编号 No.: KXJL-SSD-T-006-06	版本(Rev)：A0
型号(Model)：UPPF16100B-H-中性	

UPPF16100B 产品规格书

UPPF16100B PRODUCT SPECIFICATION

型号(Model)：UPPF16100B-H-中性

电压/容量(Voltage/Capacity)：51.2V/100Ah

编制/日期 Prepared by/Date	审核/日期 Reviewed by/Date	批准/日期 Approved by/Date
黄建植 2023.5.19	刘建植 5月19日	徐运刚 2023.5.19

受控文件

修定履历

Revision History

版本 REV.	标记 Mark	日期 Date	修订人 Reviser	修订说明 Revision Description
A0		2023-05-19	Jianzhi Huang	First issue

目录

1. 适用范围 Range of application

本规格书详细描述了 UPPF16100B 储能用磷酸铁锂电池系统的产品性能指标以及产品使用条件。

This specification describes in detail the performance indicators and conditions of use of the UPPF16100B lithium iron phosphate battery system for energy storage .

2. 产品特点 Product features

- 超薄壁挂式家储设计，美观大气，完美融入家居环境；

Ultra-thin wall-mounted home storage design, beautiful and atmospheric, perfectly integrated into the home environment;

- 内置高稳定 BMS，具有过充过放过流、高低温等保护功能；

Built in high stability BMS, with overcharge, discharge, overcurrent, high and low temperature protection functions;

- 最大支持 15 组并联使用，应对长时间用电环境；

Support up to 15 groups in parallel for long periods of power usage;

- 适配市场上主流品牌逆变器，为用户提供更多选择；

Adapt to mainstream brand inverters in the market to provide users with more choices;

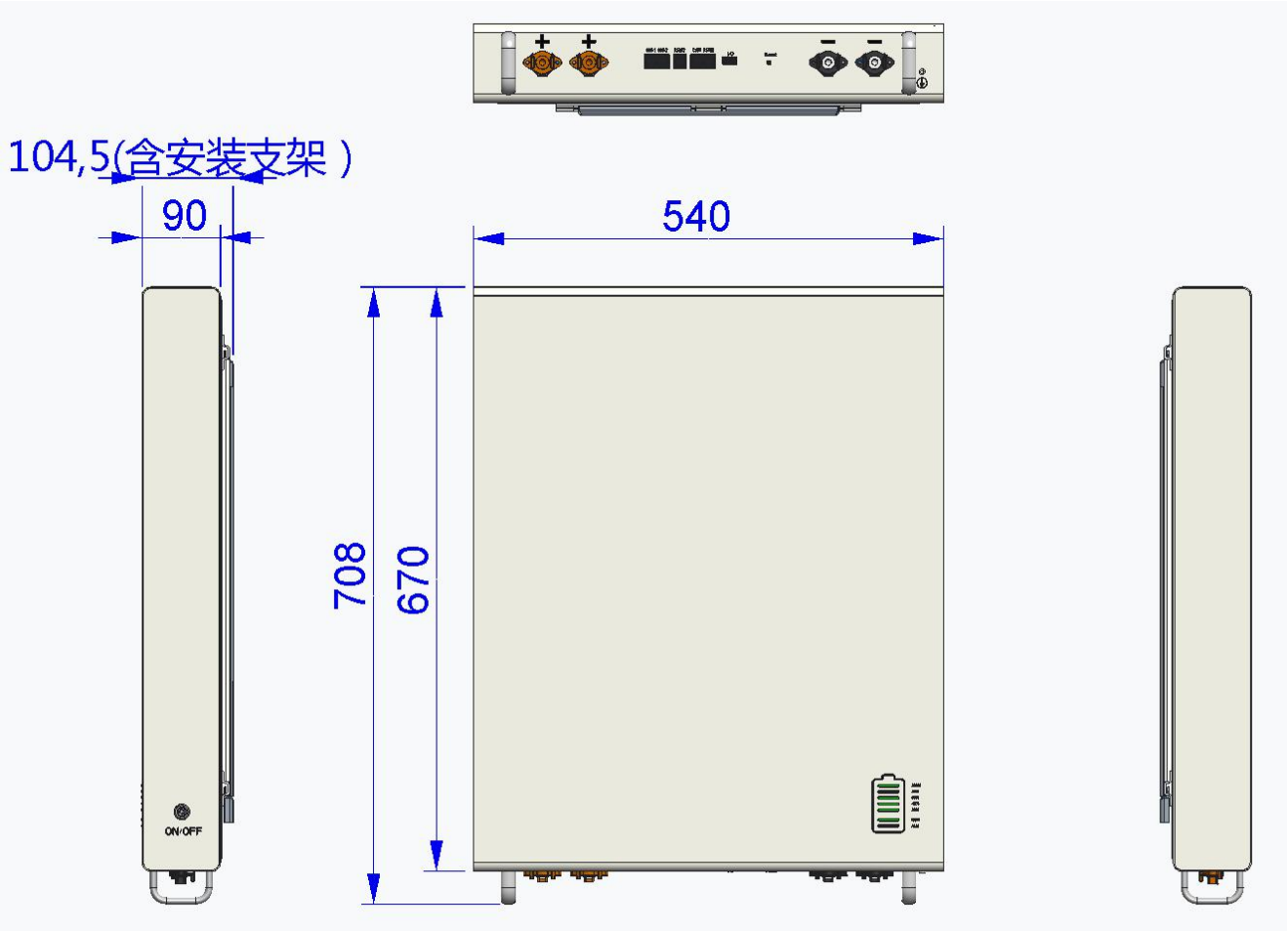
3. 产品电性能指标 Product Electrical Performance Index

