

Ground-Fault Sensing and Relaying Equipment

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UL Standard for Safety for Ground-Fault Sensing and Relaying Equipment, UL 1053

Seventh Edition, Dated August 5, 2015

Summary of Topics:

This New Edition of ANSI/UL 1053 is being issued to address the editorial maintenance of UL Standards for Safety. These revisions are considered to be non-substantive and not subject to UL's STP process.

The effective date for UL LLC will be announced through Industry File Review – Announcement Letter.

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ANSI/UL 1053-2011

UL 1053

Standard for Ground-Fault Sensing and Relaying Equipment

First Edition – May, 1972
Second Edition – August, 1976
Third Edition – June, 1992
Fourth Edition – May, 1988
Fifth Edition – July, 1994
Sixth Edition – October, 1999

Seventh Edition

August 5, 2015

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The most recent designation of ANSI/UL 1053 as an American National Standard (ANSI) occurred on June 15, 2011. ANSI approval for a standard does not include the Cover Page, Transmittal Pages and Title Page.

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.

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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Standards for Components..... A1

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.

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

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

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.

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 is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required 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 rating established for the intended conditions of use.

3.4 Specific components are 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.

4 Units of Measurement

4.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

5 References

5.1 Any undated 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.

CONSTRUCTION

6 Enclosure

6.1 General

6.1.1 An enclosure of ground-fault sensing and relaying equipment shall be so constructed and assembled that it will have the strength and rigidity necessary to resist the abuses to which it is likely to be subjected, without total or partial collapse resulting in an increased risk of fire due to reduction of spacings, loosening or displacement of parts, or other serious defects.

6.1.2 The enclosure referred to in 6.1.1 is the ultimate enclosure and does not include protective covers, dust covers, shields, and the like that are part of open type devices intended to be installed in other equipment that provides the ultimate enclosure.

6.1.3 Among the factors taken into consideration when an enclosure is being judged for acceptability are its physical strength, resistance to impact, moisture-absorptive properties, combustibility, resistance to corrosion, and resistance to distortion at temperatures to which the enclosure may be subject under conditions of normal or abnormal use. For a nonmetallic enclosure or part of an enclosure, all these factors are considered with respect to thermal aging.

6.1.4 There shall be no ventilating openings in the enclosure of ground-fault sensing and relaying equipment unless the conditions of use of such equipment necessitates ventilation and it can be shown by test that electrical disturbances within the enclosure will be contained. In no case shall there be such openings in an enclosure or a compartment of an enclosure containing a fuse or any portion of a circuit breaker other than the operating handle.

6.1.5 A ventilating opening in an enclosure, including a perforated hole, a louver, or an opening protected by means of wire screening, expanded metal, or a perforated cover, shall be of such size or shape that no opening will permit passage of a rod having a diameter greater than 1/2 inch (12.7 mm).

Exception: If the distance between an uninsulated live part and the opening is greater than 4 inches (102 mm), the opening may be larger than that previously mentioned, provided no opening will permit passage of a rod having a diameter greater than 3/4 inch (19.1 mm).

6.1.6 The diameter of the wires of a screen shall not be less than 0.051 inch (1.30 mm) if the screen openings are 1/2 square inch (323 mm²) or less in area, and shall not be less than 0.081 inch (2.06 mm) for larger screen openings.