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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 43767.1-2024

**Shipboard shore power receiving equipment - Part 1: Low
voltage shore power box**

船载岸电受电设备 第1部分：低压岸电箱

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Classification and type designation	3
4.1 Classification by type	3
4.2 Method of type designation	3
4.3 Types and specifications	3
4.4 Nameplate	4
5 Requirements	4
5.1 Dimensions	4
5.2 Appearance quality	4
5.3 Materials	4
5.4 Design and structure	5
5.5 Performance	10
5.6 Degree of protection	12
5.7 Environmental adaptability	12
5.8 Electromagnetic compatibility	13
6 Test methods	14
6.1 Nameplate	14
6.2 Dimensions	14
6.3 Appearance quality	14
6.4 Materials	14
6.5 Clearances and creepage distances	14
6.6 Safety protection	14
6.7 Emergency disconnection	14
6.8 Shore power failure and loss of power alarm	15
6.9 Voltage and frequency fluctuation	15
6.10 Voltage failure and voltage unbalance	15
6.11 Insulation resistance	15
6.12 Withstand voltage	15
6.13 Short-circuit current withstand strength	15
6.14 Temperature rise	15

6.15 Degree of protection	15
6.16 High temperature	15
6.17 Low temperature	15
6.18 Cyclic damp heat	15
6.19 Inclination and rolling	15
6.20 Vibration	15
6.21 Salt mist	16
6.22 Electromagnetic compatibility	16
7 Inspection rules	16
7.1 Classification of inspection	16
7.2 Type test.....	16
7.3 Routine test	17
8 Packaging, transport and storage	17
8.1 Marking	17
8.2 Product documents	17
8.3 Product packaging and transport	18
8.4 Storage	18
Bibliography	19

1 Scope

The document lays down the classification and type designation, the technical requirements, the test methods, the inspection rules and the provisions on packaging, transport and storage of the a.c. low voltage shore power box.

It applies to the design, manufacture, inspection and application of a.c. low voltage shore power boxes, referred to below as low voltage shore power boxes, for a system nominal voltage not exceeding 1 kV a.c., a rated frequency of 50/60 Hz and a rated current not exceeding 1 600 A.

3 Terms and definitions

The clause states that the terms and definitions of GB/T 2900.1, GB/T 2900.49, GB/T 11918.1, GB/T 11918.4-2014, GB/T 11918.5-2020 and GB/T 41999-2022, together with the following, apply to the document.

3.1 rated voltage, symbol U with subscript r : r.m.s. value of the phase-to-phase voltage, equal to the highest voltage of the system in which the equipment is placed; it expresses the maximum value of the highest system voltage of the network for which the equipment is

used. A note adds that the several components making up the equipment may each have their own rated voltage value. The source is given as IEC 62271-200:2021, 5.2.

3.2 rated peak withstand current, symbol I_p : peak value of the first major loop of the rated short-time withstand current that switchgear and controlgear can carry in the closed position under the specified conditions of use. The source is given as IEC 62271-200:2021, 5.7.

4 Classification and type designation

4.1 Classification by type. According to the structure of the box, low voltage shore power boxes are divided into the wall-mounted type, whose box is mounted on the surface of a bulkhead panel; the flush-mounted type, whose box is mounted in a recess in the bulkhead panel; and the floor-standing type, whose box is mounted on the deck.

4.2 Method of type designation. Figure 1 shows how the type is written. The designation begins with the letters LSPB, which stand for the low voltage shore power box, and is followed by the rated current in amperes, the rated voltage in volts and the distribution system, then by the additional options. The distribution system is coded 2 for single phase, that is one phase plus neutral plus protective earth; 3 for three-phase three-wire, that is three phases plus protective earth; and 4 for three-phase four-wire, that is three phases plus neutral plus protective earth. The additional option letters are A for motor operation of the circuit breaker, manual operation being left unmarked; B for a communication interface; C for residual current protection; D for an energy meter; E for a degree of protection of IP56 or better, IP22 being left unmarked; F for 60 Hz, 50 Hz being left unmarked; G for flush mounting; H for wall mounting; I for floor standing; and J for automatic phase sequence changeover, manual phase sequence changeover being left unmarked.

