



by UL Solutions

SPANISH REQUIREMENTS FOR CONVERTERS

WWW.CERECERTIFICATION.COM

CERE, by UL Solutions is a Testing, Simulation and Certification body that was originally set up as a Certification Entity in 2015.

CERE, by UL Solutions was created in its beginnings as a Certification Entity for Renewable Energies, with the purpose of being the access key to the different countries where certification of components, full installations certificates, modeling and software validation of components and facilities was required.

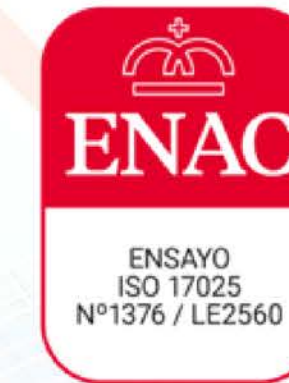
Currently **CERE**, by UL Solutions has expanded its capabilities and is dedicated not only to Renewable Energies, but also to Electric Vehicle chargers, Industrial Machinery, Medical Devices and Electrical and Electronic Products.

Accreditations

We have accreditations that verify our technical competences as a Certification Body and Testing Laboratory. This fact ensures a deep knowledge of the international requirements for components and installations.

CERE, by UL Solutions is accredited by ENAC and a2la (IAF/ILAC members) as a Certification Body according to ISO 17065; and as an Accredited Testing Laboratory according to ISO 17025. We also belong to the IEC Scheme being CBTL Testing Laboratory and NCB Certification Entity.

In addition, we can provide solutions to countries such as North America, Israel, Colombia, Korea, Australia, etc.



Our team

Our team has a long-accumulated experience in testing, simulation and certification for all its business areas, including an in-depth knowledge of grid integration standards, design, safety, EMC and grid quality.

All this knowledge is applicable in renewable energy generators and controllers, electric vehicle chargers, photovoltaic trackers, household appliances, industry, industrial machinery, electrical and electronic products and medical devices, among others.



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What's CERE Safety Converters?

CERE, by UL Solutions Renewables is a department created to cover the demand of services for renewable energies components inside of **CERE** (Certification Entity for Renewable Energies)

CERE, by UL Solutions Renewables and particularly the solution for converters for the Spanish market was created to provide support and trust at any stage of certification and testing for grid connection requirements and the Client to be able to provide a self declaration CE Marking.

Our services include Testing and Certification according different standards.

This process includes testing, certification and verification of converters and their components.

The electrical laboratory has developed a section with expert technicians in this field. We have carried out tests for Safety, EMC, grid quality and Grid connection market.

Applicable Standards

Depending on the applicability of the converter, there will be different standards to fulfill for getting the products into the different installations.



SAFETY STANDARDS FOR CONVERTERS AND SAFETY REQUIREMENTS FOR CE MARKING SELF DECLARATION:

IEC 62477-1:2012+AMD1:2016 Safety requirements for power electronic converter systems and equipment - Part 1: General.

Standalone and / or Grid connected converters

IEC 62109-1:2010 Safety of power converters for use in photovoltaic power systems - Part 1: General requirements

Standalone and / or Grid connected converters

IEC 62109-2:2011 Safety of power converters for use in photovoltaic power systems - Part 2: Particular requirements for inverters

Standalone and / or Grid connected converters

IEC 62909-1:2017 Bi-directional grid connected power converters - Part 1: General requirements.

EMC STANDARDS FOR CONVERTERS AND EMC REQUIREMENTS FOR CE MARKING SELF DECLARATION:

IEC 61000-6-1:2016 Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments.

IEC 61000-6-2:2016 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments.

IEC 61000-6-3:2016 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in residential environments.

IEC 61000-6-4:2018 Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments.

EN 55011:2011+A1:2011 Equipos industriales, científicos y médicos. Características de las perturbaciones radioeléctricas. Límites y métodos de medición.

CISPR-11:2015+AMD1:2016+AMD2:2019 Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement.

GRID QUALITY STANDARDS FOR CONVERTERS:

IEC 61000-3-11:2017 Electromagnetic compatibility (EMC) - Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems - Equipment with rated current ≤ 75 A and subject to conditional connection

IEC 61000-3-3:2013+AMD1:2017 Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection

IEC 61000-3-12:2011 Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤ 75 A per phase

IEC 61000-3-2:2018+AMD1:2020 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

IEC 61000-3-4:1998 Electromagnetic compatibility (EMC) - Part 3-4: Limits - Limitation of emission of harmonic currents in low-voltage power supply systems for equipment with rated current greater than 16 A

ZERO-INJECTION CONNECTION REQUIREMENTS:

UNE 217001:2020 Ensayos para sistemas que eviten el vertido de energía a la red de distribución

Tests for systems intended to avoid the energy transmission to the distribution network.

