

EVCC（欧美标）技术规格书

EVCC（CCS1、2）

technical specification

V3.1

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2022/4/23	初版 first edition	ZYM	V1.1
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2025/8/11	表格6.1 删除CC的相关描述； 表格6.1 CC2 输出电阻改为1K Ω ； OFFBD CAN 增加120 Ω 终端描述；	LB	V3.1

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1 目的和适用范围 Purpose and scope of application

本规格书定义了EVCC（欧标）模块充电转换的技术规格，明确了EVCC转换模块以及整机的功能要求、性能指标、可靠性要求以及其它指标This specification defines the technical specifications of the EVCC (European standard) module charging conversion, and clarifies the function requirements, performance specifications, reliability requirements and other specifications of the EVCC module and the whole machine。

本规格书所述用于产品设计、生产、检验、质量控制的输入，也作为需方进行采购、来料检验、试验验证、质量责任界定的依据The input for product design, production, inspection and quality control mentioned in this specification shall also serve as the basis for buyer's procurement, incoming material inspection, test verification and definition of quality responsibility。

2 引用和参考标准 Citation and reference standards

引用和参考的标准见下表The criteria for citations and references are shown in the table below

标准号 standard number	标准名 standard name
GB/T 18487.1-2015	电动车辆传导充电系统 第 1 部分_通用要求Conductive charging systems for electric vehicles - Part 1 - General
GB/T 18487.3-2001	电动车辆传导充电系统 电动车辆交流/直流充电机（站）Electric vehicle conduction charging system Electric vehicle AC/DC charger (station)
GB/T 27930-2015	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Communication protocol between electric vehicle
IEC 61851-1	欧标CCS直流充电控制的通讯和硬件接口European standard CCS DC charging control communication and hardware
IEC 61851-23	欧标电动车辆充电站对直流充电的要求Requirements for DC charging of European standard electric vehicle charging station
DIN 70121	Tech03_DIN_SPEC_70121-Elektromobilitaet Digitale_Kommunikatio-01_12_2014
ISO 15118（直流部分） direct current component	Network and application protocol requirements

客户指定标准Customer specified standard	诊断与刷新 Diagnosis and refresh
Tech01_SAE J1939-21	J1939-21英文数据链路层J1939-21 English Data Link Layer
QC/T 413-2002	汽车电气设备基本技术条件Basic technical requirements of
GB 17625.1-2012	电磁兼容 限值 谐波电流发射限值Emc limit Harmonic current
GB/T 18384.3-2015	电动汽车安全要求 第 3 部分：人员触电防护Safety requirements for electric vehicles - Part 3: Protection against
GB/T 18387-2008	电动车辆的电磁场发射强度的限值和测量方法Limits and methods of measurement for electromagnetic emission
GB 9254-2008	信息技术设备的无线电骚扰限值和测量方法Radio disturbance limits and methods of measurement for information
GB/T 18655-2010	车辆、船和内燃机 无线电骚扰特性用于保护车载接收机的限值 和 测量方法Limits and methods of measurement for the protection of vehicle, ship and internal combustion engine

3 术语和缩略语 Terms and abbreviations

术语term	解释explain
EV	电动车electrocar
EV PHY	电动车侧QCA7000/7005模块Electric vehicle side QCA7000/7005
EVSE	充电桩charging pile
EVCC	电动车通讯控制器Electric vehicle communication controller
SECC	充电设备通讯控制器Charging device communication controller
AC	Alternating Current 交流电
DC	Direct Current 直流电
CC	Constant Current 恒流
CV	Constant Voltage 恒压
OBCM	On Board Charger Module 车载充电机模块

4 产品概述 product overview

4.1 描述 Description

EVCC模块从EVSE枪头提供的控制信号线CP、PP、PE，来模拟国标车所需的信号进行控制，并使用EVSE枪头中交流、直流能量传输线束通过OBC给高压动力电池充电，整车控制器可以对充电过程进行全程监控EVCC module from the EVSE gun to provide the control signal line CP, PP, PE, to simulate the national standard car required signal control, and use the EVSE gun in the AC, DC energy transmission harness through OBC to charge the high-voltage power battery, vehicle controller can be the whole process of charging monitoring。

