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INTERNATIONAL STANDARD

AMENDMENT 1

**Utility connections in port –
Part 1: High voltage shore connection (HVSC) systems – General requirements**





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UTILITY CONNECTIONS IN PORT –

Part 1: High voltage shore connection (HVSC) systems –
General requirements

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This amendment has been prepared by IEC technical committee 18: Electrical installations of ships and of mobile and fixed offshore units, in cooperation with

- IEC subcommittee 23H: Plugs, socket-outlets and couplers for industrial and similar applications, and for electric vehicles, of IEC technical committee 23: Electrical accessories,
- ISO subcommittee 3: Piping and machinery, of ISO technical committee 8: Ships and marine technology, and
- IEEE IAS Petroleum and chemical industry committee.

This document is published as a triple logo (IEC, ISO and IEEE) standard.

The text of this amendment is based on the following documents:

Draft	Report on voting
18/1737/FDIS	18/1754/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table. In ISO, the amendment has been approved by 10 P members out of 10 having cast a vote.

The language used for the development of this Amendment is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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

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- withdrawn,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

2 Normative references

Add, after the existing reference IEC/IEEE 80005-2, the following new reference:

IEEE Std C37.20.2TM, *Standard for Metal-Clad Switchgear*

4.8 System study and calculations

Add, after c) 3), the following new note:

NOTE Provisional load restrictions can be necessary during load transfer.

5.1 Voltages and frequencies

Replace the existing fourth paragraph with the following new paragraph:

The phase sequence shall be L1-L2-L3 or A-B-C or R-S-T, anticlockwise. A phase sequence indicator shall indicate correct sequence prior to energizing or paralleling HVSC – see Figure 2 a). Figure 2 b) illustrates the balanced three-phase voltages in the time domain.

Add, after the existing fifth paragraph, the following new note:

NOTE See ship specific annexes for phase assignment of the pins in the connector.

5.2 Quality of HV shore supply

Delete, in item c) of the existing second paragraph, the last sentence.

Figure 3 – Single harmonic distortion limits

Delete the existing figure, including its title.

Replace, after Figure 3, the existing note with the following new note:

NOTE Additional recommendations are provided in IEEE Std 519TM, MIL STD 1399-680, and IEC 60092-101.

6.2.1 Circuit-breaker, disconnector and earthing switch

Replace the existing first paragraph with the following new paragraph and note:

The shore connection switchgear and control gear shall be designed and tested in accordance with IEC 62271-200 or ANSI/UL Metal-Clad Switchgear (IEEE Std C37.20.2TM). Switching devices and their combination shall be electrically and mechanically interlocked, to provide safe isolation before earthing and during operation.

NOTE 1 Switching devices and their combination for isolation and earthing can be part of different switchgear functional units (see IEC 60050-441:2000, 441-13-04).

Replace, in the existing note, the word "NOTE" with "NOTE 2".

7.3.4 Fibre-optic connection

Delete the existing subclause, including its title.

B.1 General

Delete, in the existing first paragraph, the words "excluding pure car carriers".

Add, after the existing last paragraph, the following new note:

NOTE IEC/IEEE 80005-1:2019/AMD1 removes the wording “excluding pure car-carriers”. This is not to make Annex B applicable for vehicles carriers/pure care carriers. A new annex for vehicles carriers is under consideration for a potential future edition.

Figure B.1 – General system diagram

Replace the existing key 2 and 3 with the following new keys:

- 2 Power ship connector (shore-side) and ship inlet (onboard)
- 3 Fibre optic communication for control and monitoring (integrated in power cable); socket-outlet (shore-side) and plug (on-board) (this document does not specify requirements for optic communication)

B.7.1 General

Replace the existing paragraph with the following new paragraph:

For 6,6 kV systems, one cable shall be used for HVSC system up to a power demand of 3,5 MVA. For 11 kV systems, one cable shall be used for HVSC system up to a power demand of 6,5 MVA.

B.7.3.1 General

Replace the existing first paragraph with the following new paragraph:

General arrangement of ship connector and ship inlet shall be in accordance with IEC 62613-2:2016, Annex J, and Figure B.3 below.

