

# CERTIFICATE

## (1) EC-Type Examination

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

(3) EC-Type Examination Certificate Number: **DEKRA 11ATEX0200 X** Issue Number: **1**

(4) Equipment: **Temperature sensor, types TCRI/TCTI, PT100RI/PT100TI, TCWI/TCKI and PT100WI/PT100KI**

(5) Manufacturer: **Rodax N.V.**

(6) Address: **Santvoortbeeklaan 33, B-2100 Antwerpen, Belgium**

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

(8) DEKRA Certification 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 NL/DEK/ExTR11.0029/xx.

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

**EN 60079-0 : 2009**  
**EN 61241-11 : 2006**

**EN 60079-11 : 2007**

**EN 60079-26 : 2007**

(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 G Ex ia IIC T6...T1 Ga**  
**II 1 D Ex ia IIIC T85 °C Da**

This certificate is issued on 30 November 2011 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.

DEKRA Certification B.V.

R. Schuller  
Certification Manager

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° Integral publication of this certificate and adjoining reports is allowed. This Certificate may only be reproduced in its entirety and without any change.



All testing, inspection, auditing and certification activities of the former KEMA Quality are an integral part of the DEKRA Certification Group

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate DEKRA 11ATEX0200 X**

Issue No. 1

(15) **Description**

The Temperature Sensors, types TCRI/TCTI, PT100RI/PT100TI, PT100WI/PT100KI and TCWI/TCKI for temperature measurement, in different versions, consists of one or more inserts, a connection head provided with terminals or a permanently fixed lead wire and optionally extension parts.

The inserts have up to 3 thermocouple or up to 2 RTD temperature sensing elements.

The sensor assembly is provided with terminals for connection to up to 3 external intrinsically safe circuits or is provided with a temperature transmitter.

For thermal and electrical data see attachment to the Test Report.

For use in a potentially explosive gas atmosphere the connection head shall provide a degree of protection of at least IP20 according to EN 60529, or higher when the environment requires so.

For use in a potentially explosive dust atmosphere the connection head shall provide a degree of protection of at least IP6X according to EN 60529, and that is suitable for the application and is correctly installed.

**Installation instructions**

The instructions provided with the equipment shall be followed in detail to assure safe operation.

(16) **Test Report**

No. NL/DEK/ExTR11.0029/xx.

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

If the connection head of the Temperature Sensor is made of aluminium and it is mounted in an area where the use of category 1 G apparatus is required, the head must be installed such, that, even in the event of rare incidents, ignition sources due to impact and friction sparks are excluded.

If the connection head of the Temperature Sensor is made of non-conductive non-metallic material and it is mounted in an area where the use of category 1 G apparatus is required, precautions have to be taken to avoid electrostatic charges.

Ambient temperature range: See attachment to the Test Report.

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

Covered by the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. NL/DEK/ExTR11.0029/xx.

Attachment to: NL/DEK/ExTR11.0029/00  
Applicant's name: Rodax N.V.  
Test item: Temperature sensor



### Electrical data

Insert with single or double RTD or thermocouple sensing elements only:

Output circuits:

in type of protection intrinsic safety Ex ia IIC or IIB, only for connection to a certified intrinsically safe circuit, with the following maximum values for each sensing element:

$U_i = 30 \text{ V}$  (IIC),  $50 \text{ V}$  (IIB);  $I_i = 100 \text{ mA}$ ;  $P_i = 0.5 \text{ W}$ ;  $C_i = 10 \text{ nF}$ ;  $L_i = 400 \text{ }\mu\text{H}$ .

The maximum length of the sensor is 30 m.

Insert with tripple thermocouple sensing elements only:

Output circuits:

in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values for each sensing element:

$U_i = 30 \text{ V}$ ;  $I_i = 100 \text{ mA}$ ;  $P_i = 0.5 \text{ W}$ ;  $C_i = 9 \text{ nF}$ ;  $L_i = 360 \text{ }\mu\text{H}$ .

The maximum length of the sensor is 15 m.

Transmitters with inserts as above:

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the maximum values according to the data listed in the documentation of the transmitter.

The parameters of the sensor connections at the transmitter shall comply with the parameters of the sensing element.

### Thermal data

Ambient temperature range:  $-20 \text{ }^\circ\text{C}$  to  $+80 \text{ }^\circ\text{C}$ .

The maximum surface temperature due to process conditions ( $T_p$ ) is the maximum surface temperature of any part of the assembly in contact with the explosive atmosphere.

The temperature class and the maximum surface temperature of the assembly depend on  $T_p$  and, when mounted, on the temperature class of the integrally mounted transmitter, as listed in the table below.

$T_p$ [ $^\circ\text{C}$ ]	Temperature class transmitter	Temperature class of the assembly	Max. surface temperature of the assembly [ $^\circ\text{C}$ ]
60	T6	T6	85
75	T5	T5	100
110	T4	T4	135
175	T3	T3	200
275	T2	T2	300
425	T1	T1	450
> 440	T1	-	$T_p + 25 \text{ K}$

For versions with an integrally mounted certified intrinsically safe transmitter:

- The highest minimum ambient temperature as mentioned above and as mentioned on the transmitter, is decisive.
- The maximum ambient temperature of the connection head is  $+80 \text{ }^\circ\text{C}$  or the maximum ambient temperature as mentioned on the transmitter, whichever is the smaller.

If the sensor assembly is influenced by the temperature of the process medium, it shall be verified that the surface temperature of the connection head and the connection box does not exceed the specified maximum ambient temperature.