Specification For Approval
客户承认书

Customer Name Code 客户名称代码	
Model 产品型号	ASH-LESS-51100
Description 规格描述	16S1P-51.2V100Ah 圆弧壁挂
Issue Date 发行日期	2023 年 2 月 10 日

Made By 制订	Checked By 审核	Approved By 批准
黄广源	贺星凯	姜国明

Customer Confirmation 客户确认	Company Name 公司名称：
	Signature 签名：
	Company Stamp 公司印章：

广东派尔特新能源有限公司

Guangdong Asgoft New Energy Co., LTD.

地址：深圳市龙华区大浪街道忠信路 9 号汇亿财富中心 806

Address: 806 Huiyi Wealth Center, No. 9 Zhongxin Road, Dalang Street, Longhua District, Shenzhen.

Asgoft New Energy GmbH

Address: Wandsbeker Allee77,22041 Hamburg,Germany

Mobile phone：+86-18902448080

TEL：+86-0755-29366186

Email: czp@pairbest.com

Website：www.asgoft.de

History of revision

规格书修订记录

Date	Versin	Contents	Remarks	Edit
2023-02-10	A0	首次发行		

Contents 目录

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

This document describes the Product Specification of the Lithium rechargeable battery manufactured by Guangdong Asgoft New Energy Co., Ltd.

本规格说明书描述了派尔特新能源有限公司（以下简称派尔特公司）生产的可充电锂离子电池的产品性能。

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±5℃ 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±5℃，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

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 10kΩ/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 10kΩ/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 0.01Ω. 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 0.01Ω。

