



天康锂电

TIANKANG Lithium Battery

团结 创新 务实 发展

Solidarity/Innovation/Practicality/Development

INNOVATION MAKES EXCELLENT

有 | 跨 | 越 | 才 | 有 | 卓 | 越

企业简介

Company profile

安徽天康（集团）股份有限公司创建于1974年，总部位于“长三角”经济圈核心区域——天长市，是中国民营企业制造业500强企业、中国电子信息百强企业、国家级守合同重信用企业、国家高新技术企业、安徽省依法纳税先进企业、银行资信AAA级企业、中国仪表行业十强企业、中国电线电缆十强企业、安徽省重点骨干企业。

天康集团历经四十多年的发展，已形成集仪器仪表、光电缆、医疗卫生、锂电池等跨行业、多元化的集团公司，下属子公司达20余家。旗下产品被广泛应用于石油、电力、化工、通讯、卫生、新能源汽车及储能等行业和领域。

集团近几年来积极打造安徽最大的新能源产业基地，投资26亿元新上年产20亿安时钛酸锂电池生产线。2012年12月顺利通过科技成果鉴定，公司所生产的纳米钛酸锂动力/储能电池产品达到国内领先、国际先进水平，先后被国家科技部等四部委列为国家重点新产品，安徽省委、省政府已将该项目作为安徽省五大经济增长源项目之一。产品具有安全、环保、长寿命、高低温特性、大倍率充放电等特点，可广泛应用于新能源汽车等动力领域及各储能领域，在军工系统、船舶运输、航空航天等领域也有着重要用途。

作为皖东经济最具活力与贡献的骨干企业之一，天康集团以“追求卓越，缔造满意”为目标，依托一流的产品、一流的管理、一流的服务，不仅在国内市场中赢得了广泛赞誉；在国际市场中，天康产品远销欧洲、非洲、亚洲等46个国家和地区，出口额连年攀升。

天康集团在发展中逐步形成了独特的品牌文化及着眼全球的经营布局，全力塑造“高科技、高品质、国际化”的品牌形象。始终秉持“有跨越才有卓越”的天康精神，在创建和谐企业的基础上，引进国际先进的构架与模式，组织企业的生产经营管理体系。在积极参与国际化竞争的基础上，不断把握市场发展脉搏，寻求经济战略联盟，与全球伙伴共同发展与进步。



Anhui Tiankang (Group) Shares Co.,LTD was founded in 1974, the headquarters is located in the "Yangtze River Delta" economic circle core region- Tianchang, it is China's top 500 enterprise in the manufacturing industry, China's top 100 electronic information enterprise, National contract and trustworthy enterprise, National high-tech enterprise, Anhui advanced enterprise paying tax according to law , AAA- level bank credit enterprise , China's top 10 enterprise in the instrument industry, China's top 10 enterprise in the wire and cable industry, the key enterprises in Anhui Province.

After more than 40 years development, Tiankang group has formed a cross - industry and diversified group company which products include instruments, optical cable, medical and health, lithium battery etc, it has more than 20 subsidiaries. Its products are widely used in industries and fields of petroleum, electricity, chemical, communication, health, new energy vehicles and energy storage etc.

In recent years , the group has actively built Anhui largest new energy industry base , it invested 2 billion 600 million yuan to build 2 billion ampere hours LTO battery production line. In December 2012, Tiankang passed the identification of scientific and technological achievements, its nano LTO power / energy storage battery product has reached the level of leading in domestic and advanced in international . It has been listed as the national key new product by the ministry of science and technology and other three ministries and commissions, and the provincial & government of Anhui have taken this project as one of the five major economic growth projects in Anhui province. The product has advantages of safety , environmental protection, long life, high & low temperature characteristics, high rate charge & discharge characteristics, can be widely used in the power fields of new energy vehicles etc and energy storage fields, and also has important use in the fields of military system, shipping transportation, aerospace etc.

As one of the backbone enterprises in east Anhui economy of the most dynamic and contribution, Tiankang group take "pursuit excellence , to create satisfaction " as the goal, relying on first-class product , first - class management, first-class service, the products not only won widespread praise in the domestic markets; but also in the international markets, the products were export to Europe, Africa, Asia etc 46 countries and regions, exports increased year by year.

