BS EN 15869-1:2010

BSI Standards Publication

Inland navigation vessels — Electrical shore connection, three phase current 400 V, up to 63 A, 50 Hz

Part 1: General requirements

bsi.

...making excellence a habit.™

National foreword

This British Standard is the UK implementation of EN 15869-1:2010.

The UK participation in its preparation was entrusted to Technical Committee SME/32/-/11, Ships and marine technology - Intermodal, inland navigation and short sea shipping.

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.

Published by BSI Standards Limited 2013.

ISBN 978 0 580 63977 7

ICS 47.020.60; 47.060; 93.140

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

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2013.

Amendments issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 15869-1

February 2010

ICS 47.020.60; 47.060

English Version

Inland navigation vessels - Electrical shore connection, three phase current 400 V, up to 63 A, 50 Hz - Part 1: General requirements

Bateaux de navigation intérieure - Connexion au réseau électrique terrestre, courant triphasé 400 V, à 63 A, 50 Hz - Partie 1: Exigences générales

Fahrzeuge der Binnenschifffahrt - Elektrischer Landanschluss, Drehstrom 400 V, bis 63 A, 50 Hz - Teil 1: Allgemeine Anforderungen

This European Standard was approved by CEN on 25 December 2009.

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 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 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 15869-1:2010: E

Contents

Page

Foreword

This document (EN 15869-1:2010) 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 August 2010, and conflicting national standards shall be withdrawn at the latest by August 2010.

EN 15869, *Inland navigation vessels — Electrical shore connection — Three-phase current 400 V, up to 63 A, 50 Hz* comprises:

— *Part 1: General requirements*

— *Part 2: Onshore unit, safety requirements*

— *Part 3: On-board unit, safety requirements*

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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 onboard system from generators driven by diesel engines. When the vessel is berthed, these generators have to 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 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 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 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 shall be possible, ideally a standard Europe-wide payment system.

Electrical shore connections with a permissible current of over 63 A as used for passenger ships with a hotelling function are not covered by this standard.

1 Scope

This European Standard specifies requirements applicable to equipment for shore-to-vessel supply of three-phase 400 V electrical power up to 63 A and a frequency of 50 Hz to berthed inland navigation vessels.

This part of the European Standard specifies general requirements and contains information on the settlement method.

2 Normative references

This document does not contain any normative references.

3 Terms and definitions

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

3.1
electrical shore connection
<inland navigation> equipment consisting of electrical power-supply station, cable set and feed unit for the supply of electrical power to inland navigation vessels in ports and at berths

3.2
electrical power-supply station
shore-side part of the electrical shore connection with one or more connector units

3.3
connector unit
<inland navigation> unit for connecting an inland navigation vessel

3.4
activation medium
<inland navigation> system for activating the supply of power and cashless settlement of the costs

3.5
feed unit
<inland navigation> all the onboard devices for receiving the electrical power on board