EVCC模块通过CAN总线控制输出电压和输出电流，并且通过CAN通信实现与BMS、VCU的信息交互，以及反馈工作状态EVCC module controls the output voltage and output current through CAN bus, and realizes the information interaction with BMS and VCU through CAN communication, as well as the feedback of the working state。

4.2 产品外观与尺寸 Product appearance and size

产品外观请参照下图 Please refer to the following figure for product appearance



图 1 产品正面 Figure 1 Front of the product

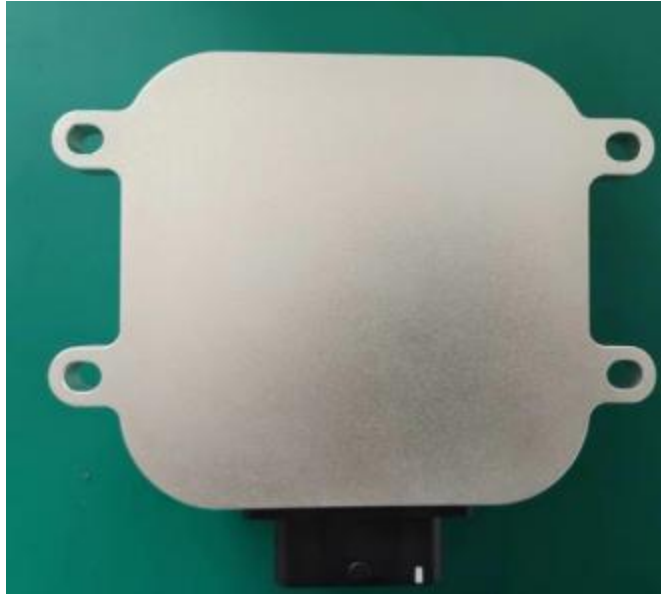


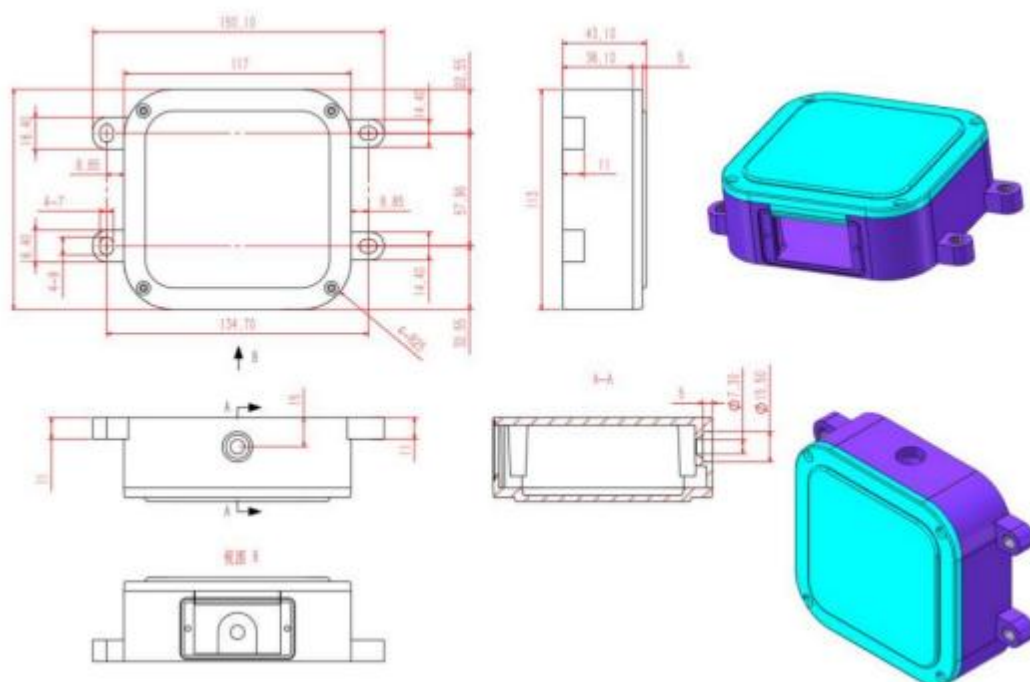
图2 产品侧面 Figure 2 Product profile



图 3 产品接口 Figure 3 Product interface

产品物理尺寸如下 The physical size of the product is as follows:

长length (mm)	宽wide (mm)	高high (mm)
150.10	113	43.10



4.3 产品特点 Product Features

EVCC模块可广泛应用于新能源汽车三电系统，并且具有体积小，重量轻，效率高，充电稳定，寿命长，防护等级高，可靠性高，抗震能力强等特点EVCC module can be widely used in the three electric system of new energy vehicles, and has the characteristics of small