



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 11.0021

Issue No: 4

Certificate history:

Status: Current

Issue No. 4 (2018-06-29)

Date of Issue: 2018-06-29

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Issue No. 3 (2015-07-30)

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

Issue No. 2 (2014-11-25)

Issue No. 1 (2013-10-10)

Issue No. 0 (2011-09-30)

Equipment: Lighting fixtures, series FLF- .. and FLFE- ..

Optional accessory:

Type of Protection: Flameproof enclosures 'd'; Increased safety 'e'; Optical radiation 'op Is'; Dust Ignition protection 't'

Marking:

Ex db IIC T6 Gb or Ex db eb IIC T6 Gb

Ex db op Is IIC T6 Gb or Ex db eb op Is IIC T6 Gb

Ex tb IIIC T71°C...T80°C Db or Ex tb op Is IIIC T71°C...T80°C Db

Approved for issue on behalf of the IECEx

Mirko Balaz

Certification Body:

Position:

Head of IECEx CB

Signature:

(for printed version)

Date:

29-6-2018

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

CESI S.p.A.

Testing & Certification Division
Business Area Certification

Il Responsabile

(Roberto Piccin)

PAD B8014194 (2526087) - USO AZIENDALE



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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 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 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 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-28 : 2015 Edition:2	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7 : 2015 Edition:5.0	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/ExTR11.0024/00	IT/CES/ExTR11.0024/01	IT/CES/ExTR11.0024/02
IT/CES/ExTR11.0024/03	IT/CES/ExTR11.0024/04	

Quality Assessment Report:

IT/CES/QAR06.0002/12



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The Lighting fixtures series FLF... FLFE... are suitable for fluorescent tubes T8 G13, compact tubes 4 pins 2G11 or for LED tubes T8 G13 and for LED strips.

The luminaries' series FLF... consists of the one flameproof "d" enclosure containing the source of light, lamp holder, ballast, other electrical apparatus, and the terminals.

The luminaries' series FLFE... consists of the two chambers: one flameproof "d" enclosure containing the source of light, lamp holder, ballast, other electrical apparatus, and second enclosure (terminal compartment) in the type of protection increased safety "e".

The two chambers are connected through special multi-core bushing. The equipment are assembled by means of threaded joints. The lighting fixture is composed with a protection borosilicate glass tube sealed on two aluminium end fittings using a silicon resin.

See annex for further description.

SPECIFIC CONDITIONS OF USE: NO



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

Variation 4

Variation 4.1

- New model of lighting fixture for normal and/or emergency operation with LED modules strips.

Variation 4.2

- New marking "op is" for lighting fixtures with LED tube and LED strips.

Variation 4.3

- Use of the heater mat on battery group for ambient temperature -20°C $+40^{\circ}\text{C}$.

Variation 4.4

- The lighting fixtures FLF.. and FLFE.., originally assessed in compliance with IEC 60079-7 Ed. 4th 2006, has been reassessed on the basis of the new standard IEC 60079-7 Ed. 5th: 2015 and assessed in compliance with the IEC 60079-28 Ed. 2th: 2015.

Variation 4.5

- Upgrading of the name-plate

Annex:

Cortem IECEx CES 11.0021 ANNEX- Issue 4-Luminaries FLF_FLFE r1.pdf



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CESI

Prot: B8014194

Annex to certificate:

IECEX CES 11.0021 Issue No.:4 of 2018-06-29

Applicant:

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

Electrical Apparatus:

Lighting fixtures, series FLF- .. and FLFE- ..

Description of the equipment:

The Lighting fixtures series FLF... FLFE... are suitable for fluorescent tubes T8 G13, compact tubes 4 pins 2G11 or for LED tubes T8 G13 and for LED strips.

The luminaries' series FLF... consists of the one flameproof "d" enclosure containing the source of light, lamp holder, ballast, other electrical apparatus, and the terminals.

The luminaries' series FLFE... consists of the two chambers: one flameproof "d" enclosure containing the source of light, lamp holder, ballast, other electrical apparatus, and second enclosure (terminal compartment) in the type of protection increased safety "e". The two chambers are connected through special multi-core bushing.

