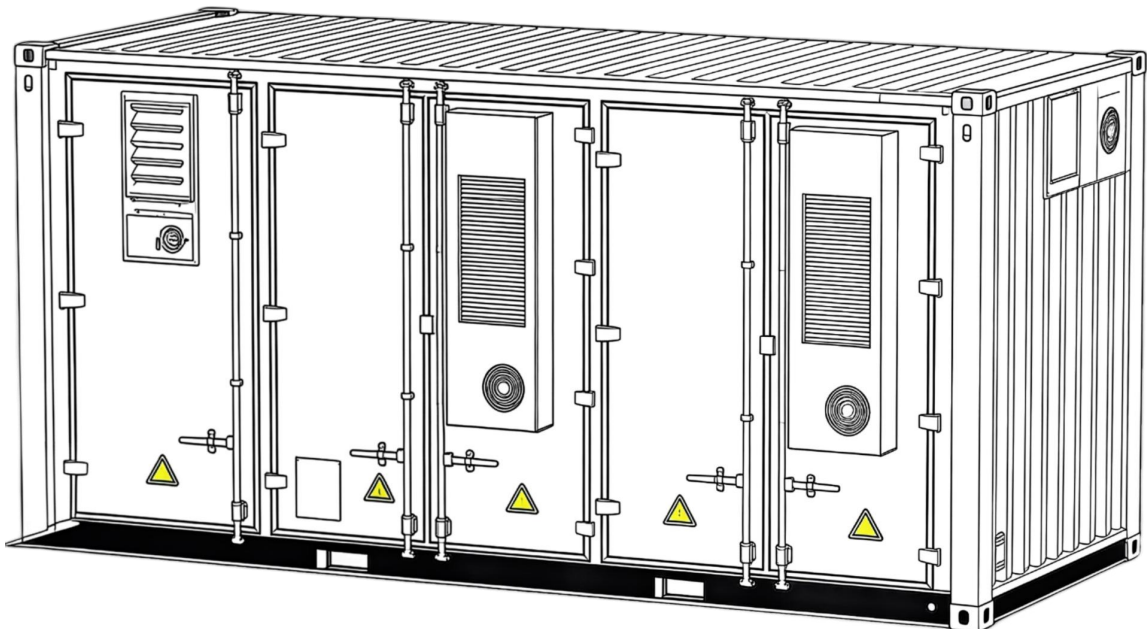


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Faran Technology (shenzhen) Co., Ltd.  
法拉安(深圳)科技有限公司

# Energy Storage Project Specification 储能项目规格书

**FA-ebank-1687FPGF2.4**





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## 1、Scope of application documents/文件适用范围

This product specification only applies to the protection parameters of rechargeable lithium-ion battery products and batteries designed by Faran Technology (shenzhen) Co.,Ltd..

本产品规格书仅适用由法拉安科技(深圳)有限公司设计的可充电锂离子电池产品和电池组的保护参数.

## 2、The Specification Amendment/ 规格书修订

If the raw materials, production processing, production system or battery usage environments & other conditions need to be changed, the amendment side needs provide the written advice to the other side, only the both sides come to agreement, the amendment will be effective.

如因原材料、生产制程、生产系统或电池使用环境或其他条件发生改变, 修订方需将改变的信息以书面形式通知对方取得供需双方同意后再行修订。

## 3、Product or Cell testing conditions/ 设备产品或电芯的测试条件

It is recommended to use newly produced battery packs and new cells for related tests. Unless specified, testing and measurement shall be done under temperature of  $20 \pm 5^{\circ}\text{C}$  and relative humidity of 45~75%.

建议采用新生产的电池组和新的电芯作相关的测试。除非有特别要求, 否则测试需要在温度  $20 \pm 5^{\circ}\text{C}$ , 相对湿度45~75%的条件下进行。

## 4、Standard / 标准

### 4.1 Reference Standard/参考标准

参考 GB 31241-2014 便携式电子产品用锂离子电池和电池组安全要求

参考 UL1642 安全标准-(锂电池)

参考 GB/T 31486-2015 电动汽车用动力蓄电池电性能要求及试验方法

参考 GB/T 31485-2015 电动汽车用动力蓄电池安全要求及试验方法

参考 GB/T 31484-2015 电动汽车用动力蓄电池循环寿命要求及试验方法

参考 VDE-AR-N 4110 储能电源系统德国并网标准要求

### 4.2 Measuring Instrument and Apparatus/ 测量器具及设备

#### 4.2.1 Dimension Measuring Instrument/ 尺寸测量器具

The dimension measurement shall be implemented by instruments with equal or more precision scale of 0.02mm.

尺寸测量器具的精度等级应不小于0.02 mm。

#### 4.2.2 Voltmeter (伏特计)

Standard class specified in the national standard or more sensitive class having inner impedance more than  $10\text{k}\Omega/\text{V}$  按照国家标准指定规格等级或采用灵敏度更高的, 测量电压时内阻不应小于  $10\text{k}\Omega/\text{V}$ 。

#### 4.2.3 Ammeter (安培计)

Standard class specified in the national standard or more sensitive class. Total external resistance including ammeter and wire is less than  $0.01\Omega$ .

按照国家标准指定规格等级或采用灵敏度更高的, 包括电流表及电线在内的总外阻应小于  $0.01\Omega$ 。

#### 4.2.4 Impedance Meter (电阻计)

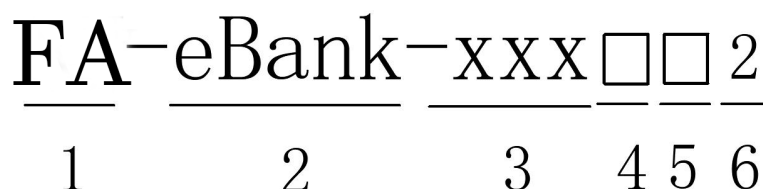
Impedance shall be measured by a sinusoidal alternating current method (1kHz LCR meter). 内阻测试仪测量原理应为交流阻抗法 (1kHz LCR)。

**4.3 Testing Conditions (Unless Specially Requirements) 测试条件 (除非特别规定)**

Atmosphere Pressure : 86~106kPa    大气压力: 86~106kPa  
 Temperature: 20°C±5°C    环境温度: 20°C±5°C  
 Relative Humidity: ≤75%    环境湿度: ≤75%

**5、Model Description 型号说明**

Our company's product model definition rules are as follows:  
 我司产品型号定义规则如下:



