STANDARDS UPDATE NOTICE (SUN)
ISSUED: October 19, 2022

STANDARD INFORMATION

Standard: UL 1741
Standard ID: Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources [UL 1741:2021 Ed.3]
Previous Standard ID:
Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources [UL 1741:2010 Ed.2+R:10Jun2021]
Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources [UL 1741:2010 Ed.2+R:25May2021]
Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources [UL 1741:2010 Ed.2+R:16Sep2020]

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **September 28, 2023**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: Per our accreditation, Intertek is required to review reports against the standard revisions to confirm compliance. Once compliance is confirmed, the standard reference in the report is updated to show continued compliance to the technical requirements of the standard. Reports not updated to this version by the effective date above will be withdrawn.

All reports must be certified to the September 28, 2021 (3rd Ed.) revision prior to the effective date.

Overview of Changes:

May 25, 2021:
- Usage of Maximum Input Short-Circuit Current for Abnormal Tests
- Power Connector Mate-Ability
- Additional Requirement Clarifying Panelboard Functionality

June 10, 2021:
- Trunk Cable Stranding
- Field Repair of AC PV Modules
- Trunk Cables for Multiple Inverters

September 28, 2021
- Revisions to Supplement SB – Grid Support Utility-Interactive Inverters and Converters

Specific details of new/revised requirements are found in table below.

Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.

STANDARD INFORMATION

CLAUSE	VERDICT	COMMENT
		Additions to existing requirements are underlined and deletions are shown ~~lined out~~ below.
		The following changes reflect the May 25, 2021 revision
30	Info	**Overcurrent Protection**
30.4	Info	**Battery circuits**
30.4.1		A unit intended for connection to a battery circuit shall have a maximum input short-circuit current rating as required in Table 62.1 and shall be provided with overcurrent protection complying with the requirements described in 30.4.2–30.4.4.
30A		***New section added;*** **Panelboard Features** This section covers panelboard features and functions, such as common busses, multiple panel mounted automatic overcurrent devices that are accessible and intended for the control and protection of power and load electrical circuits. See standard for details.
	Info	**PERFORMANCE**
41	Info	**General**
41.2		Unless otherwise specified, the unit is to be energized from a supply that simulates the current-voltage characteristics and time response of the input source. Where the results of a test could be affected by the voltage versus current characteristics and short circuit current capability of the supply, the source is to be adjusted to the maximum rated input voltage of the DUT. The current capability of the test source, measured at the DUT terminals, shall be equal to or greater than the rated maximum input short-circuit current of the DUT. The output of a utility-interactive inverter or converter is to be connected to a supply voltage as specified in 41.3 and Table 41.1.
65	Info	**Equipment Information and Instructions**
65.2	Info	**Operating and installation instructions**
65.2.1		The operating and installation instructions shall: i) For any chassis mounted power socket or cable mounted power connector not manufactured to a NEMA standard, the following warning and information shall be provided:

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		1) The following statement: "Any power connector mated with a socket or connector attached to this product must be from the same manufacturer, the same series, and have a matching part number", and 2) Inverters, microinverters, dc to dc converters and other equipment equipped with PV wiring connectors that comply with the Standard for Connectors for Use in Photovoltaic Systems, UL 6703, shall have the specific allowable mating connector manufacturer(s) and model number(s) listed, as well as contact information and/or website of the PV connector manufacturer. If a specific product is available with multiple PV wiring connectors from various manufacturers, then the following shall be included: i) Means to identify each distinct PV connector manufacturer's product – such as a picture or illustration, unique physical features, markings, company logos, etc, and ii) Allowable mating connector manufacturer and model number (s) listed for each distinct cable connector manufacturer's product (s), as well as contact information and/or website of the PV connector manufacturer.
71A		***New section added;*** **Sources and Loads** When performing tests on a charge controller using a simulated source for the PV input, the test source is to be adjusted to the maximum rated input voltage, and the current source shall be capable of delivering the DUT's rated maximum input short-circuit current measured at the DUT terminals. See standard for details.
		The following changes reflect the June 10, 2021 revision
30	Info	**Overcurrent Protection**
30.3	Info	**Output ac power circuit overcurrent protection**
30.3.4		***New clause added;*** Where the unit uses a trunk cable or other output cable to connect multiple units in parallel without an overcurrent device for the output of each unit, the requirements of 30.3.1 and 30.3.2 shall be met for the individual unit and the combined output of all units connected in parallel. The instruction manual shall include the requirements found in 66.4 (U).
66	Info	**Important Safety Instructions**
66.4		The important safety instructions shall include instructions for the following items A – U. The statement "IMPORTANT SAFETY INSTRUCTIONS", and the statement

