure T85 °C is based on an ambient temperature of 65 °C.

Ambient temperature range -40 °C ... +65 °C.

**Electrical data**

Power supply ..... 100 - 230 Vac -15/+10 %, 22 VA resp.  
(terminals L, N or L+, L-) 12 - 24 Vdc -25/+30 %, 12 W  
U<sub>m</sub> = 253 V

Intrinsically safe I/O signal circuits

In type of explosion protection intrinsic safety EEx ia IIC, only for connection to a certified intrinsically safe circuit, with the maximum values per circuit per table below:

Type of PCB	Type of I/O circuit (terminals)	U <sub>o</sub> [V]	I <sub>o</sub> [mA]	P <sub>o</sub> [W]	C <sub>o</sub> [nF]	L <sub>o</sub> [mH]
Ex i IO	4 - 20 mA with HART active (C and C-)	21	90	0,5 note 1	90	2,0
					110	0,5
Ex i Option	4 - 20 mA active (A and A-)	21	90	0,5 note 1	90	2,0
					110	0,5
		U <sub>i</sub> [V]	I <sub>i</sub> [mA]	P <sub>i</sub> [W]	C <sub>i</sub> [nF]	L <sub>i</sub> [mH]
Ex i IO	4 - 20 mA with HART passive (C and C-)	30	100	1,0	10	0
	pulse/status output (D and D-)					
Ex i Option	4 - 20 mA passive (A and A-)	30	100	1,0	10	0
	pulse/status output / control input (B and B-)					
Fieldbus IO note 2	Profibus-PA (C, C-, D and D-)	24	380	5,32	0	0
	Foundation Fieldbus (C, C-, D and D-)					

note 1: linear characteristic

note 2: The fieldbus circuit complies with the FISCO model according to IEC TS 60079-27.

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#### Non-intrinsically safe I/O signal circuits

(terminals A, A-, A+, B, B-, C, C-, D and D-) ...  $U_n \leq 32$  Vdc,  $I_n \leq 100$  mA

Field coil circuit ..... For connection to an associated certified primary head  
(terminals 7, 8, 9)  $U \leq 40$  V (pulsed)  
 $I \leq 125$  mA (fuse protected)

Electrodes circuit ..... in type of explosion protection intrinsic safety EEx ia IIC,  
(terminals 1, 2, 20, 3, 30, 4, 40) with the following maximum values:

$U_o$	=	14	V
$I_o$	=	70	mA
$P_o$	=	300	mW linear characteristic
$C_o$	=	430	nF
$L_o$	=	2	mH

#### **Installation instructions**

When used in a potentially explosive atmosphere, requiring the use of apparatus of equipment category 2G, certified cable entry devices shall be used that are suitable for the application and correctly installed.

When used in a potentially explosive atmosphere, requiring the use of apparatus of equipment category 2D, certified cable entry devices with a degree of ingress protection of at least IP6X according to EN 60529 shall be used that are suitable for the application 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.

To avoid voltage and current addition the intrinsically safe circuits shall be separated and wired according to EN 60079-14.

#### **Routine tests**

Routine tests according to EN 50018 are not required for the signal converter housing since the overpressure test has been carried out at four times the reference pressure.

Electric strength tests according to EN 50019 Clause 6.1 shall be applied during one minute without breakdown as follows:

- On each terminal compartment in type of explosion protection increased safety "e" with 1500 V between the power supply circuit and the enclosure and with 500 V between the signal in- and output circuits and the enclosure.
- On each field connection box with 500 V between the field coils circuit and the enclosure and with 1500 V between the field coils circuit and the intrinsically safe sensor circuit.

(16) **Report**

KEMA No. 2074671.

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

None

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

Covered by the standards listed at (9).

(19) **Test documentation**

1. Component Certificate KEMA 03ATEX2527 U  
KEMA 97ATEX4564 U  
PTB 04 ATEX 2052 U

signed

2. Description (15 pages) 18.08.2004
3. Drawing list 25.08.2004
4. Appendix list (4 pages) 18.08.2004

**AMENDMENT 1****to EC-Type Examination Certificate KEMA 04ATEX2166**

Manufacturer: **Krohne Altometer**

Address: **Kerkeplaat 12, 3313 LC Dordrecht, The Netherlands**

**Description**

In the future, in accordance with the documentation as stated below, the Signal Converter Type Optiflux IFC300 F-EEx may also be manufactured with a stainless steel enclosure.