size, light weight, high efficiency, stable charging, long life, high protection grade, high reliability, strong earthquake resistance。

并具有以下各种保护功能And has the following protection functions:

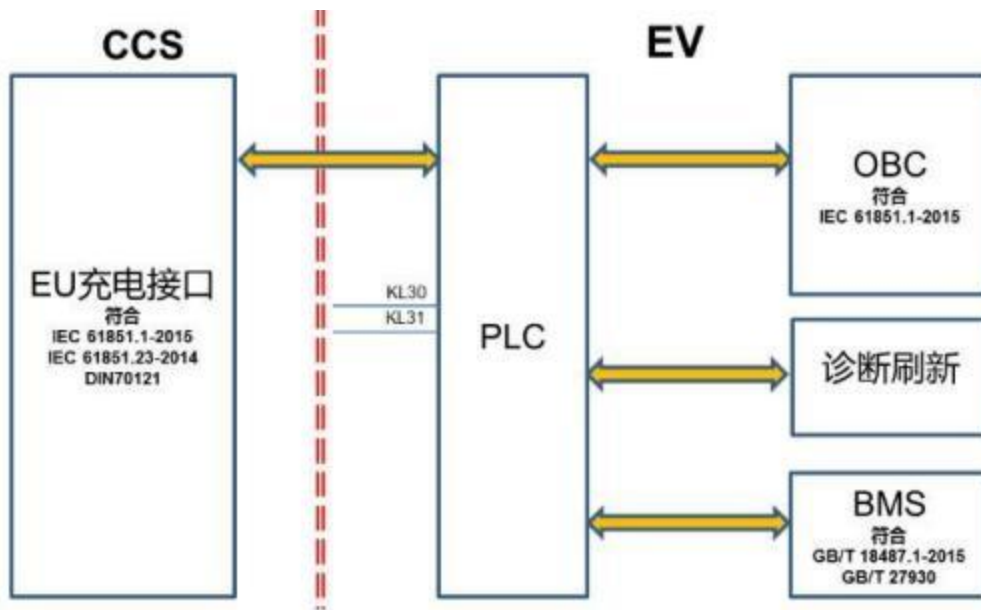
1. 输入过、欠压保护 Input over and under voltage protection
2. 输出过、欠压保护 Output over and under voltage protection
3. 输出短路保护 Output short-circuit protection

5 功能描述 functional description

5.1 EVCC 模块具备功能 The EVCC module has functions

1) 实现 EV (Electrical Vehicle) 国标接口和欧洲 CCS (Combined Charging System) 标准的充电桩 EVSE(Electric Vehicle Supply Equipment)之间的直流充电控制。同时 PLC 模块不影响 OBC 的交流充电控制 ;Realized the DC Charging control between the national standard EV (Electrical Vehicle) interface and the charging pile EVSE(Electric Vehicle Supply Equipment) of the European CCS (Combined Charging System) standard. At the same time PLC module does not affect the AC charging control of