Tiankang group formed a unique brand culture and focus on the global business layout in the development, and try to create a "high-tech, high-quality, international" brand image. It always uphold the spirit of " to stride to be outstanding " , on the basis of creating a harmonious enterprise, introduce the international advanced architecture and model , and organize the production and management system of enterprise . On the basis of actively participating in international competition , we should constantly grasp the pulse of market development, actively seek for economic strategic alliances, and develop and progress with global partners.



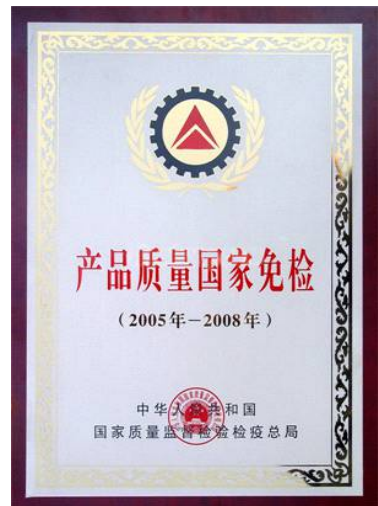
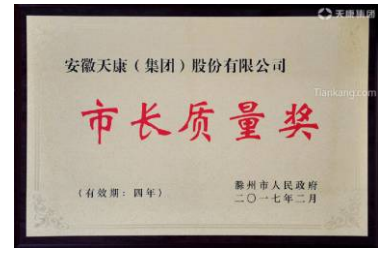
领导关怀

Leadership concern



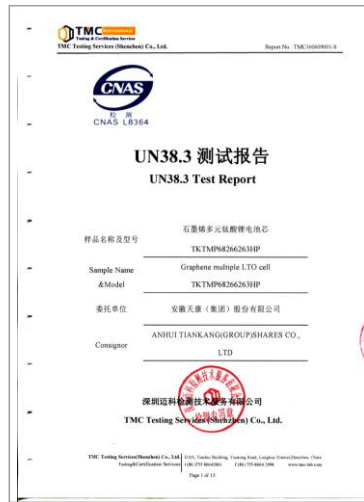
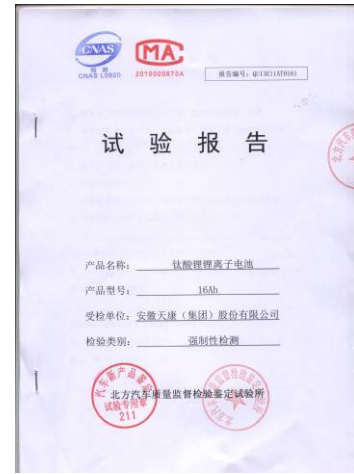
荣誉资质

Honors and Qualifications



荣誉资质

Honors and Qualifications



研发与创新

R & D and innovation

锂电池装备技术研究院

安徽天康锂电池装备技术研究院承担着锂电池及系统研发、生产检测等重要任务，与国内外高等科研院所建立了长期紧密的技术交流和产学研合作关系，建立了安徽省企业院士工作站等。研发中心聚集了各类高水平的人才队伍，承担了上百个国家 and 省市级创新创研项目，奠定了在行业中的竞争优势。

Lithium battery equipment technology research Institute

The lithium battery equipment technology research institution of Tiankang group undertakes the R&D and production inspection etc important tasks of lithium battery and system. It has established a long-term close technical exchange and cooperation relationship with domestic and foreign research institutes, and established the Anhui enterprise academician workstation. The R&D center gathered a variety of high-level teams, it has undertake hundreds of national and provincial and municipal innovation research projects, laid the competitive advantage in the industry.



