

SLOVENSKI STANDARD
SIST EN 15869-3:2019**01-september-2019****Nadomešča:****SIST EN 15869-3:2010**

Plovila za celinske vode - Električne povezave s kopnim, trifazni tok 400 V, 50 Hz, do 125 A - 3. del: Enota na krovu, dodatne zahteve

Inland navigation vessels - Electrical shore connection, three phase current 400 V, 50 Hz, up to 125 A - Part 3: On-board unit, additional requirements

Fahrzeuge der Binnenschifffahrt - Elektrischer Landanschluss, Drehstrom 400 V, 50 Hz, bis 125 A - Teil 3: Bordseitiger Teil, zusätzliche Anforderungen

Bateaux de navigation intérieure - Connexion au réseau électrique terrestre, courant triphasé 400 V, 125 A maximum, 50 Hz - Partie 3 : Unité à bord, exigences supplémentaires

Ta slovenski standard je istoveten z: EN 15869-3:2019

ICS:

47.020.60	Električna oprema ladij in konstrukcij na morju	Electrical equipment of ships and of marine structures
47.060	Jezerska in rečna plovila	Inland navigation vessels

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 15869-3

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ICS 47.020.60; 47.060

Supersedes EN 15869-3:2010

English Version

**Inland navigation vessels - Electrical shore connection,
three phase current 400 V, 50 Hz, up to 125 A - Part 3: On-
board unit, additional requirements**

Bateaux de navigation intérieure - Connexion au réseau
électrique terrestre, courant triphasé 400 V, 125 A
maximum, 50 Hz - Partie 3 : Unité à bord, exigences
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Fahrzeuge der Binnenschifffahrt - Elektrischer
Landanschluss, Drehstrom 400 V, 50 Hz, bis 125 A -
Teil 3: Bordseitiger Teil, zusätzliche Anforderungen

This European Standard was approved by CEN on 22 April 2019.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard 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 exists 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, North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey 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

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European foreword

This document (EN 15869-3:2019) has been prepared by Technical Committee CEN/TC 15 "Inland navigation vessels", the secretariat of which is held by DIN.

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 December 2019, and conflicting national standards shall be withdrawn at the latest by December 2019.

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 15869-3:2010.

A list of all parts in the EN 15869 series, published under the general title *Inland navigation vessels — Electrical shore connection, three phase current 400 V, 50 Hz, up to 125 A*, can be found on the CEN-CENELEC website.

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

- the maximum operating current has been increased up to 125 A;
- the title has been changed accordingly;
- the Scope has been changed;
- Terms and definitions have been moved to Part 1;
- Clause 4 has been renamed "Requirements" and divided into three sub clauses;
- new sub clause 4.2 "Requirements for shore connection cable" has been added;
- Table 1 "Maximum length of cable set and extension" has been revised and moved to Annex A (informative) with new title "Maximum length of a shore connection cable according to EN 50525-2-21 including extension, if applied";
- Clause 4.3.5 "Operating instructions" has been added;
- Figure 2 "Overview circuit diagram of an on-board power supply unit" has been amended;
- Former Clause 7 "Manufacturer's declaration of conformity" has been removed;
- Annex A (informative) has been added.

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

EN 15869-3:2019 (E)**Introduction**

Inland navigation vessels are equipped with a variety of electrical loads operating at 230 V or 400 V. While underway, continuous electrical power supply is provided by the on-board system from generators driven by diesel engines. When the vessel is berthed, these generators remain in operation if there is no suitable onshore power supply available. In some cases, this leads to intense noise pollution both for the crew on the vessel itself and on other vessels lying alongside and also for residents ashore. The exhaust fumes are an additional pollution factor.

The electrical shore connections specified in this European Standard make it possible to provide the vessels with an electrical power supply while berthed and to eliminate noise and exhaust pollution. This calls for a uniform Europe-wide shore connection that can be activated and deactivated by the vessel's crew in all ports and berths, if possible, without requiring any assistance from shore-based personnel. This European Standard contains electrical safety requirements for the prevention of hazards in making, using and breaking the shore connection.

Furthermore, cashless settlement for the electricity used should be possible, ideally a standard Europe-wide payment system.

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1 Scope

This document applies in connection with EN 15869-1 for the supply of berthed inland navigation vessels with electrical energy from shore.

This document specifies additional requirements for the shore connection cable and the feeding unit of the electrical shore connection.

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.

