1 # EC TYPE EXAMINATION CERTIFICATE

2 Equipment or protective system intended for use in potentially explosive atmospheres – Directive 94/9/EC – Annex III

3 EC Type Examination Certificate No.: **TRAC09ATEX21226X (incorporating variation V1)**

4 Equipment: **Clamp-On Transducer K1Ex, K4Ex**

5 Manufacturer: **Katronic Technologies Ltd.,**

6 Address: **Earls Court, 13 Warwick Street, Earlsdon, Coventry, CV5 6ET, United Kingdom**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 TRaC Global Ltd, Notified Body number 0891 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment or protective system intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential report **16-0071-003870**.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in section 18 of the schedule to this certificate, has been assured by compliance with:

EN60079-0:2006 **EN60079-18:2004** **EN61241-0:2006**

EN61241-18:2004

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

11 This EC-Type Examination certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of this equipment or protective system shall include the following:

II 2 G Ex mb IIC T4 – T6 X **T_{amb} = -50°C to +115°C**

II 2 D Ex mbD 21 IP68 T80°C – T120°C X

This certificate and its schedules may only be reproduced in its entirety and without change. This certificate is issued in accordance with the TRaC Ex Certification Scheme.

S P Winsor, Certification Officer

Issue date: 2014-04-23

Copy No.: 1e

Form RF355 is16A

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13 **SCHEDULE TO EC TYPE EXAMINATION CERTIFICATE**

14 **TRAC09ATEX21226X (incorporating variation V1)**

15 **General description of equipment or protective system included within the scope of this certificate**

The clamp-on transducer, model type K1Ex and K4Ex, are ultrasonic transducers designed to transmit and receive ultrasonic signals pulsed from a controlling flow transmitter (e.g. the Katflow 150), which is installed in a safe area or suitably protected by an appropriate ATEX protection concept if it is in the hazardous area. There is a tri-axial cable (5m length) for connecting the transducers to a flow transmitter device. The transducers are designed to be clamped onto the outside of the pipe, ultrasound signals are emitted by the first transducer on one side of the pipe, reflected and received by a second transducer on the opposite side.

The K1Ex and K4Ex transducers are enclosed on 3 sides in a metallic enclosure and completely encapsulated. The fourth side is made from PEEK plastic and is the side that fits to the pipe.

The transducers are connected to specialist apparatus which must conform to signal parameters and thermal protection conditions as outlined in the special conditions for safe use.

A list of controlled Manufacturer's Documents is given in Appendix A to this schedule.

16 **Test report No.:** **16-0071-003870**.

17 **"Special Conditions of Safe Use" for Ex Equipment, if any:**

1. The transmitting circuitry must be protected from a mains transient fault by fuses and they shall be rated in accordance with IEC 60127 or ANSI/UL 248-1, the fuse time-current characteristic shall ensure that the COT of the encapsulating compound and T class are not exceeded and shall have a breaking capacity greater than 1500A. In addition, the fuses shall be non-resettable and shall only be replaced by opening the enclosure. The separation distance across the fuse shall meet Table 5 of EN60079-11.
2. The pulsed supply to the transducers must not exceed 330V at a maximum frequency of 4 MHz.
3. Where the interconnecting cable may be subject to mechanical damage then the user shall provide additional mechanical protection.

18 **Essential health and safety requirements**

Covered by application of the standards listed in section 9 of this certificate and the assessment conducted in the test report listed in section 16 of this certificate.

19 **Additional information**

"Routine tests", if any:

None.

"Special conditions for manufacture", if any:

1. During encapsulation, it shall be ensured that both the signal wire and ground wire maintain a distance of >3mm from the outer metal enclosure and also to maintain a distance >1mm from each other.
2. The manufacturing process shall ensure that each sample is free of voids during encapsulation.
3. Each piece of 'm' apparatus shall be subjected to a visual inspection. No damage shall be evident, such as cracks in the compound, exposure of the encapsulated parts, flaking, inadmissible shrinkage, swelling and decomposition, failure in adhesion or softening.
4. A 1600V dielectric strength test shall be performed between the signal wire and the metallic enclosure on each sample for a minimum 1s with no breakdown occurring
5. Prior to connecting the external signal wires the insulation at the ends shall be stripped back so that at least 5mm of bare conductor exists. It also must be ensured that the 3mm separation is maintained between these conductors and the inner surface of the enclosure.

Other information, if any:

None.

Photographs

Transducer K1Ex, K4Ex

Details of markings

Ultrasonic Transducer K1Ex

Ultrasonic Transducer K4Ex

Details of variations to this certificate

This certificate is a consolidated certificate and reflects the latest status of the certification, including the following variations:

- Variation V1 – Update of certificate and drawings to reflect address change.

Notes to CE marking

In respect of CE Marking, TRaC Global Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

Notes to this certificate

TRaC certification reference: **TRA-021431-32-00**.

Throughout this certificate, the date format yyyy-mm-dd (year-month-day) is used.

This certificate is a consolidated certificate and reflects the latest status of the certification, including all variations.

APPENDIX A - LIST OF CONTROLLED MANUFACTURER'S DOCUMENTS

Title:	Drawing No.:	Rev. Level:	Date:
Sensor Housing and Gland Assy General Arrangement	DWG-K1Ex-001E	E	2014-01-10
Sensor Housing and Gland Assy General Arrangement	DWG-K4Ex-001E	E	2014-01-10
K1/K4Ex Stainless Steel Housing	DWG-K1_K4Ex-002A	*	2009-11-23
Sensor Wedge V04.1	DWG-K1_K4Ex-003A	*	2009-11-24
Sensor Cover V03.1	DWG-K1_K4Ex-004A	*	2009-11-24
Ex Sensor Wiring	DWG-K1_K4Ex-005	A	2009-10-09
K1/K4 Ex Sensor PE Connection	DWG-K1_K4Ex-007A	*	2009-11-20
Ex Sensor K1Ex Part List	DWG-K1Ex-001A_SensorPartList_091124.doc	*	2009-10-29
Ex Sensor K4Ex Part List	DWG-K4Ex-001A_SensorPartList_091120.doc	*	2009-10-29
Ex Sensor Marking	DWG-K1Ex_K4Ex-001C	C	2014-04-10
Supplement ATEX Safety Instructions	Version V11E0510	*	2010
Work Instructions	7.5_AA_Ex-K1-K4-Gehausemontage_02.09.10	*	2010-01-14
Manufacturing Instructions	ManufacturingInstructions_ExSensors_100916.odt	*	2010-08-16

* no information supplied