The equipment are assembled by means of threaded joints. The lighting fixture is composed with a protection borosilicate glass tube sealed on two aluminium end fittings using a silicon resin.

Lighting fixtures are equipped with the following:

- internal/external earth screws
- metallic reflector
- metallic stay bolt for assembly fixture

On request on lighting fixture can be externally added accessories like reflector and guard without compromise Ex characteristics

There are 3 sizes of lighting fixture where the length of glass tube changes:

Short size for 18W fluorescent tube, LED tube up to 11W or 36W compact lamp 4pins.

Middle size for 36W fluorescent tube or LED tube up to 23W.

Long size for 58W fluorescent tube or LED tube up to 31W.

The model with LED modules strips have the same mechanical characteristics. There are not lamp holders on the internal mounting plate, the LED modules strips are installed directly on the mounting plate. On the rear of mounting plate are installed electronic drivers, electronic inverter and battery pack. LED strips are composed by single modules with maximum wattage 15W wired together.

On the short size of lighting fixture can be installed one or two LED strips, on the code this size is named ...01L. On the middle size of lighting fixture can be installed two LED strips on one row, or four LED strips on two rows, on the code this size is named ...02L. On the long size of lighting fixture can be installed three LED strips on one row, or six LED strips on two rows, on the code this size is named ...03L.

The lighting fixtures with fluorescent tubes are suitable for normal and emergency working on all the three sizes. The lighting fixtures with LED tubes are suitable for normal working on all the three sizes; the emergency version is produces only on the short size (LED tubes up to 11W) and on the middle size size (LED tubes up to 23W). The long size (LED tubes up to 31W) is suitable only for normal working. The lighting fixtures with LED modules strips are suitable for normal and emergency working on all the three sizes.

On lighting fixtures for ambient temperature range -20°C +40°C can be installed on request a Silicon Heater Mat on the battery group to guarantee to maintain an temperature upper than the -20°C and to preserve the characteristics of cells in case of low temperatures during normal operation and during charge. For battery group 4Ah can be used heater mat with power rating 5W and for battery group 7Ah can be used an heater mat with power rating 7,5W. Each mats have supply voltage 12Vdc and resist at peak temperature of +300°C.

Using the heater, at external minimum ambient temperature of -20°C, the temperature on the surface of the battery group does not go below to -5°C; at external maximum ambient temperature of +40°C, the temperature on the surface of battery group not exceeds to +54°C, so the cells limit temperature of +70°C is respected. A thermostat can be added to switch off the heater mat when the internal temperature on the lighting fixture rises to +20/+25°C.



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CORTEM S.p.A.,
Via Aquileia 10, I - 34070 Villesse (GO), Italy
Lighting fixtures, series FLF- .. and FLFE- ..

Electrical Apparatus:

Electrical characteristics:

Nominal wattage: 18W, 36W, 58W (fluorescent tubes)
11W, 23W, 31W (max wattage for LED tubes)
36W (4 pin compact fluorescent lamps)
15W, 30W, 45W, 60W, 90W (maximum for LED module strips)

Number of lamp tubes: 1 or 2

Number of strips: 1 on one row (FLF-101L... FLFE-101L...)
2 on two rows (FLF-201L... FLFE-201L...)
2 on one row (FLF-102L... FLFE-102L...)
4 on two rows (FLF-202L... FLFE-202L...)
2 on one row (FLF-103L... FLFE-103L...)
4 on two rows (FLF-203L... FLFE-203L...)

Nominal voltage: 230Vac/dc (220÷240V)
110÷230Vac/dc (110+240V)
277Vac/dc (200+300V)
24Vdc

Nominal voltage for LED tubes: 220+240Vac or 100+240Vac/dc

Nominal voltage for LED strips: 230Vac/dc (220+240V)
110+240Vac/dc
110+277Vac/dc

Frequency: 50/60Hz

NiCd battery voltage: 6V

NiCd battery capacity: 4Ah, 7Ah

Voltage range: 110+230V 100+264Vac, 110÷254Vdc
230V 198+264Vac, 198÷254Vdc
277V 200+300Vac, 200+300Vdc
24V 22+26Vdc
100+240V 90+264Vac; 100+121Vdc
110+277V 99+305Vac; 99+305Vdc

Degree of protection: IP 66 (IEC 60529)

Ambient temperature: From -20°C to +50°C (version with battery pack inside),
From -20°C to +55°C.

