

国标充电桩适配模块 China National Standard Charger Adaptor

本模块功能：与 Master BMS (BMC) 主机进行通信，另一端连接国标充电插座。按照国标充电桩的充电流程要求，引导充电桩进入充电状态。根据 BMC 的发出的电池状态数据，将当前电池充电能力的信息上报给充电机，控制充电机以合适的电压电流对电池进行充电。充电参数可以在 BMS 系统的软件中，进行修改和标定。

Features of this module: Communicate with the Master BMS (BMC), and connect the other end to the national standard charging socket. According to the charging process requirements of the national standard charging pile, guide the charging pile into the charging state. According to the battery status data sent by the BMC, the information about the current battery charging capability is reported to the charger, and the charger is controlled to charge the battery with the appropriate voltage and current. The charging parameters can be modified and calibrated in the BMS system PC software.

使用我们 BMS 系统组建电池的客户，为了快速解决匹配充电器问题，客户可以购买国标充电机，快速完成充电器适配。这些充电机功率从几千瓦至几百千瓦，体积从小巧便携式至大型固定式都有，可以解决很多电池项目的充电问题。只需要根据电池组实际参数，选择合适的电压、电流输出范围的充电机即可。

您可以自行购买标准充电机，或者联系我们给您推荐合适的产品。

For customers who use our BMS system to build batteries, in order to quickly solve the problem of matching chargers, customers can purchase national standard chargers to quickly complete the charger adaptation. These chargers range in power from a few kilowatts to a few hundred kilowatts, and in size from small portable to large stationary devices, which can solve the charging problems of many battery projects. You only need to select the appropriate voltage and current output range of the charger according to the actual parameters of the battery pack.

注意：Attention:

1、本模块、以及我们提供的 BMS 其它配件，虽然可以兼容下面提到的相关国家标准，但目前，我们并未取得相关资格认证（包括汽车行业的资质）。请确认您的应用项目，是否需要相关资格认证，并按相关规定，完成认证后，再投入使用。

1. Although this module and other BMS accessories provided by us are compatible with the relevant national standards mentioned below, at present, we have not obtained the relevant qualification certification (including the qualification of the automotive industry). Please confirm whether your application project requires relevant qualification certification, and according to relevant regulations, after completing the certification, then put into use.

2、请您仔细研究电路、方案，确保系统安全可靠。

2. Please carefully study the circuit and scheme to ensure the safety and reliability of the system.

本模块可兼容充电桩通信协议标准如下：

标准号：GB/T 27930-2015

中文标准名称：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

This module can be compatible with the following charging pile communication protocol standards:

Standard : GB/T 27930-2015

Chinese standard name: Communication protocol between electric vehicle non-on-board conduction chargers and battery management systems

本模块推荐使用符合如下标准的充电插座：

标准号：GB/T 20234.3-2015

中文标准名称：电动汽车传导充电用连接装置 第3部分：直流充电接口

This module recommends the use of charging sockets that meet the following standards:

Standard number: GB/T 20234.3-2015

Connectors for conductive charging of electric vehicles - Part 3: DC charging interfaces



参数特性: Features

- 工作电压: 额定 12V, (也可以支持 24V 充电桩, 本文不详细介绍。)

Working voltage: rated 12V, (it can also support 24V charging pile, this article is not detailed.)

- 根据 BMS 指令进行动态充电功率调节、充电终止的控制

Dynamic charge power adjustment and charge termination control are performed according to BMS instructions

- 充电桩插座的温度检测和保护

Temperature measurement and protection of charging pile sockets

- 有充电桩连接状态信号输出, 可实现插枪锁定等功能

There is output of charging pile connection status signal, it can realize the plug gun lock and other functions

- 可以直接驱动充电接触器, 接触器线圈驱动电流能力: 驱动峰值电流 3A, 持续 0.5A。

It can directly drive the charging contactor, The required current if contactor: driving peak current 3A, lasting 0.5A.

- 可连接独立的充电电流检测的传感器, 可以适应较严格参数判断检测的充电桩

It can be connected to an independent charging current sensor, which can adapt to the charging pile with strict parameters

- 独立充电电流检测部分与低压部分绝缘隔离, 额定隔离耐压 1500VDC, 无特殊要求时, 建议用于<500VDC 的系统。可提供更高耐压的版本。

The independent charging current measurement part is insulated and isolated from the low-voltage part. The rated isolation voltage is 1500VDC. It is recommended <500VDC system when there is no special requirement. Higher voltage versions are available.