Number 序号	Code Name 代码名称	Code Description 代码说明
1	Enterprise code 企业代号	FA: FARAN 法拉安科技缩写 Abbreviation of Company Name
2	Product code 产品代号	eBank: energy Bank 能量银行
3	Energy code 能量代号	for example: "215" represents the rated energy of 215kWh 例如: "215" 表示额定能量 215kWh
4	Cooling method code 冷却方式代号	F: Indicating air cooling 表示风冷 L: Indicating liquid cooling 表示液冷
5	Inverter configuration code 逆变器配置代号	Empty: grid connected 空: 并网
		S: Grid connected photovoltaic system S: 并网带光伏
		PGF: Grid connected and off grid PGF: 离并网
		PGFS: Grid connected and off grid photovoltaic system PGFS: 离并网带光伏
		HYB: Hybrid inverter HYB: 混合逆变器
6	Code for backup power duration 备电时长代号	"2" indicates that the energy storage backup time is 2 hours "2" 表示储能备电时长为 2h

## 6、Main specifications 主要技术参数

### 6.1 System Parameter 系统参数

No	Item (项目)	General Parameter	Remark (备注)
1	system energy 系统能量	2MWh	
2	MPPT power MPPT 功率	----	
3	PCS power PCS 功率	1MW	
4	STS power STS 功率	1.8MW	
5	Communication access method 交流接入方式	3P4W	
6	rated output voltage 额定输出电压	380/400V	
7	Rated output power 额定输出功率	1MW	
8	Cooling method 冷却方式	air cooling 风冷	
9	Placement environment 放置环境	Outdoor 室外	Suggest a cool and ventilated place 建议阴凉通风处
10	Size 尺寸	W2438*D6058*H2590mm	
11	Weight 重量	≈33T	estimate 预估
14	protection grade 防护等级	IP54	

## 6.2 System Configuration Table 系统配置表

No	Item (项目)	quantity 数量	Remark (备注)
1	Battery cluster 电池簇	8	241KWh
2	Battery control box 电池控制箱	8	
3	Cooling Method 散热方式	1	air cooling 风冷
4	Fire Protection System 消防系统	1	
5	Lighting 照明系统	1	
6	Energy Management System 能量管理系统	1	
7	MPPT-100KW	---	
8	PCS-125KW	8	
9	STS-600kW	3	
10	Access control switch 门禁开关	1	
11	Water immersion detection device 水浸检测装置	1	
12	fire protection system 消防系统	1	

## 6.3 Cell Battery specifications (电芯技术参数)

No	Item (项目)	General Parameter 常规参数	Remark (备注)
1	Rated Capacity 额定容量	314Ah	Standard discharge after Standard charge, we recommend 0.2C charge and 0.5C discharge 标准充电后标准放电, 推荐 0.2C 充 0.5C 放。
2	Nominal Voltage 平台电压	3.2V	Mean Operation Voltage 平台电压
3	Internal Impedance 内阻	$\leq 0.3m\Omega$	Under $20 \pm 5^\circ\text{C}$ Environment Temperature , the Usage Frequency of Fully Charge( 1kHz) , Use AC Internal Impedance test machine to test $20 \pm 5^\circ\text{C}$ 环境温度下, 完全充电后使用频率为 (1kHz) 的交流内阻测试仪测量。
4	Standard charge 标准充电	157A	Constant Current 0.5C <sub>5</sub> A, Constant Voltage 3.6V, 0.02C <sub>5</sub> A cut-off
5	Maximum continuous chargepower 最大持续充电	157A	Constant Current 0.5C <sub>5</sub> A, Constant Voltage 3.6V, 0.02C <sub>5</sub> A cut-off
6	Standard Charge Cut-off Voltage 标准充电截止电压	3.65V	Voltage of the battery when the Charge is stopped 按电芯充电达到满电时停止的电压值
7	Standard Discharge Cut-off Voltage 标准放电截止电压	2.5V	Voltage of the battery when the discharge is stopped 按电芯平台放电达到放电截止的电压值
8	Standard discharge 标准放电	157A	Constant current 0.5C end voltage 2.5 V
9	Maximum discharge current 最大放电持续电流	157A	Constant current: 0.5C <sub>5</sub> A end voltage: 2.5 V
10	Dimension 尺寸	Thickness/厚度: $71.75 \pm 0.8\text{mm}$	
		Width/宽度: $174 \pm 0.8\text{mm}$	
		Height/高度: $204.4 \pm 0.8\text{mm}$	
11	Weight 重量	5.67 $\pm$ 0.2kg	
12	Operating Temperature Range 工作温度范围	Temperature: $-20 \sim 60^\circ\text{C}$ , Humidity: $\leq 60 \pm 25\%RH$	
13	Storage Temperature Range 储存温度范围	$-30^\circ\text{C} \sim 60^\circ\text{C}$	

## 6.4 Technical parameters of battery cluster (电池簇技术参数)

No	Item (项目)	General Parameter 常规参数	Remark (备注)
1	Combination method 组合方式	240S1P	
2	Rated Capacity 额定容量	314Ah	Standard discharge after Standard charge (package) 标准充电后标准放电得到的容量
3	Factory Voltage 出货电压	768V-792V	
4	Voltage at end of Discharge 放电终止电压	$\leq 648V$	Discharge Cut-off Voltage 放电截止电压
5	Recommended charging voltage 推荐充电电压	840V	V=串数*3.5V
6	Internal Impedance 内阻	$\leq 130m\Omega$	Under $20\pm 5^{\circ}C$ Environment Temperature , the Usage Frequency of Fully Charge( 1KHz) , Use AC Internal Impedance test machine to test $20\pm 5^{\circ}C$ 环境温度下, 完全充电后使用频率为 (1kHz) 的交流内阻测试仪测量。
7	Max Charging Current (Icm) 允许最大持续充电电流	157A	Ampere-meter , Maximum allowable charging current of the battery pack 电流表测量, 电池组最大充电电流
8	Limited Charging Voltage (Uc1) 充电限制电压	876V	Volta-meter (Serial*3.53V) , Battery pack safe charging voltage 电压表测量 (串数*3.65V (电芯的最大安全充电电压)), 电池组安全充电电压
9	Max Discharging current 最大持续放电电流	157A	Maximum discharge current allowed by the battery pack 允许用最大放电电流进行放电。
10	Discharge Cut-off voltage (Udo) 放电截止电压	600V	Voltage of the battery when the discharge is stopped 为电池组中止放电的负载电压 (按电芯平台放电达到放电截止的电压值)
11	Operation Temperature Range 工作温度范围	Charge: $0\sim 55^{\circ}C$ / Discharge: $-20\sim 55^{\circ}C$	
12	Storage Temperature Range 储存温度范围	$-20^{\circ}C\sim 50^{\circ}C$	