研发与创新

R & D and innovation

国家重点检测实验室

公司积极打造国家级锂电池重点实验室，主要有电性能检测实验室、环境性检测实验室和安全性检测实验室。拥有国内最先进的检测设备和检测仪器，其中电性能实验室拥有大倍率充放电测试仪、高温测试仪、低温测试仪、电池组测试仪等，测试设备均来自于美国技术；安全性实验室中的冷热冲击测试仪、机械冲击仪、重物冲击仪、短路测试仪、挤压测试机、针刺试验机、跌落试验台等检测设备，已达到国内一流；环境适应性实验室中的检测设备如低气压测试仪、振动测试仪、燃烧测试仪、盐雾试验箱等已达到国际先进的测试要求。目前实验室能够满足GB/T 31484-2015、GB/T 31485-2015、GB/T 31486-2015、IEC62133-2012等标准测试要求。

National Key Laboratory

The company actively creates a national key laboratory of lithium battery which mainly includes electrical performance testing lab, environmental performance testing lab and safety performance testing lab. It has the most advanced testing equipment and inspection instruments, the electrical performance lab has high rate charge/discharge tester, high & low temperature tester, battery pack tester etc, the testing equipment are all import from the United States; the safety performance lab has cold/thermal shock tester, mechanical shock tester, heavy shock tester, short circuit tester, crush tester, acupuncture tester, and free fall tester, and has reached the domestic first-class level. The environmental performance lab such as low pressure tester, vibration tester, combustion tester, salt spray testing box have reached the international advanced testing requirements. At present, the lab can meet the standard test requirements of GB/T 31484-2015, GB/T31485-2015, GB/T 31486-2015, IEC62133-2012 and so on.



总控室
Master control room



电性能实验室
Electrical performance lab



安全性能实验室
Safety performance lab



环境性能实验室
Environmental performance lab

精细制造

Refined manufacturing

钛酸锂材料生产线

公司现有1.6万平米的材料生产线4条，主要生产纳米钛酸锂动力/储能电池负极材料—钛酸锂。配套有原材料烘干室、球磨室、筛分室、煅烧室、设备控制操作室、检验室及仓库。因该材料特性受环境的制约，对生产线具有较高的要求。

公司严格执行ISO“三标一体”体系，按照10万级净化标准建成恒湿生产流水线。该生产线配置的设备自动化程序高，检测设施齐全，检验室配置进口扫描电镜、全自动氮吸附比表面仪、振实密度仪、快速水分测定仪等一系列先进的检测设备。目前，可实现年产纳米钛酸锂负极材料2000吨。



LTO material production line

The company has 4 lines of material production, each of them has 16 thousand square meters. It mainly produce the negative material of nano LTO power / energy storage battery-LTO. It is equipped with raw materials drying room, milling room, screening room, calcining compartment, equipment control operations room, inspection room and warehouse. Due to the environmental characteristics of the material constraints, the production line has higher requirements.

Companies strictly enforce the ISO "three standard" system, to build a constant humidity production line in accordance with the 100 thousand levels of purification standards. The equipment in this production line have a high automated procedures and complete inspecting facilities. The inspecting room has equipped with a series of advanced testing equipment, such as imported scanning electron microscope, automatic nitrogen adsorption surface tester, vibrating density apparatus and fast moisture meter. At present, an annual output of 2000 tons of nano LTO anode material can be achieved.



精细制造

Refined manufacturing

钛酸锂电池生产线

公司现有4.2万平米2栋锂电池量产线，钛酸锂电池生产线主要生产纳米钛酸锂动力/储能电池，目前用于生产的主要设备有：真空干燥箱、搅拌机、涂布机、轧膜机、模切机、叠片机、超声焊接机、激光焊机、真空注液机、化成分容设备等。

该生产线配置的设备自动化程度高，部分设备由我司自主创新研发。目前，可实现年产钛酸锂电池2.5亿瓦时。

LTO battery production line

The company has two lithium battery production lines with 42 thousand square meters, the LTO battery production line mainly produces nano LTO power/energy storage battery. At present, the main equipment used in production are: vacuum drying oven, mixing machine, coating machine, rolling machine, cutting machine, film lamination machine, ultrasonic welding machine, laser welding machine, vacuum injection liquid machine, formation and grading equipment etc.

The equipment in this production line have a high automated procedures, some of the equipment are independent innovation researched and developed by ourselves. At present, an annual output of 250 million kWh of LTO battery can be achieved.



