

**(1) EC-TYPE EXAMINATION CERTIFICATE****(2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 08ATEX0012 X** Issue Number: 1

(4) Equipment: **Average Temperature/ Water Bottom Sensor Type 4539 and Average Temperature Sensor and Converter Type 4532**

(5) Manufacturer: **Varec, Inc.**

(6) Address: **5834 Peachtree Corners East, Norcross GA 30092, USA**

(7) This equipment 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 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 test report number 2113048/1.

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

**EN 50014 : 1997 + A1, A2**

**EN 50020 : 2002**

**EN 50284 : 1999**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment 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 according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:



**II 1/2 G EEx ia IIB T2 ... T6 or  
II 2 G EEx ia IIB T2 ... T6**

This certificate is issued on 10 March 2008 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

KEMA Quality B.V.

  
C.G. van Es  
Certification Manager

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(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 08ATEX0012 X** Issue No. 1

(15) **Description**

Average Temperature/ Water Bottom Sensor Type 4539 and Average Temperature Sensor and Converter Type 4532 are used either for average temperature measurement, using a separate or an integrated temperature probe, or for the measurement of the water interface level at the bottom of a tank, or for combinations of these measurements.

The output signal is a 4 - 20 mA current with digital communication (HART).

Ambient temperature range -40 °C ... +85 °C.

The relation between the ambient temperature, the process temperature and the temperature class is shown in the following table:

Temperature class	Ambient temperature	Process temperature (sensor)	
		Temperature measurement only	Temperature measurement and water level or water level only
T6	≤ 60 °C	≤ 60 °C	≤ 60 °C
T5	≤ 85 °C	≤ 80 °C	≤ 80 °C
T4	≤ 85 °C	≤ 100 °C	≤ 100 °C
T3	≤ 85 °C	≤ 175 °C	≤ 125 °C
T2	≤ 85 °C	≤ 235 °C	---

**Electrical data**

All versions:

Supply and output circuit (terminals H1+ and H1-):

In type of protection intrinsic safety EEx ia IIB, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 30 \text{ V}$ ;  $I_i = 120 \text{ mA}$ ;  $P_i = 1 \text{ W}$ ;  $C_i = 7,9 \text{ nF}$ ;  $L_i = 48 \text{ }\mu\text{H}$ .

Converter only:

Temperature sensor circuit:

in type of protection intrinsic safety EEx ia IIB, for connection to an external temperature probe, with following maximum values (trapezoidal characteristic):

$U_o = 8,6 \text{ V}$ ;  $I_o = 71 \text{ mA}$ ;  $P_o = 153 \text{ mW}$ ;  $C_o = 9,5 \text{ }\mu\text{F}$ ;  $L_o = 7,5 \text{ mH}$ .

The level sensor circuit is connected to ground and is infallibly galvanically isolated from the supply and output circuit and from the temperature measurement circuit.

**Installation instructions**

All metal parts of the sensor and the transmitter shall electrically conductive and securely be connected to the potential equalisation system within the hazardous area.

**Routine tests**

The transformer shall be subjected to a dielectric strength test with a test voltage of 500 Vac during 1 minute between primary and secondary windings.



(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 08ATEX0012 X** Issue No. 1

(16) **Test Report**

KEMA No. 2113048/1.

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

In order to exclude ignition sources due to impact and friction sparks, even in the event of rare incidents, the temperature sensor tube shall not be subject to environmental stress, such as impact from moving parts, and the bottom part shall be secured.

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

Covered by the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. 2113048/1.