## 6.5 PCS parameters PCS 参数

	Model	PCS 125KW
DC side parameters 直流侧	ceiling voltage 最高电压	950V
	minimum voltage 最低电压	680 V
	Full load voltage range (V) 满载电压范围 (V)	680~950 (3W+PE) 680~950 (3W+N+PE)
	Maximum input current 最大输入电流	200A
AC grid connection parameters 交流侧 (并网)	output power 输出功率	125
	maximum output current 最大输出电流	200A
	rated voltage 额定电压	400 V / 230V
	Rated voltage range 额定电压范围	-20%~15%
	Frequency range 频率范围	50Hz / 47Hz~52Hz/ 60Hz / 57Hz~62Hz
	Harmonic 谐波	< 3% (大于 30%负载)
	Power factor 功率因数	-100%~100%
Communication off grid parameters 交流侧 (离网)	rated voltage 额定电压	400 V / 230V
	Output voltage harmonics 输出电压谐波	< 3 % (阻性负载)
	Imbalance 不平衡度	100%
	Frequency range 频率范围	50/60Hz
	over load 输出过载	$I_e \cdot 1.1 < I_{load} \leq I_e \cdot 1.25$ 100s $I_e \cdot 1.25 < I_{load}$ 300ms
General parameters 系统参数	Port 通讯口	EMS: RS485 battery: CAN\RS485
	DIDO	2 road
	Maximum efficiency 最大效率	98.5%
	Installation method 安装方式	subrack 插框
	Loss 损耗	Standby 待机 < 15W no-load power 空载功率 < 200W
	Weight 重量	≤ 50kg
	protection grade 防护	IP20
	temperature range 温度范围	-30~60°C
	Humidity range 湿度范围	5-95%
	Cooling method 冷却方式	Intelligent forced air cooling 智能强制风冷
	Altitude 海拔	2000 (3000/4000 90%/80%)
	Authentication 认证	CE, IEC62477, IEC6100, EN50549

## 6.7 STS parameters PCM 参数

	Model	STS 600KW
Input/ Output (AC) 输入/输出	Rated power 额定功率	600KVA
	Rated voltage 额定电压	230V/400VAC(-20%~15%)
	Rated grid frequency 额定电网频率	50 Hz/60HZ /(+/-5Hz )
	Max. power 最大功率	600KVA
	Max. current 最大电流	870A
General Data 一般数据	Dimensions (W * H * D) 尺寸 (宽*高*深)	591*375*400mm
	Weight 重量	50KG
	Operating temperature 工作温度	-40 °C to 60 °C
	humidity range 湿度范围	5 % – 95 %
	Cooling method 冷却方式	Temperature controlled forced air cooling 温控强制风冷
	Max. operating altitude 最大工作高度	4000 m(>2000m derating)
	Communication 通讯	RS485*2 / modbusRTU / CAN
Switch time (PCC)切换时间	< 10ms	

## 6.8 Parameters of 53KW Air-cooling machine 53KW 风冷机参数

参数型号 (中英文对照)	单位 (Unit)	MC50HDNC1A 规格 (Specifications)
尺寸、质量 & 安装方式 (Dimensions, Weight & Installation Method)	-	-
外形尺寸 (宽 x 深 x 高) (Overall Dimensions (W x D x H))	mm	2370 × 1850 × 1200
带法兰外形尺寸 (宽 x 深 x 高) (Overall Dimensions with Flange (W x D x H))	mm	2400 × 1930 × 1200
质量 (Weight)	kg	972
安装方式 (Installation Method)	-	Floor-standing (落地式)
应用环境 (Application Environment)	-	Outdoor (户外)
环境保护 & 性能 (Environmental Protection & Performance)	-	-
工作环境范围 (Operating Temperature Range)	°C	-20to45°C
噪声等级 (Noise Level)	dB(A)	73
IP 防护等级 (IP Protection Rating)	-	IP55
设备外观颜色 (Equipment Exterior Color)	-	-
制冷剂 (Refrigerant)	-	R410a
制冷 / 加热能力 (Cooling/Heating Capacity)	-	-
制冷量 @L35 (Cooling Capacity @ L35)	W	53000 (@50Hz)
加热量 @L5 (Heating Capacity @ L5)	W	12000
消耗功率 (Power Consumption)	-	-
制冷额定输入电流 @L35 (50Hz) (Rated Cooling Input Current @ L35 (50Hz))	A	36
风量 (Air Volume)	-	-
内循环风量 (Internal Circulation Air Volume)	m <sup>3</sup> /h	12300
电源制式 (Power Supply Specification)	-	-
电源范围 (Power Supply Range)	V, Hz	3N,380-415,50/60
制冷 / 制热额定电流 (额定最大电流) (Rated Cooling/Heating Current (Rated Maximum Current))	A	-
最大运行电流 (Maximum Operating Current)	A	43

