



# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: IECEx INE 12.0046X Issue No: 1 Certificate history:  
Status: **Current** Page 1 of 4 Issue No. 1 (2016-06-10)  
Date of Issue: **2016-06-10** Issue No. 0 (2013-01-07)

Applicant: **THERMO ENGINEERING S.r.l**  
Via giuseppina, 19  
I - 26030 Malagnino (CR)  
**Italy**

Equipment: **Temperature probes type 113TE\_\_\_/Exm and 114TE\_\_\_/Exia**  
*Optional accessory:*

Type of Protection: **"ia" and "ma"**

Marking:  
With the type of protection "ia" :  
Ex ia IIC T6, T5, T4 Ga  
Ex ia III C T85°C, T100°C, T135°C Da IP66  
  
With the type of protection "ma" :  
Ex ma IIC T6, T5, T4 Ga  
Ex ma III C T85°C, T100°C, T135°C Da IP66

Approved for issue on behalf of the IECEx  
Certification Body:

Thierry HOUEIX

Position:

Ex Certification Officer

Signature:  
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

**INERIS**  
Institut National de l'Environnement Industriel  
et des Risques  
BP n2  
Parc Technologique ALATA  
F-60550 Verneuil-En-Halatte  
France



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Manufacturer: **THERMO ENGINEERING S.r.l**  
Via Giuseppina, 19  
I - 23030 Malagnino (CR)  
**Italy**

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

## STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

<b>IEC 60079-0 : 2011</b> Edition:6.0	Explosive atmospheres - Part 0: General requirements
<b>IEC 60079-11 : 2011</b> Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
<b>IEC 60079-18 : 2009</b> Edition:3	Explosive atmospheres Part 18: Equipment protection by encapsulation "m"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

## TEST & ASSESSMENT REPORTS:

*A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in*

Test Report:

[FR/INE/ExTR12.0045/01](#)

Quality Assessment Report:

[FR/INE/QAR11.0009/04](#)



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## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

These temperature probes are thermocouple or RTD ( Resistance Temperature Detector ) sensor.

There are 3 versions which are manufactured according to the following reference drawings :

For the type of protection "ma" :

- 113TE03/Exm ; 113TE04/Exm ; 113TE06/Exm.

For the type of protection "ia" :

- 114TE03/Exia ; 114TE04/Exia ; 114TE06/Exia.

### SPECIFIC CONDITIONS OF USE: YES as shown below:

The user of these temperature probes will have to connect the free extremity of cable either in a non explosive atmosphere, or in an enclosure protected by a recognised type of protection suitable for the zone.



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## DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

- the probes types 113-114TE02-2011 and 113-114TE05 are suppressed.
- The standard IEC 60079-26 is retired (no obligatory when the level of equipment is "ia" or "ma").
- New compound is used ( EPO-TEK 301-2 A/B)
- Change for negative temperature ( possibility to get -60°C with resins MC62 and EPO-TEK).
- Modifications of intrinsic safety parameters.

## Annex:

[IECEX INE 12.0046X-01\\_Annex.pdf](#)



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## PARAMETERS RELATING TO THE SAFETY:

For probes types 114TE\_ \_ \_ /Exia:

Intrinsic safety parameters (Group IIC/III):

Ui: 30 V                      Ci: 5 nF (considering 30m of cable)  
li: see following tables    Li: 30  $\mu$ H (considering 30m of cable)  
Pi: see following tables

or when there are 2 Exi (dual probe) circuits in the same probe and the separation distance through the solid insulation is < 0.5 mm and/or < 0,7 mm through the compound/resin (sec. 6.3.5 of EN/IEC 60079-11), the parameters for each Exi circuit (i.e. for each probe) are (Group IIC/III):

Ui: 20 V                      Ci: 5 nF (considering 30m of cable)  
li: see following tables    Li: 30  $\mu$ H (considering 30m of cable)  
Pi: see following tables

Further detail as per tables below.

