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Description:		Model NO. :YL512300 高压储能柜	

储能电池组规格书

Energy storage battery pack specifications

电池型号：Battery Type： YL512300 高压储能柜

客户名称：Customer Name：

客户确认：Customer Confirmation：

日期 Date：2024.12.10

版本修正记录：Revision History：

版本 Revision	日期 Date	修正人 Originator	修正内容 Reason For Change

核准 Approved	审核 Reviewed	制订 Prepared

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1、范围 Scope

本规格书描述ATE Alltopelec Solar Power有限公司锂电池组有关参考技术指标及要求。

This specification describes the relevant reference technical indicators and requirements for the lithium battery packs of ATE Alltopelec Solar Power Co., Ltd.

2、产品描述 Description and Model

2.1 电池类型 Battery Classification：**磷酸铁锂电池 LFP battery**

2.2 电池型号 Battery Type: **YL512300 高压储能柜**

3、电池组基本参数 Basic Characteristics

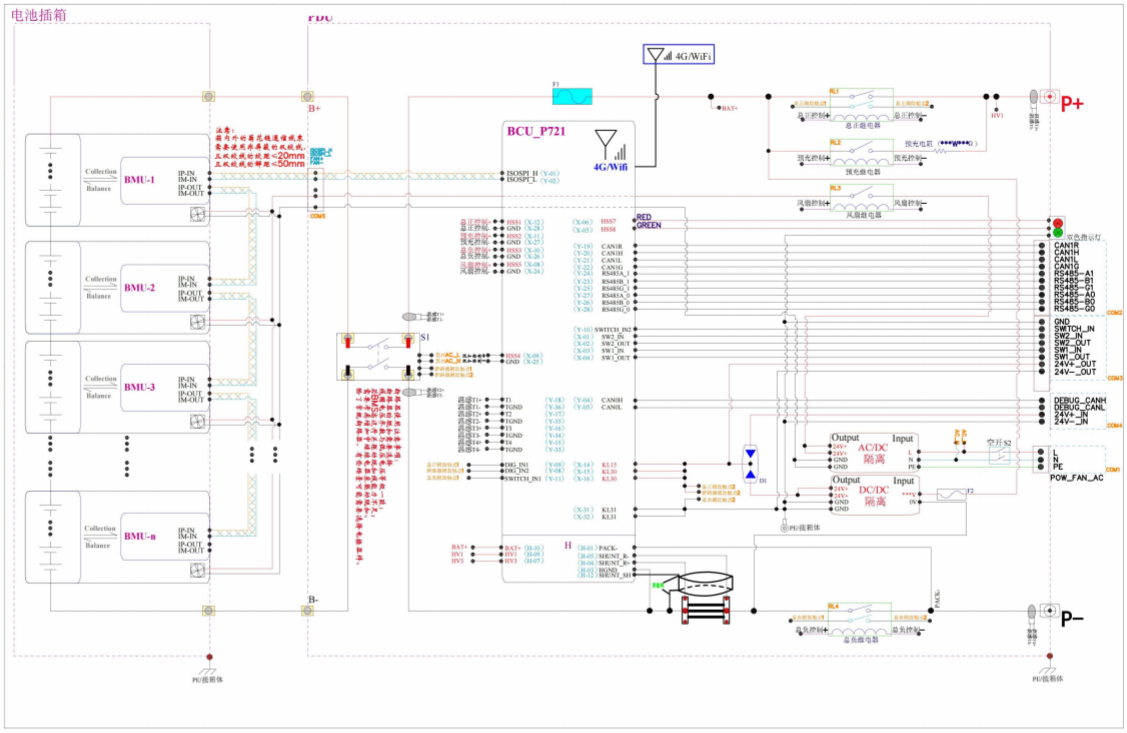
No.	项目 Item	规格 Specification
1.	电芯型号 Cell Model	3.2V-314Ah
2.	电芯串并方式 Array mode	160S1P
3.	额定容量 Nominal Capacity	314Ah (0.2C charge and 0.2C discharge)
4.	最低容量 Minimum Capacity	314Ah (0.2C charge and 0.2C discharge)
5.	瓦特小时 Watt Hour	160.768kWh
6.	额定电压 Nominal Voltage	512V
7.	电芯内阻 Battery resistance	IR≤0.25mΩ（at 1kHz after standard charge）
8.	充电电压 Charging Voltage	584V
9.	充电截止电流 Charging cut-off current	6A(0.02C)
10.	标准充电 Standard charging method	Constant Current:152A(25℃±2℃) Max Charge Current:300A(25℃±2℃)
11.	充电限流功能 Charging limit function	/
12.	放电截止电压 Discharge cut-off voltage	400V
13.	标准放电 Standard discharging method	Constant current of 152A
14.	BMS 最大持续放电电流 Maximum continuous discharge current	200A
15.	放电过流保护 Discharge overcurrent protection	一级 215A(600s)