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℃±5℃ 环境温度：20℃±5℃

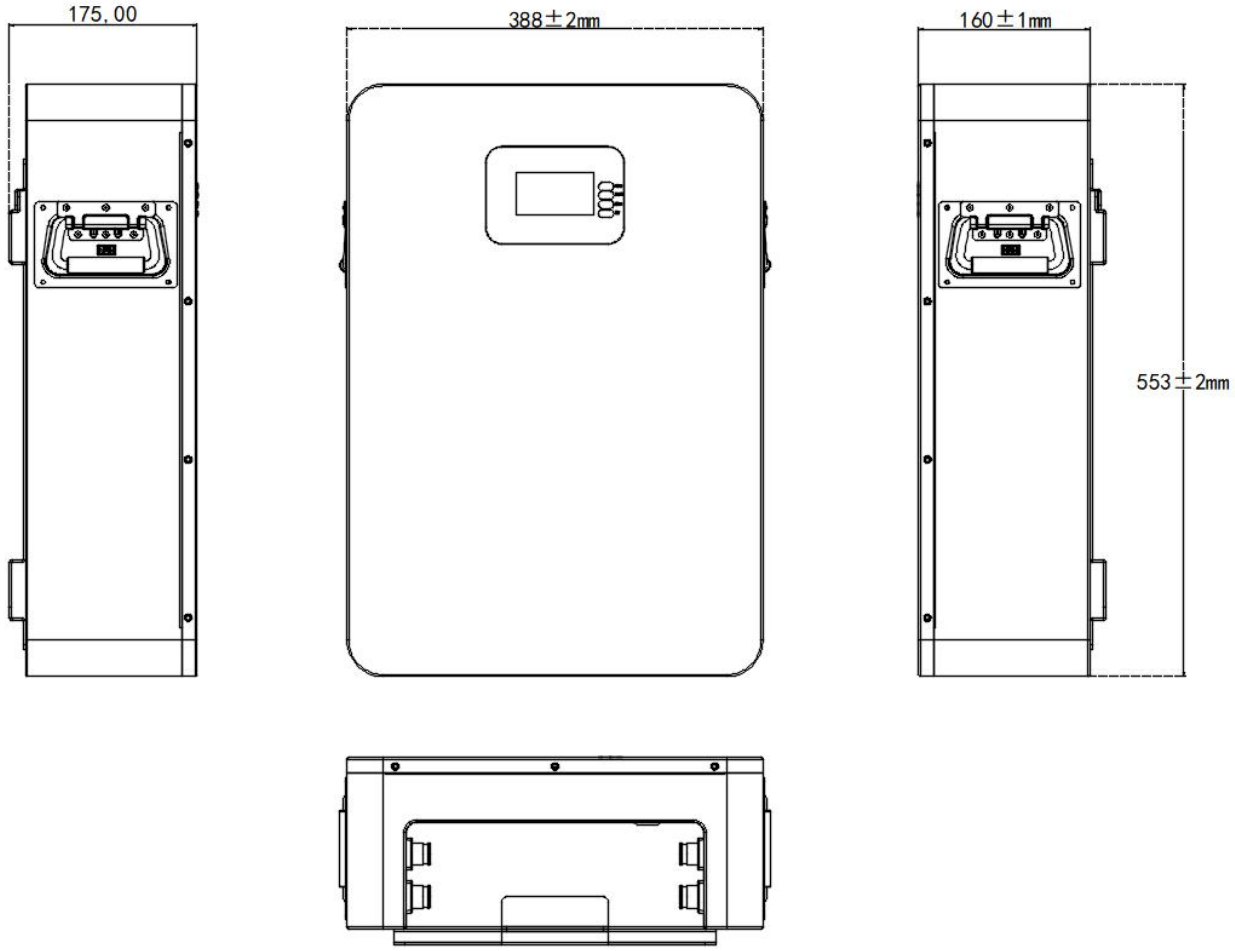
Relative Humidity：≤75% 环境湿度：≤75%

5、Appearance and structural dimensions 外观结构尺寸

5.1 Apparent size 外观尺寸

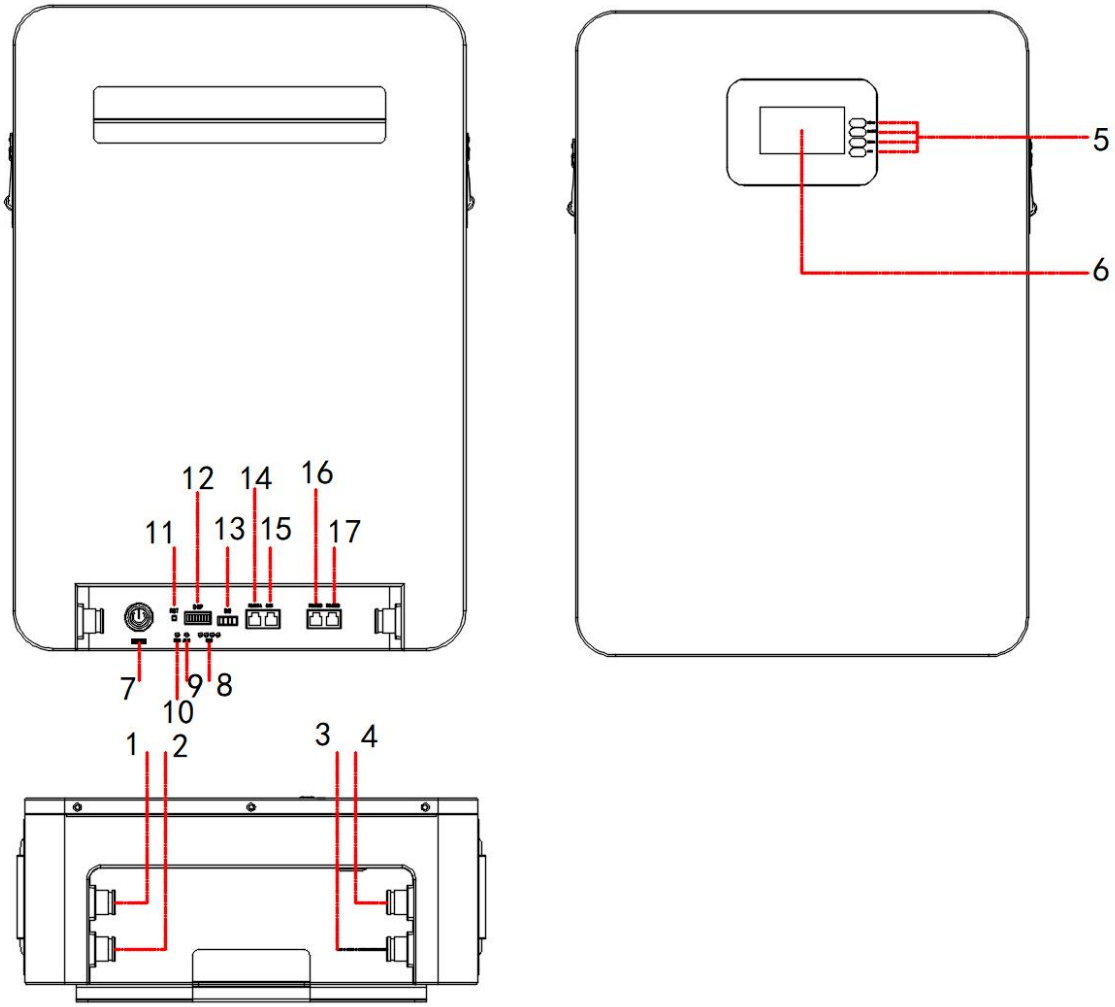
There shall be no such defect as scratch, bur and other mechanical scratch, and the connector should be no rust dirt. The structure and dimensions see attached drawing of the product.