No.	项目 Items	规格 Specifications	备注 Notes
3.1	标称能量 Nominal energy	5120Wh	标准充放电模式测试 Standard charge/discharge mode test
3.2	串并联方式 Series-parallel connection method	16 串 1 并	16S1P
3.3	标称容量 Nominal capacity	100Ah	标准充放电模式测试 Standard charge/discharge mode test
3.4	标称电压 Nominal voltage	51.2V	/
3.5	工作电压范围 Operating voltage range	40～58.4V	温度范围：-20～60℃ Temperature range:-20～60℃
3.6	工作温度（充电） Operating temperature (Charging)	0～55℃ ≤90%ROH	
3.7	工作温度（放电） Operating temperature (Discharging)	-20～60℃ ≤90%ROH	
3.8	标准充电 Standard charging	恒流充电：50A Constant current charging:50A 充电电压：58.4V Charging voltage：58.4V 截止电流：5A	最高单体电压 3.65V Maximum unit voltage 3.65V

		Cut-off current：5A	
3.9	最大充电持续电流 Maximum continuous charging current	恒流充电：100A Constant current charging:100A 持续电压：58.4V Charging voltage：58.4V 截止电流：5A Cut-off current：5A	最高单体电压 3.65V Maximum unit voltage 3.65V
3.10	标准放电 Standard discharge	恒流放电：50A Constant current discharge：50A 截止电压：40.0V Cut-off voltage：40V	T≥0℃，最低单体电压 2.5V Minimum unit voltage 2.5V
3.11	最大放电持续电流 Maximum continuous discharge current	恒流放电：100A Constant current discharge：100A 截止电压：40.0V Cut-off voltage：40V	T≥0℃，最低单体电压 2.5V Minimum monomer voltage 2.5V
3.12	存储温度 Storage temperature	-20~65℃	存储环境湿度≤95%ROH，无凝露 Storage environment humidity ≤95%ROH, no condensation.
3.13	循环寿命 Cycle life	容量衰减至 80Ah， 循环次数≥6000 次； Capacity decay to 80Ah, Number of cycles ≥ 6000;	90% DOD，@25±2℃,标准充放电模式 90% DOD, @25±2°C, standard charge and discharge mode
3.14	月自放电 Monthly self-discharge	≤2%/月 <2% Per month	出货三个月以后的电池，标准充电到 30%SOC， @25±2℃储存 After three months' shipment, the battery will be charged to 30%SOC and stored at @ 25 2°C
3.15	监控通信 Communication equipment	RS485/CAN	/
3.16	均衡方式 Equalisation method	被动均衡 Passive equalization	/
3.17	出货容量 Shipping capacity	SOC 30～70%（TBD）	SOC 30～70%（TBD）
3.18	重量 Weight	48±2Kg	
3.19	尺寸 Dimension	（540*670*90）±2mm	

