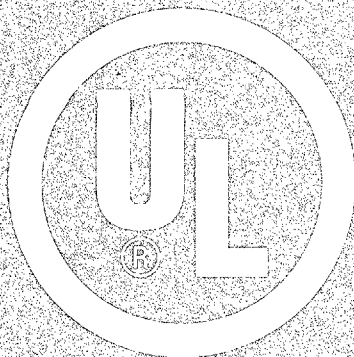


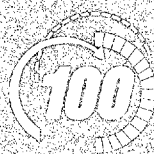


UL 1053

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Underwriters Laboratories Inc.
Standard for Safety

Ground-Fault Sensing and
Relaying Equipment



a century of public safety
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Underwriters Laboratories Inc. (UL)
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UL Standard for Safety for Ground-Fault Sensing and Relaying Equipment, UL 1053

Sixth Edition, Dated October 27, 1999

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As indicated on the title page (page1), this UL Standard for Safety has been adopted by the Department of Defense.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

A change in an effective date is indicated by a note following the affected item, and giving both the previous effective date and the new date the requirement becomes effective.

New product submittals made prior to a specified future effective date will be judged under all of the requirements in this Standard including those requirements with a specified future effective date, unless the applicant specifically requests that the product be judged under the current requirements. However, if the applicant elects this option, it should be noted that compliance with all the requirements in this Standard will be required as a condition of continued Listing, Recognition and Follow-Up Services after the effective date, and understanding of this should be signified in writing.

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This Standard consists of pages dated as shown in the following checklist:

Page	Date
1-30	October 27, 1999
A1-A2.....	October 27, 1999

October 27, 1999



1

UL 1053**Standard for Ground-Fault Sensing and Relaying Equipment**

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Second Edition – August, 1976
Third Edition – June, 1992
Fourth Edition – May, 1988
Fifth Edition – July, 1994

Sixth Edition**October 27, 1999**

This edition of UL 1053, including all revisions, is approved as an American National Standard. Approval of UL 1053 as an American National Standard is maintained using the continuous maintenance process. Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Written comments are to be sent to UL-MEL Standards Department, 1285 Walt Whitman Road, Melville, NY 11747-3081.

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

Approved as ANSI/UL 1053-1999, October 14, 1999

The Department of Defense (DoD) has adopted UL 1053 on May 27, 1988. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

Revisions of this Standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest set of revised requirements.

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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product employing materials or having forms of construction which conflict with specific requirements of the Standard cannot be judged to comply with the Standard. A product employing materials or having forms of construction not addressed by this Standard may be examined and tested according to the intent of the requirements and, if found to meet the intent of this Standard, may be judged to comply with the Standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

INTRODUCTION

1 Scope

1.1 These requirements cover ground-fault current sensing devices, relaying equipment, or combinations of ground-fault current sensing devices and relaying equipment or equivalent protection equipment for use in ordinary locations that will operate to cause a disconnecting device to open all ungrounded conductors at predetermined values of ground-fault current, in accordance with the National Electrical Code, ANSI/NFPA 70.

1.2 These requirements cover equipment intended for use in circuits that are solidly grounded and that operate at 150 volts, or more, to ground, but not more than 600 volts phase-to-phase.

1.2 revised and separated into 1.3 and 1.4 October 27, 1999

1.3 These requirements do not cover equipment intended to be powered from circuits operating at more than 600 volts.

1.3 relocated from 1.2 October 27, 1999

1.4 These requirements do not cover ground-fault circuit-interrupters.

1.4 relocated from 1.2 October 27, 1999

1.5 These devices are intended to operate with shunt-trip circuit breakers, electrically tripped bolted pressure contact switches and the like that constitute the disconnecting means.

1.6 A Class I ground-fault protection device is one that does not incorporate means to prevent opening of the disconnecting means at high levels of fault current and is intended for use with the following:

- a) Circuit breakers,
- b) Fused circuit breakers,
- c) Fused switches having an interrupting rating not less than 12 times their ampere rating, or
- d) Fused switches having integral means to prevent disconnecting at levels of fault current exceeding the contact interrupting rating of the switch.

1.7 A Class II ground-fault protection device is one that incorporates means to prevent initiation of opening of the disconnecting device if the fault current exceeds the contact interrupting capability of the disconnecting device with which it is intended to be used.

1.8 These requirements cover enclosed-type devices and also cover open-type devices that are intended for use in other equipment, such as panelboards, switchboards, and the like.

1.9 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this Standard, and that involves a risk of fire, electric shock, or injury to persons shall be evaluated using the appropriate additional component and end-product requirements to determine that the level of safety as originally anticipated by the intent of this Standard is maintained. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this Standard shall not be judged to comply with this Standard. Where appropriate, revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this Standard.

2 Glossary

2.1 GROUND-FAULT RELAYING EQUIPMENT – That element of ground-fault current sensing and relaying equipment that responds to a specified signal from a ground-fault sensor. The power to operate the relaying equipment may be derived from the ground fault, from a separate source, or both. The output of such relaying equipment may:

- a) Include a switching device,
- b) Transmit a trip energy signal, or
- c) Be any combination of a) and b) that is directly or indirectly capable of causing a disconnecting device to operate.

2.2 GROUND-FAULT SENSOR – That element of ground-fault current sensing and relaying equipment that detects ground fault current and transmits a resulting signal to ground fault-relaying equipment.

2.3 OPERATING TIME – The time elapsed between pick-up and operation (tripping or generation of output signal) of ground-fault current sensing and relaying equipment.

2.4 PICK-UP CURRENT – A nominal value that is related to the lowest value of current (pick-up) that will cause ground-fault relaying equipment to ultimately operate under specified conditions, at its setting, if provided, or rating.

3 Components

3.1 Except as indicated in 3.2, a component of a product covered by this Standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components generally used in the products covered by this Standard.

3.2 A component need not comply with a specific requirement that:

- a) Involves a feature or characteristic not needed in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

3.3 A component shall be used in accordance with its recognized rating established for the intended conditions of use.

3.4 Specific components are recognized as being incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions for which they have been recognized.

4 Units of Measurement

4.1 If a value for measurement is followed by a value in other units in parentheses, the second value may be only approximate. The first stated value is the requirement.