精细制造

Refined manufacturing

电池PACK制造线

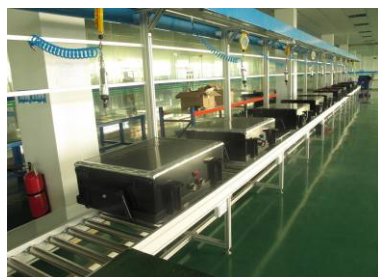
公司现有1.6万平米电池组PACK装配制造线3条及配套钣金车间，该线可生产各类钛酸锂、磷酸铁锂和三元锂电池模组及总成系统。目前该制造线主要由前段电芯筛选设备，中段电池模块焊接设备、成组设备和钣金设备，后段电池系统总成检测设备组成。用于生产和检测的主要设备有：自动化装配流水线、全自动晶体管焊接机、全自动储能焊机、激光焊接机、液压机、激光切割机、数控冲床、振动时效装置、电芯筛选检测设备若干、电池组检测设备以及工况仿真测试柜多套。

该生产线配置的设备自动化程度高，部分设备由我司自主创新研发。目前，可实现年产锂电池模组及系统约1万套。

Battery PACK manufacturing line

The company has three battery PACK assembly lines and a matched sheet metal production line, with a total of 16 thousand square meters. The production line can produce all kinds of LTO, LFP and NMC battery modules and pack systems. At present, the manufacturing line mainly consists of front part of battery cell selection equipment, the middle part of the battery module welding equipment, PACK assembly equipment and sheet metal equipment, and final part of battery PACK system inspection equipment. The main equipment used in production and inspection are: automatic assembly line, automatic welding machine, automatic welding machine, laser welding machine, hydraulic machine, laser cutter machine, CNC punch press machine, vibration aging device, a variety of battery cell selection inspection equipment, several sets of battery pack inspection equipment and working condition simulation test cabinet.

The equipment in this production line have a high automated procedures, some of the equipment are independent innovation researched and developed by ourselves, the production line can realize an annual output of about 10 thousand sets of lithium battery modules and systems.



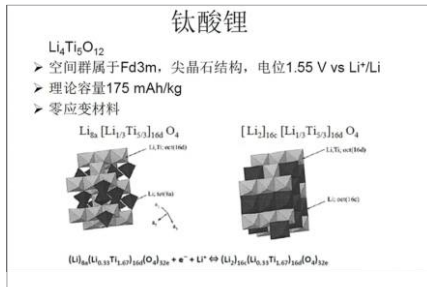
产品简介

Product introduction

■ 钛酸锂材料的特性

钛酸锂材料属尖晶石结构，其最大特点是充放电体积变化非常小，称之为“零应变”材料。这种“零应变”性能避免了石墨层反复膨胀收缩造成的结构破坏，提高了电池的使用寿命和安全性能，同时具有优异的高倍率特性和低温特性；钛酸锂负极表面不易生成SEI膜，脱嵌电位高（约1.55V），无金属锂析出导致的安全事故风险。

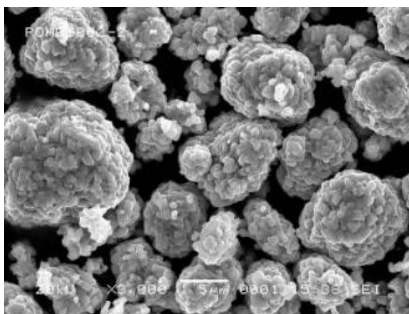
相比传统的三元和磷酸铁锂材料，钛酸锂电池在安全性、循环寿命和低温性能方面具有突出的优势，其电池产品可广泛应用于各类储能领域及高功率动力领域。



■ 三元、磷酸铁锂材料的特性

镍钴锰三元和磷酸铁锂是目前市场应用较广的电池正极材料，三元材料突出的优点是比能量高，其电池产品更加适用于对体积小、重量轻等能量密度要求高的电动自行车、电动汽车等动力领域，但须进一步提升其安全性能；磷酸铁锂材料突出的优点是高温性能及循环性能较好，其电池产品可适用于电动大巴等动力领域及各类储能领域，但同时具有低温性能较差的不足。

