

Physikalisch-Technische Bundesanstalt

Brunswick and Berlin

(1) EC-type examination certificate

(2) Apparatuses and protective systems intended for use in hazardous locations - **Directive 94/9/EC**



(3) EC-type examination certificate number

PTB 01 ATEX 2015 X

(4) Apparatus: Ultrasonic compact flowmeter type UFM 500 K/.../...-EEx respectively type UL 500 K/.../...-EEx

(5) Manufacturer: Krohne Altometer

(6) Address: NL-3313 LC Dordrecht

(7) This electrical apparatus and any acceptable variations thereto are specified in the Annex to this EC-type examination certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt approves as Notified Body No. 0102, conform to Article 9 of the Council Directive of the European Communities of March 23, 1994 (94/9/EC), the completion of the fundamental safety and health requirements for the concept and the manufacturing of apparatuses and protective systems intended for use in hazardous locations conform to Annex II of the Directive.

The test results are documented in the confidential test report PTB Ex 01-20262.


(9) The fundamental safety and health requirements are fulfilled due to the accordance with

EN 50014:1997 + A1 +A2 EN 50018:1994 EN 50019:1994 EN 50020:1994

(10) In case that the symbol "X" is printed behind the certification number, reference is made to special requirements in the Annex to this certificate for safe use of the apparatus.

(11) This EC-type examination certificate only concerns the concept and testing of the described apparatuses conform to Directive 94/9/EC. Further requirements of this directive apply to the manufacturing and marketing of these apparatuses. These requirements are not covered by this approval.

(12) The apparatus' marking shall include the following codes:

 **II 2 G EEx d [ib] IIC T6...T3 resp. EEx de [ib] IIC T6...T3 resp. EEx d [ia/ib] IIC T6...T3 resp. EEx de [ia/ib] IIC T6...T3**

Approval department Explosion Safety
On behalf of

Official stamp
of the PTB

Brunswick, March 20, 2001

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Physikalisch-Technische Bundesanstalt

Brunswick and Berlin

Annex

(13)

(14) **EC-type examination certificate PTB 01 ATEX 2015 X**

(15) Description of the apparatus

The ultrasonic compact flowmeter of type UFM 500 K/.../...-EEx is used to measure, count and display the flow rates of combustible and non-combustible media. The alternative type designation reads type UL 500 K/.../...-EEx.

The range of highest permissible ambient temperatures of the designs is

Type UFM (UL) 500 K/.../...-EEx: -40°C ... +60°C

Type UFM (UL) 500 K/ i /...-EEx: -20°C ... +60°C

The classification of the temperature class in relation to the maximum permissible medium temperature of the remote version is listed in following tables :

Type UFM (UL) 500 K/.../...-EEx :

Temperature class	Maximum permissible medium temperature [°C]		
	T _{amb} £ 40°C	T _{amb} £ 50°C	T _{amb} £ 60°C
T6	80	80	80
T5	95	95	95
T4	130	130	125
T3	180	165	125

Type UFM (UL) 500 K/ i /...-EEx :

Temperature class	Maximum permissible medium temperature		
	T _{amb} £ 40°C	T _{amb} £ 50°C	T _{amb} £ 60°C
T6	80	80	80
T5	95	95	80
T4	130	120	80
T3	160	120	80

Electrical data:

Type UFM (UL) 500 K/.../...-EEx :

Power supply

(terminals L, N, PE)

AC-version 1

240 V -16/+8 %, 55 mA

230 V ±13 %, 53 mA

220 V -9/+18 %, 50 mA

120 V -16/+8 %, 110 mA

115 V ±13 %, 105 mA

110 V -9/+18 %, 100 mA

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AC-version 2

200 V -15/+10 %, 61 mA

100 V -15/+10 %, 122 mA

AC-version 3

48 V ± 13 %, 275 mA

24 V ± 13 %, 550 mA

(terminals L \approx , L \approx , FE)

AC/DC-version

24 V -25/+33 %, 440 mA

Pulse in-/outputs
(terminals B1, B-, B2)

$V \leq 36$ V; $I \leq 150$ mA

$V_m = 250$ V AC

Current output
(terminals I+, I-)

$V \leq 18$ V; $I \leq 22$ mA

$V_m = 250$ V AC

Measurement circuits
(terminals CON 1 up to 4)

internal in type of protection intrinsic safety EEx ib IIC

All circuits are considered to be interconnected.

Type UFM (UL) 500 K/ i /...-EEx :

Power supply
(terminals 1L, 0L, FE)

$V_N = 24$ V DC +30%/-25%, 8 W

$V_N = 24$ V AC/DC +10%/-15%, 11 VA, 48...63 Hz

Internal fuse protection $I_N \leq 1.25$ A

$V_m = 250$ V

Signal circuits

according to module equipment:

Module:

P-SA, FA-ST

in type of protection intrinsic safety EEx ia IIC
resp. EEx ib IIC

only to be connected to approved intrinsically safe
circuits with the following maximum values:

$V_i = 30$ V

$I_i = 250$ mA

$P_i = 1.0$ W

$C_i = 5$ nF

L_i negligible small

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F-PA, F-FFin type of protection intrinsic safety EEx ia IIC
resp. EEx ib IIC/IIBonly to be connected to approved intrinsically safe
circuits with the following maximum values:

$$V_i = 30 \text{ V}$$

$$I_i = 300 \text{ mA}$$

$$P_i = 4.2 \text{ W}$$

$$C_i = 5 \text{ nF}$$

$$L_i \text{ negligible small}$$

DC-Iin type of protection intrinsic safety EEx ia IIC
resp. EEx ib IIC

Maximum values:

$$V_o = 23.5 \text{ V}$$

$$I_o = 98 \text{ mA}$$

$$P_o = 0.6 \text{ W}$$

Characteristic: linear

$$C_o = 127 \text{ nF}$$

$$L_o = 4 \text{ mH}$$

Measurement circuits
(terminals CON 1 up to 4)

internal in type of protection intrinsic safety EEx ib IIC

The intrinsically safe signal circuits are galvanically separated from the non-intrinsically safe
circuits up to 375 V cut-off value of the nominal voltage.(16) Test report PTB Ex 01-20262(17) Special requirements

1. It must be certain, that the equipotential bonding conductor is securely connected with the equipotential bonding system in the hazardous location.
2. Before opening the flameproof enclosure of types UFC 030 F-EEx and UFM 3030 K-EEx a waiting time should be obeyed after de-energizing (warning plate). The waiting time depends of the temperature class: T6...20 min.; T5...11 min.

(18) Fundamental safety and health requirements

fulfilled due to the compliance with the previous mentioned standards

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