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16.	并机使用 Parallel operation	**不支持并机使用** **Paruse is not supported**
17.	安装方式 Installation mode	**柜式安装** **Cabinet installation**
18.	循环寿命 Cycle Life	**6000 cycles (0.5C charge ， 0.5C discharge, capacity retention ≧80%)**
19.	通讯方式 communication mode	**CAN/RS485/4G**
20.	重量 Weight（Kg)	**1160KG**
21.	尺寸 size	**L:1056*W:848*H:1840mm**
22.	工作温度 Operating Temperature	Charging：-20℃～60℃
		Discharging：-20℃～60℃
23.	贮存温度 Storage Temperature	1 month： -20℃～50℃
		6months： -20℃～45℃
		1 year： 0℃～25℃
24.	贮存相对湿度 Relative Humidity	**65±20%**
25.	出货容量 Delivery Capacity	**SOC45%±10%**
26.	荷电保持能力与容量恢复能力 Charge retention and capacity recovery capability	电池标准充电后，常温搁置 28d 或 55℃搁置 7d，荷电保持率≥90%,容量恢复率≥90% Standard charge the battery, and then put aside at room temperature for 28d or 55 ℃ for 7d, Charge retention rate≥90%, Recovery rate of charge≥90

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4、电气原理图 Electrical schematic diagram



5、上下电流程 Up and down power flow

流程 workflows	描述 Descriptions	
低压上电流程 Low voltage power flow	自锁开关：低压供电有效，闭合开关，唤醒引脚有持续高电平，则低压上电；Self-locking switch: low voltage power supply is effective, close the switch, wake up the pin has a continuous high level, the low voltage power;	
低压下电流程 Low voltage power flow	自锁开关：断开开关，断开低压供电或唤醒引脚高电平无效，则低压下电；Self-locking switch: Disconnect the switch, disconnect the low-voltage power supply or wake-up pin high level is invalid, then low-voltage power down;	
预充策略 Pre-charging strategy	预充成功标志 Pre-charge success mark	预充回路两端电压差≤10V The voltage difference between the two ends of the precharging circuit is 10V
	预充时间限制 Pre-charge time limit	一次预充时间为≤3S One precharge time was 3S
	预充重试机制 Pre-charging and retesting mechanism	预充次数：2；间隔时间：1S; Precharging times: 2; interval time: 1S;

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高压 上电流程 high-handed Power flow	闭合总负，闭合预充，预充成功，闭合总正，延时断开预充； Closed total negative, closed precharging, successful pre-charging, closed total positive, delayed disconnection and precharging;
高压 下电流程 high-handed The power flow	非欠压故障下高压流程，记作“正常下电” ①情况一：供电丢失。 此时 BMS 丢失供电，继电器直接断开，BMS 无法控制； ②情况二： 正常下电：常电在，按开关下电（唤醒信号）。BMS 需要先请求所有功率（电流）为 0，发送下电指令给 PCS（禁充禁放标志），等待回路电流≤5A，断开所有继电器；从检测到下电信号到断开继电器最长 5 秒。 ③情况三： 故障下电：检测到需要断继电器的严重故障。BMS 需要先请求所有功率（电流）为 0，发送下电指令给 PCS（禁充禁放标志），等待回路电流≤5A，断开所有继电器；从检测到下电信号到断开继电器最长 5 秒。 The high pressure process under non-undervoltage fault is recorded as "normal power down" ① Situation 1: Loss of power supply. At this time, BMS loses power supply, the relay is directly disconnected, and BMS cannot control; ② case 2: Normal power: normal power, press the switch power (wake up signal). BMS needs to request all power (current) of 0, send down command to PCS (prohibited sign), wait for circuit current 5A, disconnect all relays; up to 5 seconds. ③ situation 3: Failure down: serious fault requiring broken relay detected. BMS needs to request all power (current) of 0, send down command to PCS (prohibited sign), wait for circuit current 5A, disconnect all relays; up to 5 seconds.
注意事项 matters need attention	1. 断继电器动作，包含总正继电器和总负继电器，可以同时执行断开动作； 2. 执行降功率：该列内容表示降功率至该数值，例如：50%表示降流至之前电流的 50%、50A 表示降流到 50A； 3. 执行下高压：执行相应的下高压流程，具体见充放电下高压流程。 4. 充放电使能：“-”表示表示对应充放电标志位发使能，“禁能”表示对应充放电标志位发禁能； 1.Broken relay action, including the total positive relay and the total negative relay, can be disconnected at the same time; 2.Execute reduced power: the column represents reduced power to this value, such as 50% is down to 50% of the previous current, 50A is down to 50A; 3.Implement high voltage: execute the corresponding high pressure process, see the high pressure process under charge and discharging.

