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Communication Protocols between Off-board Conductive Charger and Battery Management System for Electric Vehicle

电动汽车非车载传导式充电机与电池管理系统之间的通信协议

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Contents

Foreword

This Standard will be drafted based on the regulations given in GB/T 1.1-2009

This Standard is proposed by National Energy Administration of the People's Republic of China and Ministry of Industry and Information Technology of the People's Republic of China

This Standard is under the jurisdiction of Energy Industry EV Charging Facility Standardization Technology Committee.

Main draft units of this Standard: China Southern Power Grid, Guangdong Electric Power Design Institute, China Electric Power Research Institute, State Grid Electric Power Research Institute, XJ Group Corporation and Tianjin Qingyuan Electric Vehicle Co.,Ltd.

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1. Scope

This standard specifies the definitions between off-board conductive charger (hereinafter referred to as charger) and battery management system (hereinafter referred to as BMS) for electric vehicle based on communication physical layer, data link layer and application layer of control area network (CAN).

This standard is applicable to communication protocol between off-board conductive charger for electric vehicle and BMS (or other vehicle control system with charging control function).

2. Normative References

The following documents for the application of this document are indispensable. For dated references, only the dated version is applicable to this document. For references without date, the latest version (including all the amending lists) is applicable to this document.

GB/T 19596 Terms for Electric Vehicle

ISO 11898-1:2003 Road Vehicle – Control Area Network (CAN) Part 1: Data Link Layer and Physical Signaling

SAE J1939-11:1999 Recommended Practice for Serial Control and Communication Vehicle Network Part 11: Physical Layer-250K Bits/S, Twisted Shielded Pair

SAE J1939-21:2001 Recommended Practice for Serial Control and Communication Vehicle Network Part 21: Data Link Layer

SAE J1939-73:2006 Recommended Practice for Serial Control and Communication Vehicle Network Part 73: Application Layer – Diagnostics

3. Terms and Definitions

For the purposes of this Standard, the following terms and definitions given in GB/T 19596 shall apply.

3.1 Frame

A series of data bits composing a complete message.

3.2 CAN Data Frame

The necessary ordered bit field composing CAN protocol of data transmission with start of frame (SOF) started and end of frame (EOF) ended

3.3 Messages

One or multiple CAN data frames Ⅱ with same parameter group number.

3.4 Identifier

Identification division of CAN arbitration field

3. 5 Standard Frame

CAN data frame using 11-bit identifier defined in ***CAN Bus Version 2.0B***.

3.6 Extended Frame

CAN data frame using 29-bit identifier defined in ***CAN Bus Version 2.0B***.

3.7 Priority

The highest priority and lowest priority for arbitration priority of a 3-bit field in identifier during transmission are respectively 0-level and 7-level.

3.8 Parameter Group (PG)

The collection of parameter transmission in a message. The parameter group includes command, data, request, acknowledgement, and native acknowledgement etc.

3.9 Parameter Group Number (PGN)

It is only used for identifying 24-bit value of a parameter group number. The label of parameter group number includes retaining decimals, data page, PDU format field (8-bit) and group extension field (8-bit).

3.10 Suspect Parameter Number (SPN)

A 19-bit value for each parameter allocated by parameter description signal of application layer.

3.11 Protocol Data Unit (PDU)

A special format of CAN data frame

3.12 Transport Protocol

A part of data link layer, which is a mechanism for PGN transmitting data with 9 bytes or

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