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

Certificate No.:	IECEx CES 14.0018X	Issue No.:0	Certificate history:
Status:	**Current**		
Date of Issue:	**2014-08-22**	Page 1 of 3	

Applicant: **CORTEM S.p.A.**
Via Aquileia 10
I - 34070 Villesse (GO)
Italy

Electrical Apparatus: **Terminal boxes series S.1-..., S-..., GUA-.., EAH-...**
Optional accessory:

Type of Protection: **Flameproof enclosures 'd'; Increased safety 'e'; Intrinsic Safety 'i', Dust ignition protection 't'**

Marking: **Ex d IIC T... Gb**
Ex e IIC T... Gb
Ex i. IIC T... Gb
Ex tb IIIC T...℃ Db
IP66/67
(Ex i. means Ex ia or Ex ib type of protection)

Approved for issue on behalf of the IECEx Certification Body: Mirko Balaz

Position: Head of IECEx CB

Signature:
(for printed version)

Date: 22-8-2014

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.

Certificate issued by:

CESI
Centro Elettrotecnico
Sperimentale Italiano S.p.A.
Via Rubattino 54
20134 Milano
Italy

CESI S.p.A.
Testing & Certification Division
Business Area Certification
Responsabile
Fiorenzo Bregani

IECEx Certificate of Conformity

Certificate No.: IECEx CES 14.0018X

Date of Issue: **2014-08-22** Issue No.: **0**

Manufacturer: **CORTEM S.p.A.**
Via Aquileia 10
I - 34070 Villesse (GO)
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:

IEC 60079-0 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2007-04 Edition: 6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2011 Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-31 : 2008 Edition: 1	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure 't'
IEC 60079-7 : 2006-07 Edition: 4	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

*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:
IT/CES/ExTR14.0024/00

Quality Assessment Report:

IT/CES/QAR06.0002/08

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Certificate No.: IECEx CES 14.0018X

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Schedule

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

Junction boxes series S.1-..., S-..., GUA-.., EAH-...The boxes are basically manufactured in aluminium alloy.They can also be manufactured in stainless steel AISI 303-304-316 or in cast iron GJS.

The boxes manufactured in aluminium alloy or in stainless steel can have a ambient temperature range of -40 ÷ +150 °C, while the boxes manufactured in cast iron can have a ambient temperature range of -20 ÷ +150 °C.

The standard O-Ring, placed in between the body and the cover of boxes, in order to obtain an IP hold, is made of Silicon material. The maximum temperature of the gasket shall not exceed 160 °C in service.

See annex for further description.

CONDITIONS OF CERTIFICATION: YES as shown below:

- Leads connected to the terminals shall not reduce the clearance and creepage distances of the terminal blocks with type of protection Ex-e and Ex-i. . The use of terminal block's accessories (e.g. chain bridge) can reduce the maximum rated voltage of the terminal; the instructions of the manufacturer must be followed.
- The cable entry devices and blanking plugs shall be subject of separate certification for type of protection and operating temperatures indicated on the plate. To guarantee the degree of protection IP 66 or IP 67 the threaded coupling accessory-enclosure shall be suitable sealed.
- The conditions of the installation and use of the terminal boxes included within the safety instruction, provided by Manufacturer, shall be strictly respected.

Annex: Cortem IECEx CES 14.0018X ANNEX Terminal boxes S.1-S-GUA-EAH.pdf

Prot: B4021937

IECEx Certificate of Conformity

CESI

Annex to certificate: **IECEx CES 14.0018X Issue No.:0** of 2014-08-22
Applicant: **CORTEM S.p.A., Via Aquileia 10,**
I - 34070 Villesse (GO), Italy
Electrical Apparatus: **Terminal boxes, series S.1-..., S-..., GUA-.., EAH-...**

General product information:

Terminal boxes series S.1-..., S-..., GUA-.., EAH-...are basically manufactured in aluminium alloy. They can also be manufactured in stainless steel AISI 303-304-316 or in cast iron GJS.