CLAUSE	VERDICT	COMMENT
		"SAVE THESE INSTRUCTIONS" shall precede the list. The word "WARNING," "CAUTION," and "DANGER" shall be entirely in upper case letters. **IMPORTANT SAFETY INSTRUCTIONS** T. Any device, including a microinverter, PVIE, or string inverter provided with input or output leads or an ac output paralleling cable assembly or a trunk cable that has conductors with stranding finer than Class B or Class C (typically 19 strands for 14-2 AWG conductors), shall include the following statement, or equivalent, in the instruction manual: "The input or output leads or ac output paralleling cable assembly or trunk cable supplied with this device has fine stranded, flexible conductors and if unterminated or if any factory-installed connectors have been removed, shall only be terminated using connections that have been rated for use with such conductors." U. Where the unit uses a trunk cable or other output cable to connect multiple units in parallel without an overcurrent protective device for the output of each unit, the instruction manual for each unit shall include the following statements: a) Maximum number of units that can be connected in parallel without an overcurrent protective device for each unit. b) The rating of the maximum overcurrent device protecting the combined output circuit of the maximum number of units after the outputs are connected in parallel. c) The minimum ampacity of the conductors in the trunk cable or other cable connected to the output of each unit.
	Info	**CONSTRUCTION**
81	Info	**General**
81.12		***New clause added;*** An AC module that consists of a separate microinverter connected to a PV module with conductors and connectors may be repairable in the field if that repair has been determined to be possible by the original manufacturer or the manufacturer of a suitable retrofit kit. An AC module that can be repaired in the field by replacing the microinverter or the PV module shall comply with the following: a) Any mechanical device, threaded or unthreaded, that is used to electrically bond the microinverter to the PV module shall comply with the grounding impedance test of Section 48 after having been removed and reinstalled five (5) times. Bonding shall comply with the requirements in 81.8.1. b) Any disconnected and exposed (to the environment) connectors attached to the PV module or the trunk cable or other ac output connector shall comply with 81.7 and be provided with protection from the deteriorating effects of the environment, when not connected. c) Any and all input and output connections shall be accessible in the field and be capable of being disconnected using the proper tool without opening the

CLAUSE	VERDICT	COMMENT
		microinverter enclosure or the PV module junction box. Any connectors used or reused shall be mated to connectors from the same manufacturer and series number (mate-ability shall be maintained). The requirements of 81.7 shall be met. d) The manufacturer of the AC module or the manufacturer of the retrofit kit shall identify a suitable replacement microinverter or PV module and provide appropriate replacement instructions if the original equipment microinverter or PV module is no longer available. The retrofit kit shall include detailed instruction and procedures to perform the retrofit installation, including a list identifying all critical components.
	Info	**MARKING**
85	Info	**Details**
85.7		***New clause added;*** An AC module, PVIE or other device provided with input or output cables or a trunk cable that has conductors with stranding finer than Class B or Class C (typically 19 strands for 14-2 AWG conductors) shall include the following statement, or equivalent, in the instruction manual: "The input, output or trunk cable supplied with this AC module, PVIE or other device has fine stranded, flexible conductors and if unterminated or if any factory-installed connectors have been removed, shall only be terminated using connections that have been rated for use with such conductors."
85.8		***New clause added;*** An AC module not evaluated for field repair shall have the word "WARNING" and the following statement, or equivalent, marked on the microinverter and the PV module in a conspicuous location: "Risk of Electric Shock. This AC module has not been evaluated for field repair."
86	Info	**Important Safety Instructions**
86.2		***New clause added;*** An AC module that has been evaluated as suitable for field repair shall have the following information in the instruction manual. a) Instructions for removing and replacing the microinverter or the PV module, as required, including opening the circuit breaker on the dedicated ac output circuit. b) Instructions for protecting any disconnected and exposed (to the environment) dc and ac connectors. c) Where an identical microinverter or PV module is not available, the manufacturer of the AC module, the manufacturer of the original microinverter or PV module, or the manufacturer of any retrofit kit, shall be queried as to a suitable replacement and for proper instructions for installing that replacement.

CLAUSE	VERDICT	COMMENT
		New clause added;
86.3		An AC module that has not been evaluated for field repair shall have the word "WARNING" and the following statement, or equivalent, in the instruction manual: "Risk of Electric Shock. This AC PV module has not been evaluated for field repair."
86.4		***New clause added;*** The important safety instructions shall include the instructions required by 66.4(U).
		The following changes reflect the issuing of the 3rd edition dated September 28, 2021
Supplement SB		**GRID SUPPORT UTILITY-INTERACTIVE INVERTERS AND CONVERTERS BASED UPON IEEE 1547-2018 and IEEE 1547.1-2020** Supplement SB has been entirely rewritten. See standard for new requirements.