## 6.9 Specification for Single Cluster Battery Management System 单簇电池管理系统规范

### 6.9.1 BMS function introduction, BMS功能介绍

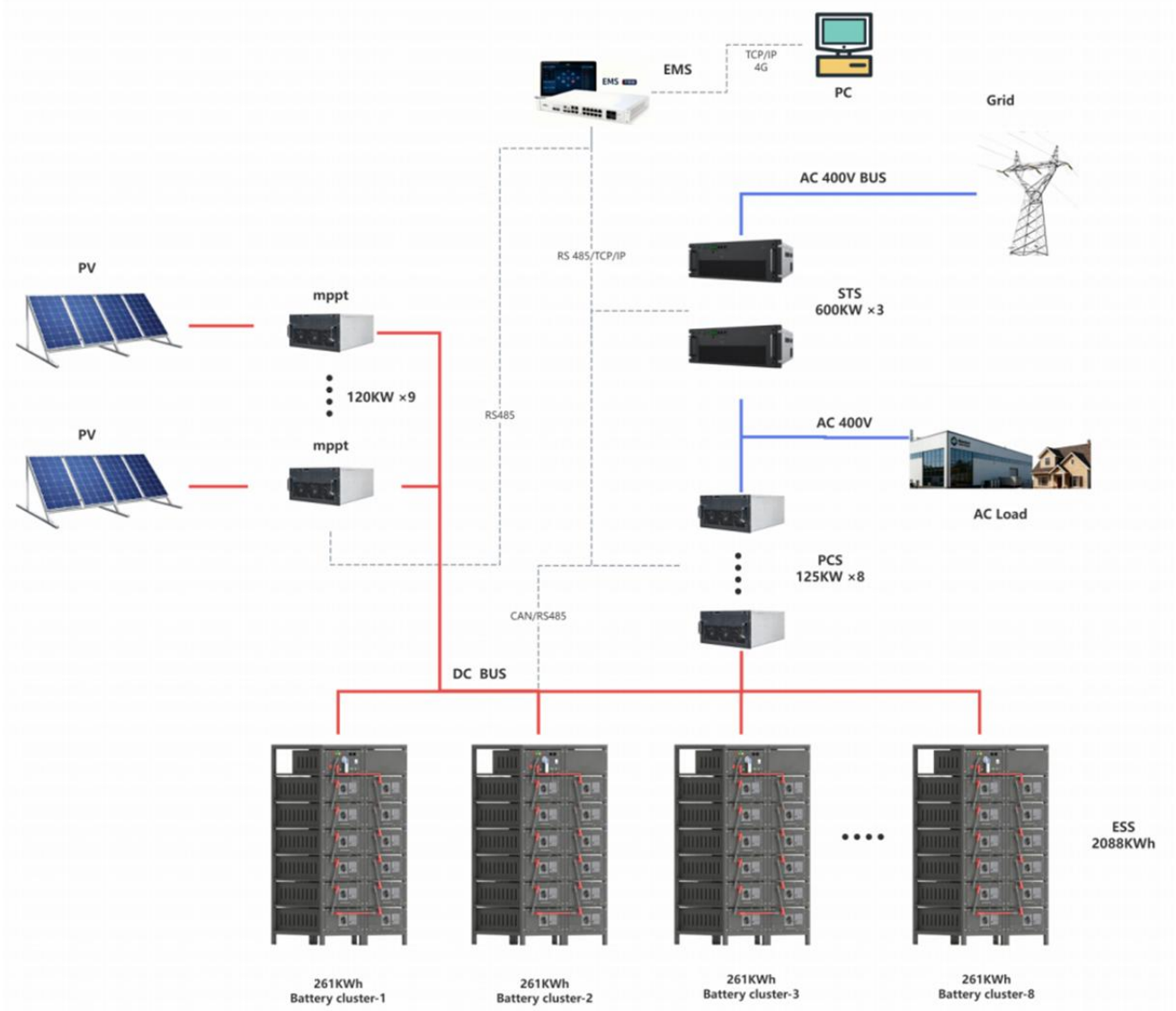
- 1) :BMS is designed for high-voltage energy storage series lithium batteries  
BMS 是为高压储能系列锂电池设计的
- 2) : The BMS have all functions which are :  
该 BMS 系统具有以下一些功能
  - .1 overcharge detection function  
过充电保护功能
  - .2 over discharge detection function  
过放电保护功能
  - .3 over current detection function  
过电流保护功能
  - .4 short detection function  
短路保护功能
  - .5 Temperature detection function  
温度保护功能
  - .6 balance function  
均衡功能
  - .7 communicate function  
通讯功能
  - .8 Alarm function  
告警功能
  - .9 Total capacity function  
总容量功能
  - .10 Storage history function  
存储历史记录功能

## 6.9.2 BMS Protect parameter 电池管理系统保护参数

Items 项目	Details 标准	General Parameter 常规参数
Cell overcharge Protection 电池过度充电保护	Overcharge detection voltage 过充电检测电压	$3.55 \pm 0.025V$
	Overcharge detection delay time 过充电检测延迟时间	Typical:1.0s
	Overcharge release voltage 过充电释放电压	$3.4 \pm 0.05V$
Cell over-discharge protection 电池过放电保护	Over-discharge detection voltage 过放电检测电压	$2.8 \pm 0.5V$
	Over-discharge detection delay time 过放电检测延迟时间	Typical:1.0s
	Over-discharge release voltage 过放电释放电压	$3.1 \pm 0.1V$ or charge release
Over-current Protection 过电流保护	discharge Over-current protection current1 放电过电流保护电流 1	140A
	discharge Over-current detection delay time 1 放电过电流检测延迟时间 1	1S
	discharge Over-current protection current 2 放电过电流保护电流 2	167A
	discharge Over-current detection delay time 2 放电过电流检测延迟时间 2	$\leq 200m \pm 50ms$
	Charge Over-current protection current 充电过电流保护电流	160A
	Protection condition 保护条件	Load short 负载短路
	Detection delay time 检测延迟时间	$\leq 30ms$
	Protection release condition 保护释放条件	Charging release 充电释放
Temperature (T) protection 温度 (T) 保护	Charge high T protection 充电高 T 保护	$55 \pm 3^{\circ}C$
	Charge high T recover 充电高 T 恢复	$47 \pm 4^{\circ}C$
	Discharge high T protection 放电高 T 保护	$60 \pm 3^{\circ}C$
	Discharge high T recover 放电高 T 恢复	$50 \pm 4^{\circ}C$

	Charge low T protection 充电低 T 保护	$0 \pm 3^{\circ}\text{C}$
	Charge low T recover 充电低 T 恢复	$5 \pm 4^{\circ}\text{C}$
	Discharge low T protection 放电低 T 保护	$-20 \pm 3^{\circ}\text{C}$
	Discharge low T recover 放电低 T 恢复	$-10 \pm 4^{\circ}\text{C}$
Balance 平衡	Balance threshold voltage 平衡阈值电压	3.4V
Communication 通信	<p>It has CAN and RS485 ,RS232 standard communication interface, it real-time monitoring the capacity of battery bank, the voltage, current, environment temperature, and charging/discharging current,</p> <p>RS485, RS232, Baud rate:9600Kb/S, CAN common Baud rate:500K/S,</p> <p>它具有 CAN 和 RS485、RS232 标准通信接口，实时监测电池组的容量、电压、电流、环境温度和充放电电流，</p> <p>RS485、RS232，波特率：9600Kb/S，CAN 普通波特率：500K/S，</p>	
Alarm 警报	<p>It has over-temperature, over charge, under-voltage, over-current, short circuit alarm Function.</p> <p>具有超温、过充、欠压、过流、短路报警功能。</p>	

