

72V8330F Specification for supercapacitors

72V8330F 超级电容器

产品规格书

Revision History 规格书修订记录

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一、Scope 适用范围

This specification describes the characteristics, appearance, dimensions, performance, test methods and precautions of the supercapacitor (72V_8330F_MAA018108337DB1) developed by Shenzhen Tsingyan Energy Storage Co., Ltd.

本规格书对深圳市清研储能技术有限公司开发的 72V_8330F_MAA018108337DB1 超级电容器的特性、外观、尺寸、性能、测试方法、及注意事项进行了说明。

二、General characteristics 产品通用特性

2.1 Features and advantages 特点与优势

- ❖ High energy density 高能量密度
- ❖ High power density 高功率密度
- ❖ Ultra-low internal resistance 超低内阻
- ❖ Ultra Long Cycle Life 超长循环寿命
- ❖ Green and environmentally friendly 绿色环保
- ❖ Good safety performance 安全性能好
- ❖ Wide operating temperature range 工作温度范围宽

2.2 Typical application areas 典型应用领域

- ❖ Low speed autonomous vehicle 低速无人驾驶车辆
- ❖ Lsightseeing bus 观光车
- ❖ golf cart 高尔夫球车
- ❖ Mobile robot 移动机器人 AGV
- ❖ Logistics vehicle, electric bicycle 物流车, 电动自行车

三、Main components, appearance, and dimensions 主要部件、外观尺寸

3.1 Main components 主要部件

NO. 序号	Items 项目	Specification 规格	Quantity 数量	Remark 备注
1	Cell 单体电容	HESC 4V/15000F	180PCS	

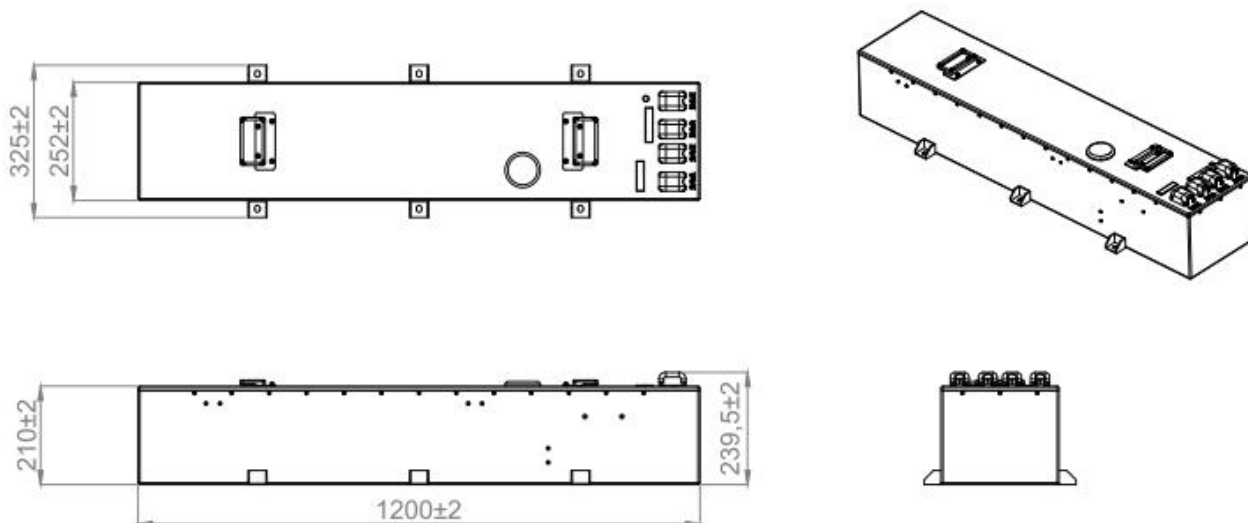
2	PDU kit PDU 套件	BMS+ High voltage devices BMS 板+高压器件	1 套	
3	Display 显示屏	UD-070F/C (7寸)	1PCS	
4	Intelligent IoT terminal 智能物联网终端	X700-M	1PCS	
5	Charge socket 充电头	National standard fast charge socket 国标快充头	1PCS	
6	Housing 外壳	1200×325×239.5mm	1PCS	

3.2 Appearance 外观



3.3 Dimensions 尺寸

单位: mm



3.4 Instructions for wiring terminals 接线端子说明

The module plug terminal has a total of 4 power terminals, 2 signal terminals, and 1 button switch

