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GB/T 20234.4-2023

Connection Set of Conductive Charging for Electric
Vehicles—Part 4: High power DC charging coupler
电动汽车传导充电用连接装置
第 4 部分：大功率直流充电接口

(English Translation)

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FOREWORD

This document is drafted in accordance with the rules given in GB/T 1.1-2020 Directives for Standardization—Part 1: Rules for the Structure and Drafting of Standardizing Documents.

This document is Part 4 of GB/T 20234 “*Connection Set of Conductive Charging for Electric Vehicles*”. The following parts of GB/T 20234 have been issued:

- Part 1: General Requirements;
- Part 2: AC Charging Coupler;
- Part 3: DC Charging Coupler;
- Part 4: High Power DC Charging Coupler.

This document was proposed by, and is under the jurisdiction of, the China Electricity Council.

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INTRODUCTION

Conductive charging is a basic way to supply electric energy to electric vehicles. GB/T 20234 aims to specify the technical requirements and test methods for charging connection set, and to unify the interface types and structural dimensions of charging couplers, so as to realize the interconnectivity and interoperability between electric vehicles and charging infrastructures. GB/T 20234 is intended to be composed of four parts:

- Part 1: General requirements, which aims to establish the general performance requirements for charging connection set to ensure the functionality and reliability of the product.
- Part 2: AC charging coupler, which aims to establish the contact definition, contact connection interfaces, structural dimensions of the AC charging coupler, so as to realize the interchangeability of the AC charging coupler.
- Part 3: DC charging coupler, which aims to establish the contact definition, contact connection interfaces, structural dimensions of the DC charging coupler (including high power charging), so as to realize the interchangeability of DC charging coupler.
- Part 4: High power DC charging coupler, which aims to establish the composition, coupler function and arrangement, cable requirements, thermal management system, technical requirements, and test methods of the DC charging connection set, as well as the definition, technical requirements, test methods, and inspection rules of the adapter.

The issuing body of this document draws attention to the fact that claims of compliance with this document may involve the use of a patent concerning adapter given in Clause 10 and Annex E.

The issuing body of this document takes no position concerning the evidence, validity and scope of this patent right.

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Connection Set of Conductive Charging for Electric Vehicles —Part 4: High power DC charging coupler

1 SCOPE

This document specifies the composition and functions, coupler interface and parameters, cable requirements, thermal management system, technical requirements, and test methods of the connection set for conductive DC charging of electric vehicles, as well as the technical requirements, test methods and inspection rules of adapters.

This document is applicable to the connection set for conductive DC charging of electric vehicles with a rated voltage not exceeding 1,500V DC and a rated current not exceeding 800A DC. This document is applicable to the adapters, with a rated voltage not exceeding 1,500V (DC), connecting the vehicle connector specified in GB/T 20234.3 with the vehicle inlet specified in this document.

2 NORMATIVE REFERENCES

The following normative documents contain provisions which, through normative reference in this text, constitute essential provision of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendment) applies.

GB/T 1804-2000 General tolerances - Tolerances for linear and angular dimensions without individual tolerance indications

GB/T 2951.11-2008 Common test methods for insulating and sheathing materials of electric and optical cables - Part 11: Methods for general application-measurements of thickness and overall dimensions - Tests for determining the mechanical properties

GB/T 3956-2008 Conductors of insulated cables

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

GB/T 11918.1-2014 Plugs, socket-outlets and couplers for industrial purposes - Part 1: General requirements

GB/T 11918.4-2014 Plugs, socket-outlets and couplers for industrial purposes - Part 4: Switched socket-outlets and connectors with or without interlock

GB/T 18487.1-2023 Electric vehicle conductive charging system - Part 1: General requirements

GB/T 20234.1-2023 Connection set of conductive charging for electric vehicles - Part 1: General requirements

GB/T 29317 Terminology of Electric Vehicle Charging/Battery Swap Infrastructure

GB/T 33594-2017 Charging cables for electric vehicles

Catalogue of Hazardous Chemicals (2015), www.chinasafety.gov.cn.

3 TERMS AND DEFINITIONS

For the purpose of this document, the terms and definitions given in GB/T 11918.1-2014, GB/T 18487.1, and GB/T 29317, as well as the following apply.

3.1 charging connection accessory

An assembly connecting EV with EV supply equipment

Note: It consists of charging cable, vehicle connector, vehicle inlet, and caps, etc.

3.2 vehicle adapter

An assembly unit used as a conversion of connection interface between vehicle connector and vehicle inlet that comply with different standards

Note: It consists of control pilot circuit, detection circuit, and additional functions, etc., and is referred to as adapter.

3.2.1 general adapter

An adapter with connecting function and control pilot circuit

3.2.2 advanced adapter

An adapter with connecting function and control pilot circuit, as well as temperature monitoring and communication functions

3.2.3 inlet-interface

The interface of an adapter that mates with vehicle inlet

Note: It is referred to as inlet interface.

3.2.4 adapter connector

The part of adapter that mates with vehicle inlet

3.2.5 connector-interface

The interface of an adapter that mates with vehicle connector

Note: It is referred to as connector interface.

3.2.6 adapter inlet

The part of adapter that mates with vehicle connector

3.2.7 proto interface

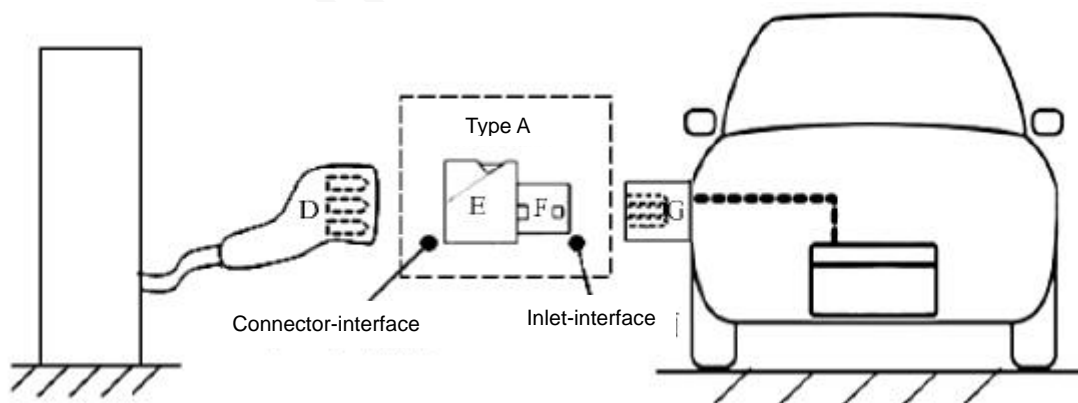
The counterpart interface that mates with adapter interface

3.2.8 adapter cable

The cable of adapter used to connect inlet interface with connector interface

3.2.9 type A adapter

An adapter that physically consists of an adapter connector and an adapter inlet only, as shown in Figure 1.



Key

D Vehicle connector;

E Adapter inlet;

F Adapter connector;

G Vehicle inlet.

Figure 1 Type A adapter

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