

(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 03ATEX1169 X**

(4) Equipment or protective system: **Vortex flow transmitter of the Series VFM31..-A.....E-..... and Series VFM31..-T.....E-.....**

(5) Manufacturer: **Krohne Messtechnik GmbH & Co. KG**

(6) Address: **Ludwig-Krohne-Straße 5, 47058 Duisburg, Germany**

(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. 2017766.


(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014 : 1997 EN 50020 : 2000

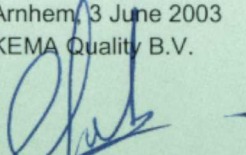
(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance 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 G EEx ib IIC T4 ... T6**

Arnhem, 3 June 2003
KEMA Quality B.V.


C.G. van Es
Certification Manager

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(15) **Description**

The Vortex flow transmitter series VFM 31.. converts a measurement signal into a digital signal and a pulse signal or into a 4-20 mA current signal and a pulse signal. The sensor of the transmitter can be integral or remotely mounted.

Ambient temperature range is per table below.

Electrical data

Series VFM31 ..-T.....E-.....

Supply and output circuit in type of explosion protection intrinsic safety EEx ib IIC,
(terminals + and -) only for connection to a certified intrinsically safe circuit,
with the following maximum values:

$$\begin{aligned}
 U_i &= 30 \text{ V} \\
 I_i &= 110 \text{ mA} \\
 P_i &= \text{see table below} \\
 C_i &= 3 \text{ nF} \\
 L_i &= 0 \text{ mH}
 \end{aligned}$$

Pulse circuit in type of explosion protection intrinsic safety EEx ib IIC,
(terminals A and B) only for connection to a certified intrinsically safe circuit,
with the following maximum values:

$$\begin{aligned}
 U_i &= 30 \text{ V} \\
 I_i &= 110 \text{ mA} \\
 P_i &= \text{see table below} \\
 C_i &= 3 \text{ nF} \\
 L_i &= 2 \text{ mH}
 \end{aligned}$$

Measurement circuit in type of explosion protection intrinsic safety EEx ib IIC,
(internal circuit) only for connection to the integral or remote mounted
sensor.

For types with remote mounted sensor, the length of the interconnecting cable shall not exceed 100 m.

The supply and output circuit, the pulse output circuit and the measurement circuit are infallibly galvanically isolated from each other.

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Electrical data (continued)

Series VFM31 ...-A.....E-.....

Supply and output circuit in type of explosion protection intrinsic safety EEx ib IIC,
(terminals + and -) only for connection to a certified intrinsically safe circuit,
with the following maximum values:

$$\begin{aligned} U_i &= 30 \text{ V} \\ I_i &= 110 \text{ mA} \\ P_i &= \text{see table below} \\ C_i &= 3 \text{ nF} \\ L_i &= 0 \text{ mH} \end{aligned}$$

Supply and pulse circuit in type of explosion protection intrinsic safety EEx ib IIC,
(terminals +, A and B) only for connection to a certified intrinsically safe circuit,
with the following maximum values:

$$\begin{aligned} U_i &= 30 \text{ V} \\ I_i &= 110 \text{ mA} \\ P_i &= \text{see table below} \\ C_i &= 3 \text{ nF} \\ L_i &= 0 \text{ mH} \end{aligned}$$

Measurement circuit in type of explosion protection intrinsic safety EEx ib IIC,
(internal circuit) only for connection to the integral or remote mounted,
sensor.

For types with remote mounted sensor, the length of the interconnecting cable shall not exceed 25 m.

All versions

The relation between the maximum allowed power P_i , ambient temperature and temperature class is for all aforementioned versions as follows:

Temperature class	P_i	Ambient temperature range
T4	0,8 W	-20 ... +80 °C
T5	0,7 W	-20 ... +40 °C
T6	0,5 W	-20 ... +40 °C

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Routine tests

Transformers T1, T2 and T3 of the Series VFM31..-T.....E-..... and T1 and T2 of the Series VFM31..-A.....E-..... shall be subjected to a voltage test in accordance with the procedure per drawings BF160LM, BF160LK, BF160TJ, BF160TA and BF160LJ respectively.

(16)

Report

KEMA No. 2017766

(17)

Special conditions for safe use

For ambient temperature range and electrical data, see (15).

(18)

Essential Health and Safety Requirements

Covered by the standards listed at (9).

(19)

Test documentation

1. EC-Type Examination Certificate KEMA 01ATEX1006 X

dated

2. Drawing No.	B0189UK, Rev. C	20.05.2003
	B0189UU, Rev. C	20.05.2003
	B0189VA, Rev. A	06.12.2001