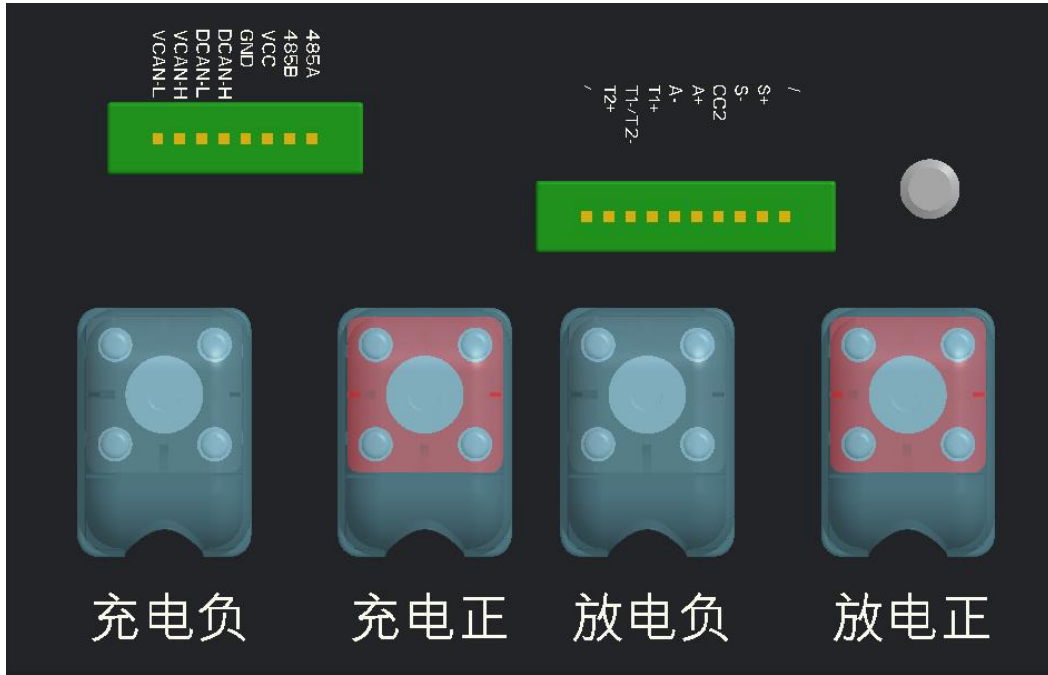
模组接插端子总共有 4 个动力端子，2 个信号端子，1 个按键开关

This module is a charging and discharging port, with two sets of power terminals: charging positive/charging negative and discharging positive/discharging negative,

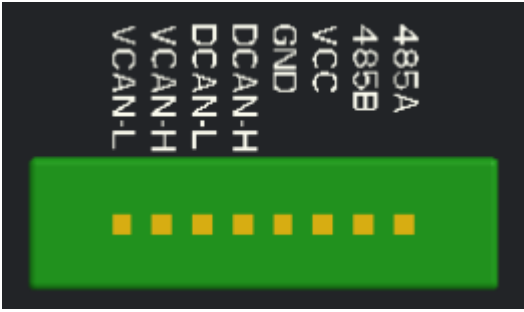
该模组为充放电异口，动力端子有充电正/充电负和放电正/放电负两组，

There are 2 signal terminals, of which the 10PIN terminal corresponds to the 9 signals of the national standard fast charging head, and the 8PIN terminal corresponds to the display power and communication signals. In addition, there are reserved external debugging CAN signals (DCANH/DCANL) and vehicle CAN signals (VCAN-H/VCAN_L). The specific information is shown in the following figure and table:

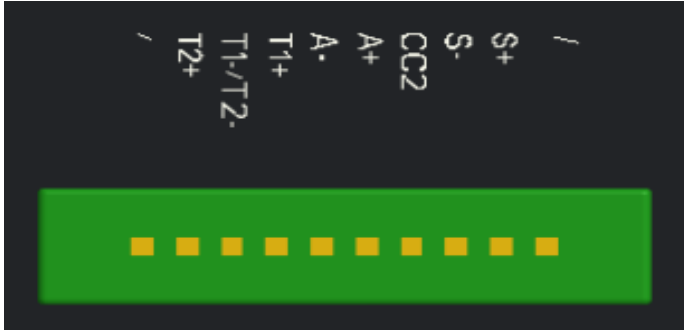
信号端子有 2 个，其中 10PIN 端子对应的是国标快充头的 9 个信号，8PIN 端子对应的是显示供电和通讯信号，另外有预留对外的调试 CAN 信号 (DCAN_H/DCAN_L) 和整车 CAN 信号 (VCAN_H/VCAN_L)，具体信息如下图和表所示：