Real Decreto 244/2019, de 5 de abril, por el que se regulan las condiciones administrativas, técnicas y económicas del autoconsumo de energía eléctrica
RD by which administrative, technical and economical conditions are regulated for the self consumption

ITC BT 40 Instalaciones generadoras de Baja Tensión (Low Voltage intalation for Generation)

Requirement for any system connected to any grid with aZero-Injection system or acting as a self consumption installation

DISTRIBUTION GRID CONNECTION REQUIREMENTS:

UNE 217002:2020 Inversores para conexión a la red de distribución. Ensayos de los requisitos de inyección de corriente continua a la red, generación de sobretensiones y sistema de detección de funcionamiento en isla

Grid connected inverters. Testing of requirements for DC grid injection, overvoltage generation and island operation detection system

-UNE 206007-1:2013 IN requisitos de conexión a la red eléctrica. parte 1: inversores para conexión a la red de distribución

Grid connection requirements to the electrical grid. Part 1: Inverters connected to the distribution network

ITC BT 40 Instalaciones generadoras de Baja Tensión (Low Voltage intalation for Generation)

Requirement for any equipment connected to a grid managed by any of the Distribution System Operators (DSO) in Spain

GRID CONNECTION REQUIREMENTS (DISTRIBUTION & TRANSMISSION SYSTEMS):

NTS631V2.1 SEPE: Norma Técnica de Supervisión de la conformidad de los módulos de generación de electricidad según el Reglamento UE 2016/631: NTS-631 v2: Revisión 2.1; Versión del 9 de Julio de 2021, que actualiza y modifica la versión 2 publicada el 3 de noviembre del 2020, con la Aprobación de la Orden TED/749/2020 y del Real Decreto 647/2020, y que sustituye las versiones anteriores “Revisión 1.0 del 18 de Julio de 2019” y “Corrección de errores y aclaraciones de la versión 1.0. 21/10/2019”; Sistema Eléctrico Peninsular (SEPE)

Supervision technical standard according electricity generation modules as indicated in the European regulation UE 2016/631: NTS-631 v2: review 2.1; Version published on July 9th, 2021, through the approval of the Order TED/749/2020 and the decree RD647/2020, which substitute and replace the previous versions “Review 1.0 from July 18th, 2019” and “Typo corrections and clarifications of version 1.0 published on October 21st, 2019”, and applicable on the continental area of Spain (SEPE)

NTS631V1.1 SENP: Norma Técnica de Supervisión de la conformidad de los módulos de generación de electricidad según el Reglamento UE 2016/631: NTS-631 v1: Revisión 1.1; Versión del 9 de Julio de 2021, que actualiza y modifica la versión publicada el 3 de noviembre del 2020, con la Aprobación de la Orden TED/749/2020 y del Real Decreto 647/2020; Sistema Eléctrico No Peninsular (SENP)

Supervision technical standard according electricity generation modules as indicated in the European regulation UE 2016/631: NTS-631 v1 review 1.1; Version published on July 9th, 2021, through the approval of the Order TED/749/2020 and the decree RD647/2020, applicable on the non-continental area of Spain (SENP)

Laboratory Capabilities



EMC

- ✓ Full Anechoic Chamber of 3 meters and up to 6GHz both in emission and radiated immunity.
- ✓ Complete test capacity of IEC 61000 in both radiated and conducted.



Test Benches

- ✓ Test bench up to 500kVA for converters
- ✓ 3 test benches up to 166kVA with parallel connection capacity.
- ✓ DC voltage range up to 1500V and AC voltage range up to 800V and 400Hz
- ✓ Passive loads up to 100kVA and electronic load up to 500kVA for island testing.



Environmental and Climate Laboratory

**TEMPERATURE RANGE FROM -40°C TO 85°C WITH
85%RH OR 125°C WITHOUT HUMIDITY REFERENCE.**

- ✓ Low temperature chamber
- ✓ High temperature chamber
- ✓ Temperature chamber
- ✓ Dycometal temperature chamber

- ✓ Binder temperature chamber
- ✓ IP and Nema Camera
- ✓ Vibration table
- ✓ Saline atmospheres chamber

Disclaimer

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