The boxes in aluminium alloy or in stainless steel are suitable for the ambient temperature of -40 ÷ +150 °C, while the boxes manufactured in cast iron are suitable for the ambient temperature of -20 ÷ +150 °C.

The standard O-Ring, placed in between the body and the cover of boxes, in order to obtain an IP hold, is made of Silicon material. The maximum temperature of the gasket shall not exceed 160 °C in service.

The inner and outer ground screws, the fixing screws of inner frames of boxes and the clamping screws for covers, are manufactured in AISI 304 stainless steel.

Entry into the equipment is made by threaded holes located on the enclosure body. In particular, the standardised cable entries are threaded according to NPT ANSI ASME B1.20.1, but are also foreseen the cylindrical threads and other alternative threads.

Model identification:

Each series of terminal boxes can have up to a maximum of four different dimensions with a maximum of six different diameters of threaded hubs for cable entry, disposed in a maximum of nine different combinations.

The Equipments are identified by the following code:

S.1 --- --- --- ---

- Type of enclosure (manufactured in die-casting)
- Number and position of hubs: T, C, L, X, A, W, D, M, B
- Hub diameter code: 1, 2, 3, 4, 5, 6
- Size of enclosure code: 4, 6, 7, 9
- Type of thread code: N, I, I2, C, P, NC, blank

S --- --- --- ---

- Type of enclosure (manufactured with mould-casting)
- Number and position of hubs: T, C, L, X, W, D, M, B
- Hub diameter code: 1, 2, 3, 4, 5, 6
- Size of enclosure code: 4, 6, 7, 9
- Type of thread code: N, I, I2, C, P, NC, blank

GUA --- --- --- ---

- Type of enclosure (manufactured in die-casting)
- Number and position of hubs: T, C, L, X, W, D, M, B
- Hub diameter code: 1, 2, 3, 4, 5, 6
- size of enclosure code: 6, 9
- Type of thread code: N, I, I2, C, P, NC, blank

GUFX
EAHT
EAHW- --- --- ---

- Type of enclosure (manufactured in die-casting)
- Hub diameter code: 2, 3,
- Size of enclosure code: 6
- Type of thread code: N, I, I2, C, P, NC, blank

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CESI

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Applicant: **CORTEM S.p.A., Via Aquileia 10,**
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Electrical Apparatus: **Terminal boxes, series S.1-..., S-..., GUA-.., EAH-...**

Model identification *(follows)*:

Number and position of hubs:

A:	1 cable entry	1 on the side;
B:	2 cable entries	1 on the bottom and 1 on the side;
C:	2 cable entries	2 on the opposite sides;
L:	2 cable entries	2 on the sides to 90°;
T:	3 cable entries	3 on the sides;
X:	4 cable entries	4 on the sides;
D:	3 cable entries	1 on the bottom and 2 on the opposite sides;
M:	3 cable entries	1 on the bottom and 2 on the sides to 90°;
W:	4 cable entries	1 on the bottom and 3 on the sides.

Hub diameter and size of enclosures codes:

First digit	Hub diameter (inches)
1	½"
2	¾"
3	1"
4	1 ¼"
5	1 ½"
6	2"

Second digit	Size of enclosure (Ø mm)
4	54
6	80
7	95
9	130

Identification letter	Type of thread
N	NPT ANSI ASME B1.20.1
I	ISO metric pitch 1,5 mm
I2	ISO metric pitch 2 mm
P	Pg DIN 40430
C	Gas UNI ISO 228/1
NC	NPSM ANSI ASME B1.20.1
Blank	Gk CEI EN 60079-1

Electrical characteristics:

- Ex d terminal boxes:
  - Rated cross section of terminals: 1,5 mm^2 ÷ 70 mm^2 Max.
  - Rated voltage of terminals: 750 V Max.
  - Rated current of terminals: 8 A ÷ 175 A Max.
  - Degree of protection of enclosures: IP 66 *or* IP 67
  - Ambient temperature: -40°C or -20°C ÷ +40°C or +65°C *or* +150°C
- Ex e and Ex i. terminal boxes:
  - Rated cross section of terminals: 1,5 mm^2 ÷ 25 mm^2 Max.
  - Rated voltage of terminals: up to 630 V Max.
  - Rated current of terminals: 5,5 A ÷ 65 A Max.
  - Degree of protection of enclosures: IP 66 *or* IP 67
  - Ambient temperature: -40°C or -20°C ÷ +40°C or +65°C *or* +80 °C

The ratings specified are maximum values; actual values will be subject to the electrical equipment/component used from case to case.

