



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

GB/T 27930.2-2024

**Digital communication protocols between off-board conductive
charger and electric vehicle - Part 2: Communication protocols
for GB/T 20234.3**

非 载传导式充电机与电动汽 之间的数字通信协议 第 2 部 分：用于GB/T
20234.3 的通信协议

Issued on: December 31, 2024

Implemented on: December 31, 2024

**Issued by: State Administration for Market Regulation;
National Standardization Administration..**

Table of Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Abbreviated terms

5 General requirements

6 Physical layer

7 Data link layer

8 Transport layer

9 Application layer

10 Timeout

Appendix A Implementation of application scenarios

Appendix B Function negotiation function module

Appendix C Parameter configuration function module

Appendix D Authentication function module

Appendix E Scheduled charging function module

Appendix F Output circuit detection function module

Appendix G Power supply mode function module

Appendix H Pre-charging and energy transfer module

Appendix J Message cycle and function module timeout

Appendix K Exit method

Appendix L Parameter type table

Appendix M Backward compatible communication protocol

Foreword

This document was drafted in accordance with the provisions of GB/T 1.1-2020 "Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents".

This document is part 2 of GB/T 27930. The following parts have been issued under GB/T 27930:

- Digital communication protocols between off-board conductive charger and electric vehicle;
- Digital communication protocols between off-board conductive charger and electric vehicle - Part 2: Communication protocols for GB/T 20234.3.

Please note that some contents of this document may involve patents. The issuing agency of this document does not assume the responsibility for identifying patents.

This document was proposed by the Ministry of Industry and Information Technology of the People's Republic of China.

This document shall be under the jurisdiction of the National Technical Committee for Automotive Standardization (SAC/TC 114).

Drafting organizations of this document: China Automotive Technology and Research Center Co., Ltd., BYD Auto Industry Company Limited, Huawei Digital Power Technology Co., Ltd., Beiqi Foton Motor Co., Ltd., GAC Aion New Energy Automobile Co., Ltd., Guangzhou Xiaopeng Automotive Technology Co., Ltd., NIO (Anhui) Co., Ltd., ShenZhen Carenergy Net Co., Ltd., Guangzhou Juwan Technology Research Co., Ltd., Deepal Technology Co., Ltd., LINCHR New Energy Technology Co., Ltd., CATARC New Energy Vehicle Test Center (Tianjin) Co., Ltd., Teltel New Energy Co., Ltd., Tianjin Pinggao Yidian Technology Co., Ltd., Hefei Guoxuan High-Tech Power Energy Co., Ltd., Shenzhen Busbar Sci-Tech Development Co., Ltd., Hangzhou Zhongheng Electric Co., Ltd., Contemporary Amperex Technology Co. Limited, CATARC Automotive Test Center (Guangzhou) Co., Ltd., Hunan Jingneng New Energy Technology Co., Ltd., Beijing Chehejia Automotive Technology Co., Ltd., Geely Automobile Research Institute (Ningbo) Co., Ltd., Green Energy Huichong Digital Technology Co., Ltd., Mercedes-Benz (China) Investment Co., Ltd., Shenzhen Oucheng Electric Co., Ltd., China FAW Group Corporation, Chongqing Changan Automobile Co., Ltd., Vkan Testing Technology Co., Ltd., Potevio New Energy CO., LTD., Great Wall Motor Company Limited, CAMS New Energy Technology Co., Ltd., Changyuan Shenrui Energy Technology Co., Ltd., Volvo Cars (Asia Pacific) Investment Holdings Limited.

