UL 458

STANDARD FOR SAFETY

Power Converters/Inverters and Power Converter/Inverter Systems for Land Vehicles and Marine Crafts

UL Standard for Safety for Power Converters/Inverters and Power Converter/Inverter Systems for Land Vehicles and Marine Crafts, UL 458

Sixth Edition, Dated September 2, 2015

Summary of Topics

This revision of ANSI/UL 458 dated January 11, 2021 includes the following changes in requirements:

- ***Revision to polarity color coding; 58.2***
- ***Revision to scope; 1.1, 1.2, 1.4, 1.5, Table 32.1, Table 35.1 and 48.2.5***
- ***Revision to production line test conditions; Table 54.1***
- ***Revision to address charging lithium batteries; 1.3, Section 14A, 58.26 and 59.5***

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated July 31, 2020 and October 2, 2020.

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Standard for Power Converters/Inverters and Power Converter/Inverter Systems for Land Vehicles and Marine Crafts

The first, second, and third editions were titled Power Converters and Power-Converter Systems for Recreational Vehicles.

First Edition – February, 1977
Second Edition – May, 1986
Third Edition – November, 1991
Fourth Edition – December, 1993
Fifth Edition – April, 2006

Sixth Edition

September 2, 2015

This ANSI/UL Standard for Safety consists of the Sixth Edition including revisions through January 11, 2021.

The most recent designation of ANSI/UL 458 as an American National Standard (ANSI) occurred on December 8, 2020. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

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 https://csds.ul.com.

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INTRODUCTION

1 Scope

1.1 These requirements cover fixed and stationary power converters, power-converter systems, and accessories having a rated nominal input of 120, 120/240, or 240 V, alternating current and a nominal output of 60 V or less, direct current. Additionally, a power converter may have a rated nominal input of 12 – 60 V, direct current. These converters are intended for use within land vehicles where not directly exposed to outdoor conditions and are intended to be employed in accordance with the National Electrical Code, NFPA 70.

1.2 These requirements also cover fixed, stationary and portable power inverters and power-inverter systems having a dc input and a 120 or 240 V ac single phase output or up to 600Y/346V three-phase output. These inverters are intended for use within land vehicles where not directly exposed to outdoor conditions and are intended to be employed in accordance with the National Electrical Code, NFPA 70.

1.3 These requirements also cover converters/inverters that are additionally intended to charge batteries. Batteries intended for use with these systems are lead acid batteries or lithium based batteries, and the batteries are intended to comply with applicable battery standards and be provided with protective measures for discharging and charging. These products are not intended to provide protection to these batteries unless specifically included and evaluated as part of a system.

1.4 Power converters supplied by AC circuits covered by Part I of this standard are intended for connection to established 15- and 20-A branch circuits within a recreational vehicle.

1.5 Power-inverters and converters supplied by DC circuits covered by Part I of this standard are intended for connection to a nominal 12 to 60 V dc battery supply.

1.6 Converters and inverters incorporating provisions for the connection of less than three line-voltage branch circuits are investigated under the requirements in Part I of this standard.

1.7 A power-converter or power-inverter system is intended for direct connection to a power-supply assembly. A system for connection of three or less line-voltage branch circuits, not including the main disconnect, may optionally be evaluated in accordance with the requirements in Part II of this standard, or with the applicable requirements for a Class CTL panelboard in the Standard for Panelboards, UL 67. Power converter systems and power inverter systems also employ circuitry as described in 1.4 and 1.5.

1.8 A power-converter or power-inverter system provided with more than three line-voltage branch circuits, not including the main disconnect, is investigated to the applicable requirements for a Class CTL panelboard in the Standard for Panelboards, UL 67.

1.9 Converters and inverters incorporating provisions for the connection of more than three line-voltage branch circuits are judged under the requirements in Part I of this standard and the applicable requirements for a Class CTL panelboard in accordance with the Standard for Panelboards, UL 67.

1.10 Each pole of a multiple-pole circuit breaker is a separate circuit.

2 Glossary

2.1 For the purpose of this standard the following definitions apply.

2.2 ACCESSIBLE PART – A part located so that it can be contacted by a person, either directly or by means of a probe or tool during user servicing, or that is not recessed the required distance behind an opening.