电池的表面应无明显的划痕毛刺及其其它机械划伤，外露的金属端子应无锈蚀污垢。



Unit 单位：mm					
L (长度)	MAX553±2	W(宽度)	MAX388±2	T（高度）	MAX160±1
L(外露线长)	/	WIRE（引线）	/	端子型号	快插端子（红正黑负）
备注	① 外壳默认为黑白色细砂喷涂，可根据客户要求定制户外粉喷涂； ② 正极端子胶为红色，负极端子胶为黑色； ③ 正负极端子为快插式 200A 端子。默认配连接线 25 平方红黑线，连接线可根据客户要求定制				

5.2 Case Structure of Battery Pack 电池组面板结构定义



No.	Description 说明	Silk-screen 丝印	Remark 备注
1	Battery + 电池正极	/	Positive terminal 电池正极
2	Battery + 电池正极	/	Positive terminal 电池正极
3	Battery - 电池负极	/	Negative terminal 电池负极
4	Battery - 电池负极	/	Negative terminal 电池负极
5	LCD KEY	/	液晶显示键
6	LCD	/	Display screen 显示屏
7	Output ON/OFF	POWER	Switch breaker
8	Electricity volume indicator	SOC	Display the battery's capacity 容量显示灯
9	ALM alarm indicator light blinking	ALM	Display state information 显示状态信息
10	Run indicator light	RUN	Red- trouble-light on 警示灯
11	On/OFF button	RST	Reset key 重置键
12	DIP Dialer	DIP	Display connection address 显示连接地址
13	DO	DO	干接点
14	RS485A port	RS485A	RS-485connection port-A RS485
15	CAN port	CAN	CAN communication port
16	RS485B port	RS485B	RS-485connection port-B RS485
17	RS485B port	RS485B	RS-485connection port-B RS485

6、Main specifications 主要技术参数

6.1 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）	Typical	100Ah	Standard discharge after Standard charge 标准充电后 0.33C A 标准放电
		Minimum	98Ah	1.0C A discharge after Standard charge 标准充电后 1.0C A 放电
2	Nominal Voltage 平台电压	3.2V		Mean Operation Voltage 平台电压
3	Internal Impedance(内阻)	≤0.4 mΩ		Under 20±5℃ Environment Temperature , the Usage Frequency of Fully Charge(1KHz) , Use AC Internal Impedance test machine to test 20±5℃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）	Constant Current 0.33C A Constant Voltage 3.65V 0.02C5A cut-off		Charge time : Approx.3.5h
5	Rapid Charge(快速充电)	Constant Current 1C A Constant Voltage 3.65V 0.02C5A cut-off		Charge time : Approx.1.5h
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）	Constant current 0.33C A end voltage 2.5 V		33A
9	Maximum discharge current 最大放电持续电流	Constant current：1C A end voltage：2.5 V		100A@≧0℃
10	Dimension（尺寸）	Thickness/厚度:47.8±0.5mm		Initial Dimension（初始尺寸）
		Width/宽度：173.9±0.5mm		
		Height/高度：132.6±0.6mm		
11	Weight（重量）	2.20kg±0.11kg		APPROX.
12	Operating Temperature Range 工作温度范围	Temperature:-20~55℃ Humidity： ≤60±25%RH		充电 Charge / 放电 Discharge
13	Storage Temperature Range 储存温度范围	-20℃ ~ 25℃		Recommend（ 25±3℃ ）；≤60±25%RH storage moisture range. 推荐储存湿度范围≤60±25%RH
14	Cycle Performance 循环性能	≥4000 次 times		0.33C 充放电方式进行循环，当连续循环放电容量＜标称容量 80%时寿命为终止,要求循环寿命≥4000 次，0.33C charging and discharging mode is used for cycle. When the continuous cycle discharge capacity is less than 80% of the nominal capacity, the life is terminated, and the cycle life is required to be ≥ 4000 times

