BS EN 16840:2017

BSI Standards Publication

Inland navigation vessels — Electrical shore connection, three-phase current 400 V, 50 Hz, at least 250 A

National foreword

This British Standard is the UK implementation of EN 16840:2017.

This standard is intended for use by operators of inland navigations vessels intending to connect the electrical systems of such a vessel to a low voltage shore supply of rated amperage greater than 200A three-phase.

In the UK, operators of inland navigation vessels fitted with low voltage, generator-supported electrical systems should note the safety guidance contained in ENA Engineering Recommendation G59, Issue 3, Amendment 1:2014 in order to obtain the necessary Distribution Network Operator (DNO) consent for temporarily connecting the vessel's electrical systems to the UK electricity grid. Guidance in G59 addresses the two types of connection implied in Subclause B.2.4 (Electrical Requirements) of EN16840:

a) Infrequent short term parallel operation; or

b) Switched alternative-only operation (for connection of a de-energized inland navigation vessel's electrical system to a DNO supply facility and vice-versa).

For seagoing vessels connecting to either high voltage or low voltage shore supplies, BS IEC/IEEE 80005 Parts 1–3 apply with identical requirements in the UK for DNO consent.

The UK participation in its preparation was entrusted to Technical Committee SME/32, Ships and marine technology - Steering committee.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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English Version

Inland navigation vessels - Electrical shore connection, three-phase current 400 V, 50 Hz, at least 250 A

Bateaux de navigation intérieure - Connexion au réseau électrique terrestre, courant triphasé 400 V, 50 Hz, minimum 250 A

Fahrzeuge der Binnenschifffahrt - Elektrischer Landanschluss, Drehstrom 400 V, 50 Hz, mindestens 250 A

This European Standard was approved by CEN on 9 January 2017.

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.

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European foreword

This document (EN 16840:2017) 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 September 2017, and conflicting national standards shall be withdrawn at the latest by September 2017.

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

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Introduction

Inland navigation vessels are usually fitted with a three-phase low-voltage grid, which operates at a rated voltage of 400 V at 50 Hz. During navigation, a continuous supply of electrical power is ensured by the diesel on-board generators. While in port, these generators shall continue to operate if no suitable land-based electrical power supply is available. The operation of these generators can sometimes lead to severe noise pollution, both for the crew on their own vessel, for other vessels lying alongside, and for residents ashore. Added to this is the damaging impact on the environment of exhaust gases.

The electrical shore connections regulated in this European Standard provide a land-based source of electrical power to the ship while in port or in a similar facility. It is therefore vital to have a Europe-wide uniform on-shore connection which can be connected and disconnected in all harbours and landing stages by the vessel crew, and, where possible, without assistance from land-based personnel. The safety requirements set out in this Standard serve to prevent accidents when setting up, using and disconnecting the shore connection. It should be pointed out that other standards apply to maritime vessels.

1 Scope

This European Standard specifies requirements relating to electrical installations for the supply of electrical power (three-phase AC - 400 V, 50 Hz and with a rated current of at least 250 A) to vessels in port.

Annex A stipulates general and safety requirements relating to the shore-based section of the electrical shore connection.

Annex B stipulates general and safety requirements relating to the shore-based connecting cables and to the on-board section of the electrical shore connection.

Annex C contains information concerning the dimensioning of shore-based connecting cables.

The requirements according to the HD 60364 and HD 384 series of standards generally apply to shore-based low-voltage equipment.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15869-2, *Inland Navigation Vessels — Electrical Shore Connections, Three-Phase Current 400 V, to 63 A, 50 Hz — Part 2: On-shore Portion, Safety-Related Requirements*

EN 50525-2-21, *Cables and Wiring — High-Voltage Power Lines with Rated Voltage to 450/750 V (Uo/U) — Part 2-21: High-Voltage Power Lines for General Applications — Flexible Cords with cross-linked elastomeric insulation*

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

EN 60947-2, *Low-Voltage Switchgear— Part 2: Circuit Breaker (IEC 60947-2)*

EN 61984, *Plug-In Connector — Safety-Related Requirements and Testing (IEC 61984)*

HD 308 S2, *Identification of cores in cables and flexible cords*

HD 60364-7-730, *Low-voltage electrical installations — Parts 7-730: Requirements for special installations or locations — Onshore units of electrical shore connections for inland navigation vessels*

3 Terms and definitions

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

3.1
on-board supply system
self-contained electrical power supply system of a vessel for distributing electrical energy

Note 1 to entry: A vehicle may have multiple separate on-board power supply systems.

3.2
electrical shore connection
<inland navigation> electrical installation for supplying electrical energy to inland navigation vessels in ports and at landing stages

3.3