OBC;



- 2) PLC 由 KL30 供电 The PLC is powered by KL30;
- 3) 支持满足客户要求的诊断、标定功能和程序刷新功能 Support diagnostic, calibration and program refresh functions to meet customer requirements;
- 4) 满足国标直流充电控制的通讯和硬件接口 GB/T 18487.1-2015 , GB/T 27930-2015 等标准 Meet the national standard DC charging control communication and hardware interface GB/T 18487.1-2015, GB/T 27930-2015 standards;
- 5) 满足欧标 CCS 直流充电控制的通讯和硬件接口 IEC 61851, DIN 70121, ISO15118 (直流部分 (不支持增值服务, 如PnC等功能)) 等标准 It meets IEC 61851, DIN 70121, ISO15118 (DC part) and other standards for communication and hardware interfaces of CCS DC charging control;
- 6) PLC 根据 IEC 61851.1-2015 模拟接口信号给 OBC PLC simulates interface signals to the OBC according to IEC 61851.1-2015;
- 7) 控制系统低功耗设计, 静态电流小于 250uA The control system is designed with low power consumption and static current less than 250uA;
- 8) 功能自检 Functional self-test;
- 9) 功能和硬件诊断 Functional and hardware diagnostics;
- 10) 支持在线更新程序 Support online update program;
- 11) IP52 防护等级 IP52 protection level;

5.2 低压控制特性 Low pressure control characteristic

5.2.1 低压输入 Low Voltage Input

EVCC模块的低压输入；正常工作电压范围为：9-16Vdc。Low voltage input of EVCC module; Normal operating voltage range: 9-16Vdc。

5.2.2 CP 功能 CPFunction

EVCC模块为直通方案，直流充电下(5%)是EVCC控制S2，交流下(5%)是OBC控制S2。该方式支持V2V放电。CP信号遵循IEC 61851-1标准。The EVCC module is a straight-through scheme. In DC charging (5%), EVCC controls S2, and in AC charging (5%), OBC controls S2. This mode supports V2V discharge. CP signals comply with IEC 61851-1 standards.

5.2.3 电子锁控制 Electronic lock control

EVCC转换模块具备电子锁功能，按照欧标要求，在适当的交互时机将枪头的电子锁闭合，也可根据车厂要求配合整车BMS进行互操作控制，确保EVSE和EVCC安全可靠连接。电子锁状态信号可以由EVCC转换模块或者BMS自检，EVCC转换模块可通过指定CAN信号通知BMS或者整车CAN。EVCC conversion module has electronic lock function, according to the European standard requirements, in the appropriate interaction time will be the electronic lock of the gun head, but also according to the requirements of the vehicle BMS interoperation control, to ensure the safe and reliable connection of EVSE and EVCC. The electronic lock status signal CAN be self-checked by the EVCC conversion module or the BMS. The EVCC conversion module CAN notify the BMS or the vehicle CAN by the specified CAN signal.

5.2.4 温度检测模块 Temperature Detection Module

EVCC 转换模块具备温度检测模块，在上电唤醒之后可监控模块内部、模块与接插件之间的温度范围，超出预设值模块将降功率运行或关机，并进行相关故障记录。The EVCC conversion module has a temperature detection module. After the EVCC conversion module is powered on and woken up, the temperature range inside the module and between the module and the plug-in can be monitored. If the temperature exceeds the preset value, the module runs at reduced power or shuts down, and records related faults.