- 工作温度范围: -40°C 至 85°C。

Operating temperature range: -40°C to 85°C.

- 湿度: 20%-90%RH 无冷凝, 绝对不可以结露, 否则高压漏电。务必做好防护。

Humidity: 20%-90%RH Non-condensing, absolutely not condensation, otherwise high voltage leakage. Be sure to protect yourself.

- 海拔 2000 米以下使用, 超过 2000 米需要加强绝缘处理。

Above sea level 2000 meters below the use, more than 2000 meters need to strengthen insulation treatment.

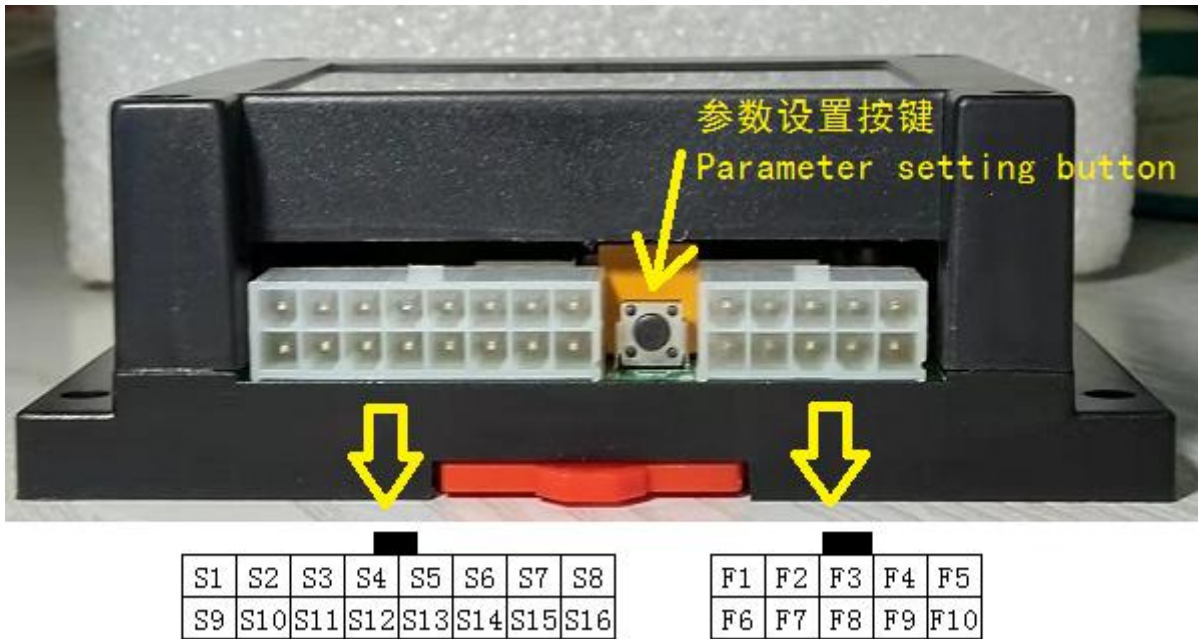
- 防护等级：无，需要用户整机做好防护。

Protection level: None, the whole machine must be protected.

- 外形尺寸在本文最后，重量约 123g

Weight: 123g

模块端口位置定义图：Pin Definition of Module



S1 - S16 与 BMS 连接的各个控制信号

Each control signal is connected to S1-S16 and BMS

F1 - F10 为充电口的各个控制信号

F1-F10 is each control signal of the charging port

当按住参数设定按键时，充电桩引导的相关控制参数可以被修改。

When hold pressing the parameter setting button, the relevant control parameters of the charging pile can be reset.