4. 产品外观结构 Product appearance and structure

4.1 结构尺寸 Structural dimensions



4.2 接口及定义 Interfaces & definitions

定义 Definition

序号 No.	名称 Name	详细介绍 Detailed introduction
1	电量 SOC	显示电量、告警等信息 Display information such as battery level, alarms, etc.
2	弱电开关 Weak electricity switch	控制保护板开/关 Control BMS on/off
3	正极 Positive electrode	系统正极，接逆变器正极 Positive system terminal, connected to positive inverter terminal
4	RS485	RS485 通讯口，并机 RS485 communication port, parallel connection
5	RS232	RS232 通讯口，调试口 RS232 communication port, debugging port
6	RS485/CAN	RS485/CAN 通讯口，与逆变器通讯 RS485/CAN communication port for communication with inverter
7	干接点接口 Dry contact	干接点接口，输出高低频信号 Dry contact , output high and low frequency signals
8	复位开关 Reset switch	复位开关，激活、重启等 Activation, restart
9	负极 Negative electrode	系统负极，接逆变器负极 Negative system terminal, connected to the negative inverter terminal
10	接地点 GND Grounding point	保护接地点 GND Protective grounding point(GND)

4.3 附件：配置清单 Appendix： Configuration list

品名 Name	规格 Type	数量 QTY
电池 Battery	UPPF16100B	1
安装支架 Mounting bracket	定制 Custom made	1
锥帽型膨胀螺栓 Taper cap expansion bolts	GB T22795+M6X50	4

4.4 应用场景拓扑 Application Scenario Topology

5. 电池管理系统设计 Battery management system design

5.1 工作模式及状态 Working mode and status

1. 充电模式 Charging mode

BMS 在检测到外部有充电电压且≥48V，同时电芯电压及温度均在可充电范围内时，开启充电 MOSFET 进行充电。充电电流达到有效充电电流时，进入充电模式。充电模式下充、放电 MOSFET 都导通。
When the BMS detects that the external charging voltage is ≥ 48V, and the cell voltage and temperature are within the chargeable range, the charging MOSFET is turned on for charging. When the charging current reaches the effective charging current, it will enter the charging mode. Both charging and discharging MOSFETs are on in charge mode.

2. 放电模式 Discharging mode

BMS 在检测到负载连接且电芯电压及温度在可放电范围内，放电电流达到有效放电电流时进入放电模式。
The BMS enters the discharge mode when it detects that the load is connected, the cell voltage and temperature

are within the dischargeable range, and the discharge current reaches the effective discharge current.

3. 待机模式 standby mode

以上两种模式都不满足时，进入待机模式。

When neither of these modes is satisfied, enter standby mode.

4. 休眠模式 Sleep mode

到正常待机规定时间后、电池触发欠压保护、执行按键关机或上位机执行关机命令，BMS 进入休眠（关机）模式。

The BMS enters sleep (shutdown) mode when the normal standby time is reached, the battery triggers undervoltage protection, the button is pressed to shutdown or the host computer executes a shutdown command.

休眠模式的唤醒条件：1、充电激活； 2、按键开机。

Wake up conditions of sleep mode: 1. Charging is active; 2. Press the button to start.

5.2 电气参数表 Electrical parameter table

功能名称 Function description	项目列表 Item	参考值 Reference value	设置说明 Setting descripti	设置 Set
单体电压告警 Cell voltage alarm	过压告警电压 Overvoltage alarm voltage	3600mV		可设 Can be set
	欠压告警电压 Undervoltage alarm voltage	2750mV		可设 Can be set
单体过压保护 Cell overvoltage protection	过压保护电压 Overvoltage protection voltage	3650mV		可设 Can be set
	过压保护延时 Overvoltage protection delay time	1S		可设 Can be set
	过压保护恢复电压 Overvoltage protection release voltage	3340mV		可设 Can be set
单体欠压保护 Cell undervoltage protection	欠压保护电压 Undervoltage protection voltage	2500mV		可设 Can be set
	欠压保护延时 Undervoltage protection delay time	1S		可设 Can be set
	欠压恢复电压 Undervoltage release voltage	2900mV		可设 Can be set
总体电压告警 Pack voltage alarm	过压告警电压 Overvoltage Alarm voltage	57.6V		可设 Can be set
	欠压告警电压 Undervoltage alarm voltage	44.0V		可设 Can be set
总体过压保护 Pack overvoltage protection	过压保护电压 Overvoltage protection voltage	58.4V		可设 Can be set
	过压保护延时 Overvoltage protection delay time	1S		可设 Can be set
	过压恢复电压 Overvoltage release voltage	54.4V		可设 Can be set
电池欠压保护 Battery undervoltage protection	欠压保护电压 Undervoltage protection voltage	40V		可设 Can be set
	欠压保护延时 Undervoltage protection delay time	1S		可设 Can be set
	欠压恢复电压 Undervoltage release voltage	46.4V		可设 Can be set
电芯温度告警 Cell temperature alarm	充电高温告警 Charging over temperature alarm	50℃		可设 Can be set
	充电低温告警 Charging Under-temperature alarm	5℃		可设 Can be set
	放电高温告警 Discharge over temperature alarm	55℃		可设 Can be set
	放电低温告警 Discharge Under-temperature alarm	-15℃		可设 Can be set
电芯充电温度保护 Cell charge temperature protection	充电高温保护 Over-temperature Protection(OTD)	55℃		可设 Can be set
	充电高温恢复 Over-temperature release	50℃		可设 Can be set
	充电低温保护 Under-temperature Protection(UTD)	0℃		可设 Can be set
	充电低温恢复 Under-temperature release	5℃		可设 Can be set
电芯放电温度保护 Cell discharge temperature protection	放电高温保护 over temperature protection(OTD)	60℃		可设 Can be set
	放电高温恢复 over temperature release	55℃		可设 Can be set
	放电低温保护 Under-temperature Protection(UTD)	-20℃		可设 Can be set
	放电低温恢复 Under-temperature release	-10℃		可设 Can be set

