



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

Ex COMPONENT CERTIFICATE

Certificate No.:	IECEX CES 10.0003U	Issue No: 2	Certificate history:
Status:	Current	Page 1 of 4	Issue No. 2 (2018-07-25)
Date of Issue:	2018-07-25		Issue No. 1 (2012-12-03)
			Issue No. 0 (2010-06-11)
Applicant:	CORTEM S.p.A. Via Aquileia 10 I - 34070 Villesse (GO) Italy		
Ex Component:	Conductor Sealing Bushings NPS**, TP**, NCS**, CP** and LPS** type		

This component is NOT intended to be used alone and requires additional consideration when incorporated into other equipment or systems for use in explosive atmospheres (refer to IEC 60079-0).

Type of Protection: **Flameproof enclosures 'd'; Dust Ignition protection 't'**

Marking:
Ex db IIC Gb
Ex tb IIC Db, IP66/67 (for NPS type only)**

Approved for issue on behalf of the IECEx
 Certification Body:

Mirko Balaz

Position:

Head of IECEx CB

Signature:
 (for printed version)

Date:

25-7-2018

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
 Il Responsabile
 (Roberto Piccin)



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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 Component 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 Ex Component 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 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

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 Ex Component listed has successfully met the examination and test requirements as recorded in

Test Report:

IT/CES/ExTR10.0007/00

IT/CES/ExTR10.0007/01

IT/CES/ExTR10.0007/02

Quality Assessment Report:

IT/CES/QAR06.0002/12



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Schedule

Ex Component(s) covered by this certificate is described below:

The conductor bushings, type **NPS** are the sealing bushings with two threaded joints (male-male same sizes sealing nipple) and serves as electrical connection between flameproof enclosures or between a flameproof enclosures and an enclosures with another type of protection.

The sealing bushings type **CP..**, **TP..** and **LPS..** are bushings with a threaded or cylindrical joint and can be used for the passage of cabling between two separate inner enclosure compartments with different types of protection.

The **NPS..** types are bushings with two threaded joints (male-male same sizes nipple) while types **NCS..** are bushings with one threaded joint and one cylindrical joint. For sealing bushings type **TP..**, **NPS..** and **NCS..** the standard threads are cylindrical ISO Metric 965/1 and ISO 965/3 from M10x1.5 up to M42X1.5 or tapered NPT ANSI ASME B1.20.1 from 1/8" up to 1"1/2. Alternatively other threads can be supplied.

The standard service temperature range for fittings is from -50°C to +110 °C wit the exception of the bushings made of carbon steel A 105 (-20°C to +110 °C).

The Conductor Sealing Bushings rated characteristics are further described in the Annexe of this certificate.

SCHEDULE OF LIMITATIONS:

- The connection cables of the sealing bushings should be connected inside enclosures conforming to one of the types of protection foreseen by the Standard IEC 60079-0, section 1.
- It is the final assemblers/users responsibility to ensure the threaded joint (or the cylindrical joint) between the bushing and the associated enclosures meet all the requirements of the applicable standards for the assembly.
- If the reference pressure for the apparatus should exceed 20 bar, the sealing bushings shall be included into the type test according to IEC 60079-1, section 15.1.3 (overpressure test) as required by the classification of the electrical apparatus in question (grouping IIA, IIB or IIC).
- The cylindrical joint of the sealing bushings shall be included into the type test according to IEC 60079-1, section 15, according to grouping of the respective electrical apparatus (grouping IIA, IIB or IIC).
- The sealing bushings shall be fixed to the electrical apparatus in such a way that rotation and accidental loosening will be prevented.
- The service temperature range is:
 - from -20 up to +110 °C for sealing bushings made of carbon steel ASTM A 105;
 - from -50 up to +110 °C sealing bushings made of stainless steel, brass and low temperature steel ASTM A 203.
- The maximum admitted current for each conductor/terminal must be established taken into account the heating caused by the current flowing through it, the heating of the apparatus and the maximum permissible ambient temperature.
- If the sealing bushings **NPS**** are intended for use with dust protection "Ex tb" the holes into which cable bushings are mounted shall be suitably sealed to maintain the ingress protection rating of the enclosure. To this scope the correct positioning of the gaskets (for cylindrical threads) or the application of sealant on the threads (for tapered threads), shall be done as indicated in the manufacturer instruction.



