



ABYC A-32 July, 2017

**Electrical Division Standard
Electrical Component Project Technical
Committee**

The ABYC Standards and Technical Information Reports for Small Craft are the product of a consensus of representatives of government, industry and public sectors. It is intended solely as a guide to aid manufacturers and the marine community in the design, construction, equipage and maintenance of small craft.

ABYC reviews each standard at least every five years at which time it may be reaffirmed, revised, or withdrawn. ABYC welcomes any written comments on the Standards and Technical Information Reports.

ABYC A-32

AC POWER CONVERSION EQUIPMENT AND SYSTEMS



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This list represents the membership at the time the Committee was balloted.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of ABYC or any document developed by the committee on which the member serves.

This standard was developed under procedures accredited as meeting the criteria for American National Standards. The Project Technical Committee that approved the standard was balanced to ensure that individuals from competent and concerned interests have had an opportunity to participate.

This standard, which is the result of extended and careful consideration of available knowledge and experience on the subject, is intended to provide minimum performance requirements.

ABYC's Project Technical Committee meetings are open to the public. All contact regarding standards activity, interpretations, or meeting attendance should be directed to the ABYC Technical Department at comments@abycinc.org.

ABYC and its committees do not "approve", "certify", or "endorse" any item, construction, or proprietary device.

REQUEST FOR INTERPRETATIONS

Upon written request, the Electrical Component PTC will render an interpretation of any requirement of the Standard. The request for interpretation should be clear and unambiguous. Requests should be presented to the PTC in a manner in which they may be answered in a yes or no fashion.

The committee reserves the right to reconsider any interpretation when or if additional information which might affect it becomes available to the PTC. Persons aggrieved by an interpretation may appeal to the Committee for reinterpretation.

A-32 AC POWER CONVERSION EQUIPMENT AND SYSTEMS

Table of Contents

32.1	PURPOSE.....	1
32.2	SCOPE.....	1
32.3	REFERENCES.....	1
32.4	DEFINITIONS	1
32.5	GENERAL REQUIREMENTS	2
32.6	AC SHORE POWER CONVERTERS	3
32.7	AC SHORE POWER VOLTAGE REGULATORS.....	3
32.8	ELECTRICAL INTERLOCKING.....	3
32.9	BACKFEED PROTECTION	3
32.10	MULTIPLE SHORE POWER SOURCE PARALLELING AND COMBINING DEVICES	3
32.11	SEAMLESS TRANSFER	3
32.12	PARALLEL OPERATION OF POWER SOURCES	4
32.13	OWNER'S MANUAL AND COLLATERAL LITERATURE	5
	DIAGRAM 1 - Shore Power Supply with Paralleled Inverter	5
	DIAGRAM 2 - Shore Power Supply with Paralleled Inverter and Shore Power Transformer	6
	DIAGRAM 3 - Shore Power Supply with Paralleled Inverter, Generator, and Shore Power Transformer	7
	DIAGRAM 4 - Typical Installation with Seamless Transfer Between Shore Power (via Transformer), Generators and Inverters.....	8
	DIAGRAM 5 - Typical Installation with Seamless Transfer Between Shore Power (via Converter), Generators and Inverters.....	9
	ORIGIN AND DEVELOPMENT	9

A-32 AC POWER CONVERSION EQUIPMENT AND SYSTEMS

Based on ABYC's assessment of the existing technology, and the problems associated with achieving the goals of this standard, ABYC recommends compliance with this standard for all boats and associated equipment manufactured and/or installed after July 31, 2018.

32.1 PURPOSE

This standard is a guide for the design, construction and installation of electrical and electronic power conversion, control equipment and systems.

32.2 SCOPE

This document applies to electrical and electronic power conversion and control equipment in the AC shore power feed on boats:

32.2.1 operating at 600 volts or less, and

32.2.2 with onboard distribution systems operating at 300 volts or less, single or three-phase, installed between the shore power inlet and the distribution panel, between shore power and onboard AC power sources, and between multiple onboard AC power sources for the purposes of:

- Power conditioning and conversion
- Seamless transfer between sources
- Parallel operation of sources

NOTE: There is a significant risk of electric shock, arc flash, and arc flash explosions at potentials greater than 300 volts.

32.3 REFERENCES

The following reference form a part of this standard. Unless otherwise noted the latest version of referenced standards shall apply.

32.3.1 ABYC - American Boat & Yacht Council, Inc., 613 Third Street, Suite 10, Annapolis, MD 21403. Phone: (410) 990-4460, Fax: (410) 990-4466. Website: www.abycinc.org

[ABYC A-27, Alternating Current \(AC\) Generator Sets](#)

[ABYC A-28, Galvanic Isolators](#)

[ABYC A-31, Battery Chargers and Inverters](#)

[ABYC E-11, AC & DC Electrical Systems on Boats](#)

32.3.2 IEC - International Electrotechnical Commission, 3, rue de Varembé, P.O. Box 131 CH - 1211 GENEVA 20 Switzerland, Phone: +41 22 919 02 11 Fax: +41 22 919 03 00 Website: www.iec.ch

IEC 60092-304 *Equipment – Semiconductor Converters*

IEC 62116 *Test procedure of islanding prevention measures for utility-interconnected photovoltaic inverters*

32.3.3 IEEE - Institute of Electrical and Electronics Engineers, 445 Hoes Lane, Piscataway, NJ 08854-4141. Phone: (732) 981-0060. Website: www.ieee.org

IEEE 1547 *Standard for Interconnecting Distributed Resources With the Electric Power System*

32.4 DEFINITIONS

For the purposes of this standard, the following definitions apply.

32.4.1 AC shore power converter - an electrical, electronic or electromechanical device which typically provides the following capabilities - electrical isolation, frequency conversion and voltage conversion - between the shore outlet and the boat's electrical system. Additional capabilities may be included as required by specific installations (e.g. phase conversion, power conditioning, synchronization).