环境温度告警 Environment temperature alarm	环境高温告警 Over temperature alarm		60℃		可设 Can be set
	环境低温告警 Under-temperature alarm		-20℃		可设 Can be set
MOS 高温告警 MOS Over temperature alarm	MOS 高温告警 Over temperature alarm(MOS)		110℃		可设 Can be set
充电过流告警 Charging overcurrent alarm	充电告警电流 Charge overcurrent alarm		105A		可设 Can be set
充电过流保护 Charging overcurrent protection	充电保护电流 Charge protection current		110A		可设 Can be set
	充电过流延时 Charge overcurrent delay time		1S		可设 Can be set
放电过流告警 Discharge overcurrent alarm	放电告警电流 Discharge alarm current		105A		可设 Can be set
放电过流保护 Discharge Over-Current protection	放电保护电流 Discharge protection current		110A		可设 Can be set
	放电过流延时 Disharge overcurrent delay time		1S		可设 Can be set
二级放电过流保护 Secondary discharge overcurrent protection	二级保护电流 Secondary Over-Current Discharge Protection (OCD2)		≥150A		可设 Can be set
	二级过流延时 Delay time		500mS		可设 Can be set
输出短路保护 Output short circuit protection	短路保护功能 Short circuit protection function		有		/
	短路保护延时 Short circuit protection delay time		≤500uS		可设 Can be set
	短路保护解除 Short-circuit protection release		充电解除或负载移除 Charge release or load removal		
放电过流恢复 Discharge overcurrent release	自动恢复延时 Automatic release delay time	1 min	1 分钟后自动恢复 Automatic recovery after 1 minute		
	充电解除 Charge release	/	充电电流≥1A Charging current ≥ 1A		
电芯均衡功能 Equalization function	电芯充电均衡 Charge balance	开启条件：有效充电电流的状态 Opening condition: state of effective charging current			
	均衡开启电压 Balance threshold		3380mV		可设 Can be set
	均衡开启压差 Balance ΔVcell		30mV		可设 Can be set

6. 安装、维护注意事项 Precautions for installation and maintenance

6.1 安装注意事项 Precautions for installation

(1) 安装前拆箱、检测配件数量和电池外观；
Unpacking, checking the number of accessories and the appearance of the batteries before installation;

(2) 安装壁挂支架，测量电池电压，一般电池出厂电压在 50.4V－53.5V（电量 20%-60%）之间；
Install the wall-mounted bracket and measure the battery voltage. Generally, the factory voltage is in the range of 50.4V-53.5V (SOC 20%-60%);

(3) 接线前查看好电池正负极，严禁在安装电池时正负极端子安装反；
Check the positive and negative terminals of the batteries before wiring. It is strictly forbidden to install the positive and negative terminals backwards when installing the batteries;

(4) 在电池连接过程中请戴好防护手套，使用扭矩扳手等金属工具时，请将金属工具进行绝缘包装，绝对避免扭矩扳手等金属工具两端同时接触到电池正、负端子，造成电池短路；
Please wear protective gloves during battery connection. When using metal tools such as torque wrench, please pack the metal tools in insulation, so as to avoid the battery short circuit caused by both ends of metal tools such as torque wrench touching the positive and negative terminals of the battery at the same time;