5.2.5 唤醒功能 Wake Up Capabilities

EVCC 模块支持被唤醒，唤醒后按照客户要求通知整车控制模块，并接收整车后续指令进行必要操作。The EVCC module can be woken up, notify the vehicle control module as required by the customer, and receive subsequent instructions from the vehicle for necessary operations

5.2.6 唤醒方式 Wake Up Mode

EVCC模块具有如下唤醒方式The EVCC module has the following wake-up modes;

- 1.KL15唤醒（钥匙）KL15 Wake Up (Key)
2. CP唤醒（插枪）CP wake up (insert gun)
3. Can唤醒（保留）Can wake up (reserved)

5.3 CAN 通讯 CAN Communication

EVCC模块与BMS采用CAN通讯方式，CAN总线波特率为250kbps。同时，EVCC模块也通过CAN通讯，支持UDS与调试功能，CAN总线波特率为500kbps。The EVCC module communicates with the BMS in CAN mode. The baud rate of the CAN bus is 250kbps. At the same time,

EVCC module also supports UDS and debugging function through CAN communication, CAN bus baud rate of 500 kbps

5.4 UDS 和 Bootloader 功能 UDS and Bootloader Functions

1. UDS 诊断技术要求按照客户要求进行处理；The UDS diagnostic technical requirements are handled according to customer requirements.

2. BootLoader刷新技术要求按照客户要求进行处理；Technical requirements of BootLoader refresh are processed according to customer requirements;

6 电气规格 Electrical Specifications

6.1 电气特性 Electrical Characteristics

充电recharge:

模块Module	项目Project	规格specification
	低压输入Low voltage input	
	输入电压范围Input voltage range	9-16 V
	静态电流Static current	$\leq 250\mu\text{A}$
	输出唤醒电压Output wake-up voltage	KL30
	输出唤醒电流能力Output wake-up current capacity 100mA Leakage current	100mA
	漏电流Leakage current	$\leq 3.5\text{mA}$
	启动冲击电流Startup impulse current	$\leq 48\text{A}/\text{max}$
	信号输出Signal output	
	CP1电压范围CP1 voltage range	0-12V
	CP1 占空比CP1 duty cycle	3% - 97%
	K3电压范围K3 voltage range	0-12V
	输出电压精度output voltage accuracy	$\leq \pm 1\%$
	CC2输出电阻范围CC2 output resistance range	1000欧姆

保护特性protective feature

模块module	项目Project	规格specification
	输入过压Input overvoltage	保护点: 12+4 VDC ; 恢复点: 11+4 VDC; Protection point: 12+4 VDC; Recovery point: 11+4 VDC;
	输入欠压Input undervoltage	保护点: 9-5 VDC; 恢复点: 10-5 VDC; Protection point: 9-5 VDC; Recovery point: 10-5 VDC;
	短路保护Short	关机; 故障解除, 可自恢复Turn off the machine;

	circuit protection	The fault is removed and can be recovered by itself
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6.2 电源要求 Power Supply Requirements

Parameter	Value	Unit	Comment
Supply range	9-16	V	Function well
	6-28	V	CAN BUS CAN WORK
consumption current	[TBD]	mA	Working mode
	250	uA	Sleeping mode

6.3 环境要求 Environmental Requirements

项目Project	规格 specification
Operating temperature	-40℃~85℃
Storage temperature	-40℃~85℃
Humidity	0~90%RH
防护等级level of protection	IP52
海拔要求Altitude requirement	4km
工作噪声Operating noise	≤60dB; 满足 QC/T 895-2011 标准≤60dB; Meet the QC/T 895-2011 standard