6.10 System schematic diagram 系统原理示意图



BMS adopts a secondary architecture distributed scheme to communicate with the superior control system through the CAN bus, mainly composed of the following key components:

BMS 采用二级架构分布式方案，通过 CAN 总线与上级控制系统通信，主要由以下关键部件组成：

Main Battery Management Unit (BCM), integrated control and insulation detection module, Battery Monitoring Unit (BMM)

主蓄电池管理单元（BCM）、集成控制和绝缘检测模块、电池监测单元（BMM）

## 7、Appearance and structural dimensions 外观结构尺寸

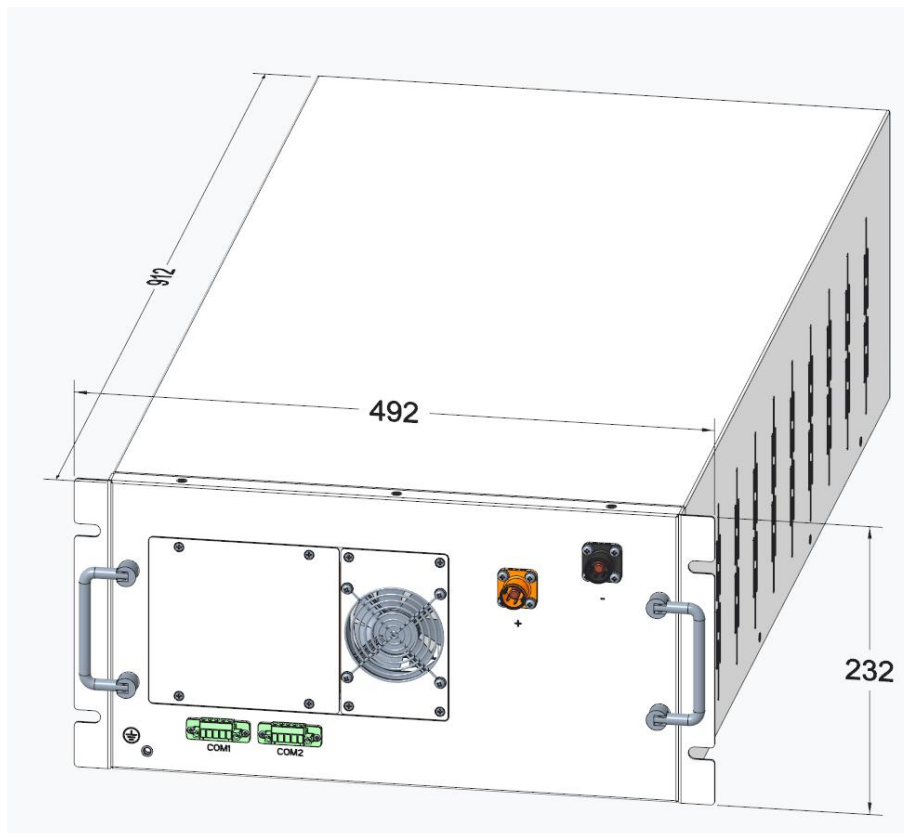
The surface of the battery pack should have no obvious scratches, burrs and mechanical scratches, and the exposed metal terminals should be free of oxidation and rust. 电池组的表面应无明显的划痕毛刺和机械划伤，外露的金属端子应无氧化生锈。

