

PV PANELS & MODULES IEC/UL 61730 COMPLIANCE

Global testing and certification solutions

IEC 61730 is a global standard for photovoltaic (PV) module safety qualification.

As of December 4, 2019, IEC 61730 and UL 61730 become fully harmonized and manufacturers must transition to IEC/UL 61730 to continue to place products on the US market



IEC/UL 61730 Development Overview

The latest edition of IEC 61730 was published in 2016 in response to industry advancement in solar technology and the continual pressure to source lower-cost photovoltaic (PV) system components. Specific revisions in 2016 include construction and testing requirements for evaluating spacings and materials due to an increased system voltage of 1500 VDC. The scope of IEC 61730 is relevant to PV module manufacturers, evaluators, developers, and owners of PV systems.

IEC 61730 is focused on photovoltaic (PV) module safety qualification in two parts: IEC 61730-1 – Requirements for construction, and IEC 61730-2 – Requirements for testing.

At the end of 2017, the US adopted the two-part IEC safety standard and published UL 61730-1 and UL 61730-2 that included all construction and testing requirements of IEC 61730, but with US national differences to comply with the National Electric Code (NEC). Module manufacturers were given a deadline of

December 4, 2019, to transition their product's certification from UL 1703 to UL 61730 for continual North American market access.

In response to the December 4, 2019, deadline for the US safety standard, the California Energy Commission (CEC) will only accept listing request forms that include module certification to IEC/UL 61730 from an accredited Nationally Recognized Testing Laboratory (NRTL) starting January 1, 2020.

The harmonized IEC/UL 61730 photovoltaic safety standard for international and North American markets now allows manufacturers to avoid the costly and time-consuming process of having products evaluated to multiple safety standards and can utilize compliance to IEC/UL 61730 for a streamlined approach for greater access to a more global marketplace.

Key Dates

- **August 17, 2016** - EFFECTIVE DATE - New harmonized edition of IEC 61730 published to bridge the gaps between EU and US safety requirements
- **December 4, 2017** - EFFECTIVE DATE - US publication of UL 61730, harmonized PV module safety standard with US national deviations to the IEC base standard
- **December 2017** - EFFECTIVE DATE - CEC requires either UL 1703 or UL 61730 certification by an NRTL for submitted PV modules
- **December 4, 2019** - DEADLINE - All new photovoltaic modules to be installed in the US, or changes to existing products, must be tested per IEC/UL 61730
- **January 1, 2020** - DEADLINE - CEC requires all new submissions to be certified by an NRTL to IEC/UL 61730
- **Date Pending** – Standards Council of Canada (SCC) to adopt the latest editions of IEC 61215 and IEC 61730

IEC/UL 61730 Part 1 & Part 2

Part 1: Specifies and describes the fundamental construction requirements for PV modules in order to provide safe electrical and mechanical operation. Specific topics assess the prevention of electrical shock, fire hazards, and personal injury due to mechanical and environmental stresses. Updates include:

- Adaptation of horizontal standards and inclusion of IEC 60664 and IEC 61140
 - Defined insulation requirements in respect to installation location and materials used, including:
 - Application classes
 - Overvoltage category
 - Pollution Degree
 - Material Groups
- Concept of cemented joints to retain insulation requirements while reducing spacing. A cemented joint is comprised of two insulating materials where the interface has been demonstrated to be cemented, and thus can be considered as solid insulation with no interface from creepage.

Part 2: Outlines the testing sequence intended to verify the safety of PV modules whose construction has been assessed by IEC/UL 61730-1. The test sequence and pass criteria are designed to detect the potential breakdown of internal and external components of PV modules that would result in fire, electric shock, and/or personal injury. Standard defines the basic safety test requirements and additional tests that are a function of PV module end-use applications. Test categories include:

- general inspection
- electrical shock hazard
- fire hazard
- mechanical stress
- environmental stress

Key updates include:

- Rearrangement and addition of testing sequences
- Update of various test requirements and addition of tests

FAQs

My product is UL 1703 listed. Am I required to retest to IEC/UL 61730? Is my UL 1703 certificate still valid after December 4, 2019?

- If a product is certified to UL 1703 before the transition deadline, the certificate will remain valid after the deadline date. Retesting and evaluation to IEC/UL 61730 is only required for new products, or changes to existing products, after December 4, 2019. Authorities Having Jurisdiction (AHJs) will recognize both UL 1703 and IEC/UL 61730 listed products.

If I my product already has an IEC 61730 (2016) certificate, what is required to receive an IEC/UL 61730 certification? Is full retesting required?

- If the IEC 61730 (2016) certification and testing was issued by an appropriated accredited NRTL laboratory, full retesting is likely not needed. A gap analysis should be conducted, starting with a full construction evaluation to IEC/UL 61730-1 to assess national differences. Depending on those results and target markets, minimal retesting might be required.

Will IEC/UL 61730-1 and IEC/UL 61730-2 certification give my product access to the Canadian market?

- Not yet. The Standards Council of Canada is in the process of adopting and publishing IEC 61730-1 and IEC 61730-2 with Canadian national differences. It is anticipated that expanding an IEC/UL 61730 certification for the Canadian market will include a gap analysis focused on a construction evaluation to assess national differences, with minimal retesting.

How does the changeover to UL 61730 impact a system rating (aka fire) when mounted to a UL 2703 listed racking?

- If a racking module manufacturer wishes to type test their product, the requirements in UL 61730 are identical to those established in UL 1703. Therefore, it is an easy continuance of required fire testing with UL 2703.

Recommended Next Steps

Contact Intertek to understand your options for either bringing new products to market or developing compliance plans for existing products. Intertek experts will develop a customized compliance plan based on your products and target markets, including a gap analysis and product retesting and certification if required.

Intertek's Solar Energy Centers of Excellence around the world support a global array of clients in quality assurance, testing, inspection, and certification to international standards for safety, performance, and reliability. Our global network of experts guide clients through every step of the compliance process, helping to streamline efforts and bring high-performance products to markets faster.

About Intertek

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