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DETAILS OF CERTIFICATE CHANGES (for Issues 1 and above):

Variation 2

Variation 2.1.

The Sealing bushings NPS**, TP**, NCS**, CP** and LPS** types originally assessed in compliance to IEC 60079-1: 2007 and IEC 60079-31: 2008 have been re-assessed on the basis of IEC 60079-1:2014 and IEC 60079-31:2013 Standards.

Variation 2.2.

To the series of sealing bushings NPS**, TP**, NCS**, CP** and LPS** the new cable sizes and number of cores have been added.

Annex:

CORTEM IECEx CES 10.0003U Issue 2 ANNEX - bushings.pdf



IECEX Certificate of Conformity

CESI

Prot: B8015703

Annex to certificate:
Applicant:

IECEX CES 10.0003U Issue No.:2 of 2018-07-25
CORTEM SPA.

Via Aquileia, 10 - 34070 Villesse (Gorizia - Italia)

Component:

Conductor Sealing Bushings NPS**, TP**, NCS**, CP** and LPS** type

Description of the components:

The sealing bushings type CP**, TP** and LPS** are bushings with a threaded or cylindrical joint and can be used for the passage of cabling between two separate inner enclosure compartments with different types of protection. The NPS** types are bushings for the passage of cabling between two flameproof enclosures or between a flameproof enclosure and an enclosure with another type of protection.

The NPS** types are bushings with two threaded joints (male-male same sizes nipple) while types NCS** are bushings with one threaded joint and one cylindrical joint. For sealing bushings type TP**, NPS** and NCS** the standard threads are cylindrical ISO Metric 965/1 and ISO 965/3 from M10x1.5 up to M42x1.5 or tapered NPT ANSI ASME B1.20.1 from 1/8" up to 1 1/2. Alternatively other threads can be supplied.

To guarantee the IP 66/67 degree of protection on the NPS** bushings, a sealant agent is put on at least two complete threads engaged of the threaded coupling.

The above mentioned bushings can be made of stainless steel, carbon steel (A 105), low temp. steel (A 203) and brass. The bushings containing cables which are sealed by means of bi-component resin set into the bushing and around each conductor.

All sealing bushings types are suitable for the service temperature range from -50°C up to +110°C with the exception of the bushings made of carbon steel A 105 (-20°C up to +110 °C).

Types of Sealing bushings:

The types of sealing bushing are the following:

- TP - Sealed bushing with cylindrical threaded joint (ISO Metric);
- CP - Sealed bushing with cylindrical joint;
- NPS - Sealed bushings with two threaded joints (cylindrical or tapered);
- NCS - Sealed bushing with one cylindrical threaded joint (ISO Metric) and one cylindrical joint;
- LPS - Sealed bushing with cylindrical joint and fixed by means of threaded lock nut.

Electrical characteristics

Types TP**, CP**, NPS**, NCS** and LPS..:

- a. Cables type BETA THERM 155 or RADOX 155 (COT from -55 °C up to +155 °C for each other);
 - Conductor size: 0.5 ÷ 70 mm²;
 - Rated voltage: 750 V for sizes ≤ 0.75 mm² and 1000 V for sizes ≥ 1 mm²;
 - Number of conductors: 1 to 48 for sizes 0.5 – 0.75 mm²;
 - 1 to 21 for size 1 mm²;
 - 1 to 36 for size 1.5 mm²;
 - 1 to 24 for size 2.5 mm²;
 - 1 to 12 for size 4 mm²;
 - 1 to 6 for sizes 6 – 10 – 16 mm²;
 - 1 to 3 for sizes 25 – 35 mm²;
 - 1 for sizes 50 – 70 mm².
- b. Compensated cables type K (S1TA and S2PA);
 - Conductor size: 2 x 0.22 ÷ 2 x 1.5 mm²;
 - Test voltage: 100 V;
 - Number of conductors: 1 ÷ 9 for sizes from 2 x 0.22 to 2 x 1.5 mm².

The maximum current for each conductor shall take into account the heating caused by the current flowing through it, the heating of the enclosure and the maximum permissible ambient temperature.