### 7.1 Exterior dimensions of air-cooled battery pack

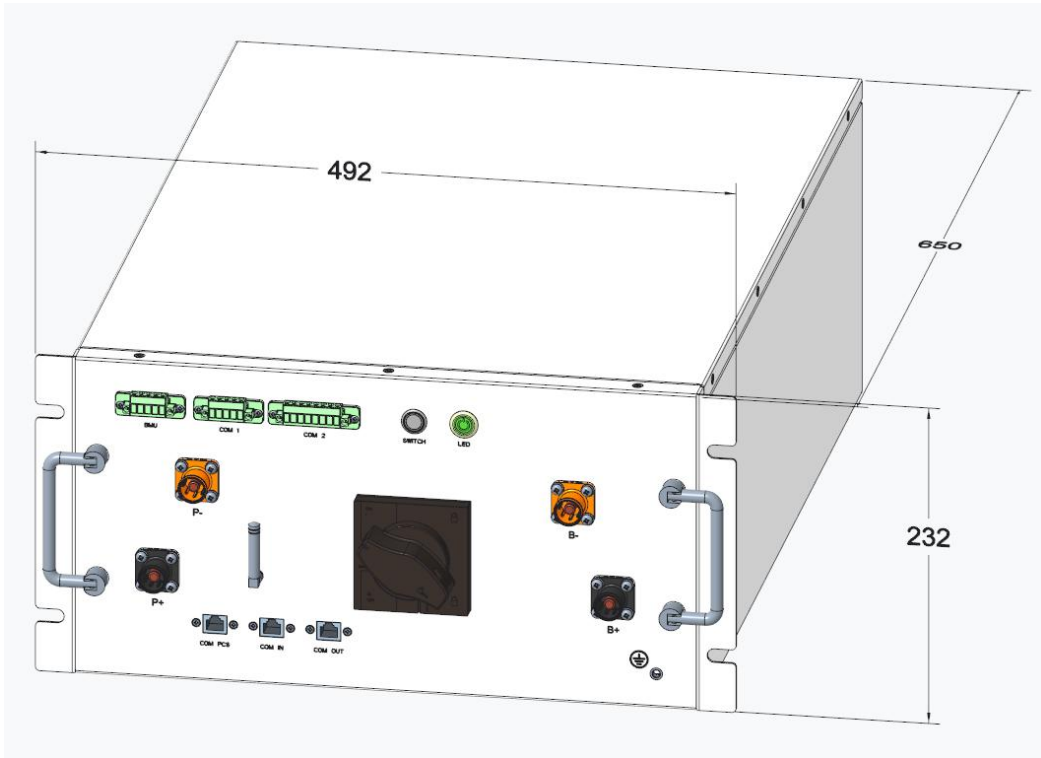
#### 风冷电池包外观尺寸

#### 7.1.1 Size of air-cooled battery pack

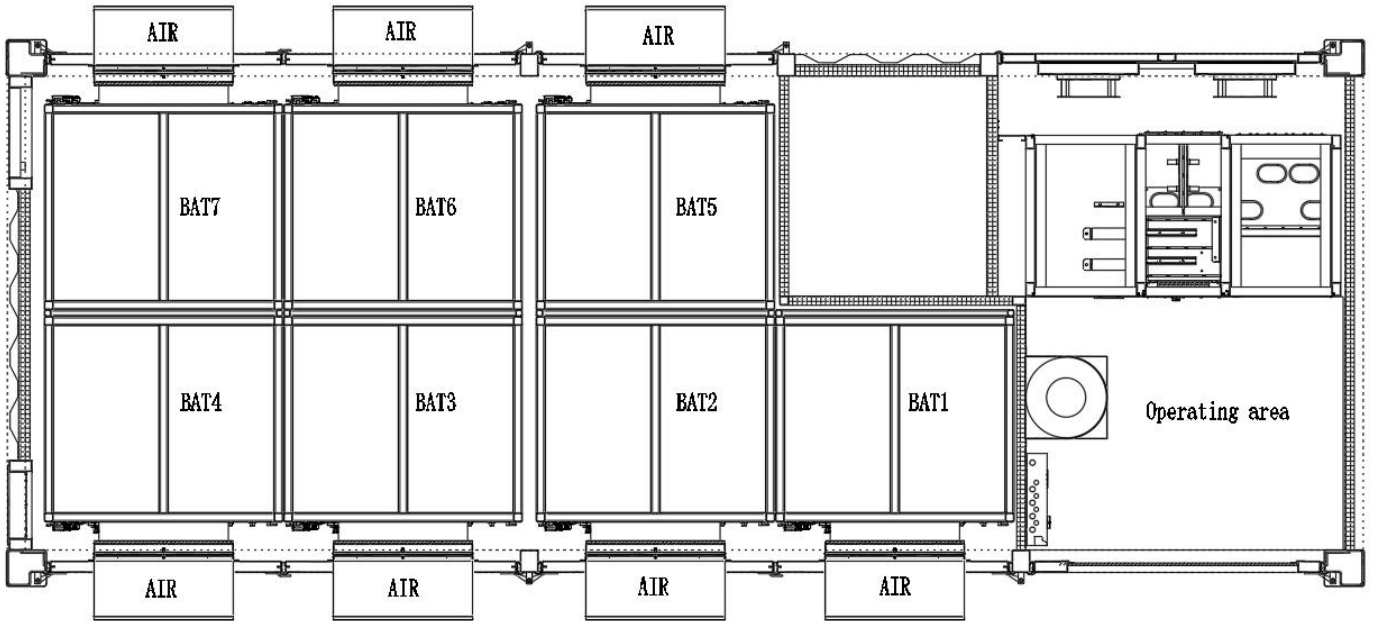
##### 风冷电池包尺寸



7.1.2 Dimensions of air-cooled battery control box 风冷电池控制箱尺寸



7.1.3 Complete product diagram for air cooling 风冷完整产品图:



## 8、fire protection system 消防系统

### 8.1.1 System Composition 系统组成

The gas fire suppression system adopts a non-pipeline total flooding system, consisting of two main components: the agent storage and discharge system, and the alarm and control system.

The pharmaceutical storage and release equipment primarily includes electrically initiated perfluorohexanone fire suppression systems and signal feedback lines. The alarm and control devices mainly consist of control panels, detectors, emergency start-stop buttons, manual alarm buttons, and alarms. Each protected area in the gas fire suppression system is equipped with one gas fire suppression controller at the main entrance, and two independent fire detection circuits, such as smoke detectors and temperature detectors, are installed within the protected area.

气体灭火系统采用非管网式全淹没灭火系统，其组成包括两大部分，即药剂储存和喷放系统、报警和控制系统。

药剂储存和喷放设备主要包括电启动全氟己酮灭火装置和信号反馈线等。报警及控制设备主要包括控制盘、探测器、紧急启停按钮和手动报警按钮、报警器等。每个气体灭火系统保护的防护区主出入口都设置有 1 个气体灭火控制器，防护区内都设有 2 个独立的火灾探测回路，如感烟探测器和感温探测器。

### 8.1.2. Fire extinguishing process 灭火过程

When a fire occurs in the protected area, the circuit that first detects the fire signal transmits the fire signal to the control panel. When the fire is confirmed by another detection circuit, the control panel delays for 30 seconds and automatically activates the solenoid valve on the corresponding gas storage cylinder head valve in the fire area, or simultaneously activates the corresponding selector valve to release the extinguishing gas. The gas completely submerges and fills the entire protected area within 10 seconds. During the delay phase, the control panel will complete the linkage of related devices. If the on duty personnel detect a fire before the fire detection system, they can directly press the manual release button to start the perfluorohexane device.

当防护区发生火灾时，首先探测到火灾信号的回路将火灾信号传送给控制盘，当火灾被另一个探测回路确认后，控制盘延时至 30 秒自动启动火灾区域相对应的储气钢瓶瓶头阀上的电磁阀，或同时启动相应的选择阀，释放灭火气体。气体在 10 秒钟内完全淹没充斥整个保护区域。在延时阶段控制盘将完成相关设备的联动。如值班人员先于火灾探测系统发现火情，可直接按下手动释放按钮启动全氟己酮装置。

### 8.1.3. System working mode 系统工作方式

The system should have two working modes: automatic control and manual control.

#### 1) Automatic control mode

When the protected area is unattended for a long time or rarely accessed, the control mode selection button on the fire alarm controller should be placed in the "automatic" position. At this time, the control system is in automatic operation. When a fire occurs in the protected area, the gas fire extinguishing system automatically completes the entire process of fire detection, alarm linkage control, and jet fire extinguishing within the

protected area. After the single detection circuit within the protection zone detects the fire signal, the control panel activates the alarm bells located inside and outside the protection zone. Simultaneously provide fire warning signals to the FAS system. After both circuits within the same protection zone detect a fire signal, the control panel activates the sound and light alarms located inside and outside the protection zone. After a 30 second delay, the fire alarm controller outputs 24V DC power to activate the fire extinguishing system. The fire extinguishing agent is released into the protective area through the spray short tube and nozzle. The control panel's spray indicator light is on, and the alarm controller receives feedback signals from the pressure signal device. The door lights inside the protective area are turned on to prevent personnel from entering until it is confirmed that the fire has been extinguished.