Ambient temperature range of the Converter with the stainless steel enclosure -40 °C ... +60 °C.

**Electrical data**

Unchanged.

**Installation instructions**

Unchanged.

**Routine tests**

Unchanged.

**Report**

KEMA No. 2083855.

**Special conditions for safe use**

Unchanged.

**Essential Health and Safety Requirements**

Unchanged.

**Test documentation**

1. Amendment 1 to EC-Type Examination Certificate KEMA 03ATEX2527 U

signed

2. Description (2 pages)

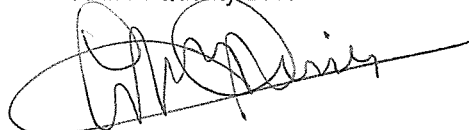
27.04.2005

3. Drawing No. 8.30701.03, rev. C  
8.30701.04, rev. B

27.04.2005

27.04.2005

Arnhem, 11 July 2005  
KEMA Quality B.V.



L.M.J. Vries  
Certification Manager

**AMENDMENT 2****to EC-Type Examination Certificate KEMA 04ATEX2166**Manufacturer: **Krohne Altometer**Address: **Kerkeplaat 12, 3313 LC Dordrecht, The Netherlands****Description**

In future the Signal Converter Type Optiflux IFC300 F-EEEx may also be manufactured according to the documentation stated below.  
The modification concerns the marking label.

**Electrical data**

Unchanged.

**Routine tests**

Unchanged.

**Report**

KEMA No. 2085484.

**Special conditions for safe use**

Unchanged.

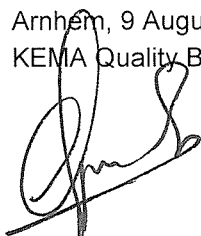
**Essential Health and Safety Requirements**

Unchanged.

**Test documentation**

	<u>signed</u>
1. Description (2 pages)	29.06.2005
2. Drawing No. 8.30701.09	29.06.2005
8.30701.10	29.06.2005

Arnhem, 9 August 2005  
KEMA Quality B.V.



C.G. van Es  
Certification Manager

## AMENDMENT 3

### to EC-Type Examination Certificate KEMA 04ATEX2166

Manufacturer: **Krohne Altometer**

Address: **Kerkeplaat 12, 3313 LC Dordrecht, The Netherlands**

#### Description

In future the Signal Converter Type Optiflux IFC300 F-EEEx may also be constructed in accordance with the documentation listed below. The modifications concern the electrical data of the intrinsically safe Fieldbus IO module and the use of a new power supply module.

#### Electrical data

Power supply ..... 24 Vac -15/+10 %, 22 VA resp.  
(terminals L, N or L+, L-) 24 Vdc -25/+30 %, 12 W  
 $U_m = 253 \text{ V}$

Fieldbus IO ..... in type of protection intrinsic safety EEx ia IIC, only for  
(terminals C, C-, D and D-) connection to a certified intrinsically safe circuit, with  
the following maximum values:

$U_i$	=	24	V
$I_i$	=	380	mA
$P_i$	=	5,32	W
$C_i$	=	5	nF
$L_i$	=	10	$\mu\text{H}$

The fieldbus circuit complies with the FISCO model according to IEC 60079-27.

#### Routine tests

Unchanged.

#### Report

KEMA No. 2087957.

#### Special conditions for safe use

Unchanged.

#### Essential Health and Safety Requirements

Unchanged.

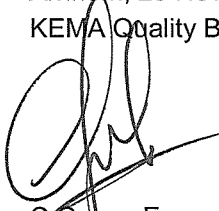
**AMENDMENT 3****to EC-Type Examination Certificate KEMA 04ATEX2166****Test documentation**

1. Amendment 1 to EC-Type Examination Certificate PTB 04 ATEX 2052 U

signed

2. Description, rev. 1 (3 pages)

14.11.2005

Arnhem, 28 November 2005  
KEMA Quality B.V.  
C.G. van Es  
Certification Manager