EN 15869-1, *Inland navigation vessels – Electrical shore connection, three phase current 400 V, , 50 Hz, up to 125 A – Part 1: General requirements*

EN 50525-2-21, *Electric cables – Low voltage energy cables of rated voltages up to and including 450/750 V (U₀/U) – Part 2-21: Cables for general applications – Flexible cables with crosslinked elastomeric insulation*

EN 50363-2-1, *Insulating, sheathing and covering materials for low voltage energy cables – Part 2-1: Cross-linked elastomeric sheathing compounds*

EN 60309-1, *Plugs, socket-outlets and couplers for industrial purposes – Part 1: General requirements (IEC 60309-1)*

HD 60364-5-51, *Electrical installations of buildings – Part 5-51: Selection and erection of electrical equipment – Common rules (IEC 60364-5-51)*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN 60811-403, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 403: Miscellaneous tests - Ozone resistance test on cross-linked compounds (IEC 60811-403)*

EN 60811-404, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 404: Miscellaneous tests - Mineral oil immersion tests for sheaths (IEC 60811-404)*

EN 61558-2-4, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-4: Particular requirements and tests for isolating transformers and power supply units incorporating isolating transformers (IEC 61558-2-4)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15869-1 and EN 60309-1 apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

EN 15869-3:2019 (E)

4 Requirements

4.1 Types

The shore connection cable shall be either permanently connected with the feeding unit on-board (Type A) or connectable via a plug-in connection (Type B).

4.2 Shore connection cable

4.2.1 General

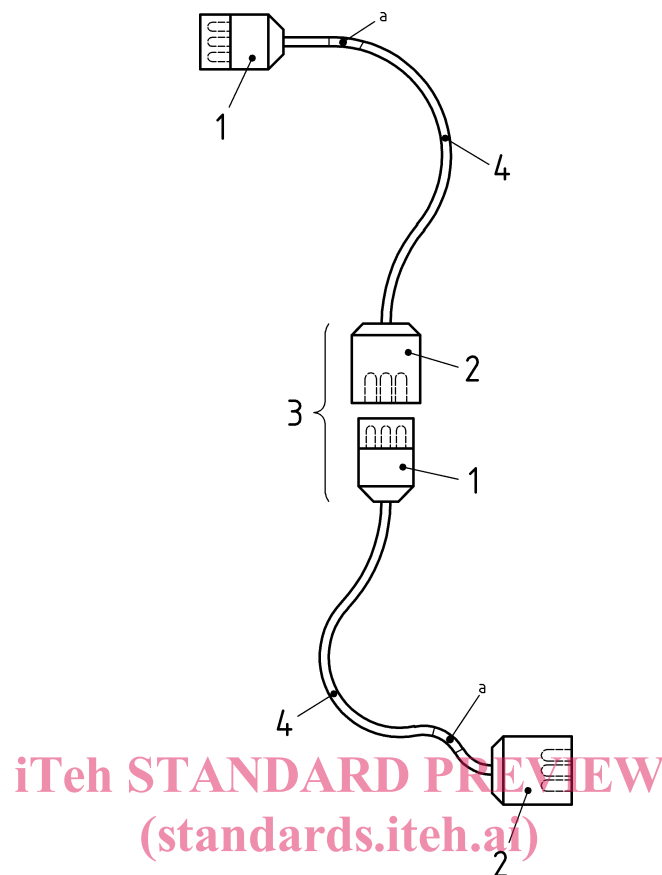
The shore connection cable belongs to the vessel.

A flexible cable according to EN 50525-2-21 shall be used for a shore connection cable according to this European Standard, see Figure 1. In addition, the cable shall meet the following requirements:

- a) resistance against splash water at least AD6 according to HD 60364-5-51;
- b) temperature resistance during operation from -25 °C up to $+80\text{ °C}$;
- c) the cable shall be suitable for being laid outdoors;
- d) ozone resistance according to EN 60811-403. The test conditions shall be as follows: ozone concentration and test duration according to EN 50363-2-1:
 - test temperature $(25 \pm 2)\text{ °C}$;
 - test duration 24 h;
 - ozone concentration $(250\text{ to }300) \times 10^{-4}\text{ Vol-\%}$;
- e) oil resistance according to EN 60811-404. The test conditions shall be as follows, test according to EN 50363-2-1:
 - oil temperature $(100 \pm 2)\text{ °C}$;
 - test duration 24 h.

The following values shall be reached:

- tensile strength: maximum change $\pm 40\%$;
- elongation at break: maximum change $\pm 40\%$.

**Key**

- 1 plug
- 2 connector
- 3 cable coupler
- 4 flexible cable
- a field for marking

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Figure 1 — Shore connection cable with extension

Annex A, Table A.1 gives examples for maximum values for the cable length depending on the maximum possible current carrying capacity in each case.

4.2.2 Laying of the shore connection cable

For the laying of the shore connection cable the risk particularly of back injury to workers involved in the manual handling of loads shall be minimized, for further information see EU Council Directive 90/269/EEC.

It is therefore recommended to select the cable length such that the mass of one single shore connection cable does not exceed 20 kg. For heavier cables, mobile cable reels should be used. Table A.1 gives approximately values for the masses of cables, in dependence to their lengths.

4.2.3 Extensions

Shore connection cables may be extended. Table A.1 gives suitable cross-sections of all cables used to the overall length of the shore connection cable. Each cable coupler (see Figure 1, key item 3) shall be