Changhong, Han Zhonghua, Zheng Tianlei, Liao Mengxiong, Wang Fang, Zhao Lvhua, Lan

Haibo, Liu Shaohui, Liu Qingrong, Qiu Peng, Li Xiao, Sun Maojian, Cheng Hao, Wang Bing, Wang Chunsheng, Peng Wenke, Qiu Shijun, Fan Bin, Li Chuan, Tan Yi, Wei Junsheng, Fang Lingshan, He Yuan, Zheng Xiangjie, Feng Bin, Sun Xiaowen, Ji Xuebin, Zhu Jianqiang, Li Enhu, Rong Chao, Liao Chao, Tian Yuwei, Gu Zhaoning, Gong Huijiao, Lv Guowei, Lv Yuhua, Li Liang, Jiang Yi, Xie Na, Liang Shifu, Wu Heng, Jiang Rui, Chen Jiyong, Zhou Anjian, Yan Lei, Fang Kailong, Gao Feng, Wang Chao, Wang Jingya, Yang Jun, Xu Qingsong, Liu Zhimin.

Introduction

With the rapid expansion of electric vehicle-related industries and consumer markets, the industry urgently needs new charging functions such as high-power charging, plug-and-play charging, scheduled charging, and discharging, and the DC charging communication protocol standard needs to be upgraded. This document specifies the DC charging communication protocol between off-board conductive charger and electric vehicle for the GB/T 20234.3 DC charging interface, and specifically gives the details of the physical layer, data link layer, transport layer and application layer of the communication protocol. The DC communication protocol specified in this document further improves the safety, compatibility and convenience of charging, thereby guiding the high-quality development of electric vehicle related industries.

GB/T 27930 is planned to consist of two parts.

- Part 1: Communication protocols for GB/T 20234.3 and GB/T 20234.4. The purpose is to establish the digital communication data link layer, transport layer and application layer applicable to the DC charging interfaces of GB/T 20234.3 and GB/T 20234.4.
- Part 2: Communication protocols for GB/T 20234.3. The purpose is to establish the digital communication data link layer, transport layer and application layer applicable to the DC charging interfaces of GB/T 20234.3, which is used to realize digital communications such as high-power charging, plug-and-play charging, scheduled charging and discharging.

1 Scope

This document specifies the communication protocol based on the physical layer, data link layer, transport layer, application layer of the controller area network, between the electric vehicle DC charging communication controller for the GB/T 20234.3 DC charging interface and the non-vehicle conductive charger charging communication controller.

This document applies to digital communication between electric vehicle (referred to as "vehicle") and off-board conductive charger (referred to as "charger") whose DC control pilot circuits and control principles comply with GB/T 18487.5.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in the text. Among them, for dated references, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies to this document.

3 Terms and definitions

Several definable minimum units with specific business functions divided by the charging communication interaction process.

When the sending conditions are met, the message which can be exchanged by each function module in the application layer.

4 Abbreviated terms

Specify the CAN bus transmission rate, number of nodes, antiinterference, and other requirements CAN transceiver frame Data Bit frame Bus status Receiv ing buffer Software Message Software Message

5 General requirements

5.3 The communication network between the vehicle and the charger is based on the CAN2.0B protocol. The communication model is divided into physical layer, data link layer, transport layer, and application layer, as specified in Chapter 6, Chapter 7, Chapter 8 and Chapter 9 respectively. The protocol architecture layered model is shown in Figure 1. document also apply to CAN Flexible Data-rate (CAN FD), CAN eXtended Length (CAN XL) and other protocols. CAN FD and CAN XL are reserved for future functions; the implementation method is not specified in this document. 5.4 The communication process between the vehicle and the charger consists of different function modules. The function modules of the charging and charging & discharging application scenarios shall comply with the provisions of Appendix A. 5.5 The information interaction messages and interaction processes of function modules shall comply with the provisions of Appendix B ~ Appendix I. The acknowledgement and connection between the function modules of the application layer shall be completed according to the phase acknowledgement of 9.3.1. 5.

6 Physical layer

The physical layer of communication between the vehicle and the charger shall comply with the provisions of Chapter 13 of GB/T 27930-2023. Among them, the physical layer shall use an independent CAN bus to support 2 nodes, EVCC and SECC.