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	4.Charge and discharge enabling: "-" means the corresponding charge and discharge mark position enabling, "no energy" means the corresponding charge and discharge mark position forbidden energy;

6、放电 SOP 表 Discharge SOP table

最大允许放电电流（BMS 上电后一直请求，不区分充放电状态） Maximum allowable discharge current (BMS without charge and discharge state)			
备注： 1C=额定容量*SOH 单位： T(℃) I (A) soc（显示 SOC） (%) Note: 1C= Rated capacity * SOH unit: T (℃) I (A) soc (displays SOC) (%)			
T\I\soc	[0,10]	(10,20]	(20,100]
≤-20	0	0	0
(-20,0]	0.05C	0.2C	0.3C
(0,10]	0.05C	0.3C	0.5C
(10,50]	0.05C	0.5C	200A
(50,55]	0.05C	0.3C	0.3C
≥56	0	0	0
注意此处温度参数与故障阈值表中对应；故障阈值表优先级＞此表格内容； Note that the temperature parameters correspond to the fault threshold table; the fault threshold table priority> the content of this table;			

6、充电 SOP 表 Charging SOP table

最大允许充电电流（BMS 上电后一直请求，不区分充放电状态） Maximum allowable charge current (BMS, without charge and discharge state)						
备注： 1C=额定容量*SOH 单位： T(℃) I (A) soc (%) 充电最大请求电流限制：0.5C 充电最小请求电流限制：5A，禁止充电时请求 0A，下表计算电流范围在[1,最小电流] 时请求最小电流。 Note: 1C= rated capacity * SOH unit: T (℃) I (A) soc (%) Charging maximum request current limit: 0.5C Charging minimum request current limit: 5A, request 0A when charging, the following table calculates the minimum current range of [1, minimum current].						
T\I\V	[0,2.2]	(2.2,3.0]	(3.0,3.5]	(3.5,3.55]	(3.55,3.6]	(3.6,3.8]
≤0	0	0	0	0	0	禁止充电 No charging
(0,10]	0.05C	0.1C	0.3C	0.2C	0.1C	禁止充电
(10,45]	0.05C	0.2C	0.5C	0.3C	0.1C	No charging
(45,50]	0.05C	0.1C	0.3C	0.2C	0.1C	禁止充电
≥51	0	0	0	0	0	No charging

注意此处温度参数与故障阈值表中对应；故障阈值表优先级＞此表格内容；

Note that the temperature parameters correspond to the fault threshold table; the fault threshold table priority> the content of this table;

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7、电池保护值及相应方式

Battery protection value and the corresponding method

下电情形 Under the electricity situation	策略描述 Policy description
欠压故障下高压流程记作“欠压下电” The high pressure process under the undervoltage fault is recorded as "power under the undervoltage"	如果有欠压断继电器故障 （单体低故障、总压低故障）： 以下策略不区分充放电状态 ① 若检测到电流≤-2A&持续 10S，则立即断开总正、总负继电器； ② 若检测到电流≤-10A&持续 3S，则立即断开总正、总负继电器； ③ 若检测到电流＜2A，则最多延迟 5 分钟，断开总正、总负继电器； ④ 当检测到电流时≥2A，则保持继电器闭合，禁止休眠； ⑤以上①②③④在欠压故障未释放时一直判断； If there is an undervoltage break relay fault (single low fault, total low pressure fault): The following policies do not distinguish between charge and discharge states ① If the current-2A & continuous 10S is detected, the total positive and total negative relay shall be disconnected immediately; ② If the current-10A & lasts 3S, remove the total positive and total negative relay immediately; ③ If the current is detected <2A, the maximum delay is 5 minutes, break the total positive and total negative relay; ④ When the current is detected, the relay is kept closed and dormancy is prohibited; ⑤ The above ①②③④ is always judged when the underpressure fault is not released;
低温下电 Electricity at low temperature	低温下高压：为保证低温情况下可以转放电，充电状态下需判断，触发低温 1 级故障时，先充电降功率到 0%；充电禁能； 若充电≥2A&3S，断总正、总负继电器； 若充电＜2A，不断继电器； High voltage at low temperature: in order to ensure that the discharge can be transferred at low temperature, when the low temperature level 1 fault is triggered, first reduce the power to 0%; charging the energy prohibition; If charging 2A & 3S, the total positive and total negative relay is broken; If the charging is <2A, the continuous relay;
断继电器动作，包含总正继电器和总负继电器，可以同时执行断开动作； 执行降功率：该列内容表示降功率至该数值，例如：50%表示降流至之前电流的 50%、50A 表示降流到 50A； 执行下高压：执行相应的下高压流程，具体见充放电下高压流程；	