6.2 Battery Pack specifications for single module（电池组技术参数）

No	Item（项目）	General Parameter		Remark（备注）
1	Combination method	16S1P		
2	Rated Capacity 额定容量	Typical	100Ah	Standard discharge after Standard charge 标准充电后 0.33C A 标准放电
		Minimum	98Ah	1.0C A discharge after Standard charge 标准充电后 1.0C A 放电
3	Factory Voltage 出厂电压	50V-53V		Mean Operation Voltage（即工作电压）
6	Internal Impedance 内阻	≤40 mΩ		Under 20±5℃ Environment Temperature , the Usage Frequency of Fully Charge(1KHz) , Use AC Internal Impedance test machine to test 20±5℃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 允许最大充电电流	100A		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 充电限制电压	58.4V		Volta-meter (Serial*3.65V) ,Battery pack safe charging voltage 电压表测量(串数*3.65V(电芯的安全充电电压)), 电池组安全充电电压
9	Max Discharging current 最大放电电流	100A		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 放电截止电压	44.8V		Voltage of the battery when the discharge is stopped 为电池组中止放电的负载电压(按设置放电达到放电截止的电压值)
11	Operation Temperature Range 工作温度范围	Charge:0~55℃		充电 Charge
		Discharge: -20~60℃		放电 Discharge
12	Storage Temperature Range 储存温度范围	Less than 12 months : -10~35℃ （小于 12 月：-10~35℃）		Recommend（25±3℃）；≤60±25%RH storage moisture range.推荐 ≤60±25%RH 储存湿度范围。
		less than 3 months: -10~45℃ （小于 3 个月：-10~45℃）		
		Less than 7 day : -20~55℃ （小于 7 天：-20~55℃）		
13	Single module Size 单模组尺寸	553*388*160mm		L*W*H
14	Weight 重量	48.6kg±5%		

6.3 BMS Protect parameter（电池管理系统保护参数）

Items 项目	Content 内容	Standard 标准
Cell overcharge Protection 电池过充保护	Overcharge detection voltage 过充电压检测	3.65±0.025V
	Overcharge detection delay time 过充检测延时时间	Typical:1.0s
	Overcharge release voltage 过充解除电压	3.4±0.05V
Cell over-discharge protection 电池过放保护	Over-discharge detection voltage 过放电压检测	2.8±0.5V
	Over-discharge detection delay time 过放检测延时时间	Typical:1.0s
	Over-discharge release voltage 过放解除电压	3.0±0.1V or charge release
Over-current Protection 过电流保护	discharge Over-current protection current1 放电过流保护 1	110±10A
	discharge Over-current detection delay time 1放电过流检测延时时间 1	3S
	discharge Over-current protection current 2 放电过流保护 2	210±10A
	discharge Over-current detection delay time 2放电过流检测延时时间 2	≤100m±50ms
	Charge Over-current protection current 充电过流保护检测	110±10A
Short protection 短路保护	Short protection current 短路保护电流	400±10A
	Protection condition 保护条件	Load short circuit
	Short protection Detection delay time 短路保护检测延时时间	≤300us
	Protection release condition 保护解除条件	Disconnect the load and charge automatically
Temperature(T) protection 温度(T)保护	Charge high T protection 充电高温保护	60±5℃
	Charge high T recover 充电高温恢复	45±5℃
	Discharge high T protection 放电高温保护	66±5℃
	Discharge high T recover 放电高温恢复	55±5℃
	Charge low T protection 充电低温保护	0±5℃
	Charge low T recover 充电低温恢复	5±5℃
	Discharge low T protection 放电低温保护	-20±5℃
	Discharge low T recover 放电低温恢复	-10±5℃
均衡功能 Cell balance	Balance threshold voltage 均衡阀值电压	≥3.40V
Communication 通信	It has CAN and RS485 standard communication interface, it real-time monitoring the capacity of battery bank, the voltage, current,environment temperature, and charging/discharging current,RS485,CAN Baud rate:9600KPS/250Kbs 具有 CAN 和 RS485 标准通信接口，可以实时监测电池组容量、电压、电流、环境温度和充/放电电流。RS485、CAN 波特率：9600KPS/250Kbs。	
Alarm 告警	It has over-temperature, over charge, under-voltage, over-current, short circuit alarm Function.它具有过温、过充、欠压、过流、短路警报功能。	

7.Cautions 注意

Do not use or leave the pack at very high temperature (for example, at strong direct sunlight or a vehicle in extremely hot conditions).Otherwise, it can overheat or fire or its performance will be degenerate and its service life will be decreased.

△ 禁止在高温下(直热的阳光下或很热的汽车中)使用或放置电池组合,否则可能会引起电池过热,起火或功能失效,从而导致电池组合寿命减短.