(5) 跟外接设备连接之前，使设备处于断开状态，并再次检查电池的连接极性和总电压是否正确，然后再将

电池的正极连接设备的正极，电池的负极连接设备的负极端，并紧固好连接线；

Before connecting to an external device, leave the device disconnected and check again that the battery connection polarity and total voltage are correct, then connect the positive terminal of the battery to the positive terminal of the device and the negative terminal of the battery to the negative terminal of the device, and fasten the connection cable;

(6) 电池在搬运和摆放中必须轻拿轻放，严禁坠落、冲击，禁止抛掷、敲打电池， 以免损坏电池或导致安全隐患；

Batteries must be handled and placed gently, no dropping, impacting, throwing and knocking, to prevent damage to the battery or cause safety hazards;

(7) 禁止使用工具的尖锐部件接触到电池箱表面，划伤或损坏电池箱；

It is forbidden to use sharp parts of tools to touch the surface of the battery box, and scratch or damage the battery box;

(8) 禁止私自拆解电池箱；

It is forbidden to disassemble the battery box without permission.

(9) 禁止将任何金属、导电材质物件与电池放置一起或者一起组装进电池箱；

It is forbidden to put or assemble any metal or conductive materials together with the battery box;

(10) 安装前确保墙体符合壁挂要求；

Ensure the wall meets the wall hanging requirements before installation;

6.2 维护注意事项 Maintenance precautions

◆安装使用后期可以对电池进行简单的维护检验，如 6 个月进行一次；

Simple maintenance and inspection of the batteries can be carried out at a later stage of installation and use, e.g. once every 6 months;

◆检查电池正负极极柱、连接线是否出现松动、损伤、变形成腐蚀等现象，电池壳体有无损伤、变形；

Check the positive and negative battery poles and connecting wires for looseness, damage, corrosion, etc., and the battery case for damage and deformation;

◆如果出现故障，电池发出告警，请检查电池连接是否正确或是否存在过流情况；之后按复位按键，电池重启后看故障是否消除，如无法消除请联系厂家处理，请勿擅自打开电池组箱体；

If a fault occurs and the battery gives an alarm, please check if the battery is connected correctly or if there is an overcurrent situation, then press the reset button and check if the fault is eliminated after the battery is restarted, if it cannot be eliminated please contact the manufacturer for handling, please do not open the battery pack case without permission;

◆针对多组电池并联的应用场景，如果当中的一组电池出现故障需要替换，请确保新替换的电池组电压和需要并联的其他电池组的电压压差在 2V 以内，如果压差较大，会发生电压高的电池组给电压低的电池组大电流充电，电压低的电池组发生充电过流保护，导致无法充电；

For applications where multiple batteries are connected in parallel, if one of the batteries fails and needs to be replaced, ensure that the voltage difference between the new battery pack and the other batteries to be connected in parallel is within 2V. If the voltage difference is large, the battery pack with high voltage will charge the battery pack with low voltage at high current and the battery pack with low voltage will be over-current protected, resulting in failure to charge;

◆记录停电的时间和次数，对电池的供电时间做详细的统计；

Record the time and number of power failure, and make detailed statistics on the power supply time of the battery;

7. 包装、运输、存储 Packaging, transportation and storage

7.1 包装 Packaging

磷酸铁锂电池组进行整体包装，以确保产品在搬运、运输、贮存中不受任何有害气体、化学 污染、静电、潮湿和机械损伤。

The lithium iron phosphate battery pack is packaged as a whole to ensure that the product is protected from any harmful gases, chemical pollution, static electricity, humidity and mechanical damage during handling, transportation and storage.

7.2 运输 Transportion

电池搬运过程应注意以下方面：

The following aspects should be noted during battery transportation:

（1）应轻拿轻放，避免设备受剧烈震动；

It should be handled gently to avoid violent shocks to the equipment;

（2）禁止倒置、翻滚、摔、撞电池，避免破坏电池的外观；

Avoid damaging the appearance of the battery by inverting, tumbling, dropping or hitting it;

（3）电池应避免暴晒、雨淋，禁止直接将电池整体淹入水中；

Batteries should be protected from exposure to the sun and rain, and direct submersion of the whole battery in water is forbidden;

（4）禁止正负极短路；

Negative and positive short circuits are prohibited;

7.3 储存 Storage

(1) 电池组的外接端子处于绝缘防护状态；

The external terminal of the battery pack is in an insulation protection state;

(2) 存期超过 6 个月的电池组要相应进行补充电，打开电池开关，指示灯点亮，当电量为 30%-50%时，以 0.2C 充电 1 小时；当电量为 30%及以下时，以 0.2C 充电 3 小时；

