

Translated English of Chinese Standard: NB/T33002-2018

www.ChineseStandard.net → Buy True-PDF → Auto-delivery.

Sales@ChineseStandard.net

NB

ENERGY INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 29.200

K 81

Registration number: 68877-2019

NB/T 33002-2018

Replacing NB/T 33002-2010

Specification for electric vehicle AC charging spot

电动汽车交流充电桩技术条件

Issued on: December 25, 2018

Implemented on: May 01, 2019

Issued by: State Energy Administration

Table of Contents

Foreword	3
1 Scope	5
2 Normative references	5
3 Terms and definitions.....	6
4 Basic composition	7
5 Classification of charging spot.....	8
6 Functional requirements.....	10
7 Technical requirements.....	11
8 Marking, packaging, transportation, storage	19

Specification for electric vehicle AC charging spot

1 Scope

This standard stipulates the basic composition, classification, functional requirements, technical requirements, inspection rules, marking, packaging, transportation and storage of electric vehicle AC charging spot (hereinafter referred to as charging spot).

This standard applies to electric vehicle AC charging spot.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this standard.

GB/T 191 Packaging - Pictorial marking for handling of goods

GB/T 2423.1-2008 Environmental testing for electric and electronic and electronic products - Part 2: Test methods - Tests A: Cold

GB/T 2423.2-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Tests B: Dry heat

GB/T 2423.4-2008 Environmental testing for electric and electronic products - Part 2: Test method - Test Db: Damp heat, cyclic (12h + 12h cycle)

GB/T 2423.16-2008 Environmental testing for electric and electronic products - Part 2: Tests - Test J and guidance: Mould growth

GB/T 2423.55-2006 Environmental testing for electric and electronic products - Part 2: Test methods - Test Eh: hammer tests

GB/T 4208 Degrees of protection provided by enclosure (IP code)

GB/T 4797.6-2013 Classification of environmental conditions - Environmental conditions appearing in nature - Dust, sand, salt mist

GB/T 13384 General specifications for packing of mechanical and electrical product

GB/T 16935.1 Insulation coordination for equipment within low-voltage systems - Part 1: Principles requirements and tests

GB/T 18487.1-2015 Electric vehicle conductive charging system - Part 1: General requirements

GB/T 18487.2-2017 Electric vehicle conductive charging system - Part 2: EMC requirements for off-board electric vehicle supply equipment

GB/T 20234.1 Connection set for conductive charging of electric vehicles - Part 1: General requirements

GB/T 20234.2 Connection set for conductive charging of electric vehicles - Part 2: AC charging coupler

GB/T 28569 Electric energy metering for electric vehicle AC charging spot

GB/T 29317-2012 Terminology of electric vehicle charging/battery swap infrastructure

3 Terms and definitions

The terms and definitions as defined in GB/T 18487.1-2015 and GB/T 29317-2012 as well as the following terms and definitions apply to this document.

3.1

Conductive charging

The way in which the battery is charged by electrical conduction.

3.2

On-board charger

The dedicated device which is fixedly installed on an electric vehicle, to convert AC power into DC power, to charge the power battery of electric vehicle through conduction.

3.3

AC charging spot

A dedicated power supply device for providing AC power to an electric vehicle which is equipped with an on-board charging device by means of conduction.

3.4

5.5 By the level of output voltage

Charging spot are classified according to the level of output voltage:

- Single-phase AC charging spot;
- Three-phase AC charging spot.

6 Functional requirements

6.1 Charging control guidance

The charging spot shall have a charging control guidance function that complies with the requirements of Appendix A of GB/T 18487.1-2015.

6.2 Communication function

The charging spot should have the function of communicating with the superior monitoring management system.

6.3 Charging connection device

The charging connection device of the charging spot shall comply with the provisions of GB/T 20234.1 and GB/T 20234.2.

6.4 Electronic locking device

For the charging spot which uses the connection method A or the connection method B as specified in clause 3.1 of GB/T 18487.1-2015, then the rated current of the charging spot is greater than 16 A, the power socket should be equipped with an electronic locking device. When the electronic locking device is not reliably locked, the charging spot shall stop charging or not start charging.

6.5 Human-computer interaction

6.5.1 Display function

The charging spot shall display the following status:

- The operating status indication of the charging spot: standby, charging, failure.

The charging spot should display the following information:

- Output voltage, output current:
- The time has been charged, the power has been charged, the amount has been charged.

Table 1 -- Input voltage / current requirements of charging spot

Power input method	Input current rating I_n , A	Input voltage rating, V	Connection method
1	$I_n \leq 32$	Single-phase/3-phase 220/380	A, B, or C
2	$I_n > 32$	3-phase 380	C

Note: The definition of the connection method is as shown in clause 3.1 of GB/T 18487.1-2015.

7.2.2 Power frequency

The AC input power's frequency is (50 ± 1) Hz.

7.3 Environmental resistance requirements

7.3.1 Degree of protection

The degree of protection as provided by the enclosure of charging spot is not lower than IP32 (indoor type) or IP54 (outdoor type) as specified in GB/T 4208.

Note: The degree of protection of the charging interface part during the connection process is not considered.

7.3.2 Three-proof (moist-proof, mildew-proof, salt mist-proof) protection

The printed circuit board, connectors and other components in the charging spot shall be subject to the moist-proof, mildew-proof, salt mist-proof treatment. Salt spray corrosion resistance shall meet the requirements of Figure 7 of GB/T 4797.6-2013.