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Prot: B8015703

Annex to certificate:
Applicant:

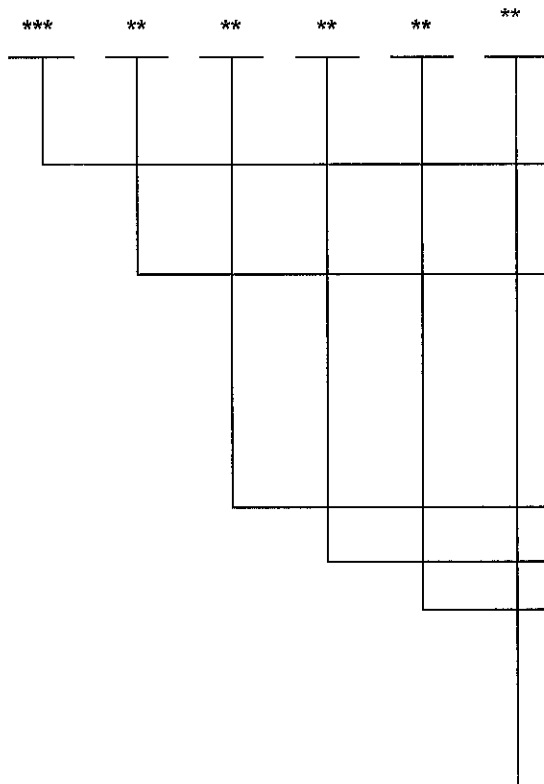
IECEX CES 10.0003U Issue No.:2 of 2018-07-25
CORTEM SPA.

Via Aquileia, 10 - 34070 Villesse (Gorizia - Italia)

Component:

Conductor Sealing Bushings NPS, TP**, NCS**, CP** and LPS** type**

Identification of Sealing bushings:



Type of bushings: **CP, TP, NPS, NCS** or **LPS**

Size or thread:

10, 12, 16, 20, 24, 25, 33, 36, 38, 42

03, 02, 01, 1, 2, 3, 4, 5

Type of thread (for NPS only):

N: NPT ANSI ASME B1.20.1

I: ISO Metric pitch 1.5

NC: NPSM ANSI ASME B1.20.1

P: PG DIN 40430

C: GAS ISO 228/1

Blank: ISO 7/1

Number of cores.

Size of cores (sqmm).

Material of bushings:

G: Carbon steel for temperature of -20°C

GL: Galvanized steel for low temp. of -50°C

B: Brass

S: Stainless steel

Code marked on sealed bushing			Type of thread of sealed bushing
NPS10	TP10	NCS10	M10x1,5
NPS12	TP12	NCS12	M12x1,5
NPS16	TP16	NCS16	M16x1,5
NPS20	TP20	NCS20	M20x1,5
NPS24	TP24	NCS24	M24x1,5
NPS25	TP25	NCS25	M25x1,5
NPS32	TP32	NCS32	M32x1,5
NPS33	TP33	NCS33	M33x1,5
NPS36	TP36	NCS36	M36x1,5
NPS38	TP38	NCS38	M38x1,5
NPS42	TP42	NCS42	M42x1,5



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Component:

Conductor Sealing Bushings NPS**, TP**, NCS**, CP** and LPS** type

Code marked on sealed bushing	Type of thread of sealed bushing
NPS03N	1/8" NPT
NPS02N	1/4" NPT
NPS01N	3/8" NPT
NPS1N	1/2" NPT
NPS2N	3/4" NPT
NPS3N	1" NPT
NPS4N	1"1/4 NPT
NPS5N	1"1/2 NPT

Code marked on sealed bushing		Cylindrical size of sealed bushing
CP10	LPS10	Ø 10
CP12	LPS12	Ø 12
CP16	LPS16	Ø 16
CP24	LPS24	Ø 24
CP25	LPS25	Ø 25
CP29	LPS29	Ø 29
CP33	LPS33	Ø 33
CP36	LPS36	Ø 36
CP38	LPS38	Ø 38
CP42	LPS42	Ø 42

Note: the bushings with threads M42x1,5 (code 42), 1"1/4 NPT (code 4) and 1"1/2 NPT (code 5) have the same sizes, all internal dimensions and sealing dimensions are identical, same maximum number and size of conductors.