For single probe, maximum input characteristics per Group:

Group	Ui (V)	li (mA)	Ci (nF)	Li ( $\mu$ F)
IIC or III	30	100	5 *	30 *
IIB or III	30	250	5 *	30 *
IIA	30	340	5 *	30 *

\* Maximum 30 m of cable is considered.

Maximum Power input (Pi) with Class of Temperature and Ambient Temperature.

For Class of Temperature T4 (T135°C)

Maximum ambient temperature °C	Maximum Power Input (Pi) W
40	1.216
50	1.081
60	0.945
70	0.810
85	0.608
120	0.135



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For Class of Temperature T5 (T100°C)

Maximum ambient temperature °C	Maximum Power Input (Pi) W
40	0.743
50	0.608
60	0.472
70	0.337
85	0.135

For Class of Temperature T6 (T85°C)

Maximum ambient temperature °C	Maximum Power Input (Pi) W
40	0.540
50	0.405
60	0.270
70	0.135

For dual probe, maximum input characteristics (for each probe):

Maximum Input per Group:

Group	Ui (V)	Ii (mA)	Ci (nF)	Li (µF)
IIC or III	20	50	5 *	30 *
IIB or III	20	130	5 *	30 *
IIA	20	190	5 *	30 *

\* Maximum 30m of cable is considered.

Maximum Power input (Pi) with Class of temperature and Ambient Temperature.

For Class of Temperature T4 (T135°C).

Maximum ambient temperature °C	Maximum Power Input (Pi) W
40	0.608
50	0.540
60	0.472
70	0.405
85	0.304
120	0.067

For Class of Temperature T5 (T100°C).

Maximum ambient temperature °C	Maximum Power Input (Pi) W
40	0.371
50	0.304
60	0.236
70	0.168
85	0.067



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For Class of Temperature T6 (T85°C).

Maximum ambient temperature °C	Maximum Power Input (Pi) W
40	0.270
50	0.202
60	0.135
70	0.067

**NOTE for double probe used as a single probe:**

In Ex ia equipment with two elements (double RTD or double TC), end user can connect one alone element applying the one probe characteristics and parameters.

**WARNING 1:** End user must assure (condemn) the not connected probe: this second probe (Ex ia circuit) has not and never to be used.

**WARNING 2:** End user need to apply a procedure to forbids the connection of the second probe (i.e. cut of wires).

For probes types 113TE\_ \_ \_ /Exm version, the parameters relating the safety are the following:

$$U_{max} = 1 \text{ V} - I_{max} = 3 \text{ mA.}$$



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## **MARKING**

Marking has to be readable and indelible; it has to include the following indications:

With the type of protection in intrinsic safety “ia”:

THERMO ENGINEERING S.r.l

I - 26030 Malagnino (CR)

114TE\_ \_ \_ /Exia \*

(Serial number)

Ex ia IIC T (1) Ga

Ex ia IIIC T (2) Da IP66

Tamb. = -60°C or -50°C to + (3)

With the type of protection “ma”:

THERMO ENGINEERING S.r.l

I - 26030 Malagnino (CR)

113TE\_ \_ \_ /Exm \*

(Serial number)

Ex ma IIC T (1) Ga

Ex ma IIIC T (2) Da IP66

Tamb. = -60°C or -50°C to + (3)

\* Underscore may be replaced by figure and type according to the alternative (see instructions).

(1) - (2) - (3) Temperature class depends of maximal ambient temperature, see table below

(3) Ambient temperature	T (1)	T (2)
120°C	T4	T135°C
85°C	T5	T100°C
70°C	T6	T85°C

## **ROUTINE EXAMINATIONS AND TESTS**

With the type of protection “m”:

- In compliance with 9.1 in IEC 60079-18, the probe has to be subjected to a visual inspection.
- In compliance with 9.2 in IEC 60079-18, the probe has to be subjected to a dielectric strength test of 500V during one second (1s) in one of the way indicated in 8.2.4 in IEC 60079-18.