



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEX TUR 20.0085X** Page 1 of 3 [Certificate history:](#)

Status: **Current** Issue No: 0

Date of Issue: 2023-04-15

Applicant: **THERMO ENGINEERING**
Via Giuseppina, 19
I - 26030 Malagnino (CR)
Italy

Equipment: **Thermal probes type 215TE, Type 215TE__/Exia-Exec/Extc**

Optional accessory:

Type of Protection: **Ex ia, Ex ec, Ex tc**

Marking: Ex ia IIC T6,T5,T4 Ga
Ex ec IIC T6,T5,T4 Gc
Ex ia IIIC T85°C,T100°C,T135°C Da IP66/IP67
Ex tc IIIC T85°C,T100°C,T135°C Dc IP66/IP67

Approved for issue on behalf of the IECEx
Certification Body:

Dipl. -Ing. Klauspeter Graffi

Position:

Head of Certification Body

Signature:
(for printed version)

Date:
(for printed version)

2023-04-15

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 www.iecex.com or use of this QR Code.



Certificate issued by:

TUV Rheinland Industrie Service GmbH
Am Grauen Stein
51105 Cologne
Germany





IECEX Certificate of Conformity

Certificate No.: **IECEX TUR 20.0085X**

Page 2 of 3

Date of issue: 2023-04-15

Issue No: 0

Manufacturer: **THERMO ENGINEERING S.r.l**
Via Giuseppina, 19
26030 Malagnino (CR)
Italy

Manufacturing locations: **THERMO ENGINEERING S.r.l**
Via Giuseppina, 19
26030 Malagnino (CR)
Italy

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 equipment 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

[IEC 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

[IEC 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

[IEC 60079-31:2022-01](#) Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
Edition:3.0

[IEC 60079-7:2017](#) Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with 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:

[DE/TUR/ExTR20.0085/00](#)

Quality Assessment Report:

[DE/TUR/QAR19.0014/01](#)



IECEX Certificate of Conformity

Certificate No.: **IECEX TUR 20.0085X**

Page 3 of 3

Date of issue: 2023-04-15

Issue No: 0

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

These temperature probes are thermocouple or RTD (Resistance Temperature Detector) sensors. There are 10 probes versions which get the references from 215TE02/Exia-Exec/Extc to 215TE11//Exia-Exec/Extc. The enclosure materials of all the sensors are metallic except for the type 215TE06/Exia-Exec/Extc which is in Teflon or fiber glass and epoxy resin. All temperature probes are protected by intrinsic safety "ia".

The 215TE__/Exia/Exec/Extc series temperature probes are intrinsic safety devices that include a thermoelement (RTD or TC temperature probe) with a stem protected by a thermowell if necessary and, when available, by a brass connection head with threaded cover, o-ring seal (SILICONE - continuous operating temperature > 155°C) and metal (brass) cable gland with retaining rubber (SILICONE), or with an aluminum or stainless steel terminal head (*) and 3-piece coupling element and nipple, with optional thermowell.

Alternatively, IP66 cable glands with silicone seal rubber or equivalent can be used (Operating temperature $\geq 155^{\circ}\text{C}$).

Connection of the thermoelement to the external circuits can be direct via the brass, aluminum or stainless steel connection head (*), or by connection cable, incorporated within the thermoelement, with a maximum length of 30m. The ceramic base is sealed with dual-component epoxy resin with a catalyser with an IT >155°C or resin and catalyzer with an IT >250°C, whilst the thermoelement (with extractable insert if necessary) is protected by an aluminum or stainless steel head connection (*), a nipple, a 3-piece coupling element and a thermowell where required.

The insert consists of a base and an AISI 303, 304, 316 or equivalent metal stem that protects the probe.

(*) _ For EPL Ga temperature probes only connection heads in stainless steel material are used.

SPECIFIC CONDITIONS OF USE: YES as shown below:

In "Ex ia" and "Ex ec" versions:

1 - The temperature probe type 215TE06/Exia-Exec/Extc must be only settled inside an Ex protective metallic enclosure (stator of the engine for example).