系统应具有两种工作方式： 自动控制、手动控制。

#### 1) 自动控制方式

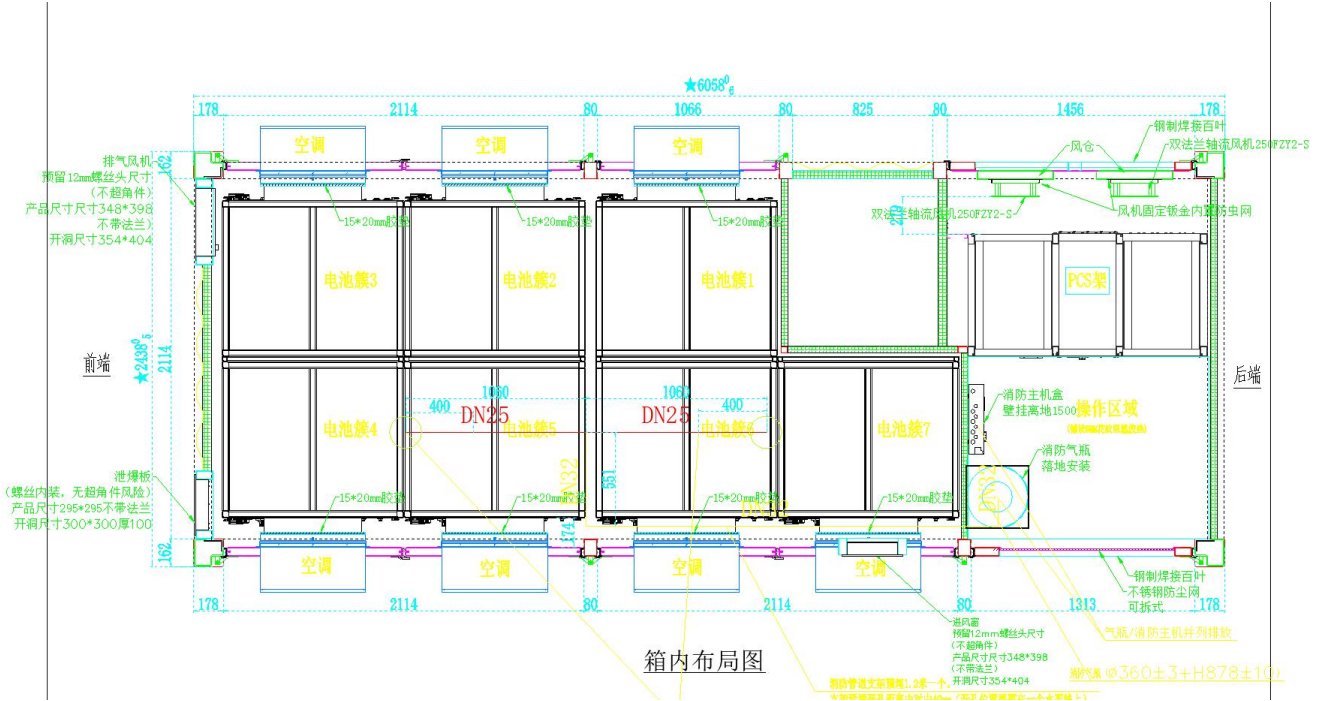
当防护区长期无人值班或很少有人出入时，应将火灾报警控制器上的控制方式选择键置于“自动”位置。此时控制系统处于自动工作状态，当防护区发生火灾时，气体灭火系统自动完成防护区内的火灾报测、报警联动控制及喷气灭火整个过程。防护区内的单一探测回路探测火灾信号后，控制盘启动设在该防护区内外的警铃。同时向 FAS 系统提供火灾预报警信号。同一防护区内的两个回路都探测到火灾信号后，控制盘启动设在该防护区域内外的声光报警器，经过 30 秒延时后，火灾报警控制器输出 24V 直流电，启动灭火系统。灭火剂经喷射短管和喷头释放到防护区，控制面板喷放指示灯亮，同时报警控制器接收压力讯号器反馈信号，开启防护区内门灯，避免人员进入，直至确认火灾已经扑灭。

#### 2) Manual control mode

When there are people working and on duty in the protected area, in order to prevent system misoperation, the control mode selection button on the fire alarm controller should be placed in the "manual" position. At this time, the system is in manual control mode. When a fire occurs in the protected area, the fire detector will transmit the detected fire signal to the controller. The controller immediately sends out sound and light alarm signals, as well as linkage signals, but will not output a signal to start the fire extinguishing system. At this time, the on duty personnel need to confirm the fire and press the emergency start button on the corresponding protected area on the controller to start the fire extinguishing system according to the pre-set program, releasing the perfluorohexane fire extinguishing device for extinguishing the fire.

#### 2) 手动控制方式

当防护区经常有人工作时且有人值班的情况下，为了防止系统误动作，应将火灾报警控制器上的控制方式选择键置于“手动”位置。此时系统处于手动控制状态。当防护区发生火灾时，火灾探测器将探测到的火灾信号输送给控制器，控制器立即发出声、光报警信号，同时发出联动信号，但不会输出启动灭火系统信号，此时需要经值班人员确认火灾后，按下控制器上相对应防护区的紧急启动按钮，即可按预先设定的程序启动灭火系统，释放全氟己酮灭火装置进行灭火。



Fire protection layout diagram  
消防布局图

8.1.4. Fire protection configuration list 消防配置清单

序号 serial number	设备名称 Device Name	型号规格 Model	数量 quantity	单位 unit	备注 remark
1	气体灭火系统 Gasfire extinguishing system		1	PCS	
1.1	气体灭火控制器 Gas fire extinguishing controller	JECP1000	1	PCS	
1.2	气体释放报警器 Gas Release Alarm	QM-ZSD-01E	1	PCS	请勿入内
1.3	紧急启停按钮 Emergency Start/Stop Button	C9065T	1	PCS	请勿入内, 门旁边 离地 1.5M左右, 方便操作
1.4	火灾声光报警器	A9092T	2	PCS	请勿入内
1.5	输入/输出模块	A9058T	3	PCS	

1.6	点型感烟探测器（含底座）	JA9030T	3	PCS	含底座
1.7	点型感温探测器（含底座）	A9020T	2	PCS	含底座
1.8	全氟己酮灭火装置	YF-40L	1	PCS	配40KG药剂
1.9	全氟己酮药剂	1230	40	KG	
2.4	可燃气体探测及排风系统		1	PCS	
2.5	防爆百叶	ZDDB-2.8（尺400*350*51.5）	1	PCS	IP66（无需防雨罩）
2.6	防爆风机	BDFBZ-2.8（400*350*115）	2	PCS	IP66（无需防雨罩）
2.7	气灭管路	/	1	Batch	
2.8	泄压阀	RTXY-0.07-J	1	PCS	防腐（无需防雨罩）
2.9	气体探测器（CO）	co	1	PCS	含支架
3.0	气体探测器（H2）	H2	1	PCS	含支架
3.1	风机启停开关	定制	1	PCS	

## 8、Storage and Others 贮存及其它事项

### Long Time Storage 长期贮存

If stored for a long time (don't used, exceed three months), the cell and pack should be stored in drying and cooling place. The PACK is to be stored in a condition that the temperature of  $23\pm 2^{\circ}\text{C}$  and the humidity of 45%- 75%. Long-term use of unused batteries to recharge every 3 months. Ensure that the battery voltage is within the above range.