4.2 Examples of type designation. Three examples are given. A single-phase low voltage shore power box with a rated voltage of 230 V, a rated frequency of 50 Hz, a rated tripping current of 63 A, flush mounted, with a degree of protection of IP22, with residual current protection and with an energy meter, is designated LSPB-63/230/2-CDG. A three-phase three-wire box with a rated voltage of 690 V, a rated frequency of 60 Hz, a rated tripping current of 400 A, wall mounted, with a degree of protection of IP56 and with automatic phase sequence changeover, is designated LSPB-400/690/3-EFHJ. A three-phase four-wire box with a rated voltage of 400 V, a rated frequency of 50 Hz, a rated tripping current of 1 250 A, motor operated, with a communication interface, floor standing and with a degree of protection of IP56, is designated LSPB-1250/400/4-ABEI.

4.3 Types and specifications. Table 1 lists the types of low voltage shore power box against the system nominal voltage, the rated voltage of the equipment, the rated frequency, the rated current, the setting range of the tripping current and the contact arrangement of the marine coupler where one is fitted. The smallest type, LSPB-63, is rated 63 A with a setting range of 16 A to 63 A at a system nominal voltage of 220 V and an equipment rated voltage

of 230 V, at 50 Hz, with a single-phase contact arrangement of one phase plus neutral plus protective earth. The 125 A types are rated at a system nominal voltage of 380 V and an equipment rated voltage of 400 V, at 50 Hz, with a setting range of 50 A to 125 A and a contact arrangement of three phases plus protective earth plus two pilot contacts. The types from 250 A to 1 600 A are given at system nominal voltages of 380 V, 440 V and 660 V, with equipment rated voltages of 400 V, 450 V and 690 V, at 50/60 Hz, with a contact arrangement of three phases plus protective earth plus four pilot contacts; their rated currents are 250 A, 400 A, 500 A, 630 A, 800 A, 1 000 A, 1 250 A and 1 600 A, and the corresponding setting ranges of the tripping current are 63 A to 250 A, 225 A to 400 A, 320 A to 500 A, 450 A to 630 A, 600 A to 800 A, 750 A to 1 000 A, 950 A to 1 250 A and 1 200 A to 1 600 A.

4.4 Nameplate. The nameplate shall be of a flame-retardant and durable material such as stainless steel; it shall carry the complete information on the product name, the type and specification, the electrical system form, the rated voltage, the rated frequency, the rated current, the degree of protection, the ship survey mark where applicable, the works serial number, the date of manufacture and the manufacturer, and the wording should be given in Chinese and English side by side; the nameplate may be fixed with screws or rivets.

5 Requirements

5.1 Dimensions. The box structure and the dimensions of the low voltage shore power box should conform to Clause 8 of GB/T 7251.1-2013 and to the relevant requirements of GB/T 20641 and GB/T 3047.1.

5.2 Appearance quality. The box surface shall be clean and shall have been given an anti-corrosion treatment; the colour of the coating on the inner and outer surfaces should be the same and even in shade, and the surface shall be smooth. The edges and the openings of all the parts shall be smooth, free from burrs and without cracks. No obvious deformation or burn defects shall be present at any weld.

5.3 Materials. Table 2 gives the material requirements for the box. The box shell shall be of ordinary carbon steel plate of thickness not less than 1.5 mm or of stainless steel plate of equivalent mechanical strength. The box door hinges shall be of chromium-plated ordinary carbon steel or of proprietary stainless steel waterproof hinge and catch assemblies. The electrical base plate shall be of an insulating board that is heat resistant, moisture resistant, flame retardant and chemically stable; ordinary carbon steel plate or stainless steel plate may also be used. Fasteners shall be of a corrosion-resistant material or of carbon steel that has been given an anti-corrosion treatment, and screws serving as conductors shall be of copper. Insulating materials shall be durable, flame retardant, moisture resistant and mould resistant; toxic materials and materials that can release toxic gases are to be avoided, and materials or products containing asbestos shall not be used.

5.4.1 Basic requirements. The low voltage shore power box shall satisfy GB/T 7251.1-2013,