本模块的各项参数设定，请查阅资料包中的对应文档。

F 端子 Pin Definition of F Port		
F1	GND	充电插座接地 PE Charging socket is connected to grounding PE
F2	A-	12V 辅助电源负极 Minus of 12V Power Supply
F7	A+	12V 辅助电源正极 (兼容 24V 辅助电源的充电桩) Plus of 12V Power Supply (Compatible with china national charge pile)
F3	充电接触器驱动输出负, RL- Minus of Charging contactor driving output RL-	充电接触器的线圈一端连接本端口，另一端连接充电机提供的 12V 辅助电源正极。驱动电流峰值不超过 5A，持续建议小于 1A。输出电压等于充电桩低压供电电压。推荐使用宽电压供电的接触器。 One end of the charging contactor is connected to this port, and the other end is connected to the plus of the 12V auxiliary power supply provided by the charger. The peak driving current does not exceed 5A, and it is recommended that the continuous driving current is less than 1A. The output voltage is equal to the low-voltage supply voltage of the charging pile. A wide voltage powered contactor is recommended.
F4	S-	充电插座的 CAN 通信总线。120 欧电阻已经内置，无需在线路上增加 CAN communication bus for charging socket. The 120 ohm resistor is already built in, no need to add it to the wiring
F5	S+	
F6	CC2	充电插座的充电枪连接检测信号。 The charging gun of the charging socket is connected to the detection signal.
F8	两路温度的公共端, T-	两路温度检测。用于充电插座的正、负极插头处的温度检测和保护。 注意：1、热敏电阻必须为 MF52-10K-3435 规格的；2、必须将模块的温度检测功能，配置为有效，才能进行温度检测和保护。3、热敏电阻需做好足够的绝缘，防止与高压正、负极接触，同时热敏安装位置必须能够可靠的测量充电插座触头温度。 Two-way temperature measurement. Temperature measurement and protection at the positive and negative of charging sockets. Note: 1, the thermistor must be MF52-10K-3435 specification; 2. The temperature detection function of the module must be configured to be effective before temperature detection and protection can be carried out. 3, the thermistor needs to do enough insulation to prevent contact with high voltage positive and negative electrodes, and the thermal installation position must be able to reliably measure the temperature of the charging socket contact.
F9	温度传感器 1 正极, T1+	
F10	温度传感器 2 正极, T2+	
S 端子 Pin Definition of S Port		
S1	分流器信号正极 C+ Plus (C+) of Shunt	此处为微弱小信号，请严格按照接线电路图，减小信号误差。This is a weak signal, please strictly follow the wiring circuit diagram to reduce the signal error. 负值电流为充电，因此，电池充电电流方向时，分流器产生的正信号电压输入 S9, 负信号电压输入 S1。 The negative current is for charging, so when the battery charges the current direction, the positive signal voltage generated by the shunt is input S9, and the negative signal voltage is input S1.
S9	分流器信号负极 C- Minus (C-) of Shunt	
S10	分流器信号地 CG Ground of shunt	

		<p>如果要使用充电桩模块的独立电流检测,那么请加装独立的分流器,不能共用BMC主机的电流检测分流器。</p> <p>If you want to use the independent current detection of the charging pile module, install an independent shunt, and do not share the current shunt of the master bms .</p>
S2\S3\S11	<p>空脚, 无需连接</p> <p>no connection required</p>	
S4	485A	<p>485 通信接口。除非定制程序的产品, 普通用户请不要使用此端口。</p> <p>485 Communication port;</p>
S12	485B	
S5	CAN-L	<p>与 BMC 进行 CAN 通信。没有内置 120 欧终端电阻, 需要在合适的位置增加。</p> <p>AN communication with Master BMS(BMC). There is no built-in 120 ohm terminal resistor, which needs to be added in place.</p>
S6	CAN-H	
S13	<p>12V 供电负极</p> <p>Minus of Power supply 12V</p>	<p>必须要给这里供电, 否则 S7\S15 的功能无效。建议使用 BMC 唤醒开机后, 输出的 12V 电压供电。</p> <p>不推荐连接充电桩的辅助供电, 否则充电桩一旦停电, 就无法检测到充电插头已经连接。</p> <p>Power must be supplied here, otherwise S7\S15 will not function. You are advised to use the 12V output power supply after the BMC(slave bms) is powered on.</p> <p>It is not recommended to connect the auxiliary power supply of the charging pile, otherwise the charging pile will not be able to detect that the charging plug has been connected once the power is cut.</p>
S14	<p>12V 供电正极</p> <p>Plus of Power supply 12V</p>	