In the following table are reported for each boxes the ambient temperature, the temperature class and the maximum surface temperature assigned by manufacturer.

Junction boxes Ex d IIC and Ex tb IIIC		
Ambient temperature	Temperature class	Max. surface temperature
-20 °C ÷ +40 °C	T6	85 °C
-40 °C ÷ +40 °C	T6	85 °C
-20 °C ÷ +65 °C	T5	100 °C
-40 °C ÷ +65 °C	T5	100 °C
-20 °C ÷ +150 °C	T3	200 °C
-40 °C ÷ +150 °C	T3	200 °C

Junction boxes Ex e IIC, Ex i. IIC and Ex tb IIIC		
Ambient temperature	Temperature class	Max. surface temperature
-20 °C ÷ +40 °C	T6	85 °C
-40 °C ÷ +40 °C	T6	85 °C
-20 °C ÷ +65 °C	T5	100 °C
-40 °C ÷ +65 °C	T5	100 °C
-20 °C ÷ +80 °C	T4	135 °C
-40 °C ÷ +80 °C	T4	135 °C

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Annex to certificate: **IECEx CES 14.0018X Issue No.:0** of 2014-08-22
Applicant: **CORTEM S.p.A., Via Aquileia 10,**
I - 34070 Villesse (GO), Italy
Electrical Apparatus: **Terminal boxes, series S.1-..., S-..., GUA-.., EAH-...**

Terminal blocks:

The terminals installed within the enclosures with type of protection Ex e and Ex i. are subjects to a separate IECEx certification as component according to EN 60079-7 standard. The terminals normally used are manufactured by Cabur or Weidmuller, but other type or brand of terminals IECEx certified can be used.
The terminals with type of protection Ex e shall be fitted in accordance with the manufacturer's instructions and, when installed, they shall have the minimum clearance and creepage distances required by Table 1 of IEC 60079-7 Standard.
For terminal boxes with type of protection Ex i the distances between Intrinsic Safety circuits and Non-Intrinsic Safety circuits or between separate intrinsic safety circuits shall be according to IEC 60079-11 standard. Intrinsically safe circuits shall be clearly identified. Where a colour is used for this purpose, it shall be light blue for the intrinsically safe connections.

The boxes series S.1-..., S-..., GUA-..., EAH-...can contain several terminals with different rated cross section. When selecting the permitted continuous current for cross section, the maximum permitted electrical current for the terminals and the connecting cable or conductor should be taken into consideration.

In the following tables are reported, for each boxes, the section and the maximum number of terminals admissible and the maximum dissipated power inside.

Tab 5 – Junction boxes executions Ex d IIC

Junction box			Section (mm^2) and max. number of terminals admissible									Maximum dissipated power inside		
Size	Type	Inside volume (cm^3)	1,5	2,5	4	6	10	16	25	35	70	T_{amb} (°C)	Section (mm^2)	Power (W)
14, 24	S. 1	103	/	/	3	/	/	/	/	/	/	40	4	1,8
	S	126	/	/	3	/	/	/	/	/	/	65	4	0,9
												150	4	1,0
16, 26, 36	S. 1	286	8	8	6	/	/	/	/	/	/	40	4	2,8
	S	263	8	8	6	/	/	/	/	/	/	65	4	1,9
	GUA-EAH-GUFX	286	8	8	6	/	/	/	/	/	/	150	4	2,2
27, 37, 47	S. 1	447	10	10	8	6	5	/	/	/	/	40	4	4,1
	S	447	10	10	8	6	5	/	/	/	/	65	4	2,8
												150	4	3,2
19, 29, 39, 49, 59, 69	S. 1	1029	16	16	12	9	7	6	4	4	3	40	70	17,4
	S	1195	16	16	12	10	8	7	5	5	4	65	70	13,5
	GUA-EAH-GUFX	1055	16	16	12	10	8	7	5	5	4	150	4	5,6
Max. current (A)		T_{amb} at 40 °C	10	12,5	20	24	30	48	75	105	175	/	/	/
		T_{amb} at 65 °C	8	10,5	16	20	24	40	65	88	150	/	/	/
		T_{amb} at 150 °C	8	10,5	16	20	24	40	65	88	150	/	/	/
Density max of current (A/mm^2) for terminals and cables wiring)			6,6	5	5	4	3	3	3	3	2,5	/	/	/