Lamp type and Temp. class /Max surface temp. are indicated in **table 1**

Installation condition

- The condition of the installation of the lighting fixtures is included within the safety instructions.
- The accessories used for cable entries and for closing unused openings shall be certified according to IEC 60079-0, IEC 60079-1, IEC 60079-31 standards for "Ex db" version and according to IEC 60079-0, IEC 60079-7, IEC 60079-31 for "Ex de eb" version. A minimum degree of protection IP66 shall be guaranteed according to IEC 60529 standard.
- If cylindrical threads are used, the coupling between the cable entry and the enclosure shall be provided with block to prevent loosening.

Warning label

"Do not open when energized. Wait 10 minutes before opening"

For lighting with emergency unit only:

"Do not open when an explosive gas atmosphere may be present"



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Lighting fixtures, series FLF- .. and FLFE- ..

Electrical Apparatus:

Table 1 (List of types, Temperature Class and Max. Surface Temperature)

Model		Service	Tamb +50°C Temp. class / Max surface temp.	Tamb +55°C Temp. class / Max surface temp.
Ex d version	Ex de version			
FLF-...18... FLF-...36... FLF-...58...	FLFE-...18... FLFE-...36... FLFE-...58...	Normal (Fluorescent)	T6/T75°C	T6/T80°C
FLF-...18E... FLF-...36E... FLF-...58E...	FLFE-...18E... FLFE-...36E... FLFE-...58E...	Emergency, Normal+ Emergency (Fluorescent)	T6/T75°C	n.a.
n.a.	FLFE-...18E...E... FLFE-...36E...E...	Emergency, Normal+ Emergency (Fluorescent)	n.a.	T6/T80°C (*)
FLF-...11L FLF-...22L FLF-...31L	FLFE-...11L FLFE-...22L FLFE-...31L	Normal (LED)	T6/T71°C	T6/T71°C
FLF-...11LE... FLF-...22LE...	FLFE-...11LE... FLFE-...22LE...	Emergency, Normal+ Emergency (LED)	T6/T75°C	n.a.
n.a.	FLFE-...11LE...E... FLFE-...22LE...E...	Emergency, Normal+ Emergency (LED)	n.a.	T6/T80°C (*)
FLF-...36C	FLFE-...36C	Normal (Fluorescent compact)	T6/T77°C	T6/T77°C
FLF-...01L FLF-...02L FLF-...03L	FLFE-...01L FLFE-...02L FLFE-...03L	Normal (LED module strips)	T6/T71°C	T6/T71°C
FLF-...01LE... FLF-...02LE... FLF-...03LE...	FLFE-...01LE... FLFE-...02LE... FLFE-...03LE...	Emergency, Normal+ Emergency (LED module strips)	T6/T75°C	n.a.
n.a.	FLFE-...01LE...E... FLFE-...02LE...E...	Emergency, Normal+ Emergency (LED module strips)	n.a.	T6/T80°C (*)

Note (*)

Lighting fixture for fluorescent tubes 18W or 36W with batteries installed on separate box. The battery pack (CORTEM type G-0309, Ex e IIC IECEX CES 13.0006U) shall be installed on separate junction box made in aluminium code SA141410 already certified IECEX CES 13.0001, connected to lighting fixture by a plug PLG2I certified IECEX CES 10.0001X and gaskets to keep the degree of protection as per drawing A3-5809.

An suffix "E" shall be added on the code to identify this configuration for examples:

- FLFE-236EF4E for No.2 fluorescent tubes 36W normal+emergency service, external battery group 4Ah;

- FLFE-222EF7E for No.2 LED tubes 23W normal+emergency service, external battery group 7Ah.

For max ambient temperature +50°C and +55°C, all the electrical devices (ballast in particular) shall be with adequate electrical characteristics refer to the ambient temperature.

The temperature of the ambient in which the battery is installed shall not be higher than +70°C.