4 Requirements

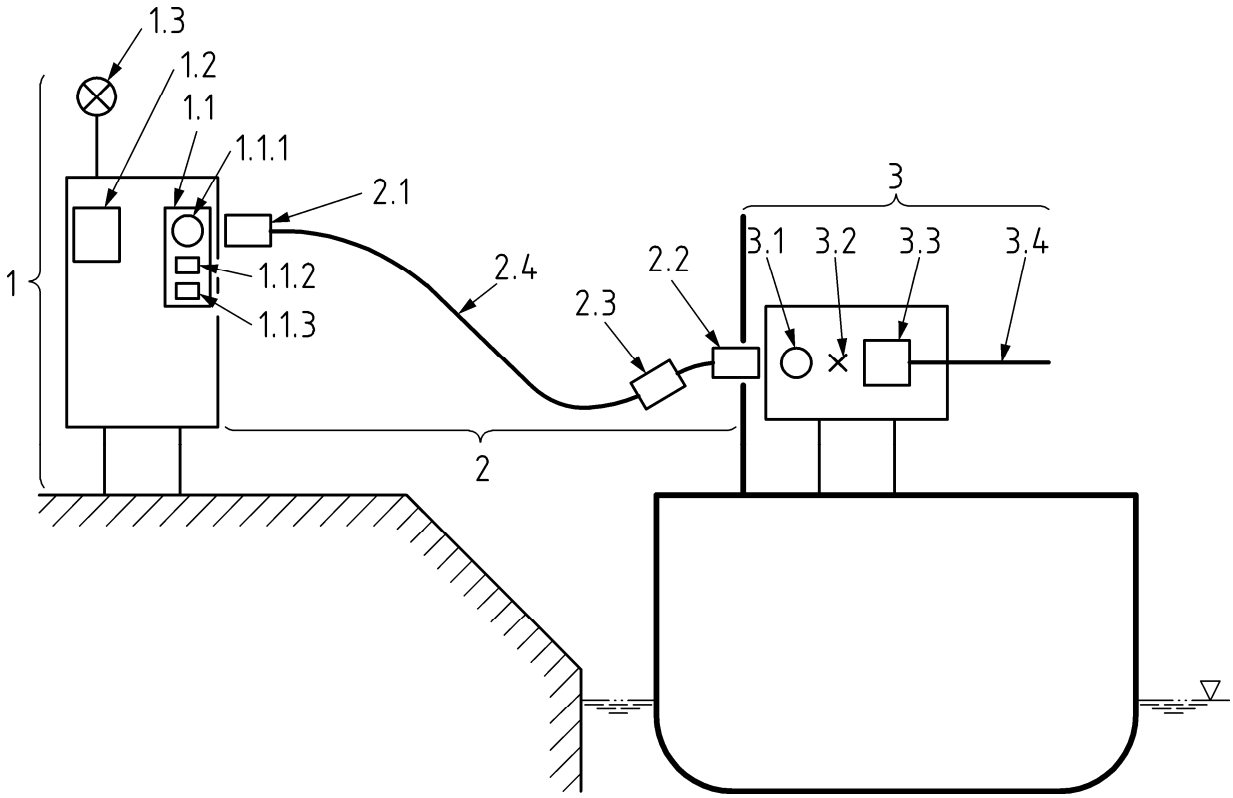
4.1 Components

The electrical shore connection comprises (see Figure 1):

a) electrical power-supply station, see Part 2 of the standard;

b) cable set, see Part 3 of the standard;

c) feed unit, see Part 3 of the standard..



Key

1 electrical power-supply station
1.1 connector unit
1.1.1 socket outlet
1.1.2 three-phase meter
1.1.3 activation medium
1.2 operating instructions
1.3 lighting

2 cable set
2.1 plug
2.2 coupler (optional, instead of fixed cable)
2.3 strain-relief device
2.4 connection cable

3 feed unit
3.1 equipment plug (optional, instead of fixed cable)
3.2 all-pole switch
3.3 isolating transformer
3.4 permanently-connected cable for control panel (optional, if the feed unit is not integrated in the control panel)

Figure 1 — Layout diagram of an electrical shore connection

4.2 Characteristic values

The electrical shore connection shall be designed for three-phase 400 V, 16 A, 50 Hz and may also be designed for three-phase 400 V, 32 A, 50 Hz or for three-phase 400 V, 32 A and 63 A, 50 Hz.

NOTE At 16 A, it can transfer approximately 11 kW continuous-load power, at 32 A approximately 22 kW and at 63 A approximately 44 kW.

4.3 Readiness for operation

The electrical shore connection shall only be energized via the activation medium used for recording consumption (see 4.4). It shall be possible to start and stop the power supply at any time without the aid of shore-side personnel.

4.4 Consumption recording and settlement

If settlement is requested, this shall be done on a cash-free basis via a fixed tariff or on consumption. Each connector unit shall then have its own consumption recording system.

Annex A gives examples of activating and consumption recording systems.

4.5 Deviations from 4.3 and 4.4

In ports and berths where personnel are provided at all times or there is free service, there may be deviations from the requirements for the autonomous connection and consumption measurement as described in 4.3 and 4.4.