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Annex to certificate: **IECEx CES 14.0018X Issue No.:0** of 2014-08-22
Applicant: **CORTEM S.p.A., Via Aquileia 10,**
I - 34070 Villesse (GO), Italy
Electrical Apparatus: **Terminal boxes, series S.1-..., S-..., GUA-.., EAH-...**

Terminal blocks *(follows)*:

Tab 6 – Junction boxes executions Ex e IIC and Ex i. IIC

Junction box			Section (mm^2) and max. number of terminals admissible							Maximum dissipated power inside		
Size	Type	Inside volume (cm^3)	1,5	2,5	4	6	10	16	25	T_{amb} (°C)	Section (mm^2)	Power (W)
14, 24	S. 1	103	/	/	3	/	/	/	/	40	4	1,0
	S	126	/	/	3	/	/	/	/	65	4	0,5
										80	4	0,5
16, 26, 36	S. 1	286	8	8	6	/	/	/	/	40	4	2,0
	S	263	8	8	6	/	/	/	/	65	4	1,1
	GUA-EAH-GUFX	286	8	8	6	/	/	/	/	80	4	1,1
27, 37, 47	S. 1	447	10	10	8	6	5	/	/	40	4	2,9
	S	447	10	10	8	6	5	/	/	65	4	1,6
										80	4	1,6
19, 29, 39, 49, 59, 69	S. 1	1029	16	16	16	9	7	6	4	40	70	6,6
	S	1195	16	16	16	10	8	7	5	65	70	3,6
	GUA-EAH-GUFX	1055	16	16	16	10	8	7	5	80	4	3,7
Max. current (A)		T_{amb} at 40 °C	8	10,5	17	20	24	40	65	/	/	/
		T_{amb} at 65 °C	5,5	7,5	12	14	17	29	47	/	/	/
		T_{amb} at 80 °C	5,5	7,5	12	14	17	29	47	/	/	/
Density max of current (A/mm^2) for terminals and cables wiring)			6,6	5	5	4	3	3	3	/	/	/

Note: The maximum number of suitable terminals can vary in function of the minimum surface distances and in the air, required by the standards.

Installation conditions:

The operating temperature range of the terminals used shall be taken into consideration.

Tab. 1 Junction boxes execution Ex d IIC

Ambient temperature	Terminals operating temperature	Temperature class
-20 °C ÷ +40 °C	≥80 °C	T6
-40 °C ÷ +40 °C	≥80 °C	T6
-20 °C ÷ +65 °C	≥100 °C	T5
-40 °C ÷ +65 °C	≥100 °C	T5
-20 °C ÷ +150 °C	≥180 °C	T3
-40 °C ÷ +150 °C	≥180 °C	T3

Tab. 2 Junction boxes execution Ex e IIC or Ex i IIC (Terminals ATEX certified)

Ambient temperature	Terminals operating temperature	Temperature class
-20 °C ÷ +40 °C	≥80 °C	T6
-40 °C ÷ +40 °C	≥80 °C	T6
-20 °C ÷ +65 °C	≥100 °C	T5
-40 °C ÷ +65 °C	≥100 °C	T5
-20 °C ÷ +80 °C	≥130 °C	T4
-40 °C ÷ +80 °C	≥130 °C	T4

The characteristics of the terminals and of the other components (cables-cable glands – adaptors-etc.) must have the same operating temperature of terminals.

The maximum operating temperature for cables to use is indicated on the marking plate of the junction box.