2 - Each equipment shall be subjected to the routine test according to EN 60079-11: 2012 Clause 6.3.13 - Dielectric strength 1500V r.m.s. for 1 minute.

In "Ex ec" version:

3 - For the equipment with a permanently connected cable, the user 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.

Annex:

[DE-IECEX_TUR_20.0085_X_00_Attachment.pdf](#)



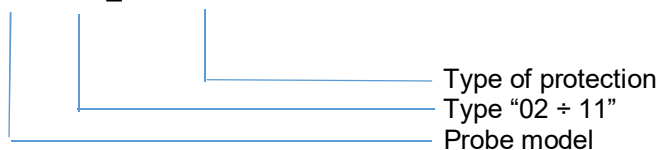
Attachment to Certificate IECEX TUR 20.0085X

Device: Temperature probes
Type: 215TE__/Exia-Exec/Extc (details refer to Technical Data section)
Manufacturer: THERMO ENGINEERING Srl
Address: Via Giuseppina 19
26030 Malagnino (CR), Italy

General product information:

These temperature probes are thermocouple or RTD (Resistance Temperature Detector) sensors. There are 13 probes versions which get the references from 215TE02/Exia-Exec/Extc to 215TE14//Exia-Exec/Extc. The enclosure materials of all the sensors are metallic except for the type 215TE06/Exia-Exec/Extc which is in Teflon or fiber glass and epoxy resin. All temperature probes are protected by intrinsic safety "ia".

The "215TE/Exia-Exec/Extc" series of devices:



The 215TE__/Exia-Exec/Extc series temperature probes are intrinsic safety devices that include a thermoelement (RTD or TC temperature probe) with a stem protected by a thermowell if necessary and, when available, by a brass connection head with threaded cover, o-ring seal (SILICONE - continuous operating temperature > 155°C) and metal (brass) cable gland with retaining rubber (SILICONE), or with an aluminum or stainless steel terminal head (*) and 3-piece coupling element and nipple, with optional thermowell.

Alternatively, IP66 cable glands with silicone seal rubber or equivalent can be used (Operating temperature $\geq 155^{\circ}\text{C}$).

Connection of the thermoelement to the external circuits can be direct via the brass, aluminum or stainless steel connection head (*), or by connection cable, incorporated within the thermoelement, with a maximum length of 30m. The ceramic base is sealed with dual-component epoxy resin with a catalyser with an IT >155°C or resin and catalyzer with an IT >250°C, whilst the thermoelement (with extractable insert if necessary) is protected by an aluminum or stainless steel head connection (*), a nipple, a 3-piece coupling element and a thermowell where required.

The insert consists of a base and an AISI 303, 304, 316 or equivalent metal stem that protects the probe.

(*) _ For EPL Ga temperature probes only connection heads in stainless steel material are used.

Technical data:

Electrical characteristics for Exi version :

Intrinsic safety parameters without transmitter (Group IIC/IIIC, Tclass T6/T85°C, Tamb. = 70°C):
 $U_i = 30\text{ V} - C_i = 5\text{ nF}$ (considering 30 m of cable).
 $I_i = 100\text{ mA} - L_i = 30\text{ }\mu\text{H}$ (considering 30 m of cable)



Attachment to Certificate
IECEX TUR 20.0085X
Revision 0

Pi = 135 mW.

When there are n.2 Ex i (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 (see. 6.3.5 of EN/IEC 60079-11), the parameters for each Exi circuit (i.e. for each probe) are (Group IIC/IIIC, class T6/T85°C, Tamb = +70°C).

Ui = 20 V – Ci = 5 nF (considering 30 m of cable)
li = 50 mA – Li = 30 µH (considering 30 m of cable).
Pi = 67 mW.

Further details as per tables below.