Annex A
(informative)

Electrical power-supply stations — Possible payment methods

A.1 Transponder card — Prepaid card

Transponder cards pre-loaded with credit are sold to users. When the electrical power-supply station is activated, the credit balance is transferred from the transponder card to the electrical power-supply station and on completion of the power transfer, the remaining credit is transferred back to the transponder card.

Advantages:

— the technical and financial costs are relatively low;

— the user pays the supplier in advance. Payment for the electrical power supplied is therefore ensured.

Disadvantages:

— suitable sales outlets and top-up facilities have to be provided for the transponder cards;

— it is not a universally valid payment system. As each transponder card is invariably valid for only one particular electrical power-supply station provider, this system is an isolated solution.

A.2 Money card

Money cards are a cashless method of payment for smaller sums of money maintained by the credit services sector. In contrast to transponder cards, the electrical power-supply station providers can only deduct the amount from the money card; it is not possible to re-credit money cards. Therefore, payment for the electrical power supplied is only ensured if run on a basis similar to that of a coin-operated machine. In this case, the power supply is automatically deactivated when the amount pre-selected by the user and deducted from the money card has been used up.

Advantages:

— this is a generally accepted payment system;

— the fees incurred for the financial transactions are low.

Disadvantages:

— money card terminals need to be read out manually on a regular basis by the provider or need suitable online connections;

— the coin-operated machine principle is not very user-friendly.

A.3 EC-card (Giro card)/credit card

Many petrol stations offer motorists the possibility of paying for fuel by EC-card or credit card. The customer's account is pre-authorized with a fixed amount before the refuelling commences. When refuelling is completed, this amount is credited back to the account and then debited with the actual amount. On completion of the payment process, the customer is given a payment receipt.

Advantages:

— EC-cards and credit cards are methods accepted Europe-wide;

— the payment for the electrical power supplied is ensured by the pre-authorization of the customer's account.

Disadvantages:

— the technical and financial costs are considerable as online connections are required in every case;

— the fees for the financial transactions and telecommunication connections are disproportionately high, particularly in cases of low electrical power consumption;

— maintaining a stock of paper rolls for the payment receipts could be particularly labour-intensive

A.4 GPRS fleet cards

With the GPRS fleet card system, each vessel owner or master receives a RFID-based (MIFARE) fleet card valid throughout Europe.

The system can be used by a settlement service operating Europe-wide or by local or national providers.

The system provider shall use a communications and settlement system, e.g. Premos-IP. With this system every vessel owner is registered and the required number of MIFARE fleet cards is allocated to him for his fleet. The owner receives his card by post. He can be enabled in the system after passing a creditworthiness test.

If he does not settle his bills for using the system, he can be locked out of the system. Statistical functions can filter out accounting data (e.g. monthly settlements) of the customer to then produce the end-of-month account, for example, or export the data automatically to a settlement and clearing system.

Accounting procedure:

In addition to the electricity meter and the other necessary equipment, the stack contains a camp control data logger, a GPRS module and a MIFARE transponder reader. When the vessel master holds his card in front of the reader, a GPRS internet connection is made to the settlement server. The ID number of the card is verified and it is established whether the owner is enabled. If the check is successful, a socket outlet is activated for use and this is indicated on the LC display of the stack.

The vessel master then inserts the plug into the socket outlet. As soon as power is supplied, the vessel owner's account is stored on the stack with his card ID and the kWh logged.

As soon as the vessel master unplugs the connection cable, the meter reading is transmitted to the settlement server by the GPRS and can be used subsequently for settlement purposes. The socket outlet in the stack is deactivated. The consumption is shown on the display.

The system can be used for settlements throughout Europe.

Advantages:

— the technical and financial costs are comparatively low;

— the financial transaction fees are low;

— payment for power consumed is ensured by the pre-authorization of the customer's account.

Disadvantages:

— suitable sales points and a distribution system have to be established for the card transponders.

This page deliberately left blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email bsmusales@bsigroup.com.

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

Useful Contacts:

Customer Services
Tel: +44 845 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 845 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

bsi.

...making excellence a habit.™