



Sisaldab värvilisi lehekülgi
Colour inside

**VÄIKELAEVAD. ELEKTRISÜSTEEMID. VAHELDUV- JA
ALALISVOOLUPAIGALDISED**

**Small craft - Electrical systems - Alternating and direct
current installations (ISO 13297:2020 +
ISO 13297:2020/Amd 1:2022)**

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

| | |
|---|---|
| See Eesti standard EVS-EN ISO 13297:2021+A1:2022 sisaldab Euroopa standardi EN ISO 13297:2021 ja selle muudatuse A1:2022 ingliskeelset teksti. | This Estonian standard EVS-EN ISO 13297:2021+A1:2022 consists of the English text of the European standard EN ISO 13297:2021 and its amendment A1:2022. |
| Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 14.04.2021, muudatus A1 19.10.2022. | This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 14.04.2021, for A1 19.10.2022. |
| Muudatusega A1 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega $\boxed{A1}$ $\langle A1 \rangle$. Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest. | The start and finish of text introduced or altered by amendment A1 is indicated in the text by tags $\boxed{A1}$ $\langle A1 \rangle$. The standard is available from the Estonian Centre for Standardisation and Accreditation. |

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 47.080

| |
|--|
| <p>Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele</p> <p>Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.</p> <p>Kui Teil on küsimusi standardite autoriõiguse kaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee</p> <p>The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation</p> <p>No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.</p> <p>If you have any questions about standards copyright protection, please contact the Estonian Centre for Standardisation and Accreditation: Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee</p> |
|--|

EUROPEAN STANDARD

EN ISO 13297 + A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2021, October 2022

ICS 47.080

Supersedes EN ISO 10133:2017, EN ISO 13297:2018

English Version

**Small craft - Electrical systems - Alternating and direct
current installations (ISO 13297:2020 +
ISO 13297:2020/Amd 1:2022)**

Petits navires - Installations électriques - Installations
à courant alternatif et continu (ISO 13297:2020 + ISO
13297:2020/Amd 1:2022)

Kleine Wasserfahrzeuge - Elektrische Systeme -
Wechselstrom- und Gleichstromanlagen (ISO
13297:2020 + ISO 13297:2020/Amd 1:2022)

This European Standard was approved by CEN on 6 July 2020. Amendment A1 was approved by CEN on 9 August 2022.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard and its amendment the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard and its Amendment A1 exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (EN ISO 13297:2021) has been prepared by Technical Committee ISO/TC 188 "Small craft" in collaboration with CCMC.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2021, and conflicting national standards shall be withdrawn at the latest by October 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 10133:2017 and EN ISO 13297:2018.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZA, which is an integral part of this document.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 13297:2020 has been approved by CEN as EN ISO 13297:2021 without any modification.

A1 Amendment A1 European foreword

This document (EN ISO 13297:2021/A1:2022) has been prepared by Technical Committee ISO/TC 188 "Small craft" in collaboration with Technical Committee CEN/TC 464 "Small Craft" the secretariat of which is held by SIS.

This Amendment to the European Standard EN ISO 13297:2021 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 13297:2020/Amd 1:2022 has been approved by CEN as EN ISO 13297:2021/A1:2022 without any modification. **A1**

This document is a preview generated by EVS

| Contents | Page |
|--|-----------|
| Foreword | v |
| [A1] Amendment A1 foreword [A1] | vi |
| 1 Scope | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions | 2 |
| 4 General requirements, DC and AC systems | 6 |
| 5 General requirements, DC systems | 6 |
| 6 General requirements, AC systems | 7 |
| 7 Marking, AC systems | 9 |
| 8 Batteries, DC systems | 10 |
| 9 Battery-disconnect switch, DC systems | 11 |
| 10 Power source options, AC systems | 11 |
| 11 Inverters and inverter/chargers, AC systems | 12 |
| 12 Overcurrent protection, DC systems | 13 |
| 13 Overcurrent protection, AC systems | 14 |
| 13.1 General | 14 |
| 13.2 Supply circuits..... | 14 |
| 13.3 Branch circuits | 15 |
| 14 Ground-fault protection/earth-leakage protection, AC systems | 15 |
| 15 Panel boards (switchboards), DC and AC systems | 15 |
| 16 Panel boards (switchboards), AC systems | 15 |
| 17 Conductors, DC and AC systems | 16 |
| 18 Conductors, DC systems | 16 |
| 19 Conductors, AC systems | 17 |
| 20 System wiring, DC and AC systems | 18 |
| 21 System wiring, DC systems | 19 |
| 22 Socket outlets, DC systems | 19 |
| 23 Socket outlets, AC systems | 19 |
| 24 Appliances and equipment, AC systems | 20 |
| 25 Ignition protection, DC and AC systems | 20 |
| 26 Owner's manual | 20 |
| Annex A (normative) Conductor requirements | 21 |
| Annex B (normative) Instructions to be included with owner's manual | 23 |
| Annex C (informative) Recommended system tests | 25 |
| Annex D (informative) Typical AC system diagrams | 26 |
| Annex E (informative) Overcurrent protection location options | 33 |

| | |
|--|-----------|
| Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of Directive 2013/53/EU aimed to be covered | 35 |
| Bibliography | 36 |

This document is a preview generated by EVS

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.

A1 Amendment A1 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).

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. **A1**

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*

A1 *deleted text* A1

A1 IEC 60309-2:2021 A1, *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)*