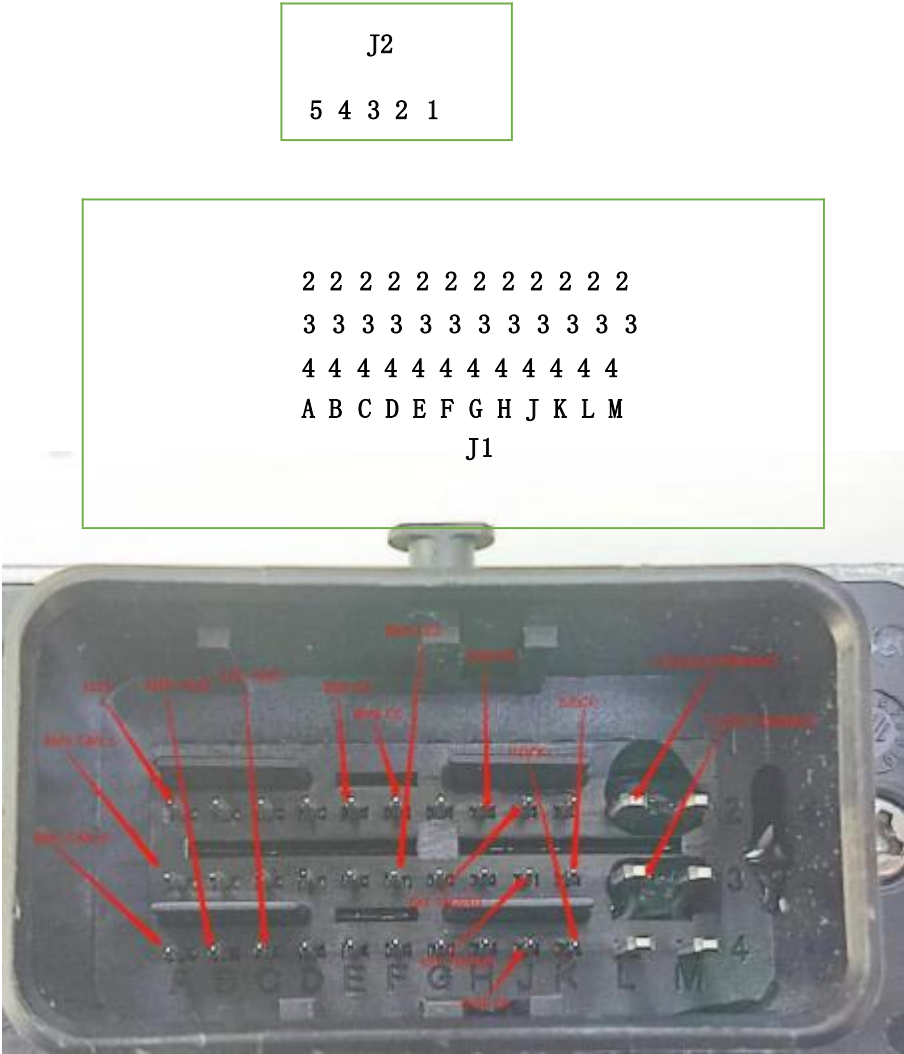
6.4 可靠性 Reliability

项目project	规格 specification
耐久性durability	满足 QC/T 895-2011 标准; Meet QC/T 895-2011 standard;
EMC 特性EMC characteristics	满足 GB/T 18487.3-2001 标准要求, 满足ECER10Meet the requirements of GB/T 18487.3-2001 standard and ECER10
谐波电流Harmonic current	满足 GB 17625.1-2003 标准 Class A 要求Meet the Class A requirements of GB 17625.1-2003
机械振动Mechanical vibration	满足 QC/T 413-2002 3.12 (ISO 16750-3 4.2.2.2) 标准 Meet QC/T 413-2002 3.12 (ISO 16750-3 4.2.2.2) standard

机械冲击Mechanical impact	满足 ISO 16750-3 4.2.2.2 标准Meet the ISO 16750-3 4.2.2.2 standard
盐雾特性Salt spray characteristic	满足 QC/T 413-2002 3.13 标准Meet QC/T 413-2002 standard 3.13

7 产品接口 Product Interfaces

7.1 产品端子接口定义 Product Terminal Interface Definitions



J1电源power supply: C4 ---12V--KL30 B4----GND---KL31 KL15---A2
 国标CAN National standard CAN : A4—BMS_CAN_H A3 —BMS_CAN_L
 DEBUGCAN: B2—DEBUG_CAN_H C2—DEBUG_CAN_L