8PIN 端子引脚信号说明								
	整车 CAN 信号		调试 CAN 信号		显示屏供电及通讯			
序号	1	2	3	4	5	6	7	8
信号	VCAN_L	VCAN_H	DCAN_L	DCAN_H	GND	VCC	485B	485A



10PIN 端子引脚信号说明										
序号	1	2	3	4	5	6	7	8	9	10
信号	/	T2+	T1-/T2-	T1+	A-	A+	CC2	S-	S+	/



3.5 Introduction to Display Interface Functions 显示界面功能介绍

First power on, enter driving mode, as shown in the following diagram:

首次开机，进入驾驶模式，如下示意图：




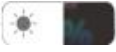
Click on any position on the screen to pop up the button shown below. The specific instructions are as follows:


点击屏幕任意位置，可弹出下图按钮，具体说明如下：


Click   to switch between different driving mode styles (including instrument style day/night mode


and digital style day/night mode). After selection, if turned off and restarted, the selected interface remains unchanged;


点击  可切换不同驾驶模式风格（包括仪表风格白天/夜晚模式和数字风格白天/夜晚模式），选择后如关机重新开机，已选界面保持不变；

Swipe left and right  to adjust screen brightness;

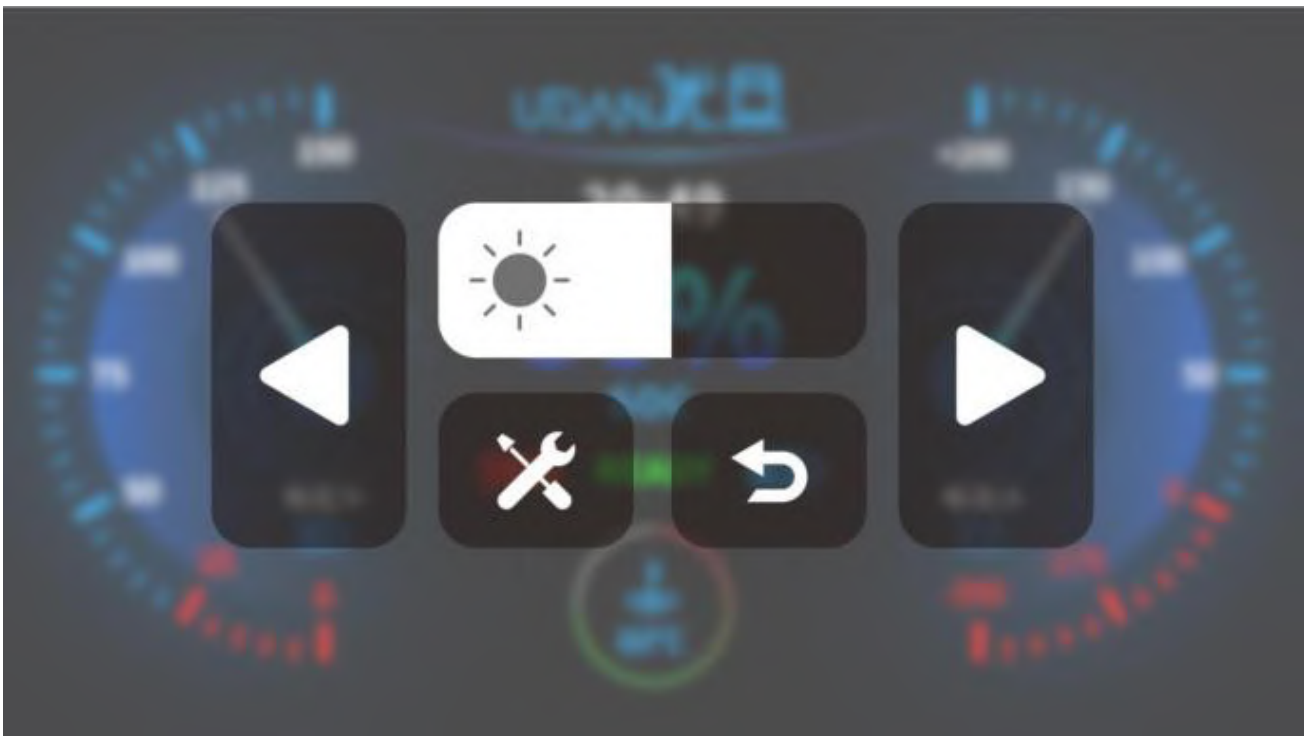
左右滑动  可调整屏幕亮度；

Click  to enter engineering mode and view more information;

点击  可进入工程模式，查看更多信息；

Click  to return to the interface.