长期贮存的电池（未使用，超过3个月）须置于干燥、凉爽处。PACK 应储存在温度  $23\pm 2^{\circ}\text{C}$ ，湿度 45%- 75% 的条件下。长期搁置未使用电池每3个月补电一次，确保电池电压在上述范围内。

## Appendix (附录)

### Li-ion battery operation instructions and precautions 锂离子电池操作指引及注意事项

#### Preface 前言

This document of 'Handling Precautions and Guideline Li-ion Rechargeable Batteries' shall be applied to the battery cells manufactured by FARAN-TECH.

本檔“锂离子充电电池操作指示及注意事项”仅适用于法拉安科技(深圳)有限公司生产电池。

#### Note (1) : 声明一

The customer is requested to contact Faran Technology (shenzhen) Co.,Ltd. in advance, if and when the customer needs other applications or operating conditions than those described in this

document. Additional experimentation may be required to verify performance and safety under such conditions.

客户若需要将电池用于超出本规格书规定以外的设备，或在本规格书规定以外的使用条件下使用电池，应事先联系法拉安科技(深圳)有限公司，因为需要进行特定的实验测试以核实电池在该使用条件下的性能及安全性。

**Note (2) : 声明二**

Faran Technology (shenzhen) Co.,Ltd. will take no responsibility for any accident when the cell is used under other conditions than those described in this Document.

对于在超出本规格书规定以外的条件下使用电池而造成的任何意外事故，法拉安科技(深圳)有限公司概不负责。

**Note (3): 声明三**

Faran Technology (shenzhen) Co.,Ltd. will inform, in a written form, the customer of improvement(s) regarding proper use and handling of the cell, if it is deemed necessary.

如有必要，法拉安科技(深圳)有限公司会以书面形式告知客户有关正确操作使用电池的改进措施。

**Caution!注意!**

Do not use or store the battery where is exposed to extremely hot, such as under window of a car in direct sunlight in a hot day. Otherwise, the battery may be overheated. This can also reduce battery performance and/or shorten service life, Cause personal injury .

不要使用处于极热环境中的电池，如阳光直射或热天的车内。否则，电池会过热，可能着火（点燃），这样就会影响电池的性能、缩短电池的使用寿命，产生人身伤害

If the electrolyte enters the eyes after the battery leaks, do not wipe it, rinse with clean water, and seek medical help immediately. 如果电池漏液后电解液进入眼睛，不要擦，应用清水冲洗，并立即寻求医疗救助。

**Danger!**

- Do not immerse the battery in water or allow it to get wet.
- 勿将电池投入水中或将其弄湿!
- Do not use or store the battery near sources of heat such as a fire or heater.
- 禁止在火源或极热条件下给电池充电! 勿在热源（如火或加热器）附近使用或贮存电池! 如果电池泄漏或发出异味，应立即将其从接近明火处移开;
- Do not use any chargers other than those recommended by FARAN-TECH.
- 请使用专用充电器!
- Do not reverse the positive(+) and negative(-) terminals.
- 勿将正负极接反!
- Do not connect the battery directly to wall outlets or car cigarette-lighter sockets.
- 勿将电池直接连接到墙上插座或车载点烟式插座上!
- Do not put the battery into a fire or apply direct heat to it.
- 勿将电池投入火中或给电池加热!
- Do not short-circuit the battery by connecting wires or other metal objects to the positive(+) and negative(-) terminals.
- 禁止用导线或其它金属物体将电池正负极短路，禁止将电池与项链、发夹或其它金属物体一起运输或贮存!
- Do not pierce the battery casing with a nail or other sharp object, break it open with a hammer, or step on it.
- 禁止用钉子或其它尖锐物体刺穿电池壳体，禁止锤击或脚踏电池!
- Do not strike, throw or subject the battery to sever physical shock.
- 禁止撞击、投掷或者使电池受到机械震动
- Do not directly solder the battery terminals.
- 禁止直接焊接电池端子!
- Do not attempt to disassemble or modify the battery in any way.
- 禁止以任何方式分解电池!
- Do not place the battery in a microwave oven or pressurized container.
- 禁止将电池置入微波炉或压力容器中!
- Do not use the battery in combination with primary batteries(such as dry-cell batteries) or batteries of different capacity, type or brand.
- 禁止与一次电池（如干电池）或不同容量、型号、品种电池组合使用!
- Do not use the battery if it gives off an odor, generates heat, becomes discolored or deformed, or appears abnormal in any way. If the battery is in use or being recharged, remove it from the device or charger immediately and discontinue use.
- 如果电池发出异味、发热、变形、变色或出现其它任何异常现象时不得使用; 如果电池正在使用或充电，应立即从用电器中或充电器上取出并停止使用!

## 9、其他/Others

(1) 任何一方均不得将本技术协议的内容向第三方泄漏，否则守约方有权追究违约方的违约责任。

Neither party shall disclose the contents of this technical Agreement to any third party, otherwise the non-breaching party shall have the right to hold the breaching party liable for breach of contract.

(2) 因履行本协议所发生的争议，双方应协商解决，协商不成的，应向协议签订地有管辖权的人民法院提起诉讼。

Any dispute arising from the performance of this Agreement shall be settled by both parties through negotiation. If no agreement can be reached through negotiation, the parties shall file a lawsuit with the people's court with jurisdiction at the place where this Agreement is signed.

(3) 本协议及附件未尽事宜，双方另行协商。

Matters not covered in this Agreement and the Annex shall be negotiated by both parties separately.

(4) 本协议书(包含附件)一式两份，甲乙双方各执一份，自双方签字盖章后生效。

This Agreement (including the attachments) is made in duplicate, with each party holding one copy. The Agreement shall come into force after being signed and sealed by both parties.

**甲方 (Supplier) :**

**乙方 (Customer) :**

**签字 (Sign) :**

**签字 (Sign) :**

**日期 (Date) :**

**日期 (Date) :**