Battery packs that have been in storage for more than 6 months should be recharged accordingly by turning on the battery switch, with the indicator light up, and charging at 0.2C for 1 hour when the charge is 30%-50%, and at 0.2C for 3 hours when the charge is 30% or less;

(3) 电池不要在 60℃高温下长期存储或放置，否则会引起功能衰退、寿命减小；

Do not store or leave batteries at 60°C for long periods of time as this may cause deterioration of function and reduced life;

8. 质保及其他 Warranties and others

(1)产品在质保期内，保质期：10 年；

The product is within the warranty period，Guarantee period of quality: 10 years;

(2)客户需遵从产品的维护使用说明进行使用，需经授权专业人员安装、调试、维护；

The customer is required to follow the instructions for the maintenance and use of the product, which is subject to installation, commissioning and maintenance by authorised professionals;

(3)客户必须通过本公司或者本公司授权的经销商处购买此产品；

Customers must purchase this product through our company or our authorized distributor;

(4)产品在未被授权的情况下不得私自打开、修改、加工或维护；

The product shall not be opened, modified, processed or maintained without authorization;

(5)不得修改产品的记录数据；

Do not modify the recorded data of the product;

(6)客户若需要将电池用于超出文件规定以外的设备，或在文件规定以外的使用条件下使用电池，应事先联系本公司，因为需要进行特定的实验测试以验证电池在该使用条件下的性能及安全性；

Customers who need to use batteries in equipment other than that specified in the documentation, or to use batteries under conditions of use other than those specified in the documentation, should contact our company in advance, as specific laboratory tests are required to verify the performance and safety of the batteries under those conditions of use;

(7)对于在超出文件规定以外的条件下使用电池而造成的任何意外事故，本公司概不负责；

Our company is not responsible for any accidents caused by the use of batteries under conditions other than those specified in the documentation;

(8)任何本说明书中未提及的事项，须经双方协商确定；

Any matter not mentioned in this specification shall be determined by negotiation between the parties;

9. 风险警告 Risk Warning

警　告 Warning

电池存在潜在的危险，在操作和维护时必须采取适当的防护措施！不正确地滥用测试实验，可能导致严重的人身伤害和财产损失！必须使用正确的工具和防护装备操作电池。

Batteries are potentially dangerous and must be operated and maintained with appropriate precautions! Improper misuse of test experiments can lead to serious personal injury and property damage! Batteries must be handled with the correct tools and protective equipment.

电池的维护必须由具有电池专业知识并经过安全培训的人士执行。不遵守上述警告可能造成多种灾难。

Battery maintenance must be carried out by persons with specialist knowledge of batteries and who have received safety training. Failure to comply with the above warnings could result in a number of disasters.

科信聚力 KEXIN UNITED POWER

文件会签申请表

☑新制定		☐修订		☐废止	
申请部门	系统方案部	文件名称	UPPF16100B-H-中性-产品规格书		
文件编号	KXJL-SSD-T-006-06	版本	A0	申请日期	2023.5.19.
原内容摘要	首次发行				
拟制修改内容	\				

相关联的文件变更：	申请部门签名	申 请	审 核	批 准
		黄建楠 2023.5.19.	刘建兵	徐宝刚 2023.5.19

会签 方式	☐书面会签	☐会议研讨	☐OA会签	☐无须会签
分发 方式	☐电子版发行 ☐纸质版备注：电子版发行符号：“①”；纸质版发行符号“②”			

部门会签意见（未罗列部门，在空白处添加）

如涉及到与产品性能相关的文件变更，相关会签部门需写明变更风险

☐	按照文件上一版本发放单位及份数进行分发

是否会签	部门	分发份数	签名	会签意见	分发方式	是否会签	部门	分发份数	签名	会签意见	分发方式
☐	总经理	[ ]				☐	品质部	[ ]			
☐	管理者代表	[ ]				☐	生产部	[ ]			
☑	系统方案部	[1]	徐宝刚	同意	①	☐	计划部	[ ]			
☑	销售部	[1]	白雪飞	同意		☐	综合管理部	[ ]			
☐	研发部	[ ]				☐	财务部	[ ]			
☐	工艺部	[ ]				☐	采购认证部	[ ]			
☐	设备工程部	[ ]				☐	其他	[ ]			

备注	各类文件具体会签要求请参见《文件控制程序》。

表格编号：QR-MP02003-001/01

受控文件