点击  返回界面。





Entering engineering mode, the top left side displays the date, the fault between the date and time is displayed, and the right side displays the time; The central display shows the total voltage, SOC, total current, highest voltage, lowest voltage, highest temperature, and lowest temperature; The navigation menu is displayed at the bottom, which can be switched to view interface details.

进入工程模式，顶部左侧显示日期，日期和时间之间显示故障，右侧显示时间；中部显示总电压、SOC、


总电流、最高电压、最低电压、最高温度、最低温度；底部显示导航菜单，可切换查看界面详情。




Click on 'Individual Voltage' to enter the voltage details interface, slide left and right to view each string of voltage values, and click  to return to the upper interface.

点击【单体电压】进入电压详情界面，可左右滑动，查看每一串电压值，点击  回到上级界面。



Click on 'Individual Temperature' to enter the temperature details interface, slide left and right to view each temperature value, and click  to return to the upper interface.

点击【单体温度】进入温度详情界面，可左右滑动，查看每一个温度值，点击  回到上级界面。



四、Specification 主要技术参数

NO. 序号	Items 项目	Specification 规格
1	Electrostatic capacity 静电容量	8330F/70Ah
2	Nominal capacity 标称电量	≥70Ah (45-75.6V)
3	Module composition 模组构成	18S10P (电芯: HESC 4.2V/15000F)
4	Nominal working voltage 标称工作电压	72V
5	Surge voltage 浪涌电压	75.6V

6	Maximum working voltage 最低工作电压	45V
7	Internal AC Resistance 交流内阻	$\leq 5\text{m}\Omega @25^{\circ}\text{C}$
8	Internal DC Resistance 直流内阻	$\leq 8\text{m}\Omega @25^{\circ}\text{C}$
9	Energy capacity(Fully Charged) 存储能量	4.2 KWh (45-75.6V) 3.6 KWh (45-72V)
10	Standard Charging Current 标准充电电流	200A (可用国标充电桩快充, 充电时间 20-30 分钟充满)
11	Standard Discharging Current 标准放电电流	200A
12	Maximum operating current 最大工作电流	600A 20S
13	Storage voltage Range 储存电压范围	60.3V ($\pm 2\%$)
14	Cycle life 循环寿命	50000 times (45-75.6V) 80000 times (45-72V)
15	Operation temperature 工作温度	$-40^{\circ}\text{C} \sim 65^{\circ}\text{C}$
16	Storage temperature 贮存温度	$-20^{\circ}\text{C} \sim 45^{\circ}\text{C}$

五、Product Circuit 产品电路

5.1 Circuit Diagram 电路原理图

(略)

5.2 Capacitor management system parameters 电容管理系统参数

No. 序号	Items 项目	Conditions 条件	Parameters 参数	Tolerance 精度	Units 单位
1	Balancing Start Voltage 均衡开启电压	Cell Voltage 单体电压	4.125	± 0.025	V

2	Balancing Stop Voltage 均衡关闭电压	Cell Voltage 单体电压	<4.125		V
3	Balancing Current 均衡电流		45	±35	mA
4	Over Charge Protection 过充保护	Cell Voltage 单体电压	4.25	±0.05	V
5	Over Discharge Protection 过放保护	Cell Voltage 单体电压	2.50	±0.1	V
6	Temperature protection 温度保护	Module 模组	65		°C

六、Product performance testing 产品性能测试

6.1 Test conditions 测试条件

Standard test conditions for this product specification:

Temperature: 25°C ± 5°C, relative humidity: 25%~85%, atmospheric pressure: 86KPa~106 KPa.

本产品规格书标准测试条件为:

温度: 25°C ± 5°C、相对湿度: 25%~85%、大气压力: 86KPa~106 KPa。

6.2 According to standards 依据标准

QC/T741—2017 《车用超级电容器》

GB/T36276—2018 《电力储能用锂离子电池》

GB/T34870.1—2017 《超级电容器》

GB/T 31485-2015 《电动汽车用动力蓄电池安全要求及试验方法》

6.3 Reliability and safety testing methods and requirements 产品可靠性、安全性测试方法及要求

No. 序号	Items 项目	Testing methods 测试方法	Testing requirements 测试要求
1	Standard charging method 标准充电方式	Under normal temperature conditions, charge at a constant current of 200A. When the product voltage reaches the charging limit voltage of 75V, switch to constant voltage charging until the charging current is less than 300mA and stop charging. 在常温条件下, 以 200A 恒流充电, 当产品电	/

