ICS 29.200

CCS K 81

GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB/T 27930-2023

Replacing GB/T 27930-2015

Digital communication protocols between off-board conductive charger and electric vehicle

非车载传导式充电机与电动汽车之间的数字通信协议

Issued on: September 07, 2023 **Implemented on: April 01, 2024**

Issued by: Status Administration for Market Regulation.

Standardization Administration of PRC.

Table of Contents

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 replaces GB/T 27930-2015 "Communication protocols between off-board conductive charger and battery management system for electric vehicle". Compared with GB/T 27930-2015, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

a) MODIFY the scope of the document (see Chapter 1; Chapter 1 of the 2015 edition);

b) ADD the abbreviations (see Chapter 4);

c) DELETE that "During the charging process, the charger and BMS monitor parameters such as voltage, current and temperature, whilst the BMS manages the entire charging process" (see 4.2 of the 2015 edition). MODIFY the number of nodes on the communication bus (see 5.2; 4.3 of the 2015 edition). ADD the processing requirements for different current values (see 5.4). ADD the processing method for messages not specified in this document (see 5.5). ADD a conversion relationship between data values and physical quantities (see 5.6);

d) ADD the provisions for physical layer shielded twisted pairs, unshielded twisted pairs, terminal resistors (see Chapter 6);

e) ADD the requirements for the sending interval time between data frames of the transmission protocol function (see 7.5);

f) DELETE the requirement to “use ‘request PGN’ to proactively obtain parameter groups of other nodes” (see 7.3 of the 2015 edition). MODIFY the parameter group modifications and new requirements (see 8.6; 7.7 of the 2015 edition). MODIFY the requirements for sending mandatory and optional items (see 8.7; 7.9 of the 2015 edition). DELETE the requirements for fault diagnosis systems (see 7.8 of the 2015 edition). MPDIFY the message transmission length and the setting requirements of undefined bits (see 8.8; 7.10 of the 2015 edition). ADD the definition of "untrusted status" (see 8.9);

g) MODIFY the process description of each communication phase (see 10.1, 10.2, 10.3, 10.4; 9.1, 9.2, 9.3, 9.4 of the 2015 edition);

h) ADD the definition of EVIN code (see 11.1.4), the definition of charging termination message (see 11.3.8, 11.3.9), the definition of error message (see 11.5.1, 11.5.2), the definition of "maximum allowable total charging voltage" (see 11.1.2, 11.2.1), the definition of "PGN1536 vehicle charging parameter message (BCP)" (see 11.2.1), the definition of "PGN2048 charger maximum output

capability message (CML)" (see 11.2.3);

i) DELETE the charging working status transition (see A.1 of the 2015 edition). MODIFY the normal charging communication process (see A.1; A.2 of the 2015 edition), message timeout processing process (see A.2; A.2 of the 2015 edition);

j) DELETE the "Charger and BMS fault diagnosis message" (see Appendix B of the 2015 edition);

k) DELETE the “Charging process troubleshooting methods” (see Appendix C of the 2015 edition);

l) MODIFY the conditions for starting and ending sending messages (see Appendix B; Appendix D of the 2015 edition);

m) ADD new communication protocol framework content (see Chapter 12 ~ Chapter 17, Appendix C ~ Appendix N).

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

This document was proposed by AND shall be under the jurisdiction of the China Electricity Council.

Drafting organizations of this document: State grid Electric Power Research Institute Co., Ltd., China Electricity Council, State grid Corporation of China, Nari Group Co., Ltd., Qingdao Haihuide Electric Co., Ltd., Xi'an Lingchong Chuangxiang New Energy Technology Co., Ltd., Wanbang Digital Energy Co., Ltd., Volkswagen (China) Investment Co., Ltd., State grid Smart Internet of Vehicles Technology Co., Ltd., Xu Ji Group Co., Ltd., Beijing New Energy Vehicle Co., Ltd., Shenzhen Aotexun Electric Power Equipment Co., Ltd., Daimler Greater China Investment Co., Ltd., BMW (China) Service Co., Ltd., China Electric Power Research Institute Co., Ltd., Putian New Energy Co., Ltd., Shenzhen Yonglian Technology Co., Ltd., Changyuan Shenrui Relay Automation Co., Ltd., Beijing Xiaoju New Energy Automobile Technology Co., Ltd., Teledian New Energy Co., Ltd., Shell (China) Co., Ltd., State Grid Shandong Electric Power Co., Ltd., Beijing Shengke Energy Technology Co., Ltd., State Grid Beijing Electric Power Co., Ltd., State grid Jiangsu Electric Power Co., Ltd., Shenzhen Infiyuan Technology Co., Ltd.

The main drafters of this document: Li Xuling, Ni Feng, Wu Bin, Liu Bowen, Fu Jing, Shen Dingshen, Yu Shiyou, Geng Qunfeng, Zhao Lvhua, Ding Qiao, Gan Haiqing, Zhao Hui, He Xuefeng, Zhang Xuan, Xu Qingsong, Zhu Xiaoqiang, Huang Shuai, Chen Xiaonan, Qian Jindu, Wu Xiaowei, Zhao Liang, Bai Ou, Pan Jingyi, Zhao Ying, Wang Hui, Hu Qiang, Qiu Peng, Liang Xiaofang, Zhang Jinlei, Meng Fanti, Qin Shuai, Wang Zhiheng, Wang Fengnen, Jiang Linzhen, Liu Jin Hai, Zhao Haizhou, Liu Lei, Ruan Wenjun.