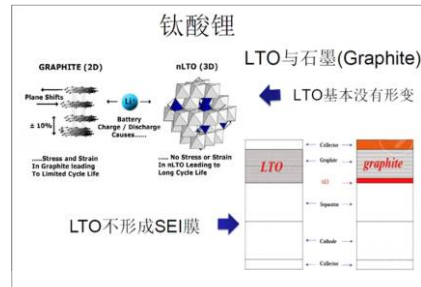
现有的三元、磷酸铁锂电池采用石墨作负极，在充放电过程中易形成SEI膜，锂离子插层造成石墨体积膨胀效应，易导致石墨层状结构坍塌，这种坍塌造成金属锂沉积形成锂枝晶，锂枝晶会刺破隔膜造成电池内部短路，从而引起起火爆炸。



Characteristics of LTO materials

The LTO material belongs to spinel structure, the charge/discharge volume changed is very small, called "zero strain" material. This "zero strain" performance can avoid structural damage caused by repeated expansion and contraction of the graphite layer, and improve the service life and the safety performance of the battery, also has excellent high C-rates and low temperature characteristics. The SEI film is difficult to generate on the surface of LTO negative, with a high deintercalation electric potential (about 1.55V), without safety accident risk lead by metal lithium precipitation.

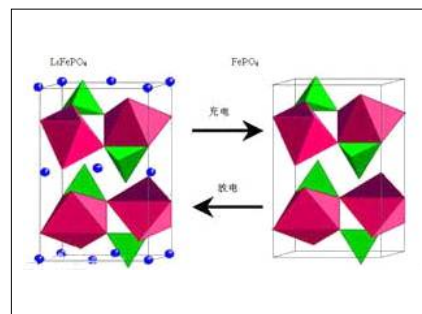
Compared with traditional materials of NMC and LFP, the LTO battery has the outstanding advantages in safety, cycle life and low temperature performance, its battery products can be widely used in many kinds of energy storage fields and high power fields.



Characteristics of NMC and LFP materials

The NMC and LFP materials are the normal positive materials widely used in markets, the outstanding advantage of NMC material is high energy rate, its battery products are more suitable for E-bike, EV etc power fields which require small volume and low weight, but need to further enhance the safety; The outstanding advantages of LFP material are better low temperature and cycle life, its battery products can be used in E-bus etc power fields and many energy storage fields, but need to improve the low temperature performance.

The existing NMC and LFP battery are use Graphite as negative material, and the SEI film is easy to generate in charging/discharging process, Lithium ion intercalation will result in graphite volume expansion and easy to lead to collapse of graphite layered structure, and this collapse result in the formation of metallic lithium deposits and form lithium dendrites, Lithium dendrites will pierce the separator and will lead to internal short circuit of the battery, causing a fire or explosion.

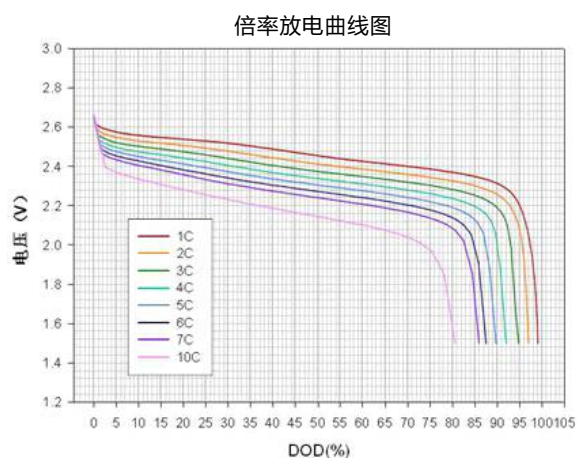
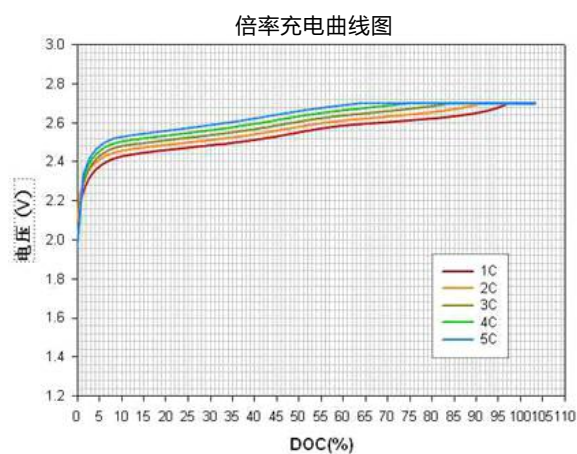