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充放电使能：“-”表示表示对应充放电标志位发使能，“禁能”表示对应充放电标志位发禁能。
Broken relay action, including the total positive relay and the total negative relay, can be disconnected at the same time;
Execute reduced power: the column represents reduced power to this value, for example: 50% is down to 50% of the previous current, 50A is down to 50A;
Implement high voltage: execute the corresponding high voltage process, see the charge and discharge high voltage process;
Charge and discharge enabling: "-" means the corresponding charge and discharge mark position enabling, and "forbidden energy" means the corresponding charge and discharge sign position forbidden energy.

ON	故障名称 Fault name	BMS 故障等级 The BMS fault level	单位 unit	故障值 Failure value	延时 delayed	释放值 releasing value	延时 delayed	放电限流至 Discharge and limit flow to	放电使能 discharge enable	充电限流至 Charging limit to	充电使能 charge enable	执行下高压 carry out Lower high pressure
1	总压低压 Always lower the pressure	1 级	V	2.9*N	2S	3.0*N	2S	50%	使能 Enable	/	使能 Enable	/
		2 级	V	2.5*N	2S	3.0*N	2S	0%	禁能 Disable	强充标志 Strong charge sign	使能 Enable	/
		3 级	V	2.4*N	2S	≥3.0*N 且 SOC≥50 %	2S	0%	禁能 Disable	强充标志 Strong charge sign	使能 Enable	欠压下电 Undervoltage power down
		4 级	V	/	/	/	/	/	/	/	/	/
2	单体低压 Single low pressure	1 级	V	2.9	2S	3.3	2S	50%	使能 Enable	/	使能 Enable	/
		2 级	V	2.5	2S	3.3	2S	0%	禁能 Disable	强充标志 Strong charge sign	使能 Enable	/
		3 级	V	2.4	2S	≥3.3 且 SOC≥50 %	2S	0%	禁能 Disable	强充标志 Strong charge sign	使能 Enable	欠压下电 Undervoltage power down
		4 级	V	/	/	/	/	/	/	/	/	/
3	总压高压 Total pressure pressure	1 级	V	3.60*N	2S	3.3*N 且 SOC < 98%	2S	100%	使能 Enable	0%	禁能 Disable	/
		2 级	V	3.65*N	2S	3.3*N 且 SOC < 98%	60S	100%	使能 Enable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		3 级	V	3.7*N	2S	3.3*N 且 SOC < 98%	60S	100%	使能 Enable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		4 级	V	/	/	/	/	/	/	/	/	/
4	单体高压 Single high pressure	1 级	V	3.60	2S	3.3 且 SOC < 98%	2S	100%	使能 Enable	0%	禁能 Disable	/
		2 级	V	3.65	2S	3.3 且 SOC < 98%	60S	100%	使能 Enable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		3 级	V	3.7	2S	3.3 且 SOC < 98%	60S	100%	使能 Enable	0%	禁能 Disable	正常下电 Normal shutdown circuit

