CSA GROUP™

**C22.2 No. 144.1-16**
*(reaffirmed 2020)*

# Ground-fault circuit interrupters

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# *Update No. 1*
# *C22.2 No. 144.1-16*
# *February 2018*

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**Title:** *Ground-fault circuit interrupters* — originally published May 2016

The following revisions have been formally approved and are marked a vertical line in the margin on the attached replacement pages:

| | |
|---|---|
| **Revised** | Cover, copyright page, Preface, Clauses 5.15.5, 6.27.1.1, 6.27.2 and 6.31.2, Table 6.4, and Annex A |
| **New** | Clauses 3.13A, 3.16A, and 5.17 |
| **Deleted** | |

- Update your copy by inserting these revised pages.
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# *Standards Update Service*

## *C22.2 No. 144.1-16*
## *May 2016*

**Title:** *Ground-fault circuit interrupters*

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**Association of Standardization and Certification**
**NMX-J-520-ANCE**
**Third Edition**

**CSA Group**
**CSA C22.2 No. 144.1-16**
**Second Edition**

**Underwriters Laboratories Inc.**
**UL 943**
**Fifth Edition**

# Ground-Fault Circuit-Interrupters

May 17, 2016

**ANSI/UL 943-2016**

**Commitment for Amendments**

This standard is issued jointly by the Association of Standardization and Certification (ANCE), the Canadian Standards Association (operating as "CSA Group"), and Underwriters Laboratories Inc. (UL). Comments or proposals for revisions on any part of the standard may be submitted to ANCE, CSA Group, or UL at anytime. Revisions to this standard will be made only after processing according to the standards development procedures of ANCE, CSA Group, and UL. CSA Group and UL will issue revisions to this standard by means of a new edition or revised or additional pages bearing their date of issue. ANCE will incorporate the same revisions into a new edition of the standard bearing the same date of issue as the CSA Group and UL pages.



**ISBN 978-1-77139-993-7 © 2016 CSA Group**



This Standard is subject to review five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquires@csagroup.org and include "Proposal for change" in the subject line: Standard designation (number); relevant clause, table and/or figure number; wording of the proposed change; and rationale for the change.

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This ANSI/UL Standard for Safety consists of the Fifth edition. The most recent designation of ANSI/UL 943 as an American National Standard (ANSI) occurred on May 17, 2016. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface.

The Department of Defense (DoD) has adopted UL 943 on November 30, 1994. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at http://csds.ul.com.

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**Annex E (Normative in Canada and the United States; informative in Mexico) Installation Instructions – Configuration Drawings**

# Preface

This is the harmonized ANCE, CSA Group, and UL Standard for Ground-Fault Circuit-Interrupters. It is the third edition of NMX-J-520-ANCE, the second edition of CSA C22.2 No. 144.1, and the fifth edition of UL 943. This edition of NMX-J-520-ANCE supersedes the previous edition published on February 1, 2006. This edition of CSA C22.2 No. 144.1 supersedes the previous edition published in February 2006. This edition of UL 943 supersedes the previous edition published on February 1, 2006, and revised on June 29, 2012.

This harmonized Standard was prepared by the Association of Standardization and Certification (ANCE), CSA Group, and Underwriters Laboratories Inc. (UL). The efforts and support of the CANENA Technical Harmonization Subcommittee 23E, Ground-Fault Circuit-Interrupters, are gratefully acknowledged.

This standard is considered suitable for use for conformity assessment within the stated scope of the standard.

The present Mexican standard was developed by the CT 23 Accesorios Electricos from the Comite de Normalizacion de la Asociacion de Normalizacion y Certificacion, A.C., CONANCE, with the collaboration of the ground fault circuit interrupters manufacturers and users.

This Standard was reviewed by the CSA Subcommittee on Ground-Fault Circuit-Interrupters, under the jurisdiction of the CSA Technical Committee on Industrial Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee.

This Standard has been approved by the American National Standards Institute (ANSI) as an American National Standard.

### Application of Standard

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

> **Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.**

### Level of harmonization

This Standard uses the IEC format but is not based on, nor shall it be considered equivalent to, an IEC Standard. This Standard is published as an identical Standard for ANCE, CSA Group, and UL.

An identical Standard is a Standard that is exactly the same in technical content except for national differences resulting from conflicts in codes and governmental regulations. Presentation is word for word except for editorial changes.

### Reasons for differences from IEC

This Standard provides requirements for ground-fault circuit-interrupters for use in accordance with the electrical installation codes of Canada, Mexico, and the United States. At present there is no IEC Standard for ground-fault circuit-interrupters for use in accordance with these codes. Therefore, this Standard does not employ any IEC Standard for base requirements.

## Interpretations

The interpretation by the standards development organization of an identical or equivalent Standard is based on the literal text to determine compliance with the Standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

## 1 Scope

1.1 This Standard applies to Class A, single- and three-phase, ground-fault circuit-interrupters intended for protection of personnel, for use only in grounded neutral systems in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code, Part I, and Electrical Installations (Use), NOM-001-SEDE. These devices are intended for use on alternating current (AC) circuits of 120 V, 208Y/120 V, 120/240 V, 127 V, or 220Y/127 V, 60 Hz circuits.

**Note: In Canada, the text "intended for protection of personnel" is excluded.**

1.2 These requirements do not cover ground-fault circuit-interrupters intended for use in circuits served by a transformer having windings wholly insulated from each other.

1.3 This Standard applies to all Class A ground-fault circuit-interrupters. These Class A GFCIs are permitted to be integrated into other devices, in which case, besides complying with this Standard, these devices are to comply with the corresponding applicable Standard for the device in question.

1.4 This Standard includes minimum requirements for the function, construction, performance, and markings of ground-fault circuit-interrupters included in the scope.

1.5 This Standard is intended to cover only Class A GFCI devices.

1.6 This Standard also covers GFCIs of the self contained type that are intended for installation in a counter, such as would be suitable for installation in a kitchen or bathroom counter top.

## 2 Normative References

2.1 Any normative reference to a code or Standard appearing in the requirements of this Standard shall be interpreted as referring to the latest edition of that code or Standard. See Annex A.

2.2 When a reference is made to another code or Standard, the product shall comply with the installation code or Standard of the country or countries in which the product is intended to be used.

2.3 For products intended for use in Canada general requirements are given in CSA Standard C22.2 No. 0, *Definitions and General Requirements – Canadian Electrical Code, Part II*.

## 3 Definitions

For the purposes of this Standard, the following definitions apply:

3.1 ACCESSIBLE PART – A part so located that it can be contacted by a person, either directly or by means of a probe or tool.

3.2 AUTOMATIC RECLOSURE – Denotes the act of a ground-fault circuit-interrupter resetting itself after having been tripped.