

JB

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

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General requirements for lithium-ion battery chargers

锂离子蓄电池充电设备通用要求

(English Translation)

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1 Scope

This Standard specifies the terms and definitions, models and basic parameters, technical requirements, tests, marks, packaging, transportation and storage for charging equipment of lithium-ion battery.

This Standard is applicable to the charging equipment for lithium-ion battery module or lithium-ion battery assembly composed of lithium-ion battery greater than or equal to 6A·h. It can be also used for the charging equipment for nickel-based battery and lead-acid battery module and assembly.

This Standard is applicable to the charging equipment that uses cables to connect to battery module or assembly, with AC rated voltage not exceeding 660V and DC rated voltage not exceeding 1000V.

2 Normative references

The following referenced documents are indispensable for the application 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.

GB/T 156-2007, Standard voltage

GB/T 2423.5-1995, Environmental testing for electric and electronic products Part 2: Test methods Test Ea and guidance: Shock

GB/T 2423.8-1995, Environmental testing for electric and electronic products Part 2: Test methods Test Ed: Free fall

GB/T 3047.1-1995, Series of basic dimensions of panels, rack and cabinets for vertical increment of 20mm

GB/T 3859.1-1993, Semiconductor convertors - Specification of basic requirements

GB/T 3859.3-1993, Semiconductor convertors - Transformers and reactors

GB 4208-2008, Degrees of Protection Provided by Enclosure (IP Code)

3 Terms and definitions

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

3.1 Extreme cell voltage

the voltage of the battery cell with the maximum or lowest voltage in the lithium-ion battery pack; during the charging process, it specifically refers to the voltage of the maximum voltage battery cell, and in the process of discharging, it refers to the voltage of the lowest voltage battery cell

3.2 Charge interface

the general term for the communication interface and circuit interface of the lithium-ion battery assembly controller (BECU) connected to the charging equipment, of which except for the positive and negative connection ports of the charging power supply, it also includes part or all of the positive and negative connection interfaces of the network power supply, the charging control pilot circuit interface, the charging control circuit interface, and the I/O charging control circuit interface

3.3 On-board charge equipment

the charging equipment installed on motorized device or motor vehicle

3.4 Pre-charge

when the minimum voltage of battery cell is lower than the minimum allowable value, before the minimum voltage of battery cell rises to the minimum allowable charging voltage, the voltage recovery charging process that uses the current less than the rated charging current; when the minimum voltage of battery cell rises above the minimum allowable voltage, the pre-charge process can be ended, and it will switch to normal charging

4.1 Models

A model consists of structure characteristics, cooling method, rated output voltage and rated output current. The arrangement is shown in Figure 1.

4.3.3 DC power supply

The rated value of DC power supply voltage of the charging equipment shall meet the requirements of 4.6 in GB/T 156-2007. Preferred values are 110V, 220V, 440V, 600V, 750V, 1000V.

4.3.4 Output voltage range

The minimum output DC voltage of the charging equipment shall be less than or equal to 50% of the rated output voltage. The maximum output voltage shall be greater than 110% of the rated output voltage.

When the output voltage range requirement is greater than the above regulations, it shall be stipulated in the contract.

The preferred value of the DC output rated voltage of the charging equipment shall be selected from the following values: 16V, 32V, 48V, 63V, 95V, 126V, 200V, 330V, 420V, 530V, 630V.

4.3.5 Output current range

The maximum output current of the charging equipment shall be greater than or equal to 105%. If the output current range is required to exceed the above-mentioned stipulations, it shall be stipulated in the contract. The optimization of the rated output current of the charging equipment shall be selected from the following values: 2A, 5A, 10A, (16A), 20A, (30A), (40A), 50A, (80A), 100A, (125A), 160A, 200A, (250A), (300A), (400A), (500A).

NOTE: Bracketed ones are non-preferred values.

4.3.6 Load level of charging equipment

The load level of the charging equipment is level 1 specified in GB/T 3859.1-1993.

4.3.7 Equipment dimensions

Fixed or mobile equipment adopts cabinet type or chassis type. External dimensions refer to the external dimensions of the skeleton, excluding dimensions of attached boards, door panels protruding from the frame, handles and rings. The external dimensions shall meet the requirements in GB/T 3047.1-1995.

Due to the limitation of vehicle space, the on-board shell is determined in the technical