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		4 级	V	/	/	/	/	/	/	/	/	/
5	单体压差 Single pressure differenc e	1 级	mV	/	/	/	/	/	/	/	/	/
		2 级	mV	500	2S	250	2S	50%	使能 Enable	50%	使能 Enable	/
		3 级	mV	/	/	/	/	/	/	/	/	/
		4 级	mV	/	/	/	/	/	/	/	/	/
6	单体高温 Single high temperat ure	1 级	℃	48	2S	45	2S	100%	使能 Enable	100%	使能 Enable	/
		2 级	℃	56	2S	52	2S	100%	使能 Enable	0%	禁能 Disable	/
		3 级	℃	61	2S	50	2S	0%	禁能 Disable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		4 级	℃	/	/	/	/	/	/	/	/	/
7	单体低温 Single low temperat ure	1 级	℃	0	2S	3	2S	100%	使能 Enable	0%	禁能 Disable	/
		2 级	℃	-11	2S	-7	2S	100%	使能 Enable	0%	禁能 Disable	/
		3 级	℃	-20	2S	-15	2S	0%	禁能 Disable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		4 级	℃	/	/	/	/	/	/	/	/	/
8	温差 differenc e in temperat ure	1 级	℃	15	2S	10	2S	50%	使能 Enable	50%	使能 Enable	/
		2 级	℃	25	2S	20	2S	20%	使能 Enable	20%	使能 Enable	/
		3 级	℃	/	/	/	/	/	/	/	/	/
		4 级	℃	/	/	/	/	/	/	/	/	/
9	持续放电过流 last Discharg e overflow	1 级	A	SOP+5A	10S	SOP	30S	80%	使能 Enable	100%	使能 Enable	/
		2 级	A	SOP+10A	10S	SOP	300S	50%	使能 Enable	100%	使能 Enable	/
		3 级	A	SOP+15A	5S	5	600S	0%	禁能 Disable	100%	使能 Enable	正常下电 Normal shutdown circuit
		4 级	A	1H 内如果出现 3 次此故障，则只能重启释放; If this fault occurs 3 times within 1H, the release can only be restarted;								
10	持续充电过流 last Charging over the flow	1 级	A	SOP+5A	10S	SOP	30S	100%	使能 Enable	80%	使能 Enable	/
		2 级	A	SOP+8A	10S	SOP	300S	100%	使能 Enable	50%	使能 Enable	/
		3 级	A	SOP+10A	5S	5	600S	100%	使能 Enable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		4 级	A	1H 内如果出现 3 次此故障，则只能重启释放 If this fault occurs 3 times within 1H, the release can only be restarted								
13	内网通信 Intranet communi cation	1 级	/	/	/	/	/	/	/	/	/	/
		2 级	/	故障 Fault	5S	恢复 Recovery	30S	50%	使能 Enable	50%	使能 Enable	/
		3 级	/	故障 Fault	30S	恢复 Recovery	30S	0%	禁能 Disable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		4 级	/									
16	逆变器通信故障 Inverter communi cation failure	1 级	/	/	/	/	/	/	/	/	/	/
		2 级	/	/	/	/	/	/	/	/	/	/
		3 级	/	故障 Fault	60S	恢复 Recovery	1S	20%	使能 Enable	20%	使能 Enable	不下电 not turn off
		4 级	/	/	/	/	/	/	/	/	/	/
17	预充失败 Pre-charg e failure	1 级	/	/	/	/	/	/	/	/	/	/
		2 级	/	/	/	/	/	/	/	/	/	/
		3 级	/	故障 Fault	3S	/	/	0%	禁能 Disable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		4 级	/	/	/	/	/	/	/	/	/	/
18	电流异常 Current	1 级	/	/	/	/	/	/	/	/	/	/
		2 级	/	/	/	/	/	/	/	/	/	/
		3 级	/	故障	3S	恢复	30S	0%	禁能	0%	禁能	正常

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	anomaly			Fault		Recovery			Disable		Disable	下电 Normal shutdown circuit
		4 级	/	/	/	/	/	/	/	/	/	/
19	BMS 初始化故障 BMS initialization failure	1 级	/	/	/	/	/	/	/	/	/	/
		2 级	/	/	/	/	/	/	/	/	/	/
		3 级	/	故障 Fault	5S	/	/	0%	禁能 Disable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		4 级	/	/	/	/	/	/	/	/	/	/
20	继电器故障 electric relay hitch	1 级	/	故障 Fault	1S	/	/	0%	禁能 Disable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		2 级	/	故障 Fault	1S	/	/	0%	禁能 Disable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		3 级	/	粘连故障 stick together malfunctions	1S	/	/	0%	禁能 Disable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		4 级	/	开路故障 open a way hitch	1S	/	/	0%	禁能 Disable	0%	禁能 Disable	正常下电 Normal shutdown circuit
21	绝缘漏电故障 Insulation leakage hitch	1 级	Ω/V	500	1S	重启 Reopen	/	100%	使能 Enable	100%	使能 Enable	/
		2 级	Ω/V	300	1S	重启 Reopen	/	100%	使能 Enable	100%	使能 Enable	/
		3 级	Ω/V	100	1S	重启 Reopen	/	0%	禁能 Disable	0%	禁能 Disable	正常下电 Normal shutdown circuit
		4 级	Ω/V	/	/	/	/	/	/	/	/	/
22	SOC 低 low	1 级	%	15	5S	20	3S	100%	使能 Enable	100%	使能 Enable	/
		2 级	%	10	5S	15	3S	100%	使能 Enable	强充标志 Strong charge sign	使能 Enable	/
		3 级	%	5	5S	10	3S	100%	使能 Enable	强充标志 Strong charge sign	使能 Enable	不下电 not turn off
		4 级	%	/	/	/	/	/	/	/	/	/