		压达到充电限制电压 75V 时, 改为恒压充电, 直到充电电流小于 300mA 停止充电。	
2	Standard discharge method 标准放电方式	Under normal temperature conditions, discharge at a constant current of 200A. When the product voltage reaches the discharge limit voltage of 45V, stop discharging. 在常温条件下, 以 200A 恒流放电, 当产品电压达到放电限制电压 45V 时, 停止放电。	/
3	Rated capacity 额定容量	1. The product is charged to the rated voltage of 75V according to the standard charging method. 1. 产品按标准充电方式充至额定电压 75V。 2. Leave for 10 minutes. 2. 搁置 10min。 3. The product is discharged to the limit voltage of 45V according to the standard discharge method. 3. 产品按标准放电方式放电至限制电压 45V。	The product capacity should not be less than 80% 产品容量应不低于 80%
4	Internal resistance 内阻	AC internal resistance testing instrument testing, accuracy:0.01mΩ 交流内阻测试仪测试, 精度: 0.01mΩ	≤ 5mΩ
5	High temperature discharge 高温放电	1. The product is charged to the rated voltage of 75V according to the standard charging method. 1. 产品按标准充电方式充电至额定电压 75V。 2. Place the product in a high-temperature oven at 60±2°C for 2 hours. 2. 将产品放入 60±2°C 的高温箱中恒温箱 2H。 3. The product is discharged to the limit voltage of 45V according to the standard discharge method, and the discharge capacity is recorded. 3. 产品按标准放电方式放电至限制电压 45V, 记录放电容量。 4. After discharge, take out the product and place it at room temperature for 2 hours, then visually inspect its appearance. 4. 放电结束后将产品取出放在常温条件下搁置 2H, 然后目测外观。	The discharge capacity shall be ≥ 95% of the Nameplate capacity, and the product appearance shall be free of deformation and burst. 放电容量应 ≥ 95% 额定容量, 产品外观无变形, 无爆裂。

6	Low temperature discharge 低温放电	<p>1. The product is charged to the rated voltage of 75V according to the standard charging method.</p> <p>1. 产品按标准充电方式充电至额定电压 75V。</p> <p>2. Place the product in a low-temperature oven at $-40\pm 2^{\circ}\text{C}$ for a constant temperature of 4 hours.</p> <p>2. 将产品放入$-40\pm 2^{\circ}\text{C}$的低温箱中恒温 4H。</p> <p>3. The product is discharged to the limit voltage of 45V according to the standard discharge method, and the discharge capacity is recorded.</p> <p>3. 产品按标准放电方式放电至限制电压 45V，记录放电容量。</p> <p>4. After discharge, take out the product and place it at room temperature for 2 hours, then visually inspect its appearance.</p> <p>4. 放电结束后将产品取出放在常温条件下搁置 2H，然后目测外观。</p>	<p>The discharge capacity shall be $\geq 60\%$ of Nameplate capacity, and the product appearance shall be free of deformation and burst.</p> <p>放电容量应$\geq 60\%$额定容量，产品外观无变形，无爆裂。</p>
7	Safety testing 安全性测试	参照 GB/T 31485-2015 《电动汽车用动力电池安全要求及试验方法》	

七、Notice 使用注意事项

- ❖ High energy super capacitors have fixed polarity. 高能量型超级电容器具有固定的极性。
- ❖ Do not touch metal objects when using supercapacitors to avoid short circuits caused by positive and negative pole connections. 使用超级电容器时请勿接触金属物体，以免正负极连接引起产品短路。
- ❖ The ambient temperature affects the lifespan of supercapacitors. 环境温度影响超级电容器的寿命。
- ❖ Do not apply pressure outside the product. 请勿在产品外部施压。
- ❖ Reverse charging is not allowed. 不可以反向充电。
- ❖ The product should be used at nominal voltage and current. 产品应在标称电压、电流下使用。
- ❖ Please do not place the product near a heat source. The product should not be used in an environment exceeding 65°C . 请勿将产品靠近热源，产品不宜在超过 65°C 的环境中使用。
- ❖ The product is suitable for live storage during storage. 储存时产品适宜带电存储。

八、Storage 储存

- ❖ The capacitor cannot be stored in place with humidity over 85%RH or place with toxic gas.
产品不能储存在湿度超过 85%，或有毒气体的地方。
- ❖ The capacitor should be best stored in the environment within -10~45°C temperature with relative humidity less than 60%.
最好储存在温度-10~45°C，湿度 60%的环境中。