Intrinsic safety parameters without transmitter (Group IIC/III, class T6/T85°C, Tamb. = 70°C):

Ui = 30 V - Ci = 5 nF (considering 30 m of cable)
li = 100 mA - Li = 30 µH (considering 30 m of cable)
Pi = 135 mW

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 (see. 6.3.5 of EN/IEC 60079-11), the parameters for each Exi circuit (i.e. for each probe) are (Group IIC/III, class T6/T85°C, Tamb = +70°C).

Ui = 20 V – Ci = 5 nF (considering 30 m of cable)
li = 50 mA – Li = 30 µH (considering 30 m of cable)
Pi = 67 mW

Further details as per tables below:

Group	Ui (V)	li (mA)	Ci (nF)	Li (µH)
IIC or III	30	100	5 *	30 *
IIB or III	30	250	5 *	30 *
IIA	30	340	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	1.216
50	1.081
60	0.945
70	0.810
85	0.608
120	0.135

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



Attachment to Certificate
IECEX TUR 20.0085X
Revision 0

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 (μH)
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

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.

In this case, end user must assure (condemn) the not connected probe, this second probe (Ex ia circuit) has not and never to be used.

Moreover, end user needs to apply a procedure to forbids the connection of the second probe (i.e. cut of wires).

Electrical characteristics for ExnA and Extc versions:

For Single sensor, maximum input characteristics.

Group	Umax (V)	Imax (mA)
IIC or III	1	3
IIB or III	1	3
IIA	1	3



Attachment to Certificate
IECEX TUR 20.0085X
Revision 0

Maximum Power input (Pmax) with Class of Temperature and Ambient Temperature:

For Class of Temperature T4 (T135 °C)

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

For Class of Temperature T5 (T100 °C)

Maximum ambient temperature °C	Maximum Power Input (Pmax) 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 (Pmax) 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	Umax (V)	I _{max} (mA)
IIC or III	20	50
IIB or III	20	130
IIA	20	190

Maximum Power input (Pmax) on each sensor with Class of Temperature and Ambient Temperature:

For Class of Temperature T4 (T135 °C)

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



Attachment to Certificate
IECEX TUR 20.0085X
Revision 0

For Class of Temperature T6 (T85 °C)

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

Environmental data:

Ambient temperature: $-50^{\circ}\text{C} \leq T_{\text{amb}} \leq +70^{\circ}\text{C}$ - for the temperature class T6/T85°C
 $-50^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}$ - for the temperature class T5/T100°C
 $-50^{\circ}\text{C} \leq T_{\text{amb}} \leq +120^{\circ}\text{C}$ - for the temperature class T4/T135°C
or
(*) $-60^{\circ}\text{C} \leq T_{\text{amb}} \leq +70^{\circ}\text{C}$ - for the temperature class T6/T85°C
(*) $-60^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}$ - for the temperature class T5/T100°C
(*) $-60^{\circ}\text{C} \leq T_{\text{amb}} \leq +120^{\circ}\text{C}$ - for the temperature class T4/T135°C

(*) Only with stainless steel connection heads and using the resin EPO-TEK 301-2.

Routine tests:

1. IEC 60079-7, Edition 5.1 – cl.7.1 - Dielectric strength 500V r.m.s. for 1 minute.
2. IEC 60079-11, Edition 6.0 – cl.6.3.13 - Dielectric strength 1500V r.m.s. for 1 minute.

“Specific Conditions of Use” for Ex Equipment:

In “Ex ia” and “Ex ec” versions:

1. The temperature probe type 215TE06/Exia-Exec/Extc must be only settled inside an Ex protective metallic enclosure (stator of the engine for example).
2. Each equipment shall be subjected to the routine test according to EN 60079-11: 2012 Clause 6.3.13 - Dielectric strength 1500V r.m.s. for 1 minute.

In “Ex ec” version:

3. For the equipment with a permanently connected cable, the user 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. The battery shall be used only with a switch gear of a certified type for use in firedamp mines permitting the connection to the external circuits.