8、风扇控制策略 Fan control strategy

检测温度在 35℃时开启风扇，温度在 30 度时关闭风扇。

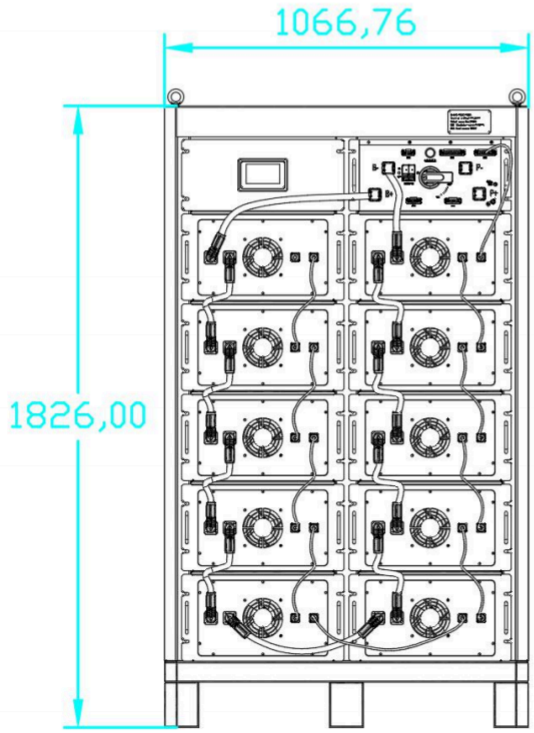
The fan is switched on when the temperature is detected at 35 degrees Celsius and switched off when the temperature is at 30 degrees Celsius.

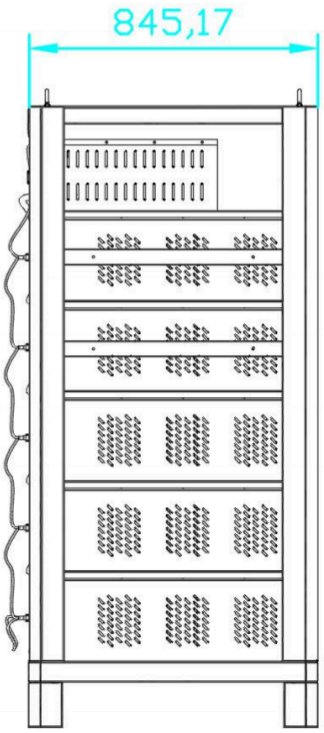
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9、产品图 Product drawing





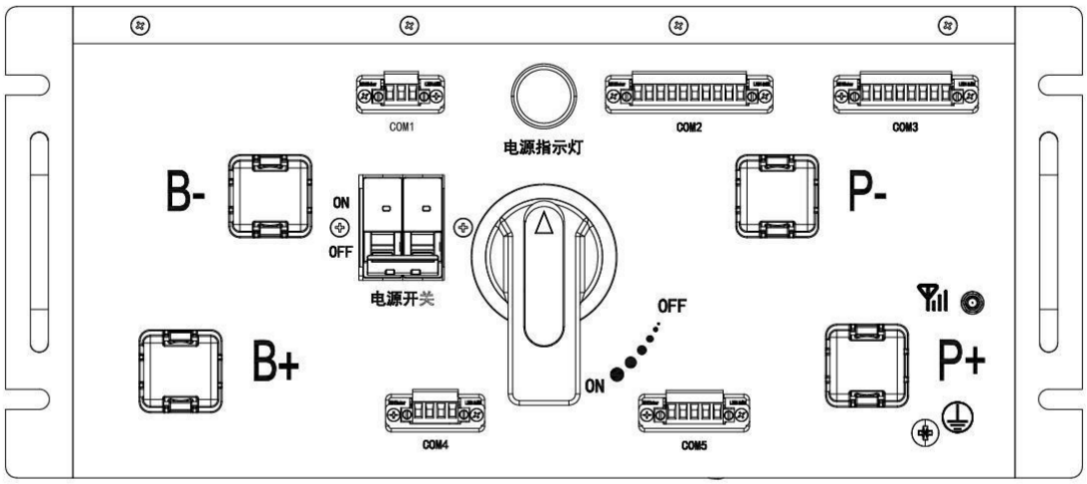




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10、接口描述 Interface description