7.3.3 Rust-proof (anti-oxidation) protection

The charging spot's iron casing and the exposed iron brackets and parts shall adopt double rust prevention measures. The non-ferrous metal casing shall also have an oxidation protection film or anti-oxidation treatment.

7.3.4 Anti-theft protection

Charging spot shall have the necessary anti-theft measures.

7.4 Temperature rise requirements

Under normal experimental conditions, the AC input is rated, the charging spot is continuously operated for a long time under the rated output power. The temperature rise of each internal heating component and each part shall not exceed the requirements in Table 2. The temperature of the heating element shall not affect the normal operation of the surrounding components and there is no component damage.

7.7.1 Charging spot shall have output overload and short circuit protection functions. The overload and short circuit protection shall comply with the requirements of Chapter 12 of GB/T 18487.1-2015.

7.7.2 When the rated current of the charging spot is greater than 16A and the connection method A or connection method B as specified in 3.1 of GB/T 18487.1-2015 is adopted, the charging spot's power supply socket shall be provided with temperature monitoring device. The charging spot shall have temperature monitoring and over-temperature protective function.

7.7.3 During the charging process, when the set end condition is reached, or the operator issues a stop-charging-command to the charging spot, the charging spot shall control the switch S1 to +12V; after detecting that the S2 switch is turned off, cut off the AC power supply circuit within 100 ms. When it does not detect the cutoff of S2 for more than 3s, it forcedly cut off the AC power supply circuit. If the power supply interface has an electronic lock, it shall be unlocked after the AC circuit is cut off for 100 ms.

Note: See Figure 6 for the location of the S1 and S2 switches.

7.7.4 When the charging spot with emergency stop function starts the emergency stop device, the charging spot shall cut off the AC power supply circuit within 100 ms.

7.7.5 When the continuity of the protection ground between the charging spot and the electric vehicle is lost, the charging spot shall control the switch S1 to +12V and cut off the AC power supply circuit within 100 ms.

7.7.6 When the charging spot detects that the voltage amplitude at the detection point 1 is 12V (state 1) or other non-6V (state 3), non-9V (state 2) state, the charging spot shall control the switch S1 to +12V and cut off the AC power supply circuit within 100 ms;

When it is detected that the power supply interface is changed from full connection to disconnection [detection point 4 is changed from full connection to disconnection (state A)], the charging spot shall switch the switch S1 to the +12V connection state and disconnect the AC power supply circuit within 100 ms;

When the voltage amplitude at the detection point 1 changes from 6V to 9V, the charging spot shall cut off the AC power supply circuit within 100 ms and continuously output the PWM signal. When the vehicle closes S2 again, the charging spot shall be connected to the AC power supply circuit again.

connected 12V+ state to the PWM connection state, the power supply control device issues a PWM signal. The power supply control device determines whether the charging connection device is fully connected by measuring the voltage of the detection point 1 and the detection point 4. For the charging spot with power-saving mode, the time for it to enter the power saving mode should be not less than 24 h.

7.9 Charge control timing sequence and process

The timing sequence and process of charging control shall meet the requirements of Appendix A.3, Appendix A.4, Appendix A.5 of GB/T 18487.1-2015.

7.10 Standby power

At rated input voltage, the standby power of the charging spot (one spot with double charging interfaces and below) shall not exceed 15W.

7.11 Mechanical strength

The charging spot is well packaged and tested according to the method as specified in GB/T 2423.55-2006. The outer casing shall be able to withstand severe impact energy of 20 J (5 kg, 0.4 m). After the test, the performance shall not be reduced, the IP protection degree of the charging spot is not affected, the operation and locking points of the door are not damaged, the live part and the outer casing are not in contact due to deformation, it meets the requirements for clearance and creepage distance.

7.12 Noise

The charging spot runs stably at the rated output power. Under the condition that the ambient noise is not more than 40dB, at a point 1 m horizontally from the charging spot, the measured maximum noise shall not exceed 55dB.

7.13 Characteristics of mechanical switches

7.13.1 Switch

The switch inside the charging spot shall comply with the requirements of 10.2.1 of GB/T 18487.1-2015.

7.13.2 Contactor

The contactor in the charging spot shall comply with the requirements of 10.2.2 of GB/T 18487.1-2015.

7.13.3 Circuit breaker

For the test load conditions of the charging spot, see Chapter 5 of GB/T 18487.2-2017:

For the operating conditions of the test procedure, see Chapter 6 of GB/T 18487.2-2017.

7.15.2 Immunity requirements

7.15.2.1 Immunity performance criteria

The immunity performance criteria of charging spot can be found in clause 7.1 of GB/T 18487.2-2017.

7.15.2.2 Immunity test requirements

For the charging spot used in different environments, their electrostatic discharge immunity, RF electromagnetic field radiation immunity, electrical fast transient burst immunity, surge immunity, RF field induced conducted disturbance immunity, temporary voltage sag, short-term interruption immunity shall meet the requirements of 7.2 of GB/T 18487.2-2017.

7.15.3 Emission requirements

The radio frequency disturbance test of the charging spot shall meet the requirements of 8.3 of GB/T 18487.2-2017.

8 Marking, packaging, transportation, storage

8.1 Marking

8.1.1 The charging spot shall have a nameplate which shall be installed in an obvious position. The nameplate shall indicate the following:

- Manufacturer:
- Product name:
- Product model:
- Rated output voltage:
- Rated output current;
- Exit-factory number:
- Production date:
- Indoor or outdoor use (Ip grade).

This is an excerpt of the PDF (Some pages are marked off intentionally)

Full-copy PDF can be purchased from 1 of 2 websites:

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

----- The End -----