Figure B.3 – Three-phase plug and socket-outlet contact assignment

Replace the existing title with the following new title:

Figure B.3 – Three-phase ship connector and ship inlet contact assignment

Replace the existing key 1 and key 2 with the following new keys:

- 1 Ship connector face
- 2 Ship inlet face

Add, after the existing key, the following new note:

NOTE Pins are showed as solid circles and sockets as open circles.

Replace the last existing two paragraphs with the following new paragraphs:

Each connector and ship inlet shall be fitted with seven pilot contacts.

For design and dimensions, see IEC 62613-1 and IEC 62613-2:2016.

B.7.3.4 Fibre-optic connection

Delete the existing subclause, including its title.

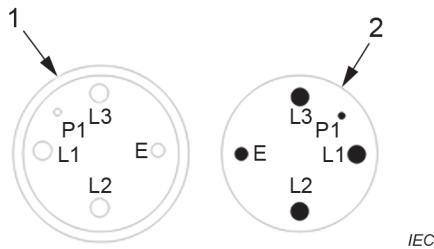
Figure C.1 – General system diagram

Replace the existing key 2 with the following new key:

- 2 Ship connector (shore side) and ship inlet (onboard), four times

Figure C.4 – Three-phase ship connector and ship inlet contact assignment

Replace the existing figure and key with the following new figure, key and note:

**Key**

- 1 Ship connector face
- 2 Ship inlet face
- E Earth
- P1 Pilot line 1 (used for continuity check)
- L1 Phase A – phase R
- L2 Phase B – phase S
- L3 Phase C – phase T

NOTE Pins are showed as solid circles and sockets as open circles.

Figure D.1 – General system diagram

Replace the existing key 3 with the following new key:

- 3 Fibre optic communication for control and monitoring (integrated in power cable); plug (shore-side) and socket outlet (on-board) (this document does not specify requirements for optic communication)

D.7.3.1 General

Replace, in the existing third paragraph, the word "Annex II" with "Annex I".

Figure D.3 – Three-phase plug and socket-outlet contact assignment

Add, after the existing key, the following new note:

NOTE Pins are showed as solid circles and sockets as open circles.

D.7.3.4 Fibre-optic connection

Delete the existing subclause, including its title.

Figure E.1 – General system diagram

Replace the existing key 2 and 3 with the following new keys:

- 2 Power ship connector (shore-side) and ship inlet (onboard)
- 3 Fibre optic communication for control and monitoring (integrated in power cable); socket-outlet (shore-side) and plug (on-board) (this document does not specify requirements for optic communication)

E.7.3.1 General

Replace, in the existing first paragraph, the words "shore plug and ship socket-outlet" with "ship connector and ship inlet".

Figure E.2 – Three-phase ship connector and ship inlet contact assignment

Replace the existing key 1 and key 2 with the following new keys:

- 1 Ship connector face
- 2 Ship inlet face

Add, after the existing key, the following new note:

NOTE Pins are showed as solid circles and sockets as open circles.

E.7.3.4 Fibre-optic connection

Delete the existing subclause, including its title.

Figure F.1 – General system diagram

Replace the existing key 2 and key 4 with the following new keys:

- 2 Power ship connector (shore-side) and ship inlet (onboard)
- 4 Pilot wires (integrated in ship connector and ship inlet)

F.7.3.1 General

Replace the existing second and third paragraphs with the following new paragraphs:

General arrangement of ship connector and ship inlet shall be in accordance with IEC 62613-2:2016, Annex I, and Figure F.2 below.

Each ship connector and ship inlet should be fitted with three pilot contacts.

Figure F.2 – Three-phase shore plug and ship socket-outlet contact assignment

Replace the existing title with the following new title:

Figure F.2 – Three-phase ship connector and ship inlet contact assignment

Replace the existing key 1 and key 2 with the following new keys:

- 1 Ship connector face
- 2 Ship inlet face

Add, after the existing key, the following new note:

NOTE Pins are showed as solid circles and sockets as open circles.

Bibliography

Add, after the existing first reference, the following new references:

IEC 60050-441, *International Electrotechnical Vocabulary – Part 441: Switchgear, controlgear and fuses* (available at www.electropedia.org)

IEC 60092-101, *Electrical installations in ships – Part 101: Definitions and general requirements*

Delete the existing reference IEEE Std C37.20.2TM.