产品简介

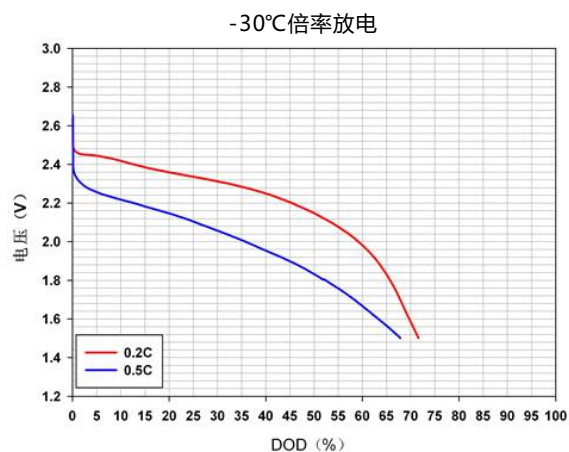
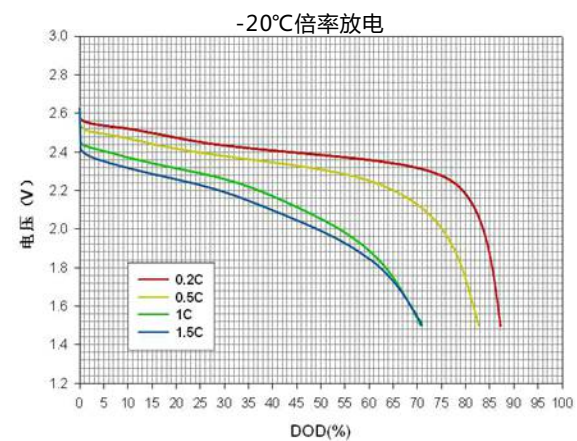
Product introduction

■ 钛酸锂电池的性能特点 The performances of LTO battery

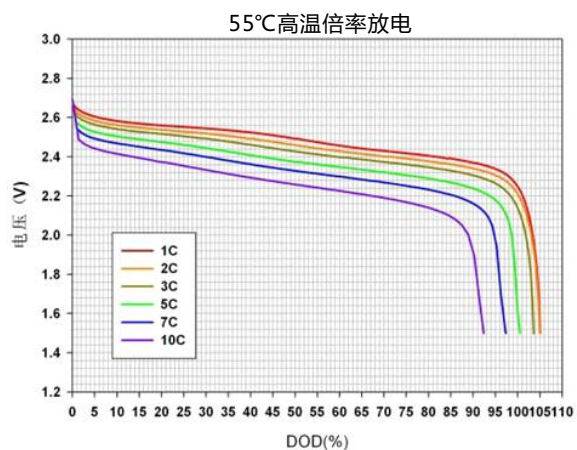
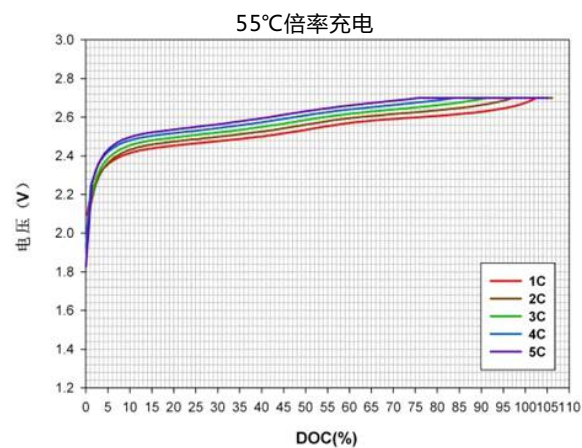
A、优异的倍率性能 Excellent c-rates performance