12V输出12V output: E3- ----- BMS_K3 D4 -- ----
 - BMS_K4 EVSE-CP J4 GND_EVSE-----
 H4
 EVSE_PP H2
 BMS CP E2
 BMS CC F2
 BMS CC2 F3
 EXT-TEMP01 J2
 EXT-TEMP02 J3
 JLOCK+ K4
 JLOCK- K3
 J_LOCK_FEEDBACK L3
 J_UNLOCK_FEEDBACK L2

信号定义 signaldefinition	信号类型signal type	信号说明CPU interface	传输方向 transmis sion direction	PIN No.
KL30	12V电源 12V power supply	12V电源 12v power supply	IN	15
KL31	GND	接地 ground connection	IN	8
Wakeup Enable	车钥匙开关 car key switch	PLC唤醒源PLC wake-up source	IN	18
OFFBD CAN H	BMS接口BMS interface	与BMS充电通信CAN H Communication with BMS charging CAN H; Can H与Can L间有120Ω终端 电阻。	IN, OUT	6
OFFBD CAN L	BMS接口BMS interface	与BMS充电通信CAN L Communication with BMS charging CAN L; Can H与Can L间有120Ω终端 电阻。	IN, OUT	13
PP	充电桩接口	电阻输入 Resistance input	IN	1
PE	充电桩接口	接地 ground	IN	9
CP	充电桩接口	Control Pilot	IN	16
OFFB WAKE	BMS接口BMS interface	BMS唤醒源BMS Wake source	OUT	23
CC2	BMS接口BMS interface	直流充电: 输出 Dc charging: Output 1K电阻	OUT	20

OFFB WAKE-RTN	BMS接口BMS interface	对车身接地Body grounding	OUT	22
CC	OBC接口 OBC interface	交流充电：输出对应档位 电阻Ac charging: Output corresponding stall resistance	OUT	7
CP1	OBC接口OBC interface	交流充电：模拟输入CP信 号Ac charging: analog input CP signal	OUT	14
PT_CAN H	ECU CAN BUS	与整车诊断通信CAN H Communication with vehicle diagnostics CAN H; Can H与Can L间没 有120Ω终端电阻。	IN, OUT	5
PT_CAN L	ECU CAN BUS	与整车诊断通信CAN L Communication with vehicle diagnostics CAN L ; Can H与Can L间没有120Ω 终端电阻。	IN, OUT	12

安装位置及方法Installation Positions and Methods

安装位置installation site:

考虑到该模块与充电座相连，并与充电桩交互信息，与BMS也进行国标通信交互。乘用车建议安装在车前盖部分，与充电机及BMS靠近，大巴车建议安装在车尾部分。也可与BMS或者其它零部件作为整体进行布置安装 Considering that the module is connected to the charging base, and exchanges information with the charging pile, it also carries out national standard communication interaction with BMS. For passenger cars, it is recommended to install it in the front cover, close to the charger and BMS, and for buses, it is recommended to install it in the rear. It can also be arranged and installed with BMS or other parts as a whole.

安装方法installation method:

可将产品用支架固定在车前盖或车尾内中的其它硬件支架侧面，接插件线束口朝向地面。The product can be fixed on the side of the front cover or other hardware support in the rear of the car with a bracket, and the wiring harness of the connector is oriented towards the ground.

8 技术支持 Technical Support

“面向海外出口充电汽车”的充电标准转换电控件给世界上不同新能源汽车厂商进行供货。针对不同车厂，公司将产品进行定制化，可与国内整车方案不同的车厂进行技术对接，对应的技术方案只对合作车厂使用，后续整车联调也给予技术支持 The charging standard conversion control of "Charging cars for Overseas Export" currently supplies to different new energy vehicle manufacturers in the world. For different vehicle factories, the company will customize the products, which can be connected with domestic vehicle factories with different vehicle solutions. The corresponding technical solutions are only used for cooperative vehicle manufacturers, and technical support will also be provided for subsequent vehicle joint inspection.