INTERNATIONAL STANDARD

ISO 13297

Fifth edition
2020-12

Small craft — Electrical systems — Alternating and direct current installations

Petits navires — Installations électriques — Installations à courant alternatif et continu

Reference number
ISO 13297:2020(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 188, *Small craft*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 464, *Small craft*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fifth edition of ISO 13297 cancels and replaces ISO 13297:2014 and ISO 10133:2012, which have been technically revised.

The main changes compared to the previous editions are as follows:

— combined the standard for alternating current (ISO 13297:2014) and the standard for direct current (ISO 10133:2012) into a single marine electrical standard.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Small craft — Electrical systems — Alternating and direct current installations

IMPORTANT — The colours represented in the electronic file of this document can be neither viewed on screen nor printed as true representations. For the purposes of colour matching, see ISO 3864-4, which provides colorimetric and photometric properties together with, as a guideline, references from colour order systems.

1 Scope

This document specifies the requirements for the design, construction and installation of the following types of DC and AC electrical systems, installed on small craft either individually or in combination:

a) extra-low-voltage direct current (DC) electrical systems that operate at nominal potentials of 50 V DC or less;

b) single-phase alternating current (AC) systems that operate at a nominal voltage not exceeding AC 250 V.

This document does not cover the following:

— electrical propulsion systems of direct current less than 1 500 V DC, single-phase alternating current up to 1 000 V AC, and three-phase alternating current up to 1 000 V AC, which are addressed by ISO 16315;

— any conductor that is part of an outboard engine assembly and that does not extend beyond the outboard engine manufacturers supplied cowling;

— three-phase AC installations that operate at a nominal voltage not exceeding 500 V AC, which are addressed by IEC 60092-507.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7010:2019, *Graphical symbols — Safety colours and safety signs — Registered safety signs*

ISO 8846:1990, *Small craft — Electrical devices — Protection against ignition of surrounding flammable gases*

ISO 10240:2019, *Small craft — Owner's manual*

IEC 60309-2:1999, *Plugs, socket-outlets and couplers for industrial purposes — Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP code)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
craft's ground/earth
protective grounding
connection, provided for safety purposes, that is established by a conducting connection with the common ground/earth (potential of the earth's surface)

3.2
equipotential bonding conductor
normally non-current-carrying conductor used to put various *exposed conductive parts* (3.15) of direct current electrical devices and *extraneous conductive parts* (3.33) at a substantially equal potential

3.3
engine negative terminal
terminal on the engine, starter or solenoid to which the negative battery cable is connected

3.4
main grounding
earthing point
main point that provides connection for the DC negative conductor, AC *protective grounding conductor* (3.10) and bonding conductor to the craft's ground that is established by a conducting connection (intended or accidental) with the common ground (potential of the earth's surface)

Note 1 to entry: It can include any conductive part of the wetted surface of the hull in permanent contact with the water, depending on the overall system design.

3.5
overcurrent protection device
device designed to interrupt the circuit when the current flow exceeds a predetermined value for a predetermined time

EXAMPLE A *fuse* (3.29) or circuit breaker.

3.6
residual current device
RCD
electro-mechanical switching device or association of devices designed to make, carry and break currents under normal service conditions and to cause the opening of contacts when the residual current attains a given value under specified conditions

Note 1 to entry: RCDs serve to reduce the risk of injury to people from electrical shock hazard, and damage to equipment from leakage of stray currents to earth or to other circuits.

3.7
polarization transformer
transformer that automatically orientates the neutral and *active (phase) conductors* (3.12) in the system in the same polarity orientation as the *polarized system* (3.17) of the craft

3.8
isolation transformer
transformer installed in the shore power supply circuit on a craft to electrically isolate all the normally *live conductors* (3.11) and the *protective conductor* (3.10) on the craft from the AC system conductors of the shore power supply

3.9
neutral conductor
conductor intentionally maintained at ground potential and capable of contributing to the transmission of electrical energy