S8、S16	<p>充电唤醒 BMS 功能，输出开关点的两端（纯机械触点）</p> <p>Charging wake-up BMS : both ends of output switch (purely mechanical contactors)</p>	<p>当连接充电机得到辅助供电后，S8\S16 内部导通，用于触发 BMS 系统充电唤醒。触点为小信号触点，允许经过电流峰值不超过 0.4A，持续 0.1A。耐电压小于 30V 直流</p> <p>Connecting of the charging pile detection and to output both ends of the switch (pure mechanical contactors)</p>
S7、S15	<p>连接充电桩检测功能，输出开关点的两端（纯机械触点）</p> <p>Connecting of the charging pile and both ends of the output switch point (pure mechanical contactors)</p>	<p>当符合标准的充电机插头连接后，S7\S15 内部断开；拔下充电插头，S7\S15 内部接通。此功能可实现连接充电机时，禁止某些功能。触点为小信号触点，允许经过电流峰值不超过 0.4A，持续 0.1A。耐电压小于 30V 直流</p> <p>When the standard charger plug is connected, S7\S15 internal disconnect; Unplug the charging plug and S7\S15 is connected internally. This function can realize the connection of the charging machine and prohibit certain functions. The contact is a small signal contact, allowing the peak current to not exceed 0.4A, lasting 0.1A. Withstand voltage less than 30V DC</p>

资料包中有参考电路图，可供参考

Reference circuit diagrams are available in the information package

充电桩的辅助电源 Auxiliary power supply of charging pile

充电桩辅助供电可支持 12V、24V 两种规格。但必须使用兼容双电压（宽电压）驱动的充电接触器。如果充电接触器的线圈驱动电流过大，而充电桩辅助电源供电电流太小，则可能无法驱动充电接触器。这时，可考虑用其它电源为充电接触器供电，本模块的充电接触器控制信号端口，驱动一个小继电器，小继电器再去控制充电接触器。

Charging pile auxiliary power supply can support 12V, 24V two specifications. However, a charging contactor compatible with dual voltage (wide voltage) drives must be used.

If the coil drive current of the charging contactor is too large, and the charging pile auxiliary power supply current is too small, it may not be able to drive the charging contactor. At this time, it can be considered to use other power sources to power the charging contactor. The charging contactor of this module controls the signal port to drive a small relay, which then controls the charging contactor.

BMS 报告给充电桩的电流值问题 BMS reports a problem with the current value of the charging pile

部分充电桩要求 BMS 报告的充电电流值，与充电桩自身检测的电流值相差不能太大。这时，如果设定为 BMC 报告的电流值，那么电池一旦在充电时打开用电负载，这时向充电桩报告的充电电流值，会与充电桩自身测量值出现较大偏差，而导致充电桩报错停机，最佳解决办法就是，为本模块，安装独立的充电电流值检测。也可以设置为报告充电桩测量值，这种方法我方不推荐使用，请您自行考虑，以及确保系统安全。

Some charging piles require that the charging current value reported by BMS should not be too different from the current value detected by the charging pile itself. At this time, if the current value reported by BMC is set, then once the battery is turned on during charging, the charging current value reported to the charging pile will have a large deviation from the measured value of the charging pile itself, resulting in the charging pile reporting an error stop, the best solution is to install an independent charging current value detection for this module. It can also be set to report the measured value of the charging pile. We do not recommend this method. Please consider it by yourself and ensure the safety of the system.

选择合适参数的充电桩 Select the charging pile with appropriate parameters

国标充电桩有如下关键参数：最低输出电压，最高输出电压，最低输出电流，最高输出电流。电池组的最低电压、最高电压，必须在充电桩的最高最低输出电压范围之内；充电桩的最大最小输出电流，一般情况不会出现不兼容的问题，只需要按照您的充电速度要求进行选择即可。

National standard charging pile has the following key parameters: minimum output voltage, maximum output voltage, minimum output current, maximum output current.

The minimum voltage and maximum voltage of the battery pack must be within the range of the maximum and minimum output voltage of the charging pile;

The maximum and minimum output current of the charging pile, generally there will be no incompatible problems, only need to choose according to your charging speed requirements.

外壳机械尺寸图