主控箱接口定义 Master Box Interface Definition



接口定义 interface definition	功能说明 Functional Description	备注 Note
B+	电池簇正极输入 Battery Cluster Positive Input	连接电池簇正极，接口为 M8 螺栓 Connects to the positive terminal of the battery cluster, connector M8 bolt
B-	电池簇负极输入 Battery Cluster Negative Input	连接电池簇负极，接口为 M8 螺栓 Connection to the negative terminal of the battery cluster, connector M8 bolt
P+	PCS/逆变器输入正极 PCS/Inverter Input Positive	连接 PCS/逆变器正极，接口为 M8 螺栓 Connection to PCS/inverter positive terminal, connector M8 bolt
P-	PCS/逆变器输入负极 PCS/Inverter Input Negative	连接 PCS/逆变器负极，接口为 M8 螺栓 Connection to PCS/inverter negative terminal, connector M8 bolt

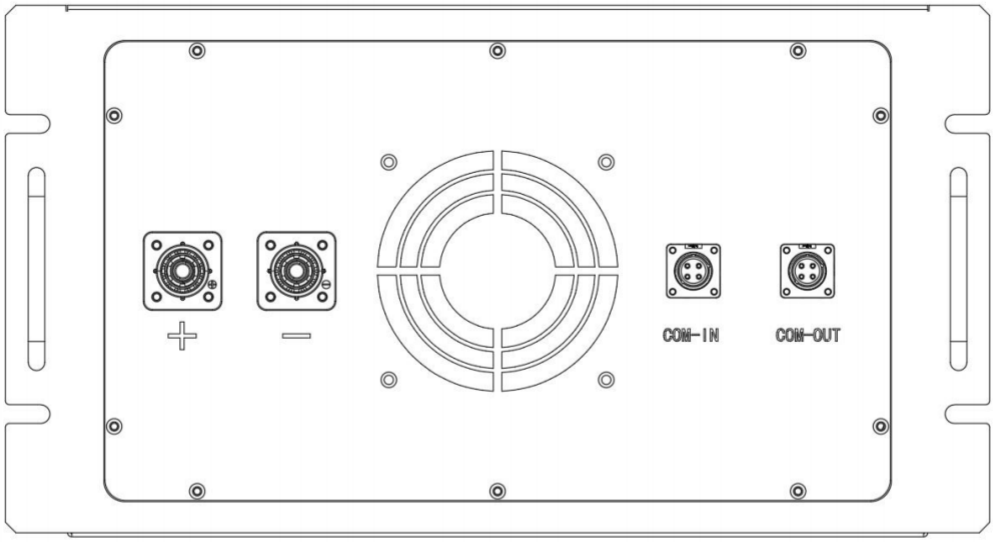
ON	I/O	COM	定义 Define	功能说明 Functional Description
1	I	COM1(3P)	AC220V-N	N
2	/		/	/
3	I		AC220V-L	L
1	I/O	COM2(10P)	CAN1R	终端电阻 Terminating Resistors
2	I/O		CAN1-L	隔离 CAN(连 PCS 或外部设备) Isolated CAN (with PCS or external device)
3	I/O		CAN1-N	
4	I/O		GED	
5	I/O		RS485-A1	隔离 RS485(连接外部设备) Isolated RS485 (connection to external
6	I/O		RS485-B1	

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7	I/O		RS485-G1	devices)
8	I/O		RS485-A0	非隔离 485（连显示屏或外部设备） Non-isolated 485 (with display or external device)
9	I/O		RS485-B0	
10	I/O		RS485-G0	
1	O	COM3(8P)	GND	开关量检测（短接检测） Switching detection (short detection)
2	O		SWITCH-IN	
3	/		SW2-IN	干节点 2（0.1A） Dry node 2 (0.1A)
4	I/O		SW2-OUT	
5	I/O		SW1-IN	干节点 1（0.1A） Dry node 2 (0.1A)
6	/		SW1-OUT	
7	O		DC24V+*OUT	直流输出 24V+(额定 75W) DC output 24V+ (rated 75W)
8	O		DC24V-*OUT	直流输出 24V-(额定 75W) DC output 24V- (rated 75W)
1	I/O	COM4(4P)	DEBUG-CANH	调试 CANH Debugging CANH
2	I/O		DEBUG-CANL	调试 CANL Debugging CANL
3	I		DC24V+IN	输入 24V+Input 24V +
4	I		DC24V-OUT	输入 24V-Input 24V-
1	I/O	COM5(5P)	SPI-H	内网菊花链通讯 H Intranet daisy-chain communication H
2	I/O		SPI-L	内网菊花链通讯 L Intranet daisy-chain communication L
3	/		/	/
4	O		FAN+	风扇供电输入 DC24V+(额定 200W) Fan power input DC24V+ (rated 200W)
5	O		FAN-	风扇供电输出 DC24V-(额定 200W) Fan power output DC24V-(rated 200W)

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电池簇接口定义 Battery cluster interface definition