Do not use it in a location where static electricity is great, otherwise, the safety devices in the pack may be damaged, which will cause hidden trouble of safety.

△ 禁止在强静电和强磁场的地方使用,否则易破坏电池组合的安全保护装置,带来不安全隐患.

If the pack leaks and the electrolyte get into the eyes, do not rub eyes, instead, rinse the eyes, with clean running water, and immediately seek medical attention. Otherwise, eye injury can result.

△ 如果电池发生泄漏,电解液进入眼睛,请不要揉擦,应用清水冲洗眼睛,并立即送医院治疗,否则会伤害眼睛.

If the pack takes off an odor, generates heat, becomes discolored or deformed, or in any way appear abnormal during use, recharging or storage, immediately remove it from the device or battery charge and stop using it.

△ 如果电池组合在使用或贮存中发出异味,发热,变色,变形,或者是在充电过程中出现任何异常现象,立即将电池从充电器或装置中移开,并停止使用.

In case the pack terminals are dirt, clean the terminals with a dry cloth before use. Otherwise power failure or charge failure may occur due to the poor connection with the instrument.

△ 如果电池组合的连接点弄脏,使用前应用干布抹净,否则可能会因接触不良而影响性能失效. Be aware discharged battery may cause fire or smoke, tape the terminals to insulate them.

△ 废弃之电池应用绝缘纸包住电极,以防起火, 冒烟.

The pack should be stored at room temperature, charged to about 40% to 60% of capacity. In case of over-discharge, pack should be charged for one time every 3 months while storing and batteries should be discharge and charge after being stored more than a year in order to activate it and restore energy.

△电池组合应当在室温下存放，应充到 40%至 60%的电量。为防止电池过放，建议每 3 个月进行一次充电，如储存时间超过一年，建议每年进行一次充、放电以激活电池。

8.Warnings 警告

Load circuit may cause voltage and current, and the voltage or current may add to pack, the voltage or current must be controlled as lower than RWV and RWI, larger voltage or current may damage the PCM of pack.

☆负载可能产生电压和电流,该电压和电流会反加在电池组合（含 PCM）上，该电压和电流不能超过保护板自身反向耐压耐流值，过高电压或电流会损坏电池组合中的保护板。

To prevent the possibility of the pack from leaking, heating, fire .please observe the following precautions:

☆为防止电池组合可能发生的泄漏,发热,起火,请注意以下预防措施:

The soft aluminum packing foil is very easily damaged by sharp edge parts such as Ni-tabs, pins and needles .Do not strike at pack with any sharp edge parts.

☆ 电池组合外包装膜易被镍片,尖针等尖锐部件损伤,禁止用尖锐部件碰伤电池.

Do not immerse the pack in water and seawater

☆ 严禁将电池组合浸入海水或水中.

Do not use and leave the pack near a heat source as fire or heater

☆ 禁止将电池组合在热高温源旁,如火,加热器等使用设备.

When recharging, use the battery charger specifically for that purpose

☆ 充电时请选用锂离子电池专用充电器.

Do not reverse the positive and negative terminals

☆ 禁止颠倒正负极使用电池组合

Do not connect the pack to an electrical outlet

☆ 禁止将电池组合直接接入电源插座

Do not discard the pack in fire or heat it

☆ 禁止将电池组合丢入火或加热器中

Do not short-circuit the pack by directly connecting the positive and negative terminal with metal object such as wire

☆ 禁止用金属直接将电池组合的正负极进行短路连接.

Do not transport and store the battery together with metal objects such as necklaces, hairpins etc.

☆ 禁止将电池组合与金属,如发夹,项链等一起运输或贮存.

Do not strike or throw the pack.

☆ 禁止敲击或抛掷,踩踏电池组合等.

Do not directly solder the pack or battery and pierce the battery with a nail or other sharp object.

☆ 禁止直接焊接电池组合或电芯，禁止用钉子或其它利器刺穿电池组合或电芯.

9.Others 其它事项

The customer is requested to contact ASGOFT 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文件规定以外的应用，或在文件规定以外的使用条件下使用电池，应事先联系派尔特，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。

ASGOFT will take no responsibility for any accident when the battery is used under other conditions than those described in this Document.

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，派尔特概不负责。

ASGOFT will inform, in a written form, the customer of improvement(s) regarding proper use and handing of the battery, if it is deemed necessary.

如有必要，派尔特会以书面形式告之客户有关正确操作使用电池的改进措施。

Any matters that this specification does not cover should be conferred between the customer and ASGOFT .

任何本说明书中未提及的事项，须经双方协商确认