

# INTERNATIONAL STANDARD

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**Plugs, socket-outlets and ship couplers for high-voltage shore connection  
(HVSC) systems –  
Part 1: General requirements**



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Part 1: General requirements**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PLUGS, SOCKET-OUTLETS AND SHIP COUPLERS FOR  
HIGH-VOLTAGE SHORE CONNECTION (HVSC) SYSTEMS –****Part 1: General requirements**

## FOREWORD

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International Standard IEC 62613-1 has been prepared by subcommittee 23H: Plugs, socket-outlets and couplers for industrial and similar applications, and for electric vehicles, of IEC technical committee 23: Electrical accessories.

This second edition cancels and replaces the first edition published in 2011. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) extension of the scope to an unlimited number of pilot contacts (previously limited to 3);
- b) update of the Figures and deletion of their embedded texts;
- c) insertion of tables of keys whenever required by the Figures.

The text of this International Standard is based on the following documents:

CDV	Report on voting
23H/411/CDV	23H/442A/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

In this standard, the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- notes: in smaller roman type.

A list of all the parts in the IEC 62613 series, under the general title *Plugs, socket-outlets and ship couplers for high-voltage shore connection (HVSC) systems*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

## INTRODUCTION

This part of IEC 62613 has been primarily written to address the needs of IEC/IEEE 80005-1 in terms of plugs, socket-outlets, ship connectors and ship inlets (hereafter referred to as "accessories"), to deliver electrical power to ships in ports. The purpose of IEC/IEEE 80005-1 is to define requirements that allow compliant ships to connect to compliant high-voltage shore power supplies through a compatible shore-to-ship connection.

These ships are described in IEC/IEEE 80005-1.

Ships that do not require connecting with standardized high-voltage shore power supplies as above may use accessories that are not covered by the standard sheets of IEC 62613-2, but they may find it impossible to connect to these shore supplies.

Low-voltage plugs, socket-outlets, ship connectors and ship inlets used for the connection of certain ship types to low-voltage shore power supplies can be found in IEC 60309 (all parts).

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# PLUGS, SOCKET-OUTLETS AND SHIP COUPLERS FOR HIGH-VOLTAGE SHORE CONNECTION (HVSC) SYSTEMS –

## Part 1: General requirements

### 1 Scope

This part of IEC 62613 applies to accessories with

- three phases and earth with pilot contacts,
- one pole for neutral.

These accessories have rated currents not exceeding 500 A and rated operating voltages not exceeding 12 kV 50/60 Hz.

NOTE 1 In some countries, the term "ground" is used instead of "earth".

These accessories are primarily intended for use outdoors, in a seawater environment, for the shore supply of ships (ship-to-shore connection), in an ambient temperature within the range of  $-25\text{ °C}$  to  $+45\text{ °C}$ .

NOTE 2 In some countries, other ambient temperatures prevail and are considered.

These accessories are not intended for use in hazardous areas. In such locations where special conditions prevail, additional requirements can be necessary.

These accessories are intended to be connected to cables of copper or copper alloy only.

Socket-outlets or ship inlets incorporated in or fixed to electrical equipment are within the scope of this document.

### 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.

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60092 (all parts), *Electrical installations in ships*

IEC 60092-354, *Electrical installations in ships – Part 354: Single- and three-core power cables with extruded solid insulation for rated voltages 6 kV ( $U_m = 7,2\text{ kV}$ ) up to 30 kV ( $U_m = 36\text{ kV}$ )*

IEC 60112, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60228, *Conductors of insulated cables*

IEC 60269-1, *Low-voltage fuses – Part 1: General requirements*

IEC 60269-2, *Low-voltage fuses – Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) – Examples of standardized systems of fuses A to K*

IEC 60502-4:2010, *Power cables with extruded insulation and their accessories for rated voltages from 1 kV ( $U_m = 1,2$  kV) up to 30 kV ( $U_m = 36$  kV) – Part 4: Test requirements on accessories for cables with rated voltages from 6 kV ( $U_m = 7,2$  kV) up to 30 kV ( $U_m = 36$  kV)*

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

IEC 60664-1, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60695-2-11, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)*

IEC 60695-10-2, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test method*

IEC 62262, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

IEC 62271-1, *High-voltage switchgear and controlgear – Part 1: Common specifications for alternating current switchgear and controlgear*

ASTM B117-1985, *Standard practice for operating salt spray (fog) apparatus*

IEEE 1580, *IEEE Recommended Practice for Marine Cable for Use on Shipboard and Fixed or Floating Facilities*

### 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:

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

NOTE Where the terms "voltage" and "current" are used, they imply the alternating current (AC) root mean square (RMS) values.

#### 3.1

##### **accessory**

plugs, socket-outlets, ship connectors and ship inlets

Note 1 to entry: The application of accessories is shown in Figure 1.

#### 3.1.1

##### **socket-outlet**

part intended to be installed with the fixed wiring or incorporated in equipment

Note 1 to entry: A socket-outlet may also be incorporated in the output circuit of an isolating transformer.

#### 3.1.2

##### **plug**

part intended to be attached directly to one flexible cable