接口定义 Interface definition	功能说明 Functional Description	备注 Note
+	电池组正极 Battery Pack Positive	橙色 300A 防水快插头 Orange 300A Waterproof Quick Plug
-	电池组负极 Battery pack negative terminal	黑色 300A 防水快插头 Black 300A Waterproof Quick Plug
COM-IN	内网菊花链通讯及风扇供电输入 Intranet daisy chain communication and fan power inputs	WS16 航空插座（插孔） WS16 aviation socket (jack)
COM-OUT	内网菊花链通讯及风扇供电输出 Intranet daisy-chain communication and fan power output	WS16 航空插座（插针） WS16 aviation socket (pin)

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11、包装 pack

包装方式 Packing method：钢带边木箱 Wooden box with steel banded edges



9、储存条件 Storage conditions:

电池组与充电器应贮存在清洁、干燥、通风处，应避免与腐蚀性物质接触，远离火源及热源。
The battery pack and charger should be stored in clean, dry and ventilated place, avoid contacting with corrosive materials and be away from fire and heat.

存放前请检查电池组电量，电池电量应该在 50%~60%之间，每 3~6 个月检查电池组状态。

Please check the battery pack charge before storage, the battery charge should be between 50%~60%, and check the battery pack status every 3~6 months.

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10、产品责任

* 本公司对违反本规格书规定操作而导致的意外不负任何责任;

We assume no responsibility for the accident of not operating in accordance with the specification.

* 如果规格书、原材料、生产过程或生产控制系统发生改变，改变的信息将会随质量和可靠性数据以书面形式通知客户。

Specifications, raw materials, production process or production control system is changed , the change will vary depending on the quality and reliability of data written notice to the customer.

11、使用电池注意事项 Battery Handling Precautions

- 勿将电池组投入水中或将其浸湿!
  Forbid to immerse battery in water or allow it to get wet!
- 禁止在火源或极热条件下给电池组充电！勿在热源（如火或加热器）附近使用或贮存电池组！如果电池泄漏或发出异味，应立即将其从接近明火处移开。第一次使用电池，需将电池充满电后再使用!
  Don't charge, use and store battery near a heat source such as fire and heater! If the battery leaks or releases strange odor, pls remove it from place near fire place immediately. Fully charge the battery before first-time using.
- 勿将正负极接反！ Forbid to reverse the positive and negative pole!
- 勿将电池组投入火中或给电池组加热!
  Forbid to throw the battery pack into fire or heat it!
- 禁止用导线或其他金属物体将电池组正负极短路!
  Forbid to short-circuit battery with wire or other metal objects!
- 禁止用钉子或其他尖锐物体刺穿电池组壳体，禁止锤击或脚踏电池组!
  Forbid to nail, knock or trample battery!
- 禁止以任何方式分解电池组和电池!
  Forbid to disassemble the battery and battery pack in any way!
- 禁止将电池组置于微波炉或压力容器中!
  Forbid to put the battery into microwave oven or pressure vessel!
- 如果电池组发出异味、发热、变形、变色或出现其他任何异常现象时不得使用；如果电池组正在使用或充电，应立即从用电器或充电器上取出并停止使用!
  If the battery pack gives off odor, gets heat, deformation, discoloration or appears any abnormal phenomenon, stop using it; please remove the battery from electrical appliances and stop using it, when the battery is being used or charged!
- 不能使用处于极热环境中的电池组，如阳光直射或热天的车内。否则，电池组会过热，这样就会影响性能、缩短电池组的使用寿命!
  Forbid to use battery pack in a very hot environment, such as under direct sunlight or in car on hot day. Otherwise, the battery pack will overheat, which will affect battery performance and shorten battery life!
- 如果电池漏液后电解液进入眼睛，不要擦，应立即用水冲洗，立即寻求医疗救助。如不及时处理，眼

睛将会受到伤害!

If the battery leaks and electrolyte leakage enters into the eyes, do not rub, rinse with water immediately and seek immediate medical assistance. If not in time, eyes will be hurt!

- 环境温度会影响放电容量，环境温度超出标准环境时（25±5℃），放电容量会有所降低!

Ambient temperature will affect the discharge capacity, if the ambient temperature is beyond the standard environment (25±5),℃ the discharge capacity will drop!

特别注意事项 Special Considerations:

- 电池组在充电过程中，如果出现异味、异常声响，请立即停止充电。

During charging, if there is odor and unusual noise, immediately stop charging.

- 电池组在放电过程中，如果出现异味、异常声响，请立即停止放电。

During discharging, if there is odor, unusual noise, immediately stop charging.

- 如果出现上述现象，请与厂家联系，请勿私自拆卸。

If there are above phenomenon, please contact the manufacturer, do not disassemble by yourself.

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