STANDARDS UPDATE NOTICE (SUN)
ISSUED: July 10. 2020

STANDARD INFORMATION

Standard Number: UL 943 / CSA C22.2 No 144.1
Standard Name: Ground Fault Circuit-Interrupters
Standard Edition and Issue Date: 5th / 2nd Edition Dated May 17, 2016
Date of Revision: February 23, 2018 / Update 1
Date of Previous Revision of Standard: May 17, 2016

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **May 5, 2021**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: A review of all Listing Reports is necessary to determine which products comply with new/revised requirements and which products will require re-evaluation. **NOTE:** Effective immediately, this revised standard will be exclusively used for evaluation of new products unless the Applicant requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revised requirements.

Overview of Changes:

- Expansion of Auto-Monitoring and End of Life Requirements to All Types of GFCIs
- Addition of Requirements for Programmable Components
- Improving the Auto-Monitoring Function of Permanently Connected Ground-Fault Circuit Interrupters

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

If the applicable requirements noted in the table are not described in your report(s), these requirements will need to be confirmed as met and added to your report(s) such as markings, instructions, test results, etc. (as required).

Client Action:

Information – To assist our Engineer with review of your Listing Reports, please submit technical information in response to the new/revised paragraphs noted in the attached or explain why these new/revised requirements do not apply to your product (s).

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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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.
5	Info	**Construction**
5.16	Info	**Auto-monitoring function**
5.16.1		In addition to the Supervisory circuit specified in 5.15, a ~~permanently connected~~ ground-fault circuit interrupter shall be provided with an auto-monitoring function that will allow for periodic, automatic testing of the ability of the device to respond to a ground fault. This testing shall be done without opening the circuit interrupter contacts.
5.17		***New section added;*** **Programmable circuit components**
5.17.1		If a programmable circuit component such as a microprocessor is employed in a device, that portion of the device shall be investigated in accordance with the requirements of Annex A, Ref. No. 15 as defined in 5.17.2. Discrete components such as resistors, capacitors, and transistors, including simple integrated circuits that are not programmable such as logic gates and operational amplifiers, do not fall within the scope of the requirements of Annex A, Ref. No. 15.
5.17.2		The risks to be considered in the investigation mentioned in 5.17.1 shall include the following scenarios as applicable: a) Unwanted tripping; b) Failure to trip under conditions where tripping should occur; c) Tripping at the wrong trip threshold value; d) Failure of supervisory circuit to complete evaluation; e) Failure of the end of life function; f) Failure of the auto-monitoring function; and g) Failure of the line load miswire function.
6	Info	**Tests**
6.27		**~~Permanently connected~~ GFCI end of life test**
6.27.1		General
6.27.1.1		A ~~permanently connected~~ ground-fault circuit-interrupter that has reached its end of life shall meet the requirements of 5.15.5.
6.27.2		~~Permanently connected~~ GFCI end of life simulation

CLAUSE	VERDICT	COMMENT
6.31	Info	**Auto-monitoring function tests**
6.31.2		In order to determine compliance with the provisions of Clause 5.16, separate samples shall be modified to represent those single component failure modes that can cause the GFCI to become unable to respond to a ground fault per this standard. Welded power contacts need not be considered. Except as noted in 6.31.3, each sample shall be altered with a single modification that represents either an open or a shorted component (unless otherwise specified) as described in 6.31.2 (a) – (g) below. a) Open circuit or short circuit the ground fault sensing component (transformer); b) Alter the integrated circuit responsible for the ground fault detection by one of the following modifications selected by the manufacturer and agreeable to all parties concerned: 1) Disconnect the power supply pin of the IC; 2) Disable the "clock" circuit; 3) Open the signal path at the subject IC pin; 4) Short the signal path pin to one of the adjacent pins one at a time. c) Open circuit the current limiter (for example, dropping resistor) of the power supply of the ground fault detection circuit. d) ~~Except as specified in 6.31.2(d)(1)~~, Open-circuit the trip solenoid. See 6.31.8. ~~1) GFCI circuit breaker types are excepted from 6.31.2(d).~~ e) ~~Except as specified in 6.31.2(e)(1)~~ Open the switching semiconductor supplying the trip solenoid. See 6.31.8. ~~1) GFCI circuit breaker types are excepted from 6.31.2(e).~~ f) Short circuit the switching semiconductor supplying the trip solenoid. g) Open circuit or short circuit a single rectifier diode in the ground fault detection power supply circuit. Short circuit a single diode in the case of a bridge rectifier package.
		CUSTOMERS PLEASE NOTE: This Table and column "Verdict" can be used in determining how your current or future production is or will be in compliance with new/revised requirements.