B、优异的低温性能 Excellent low temperature performance



C、优异的高温性能 Excellent high temperature performance

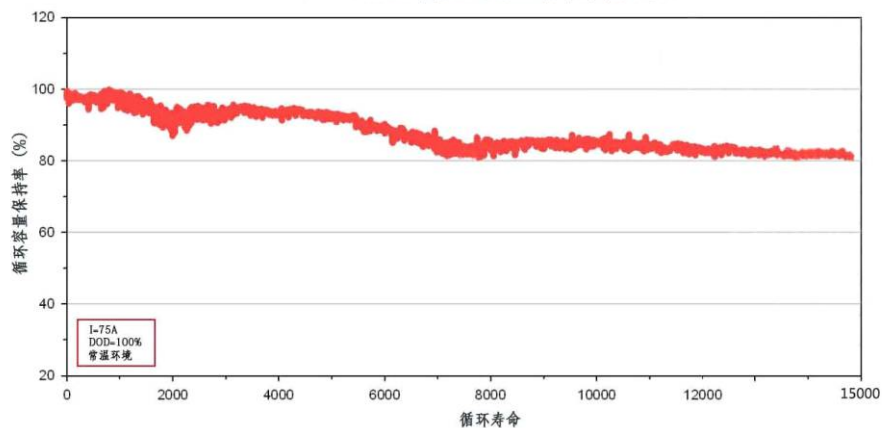


产品简介

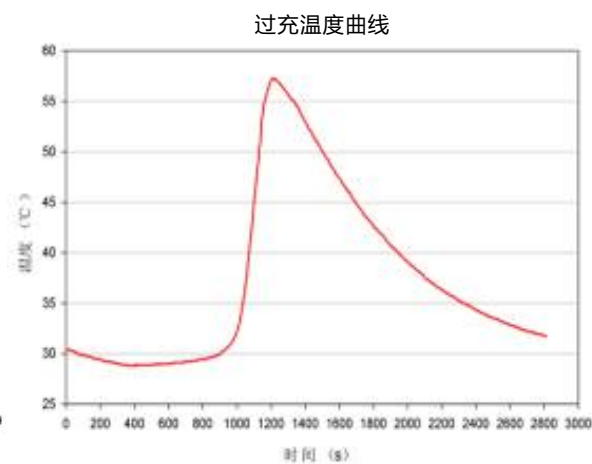
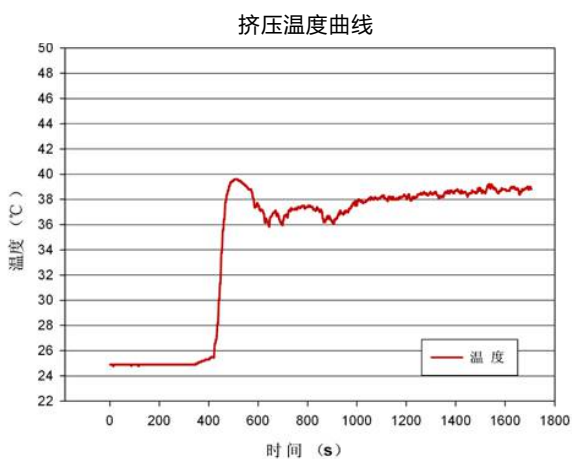
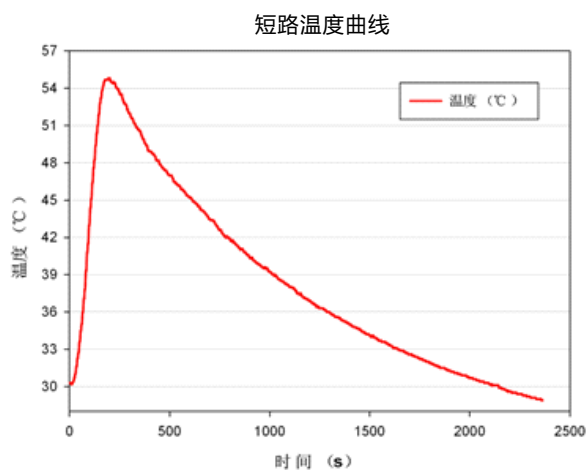
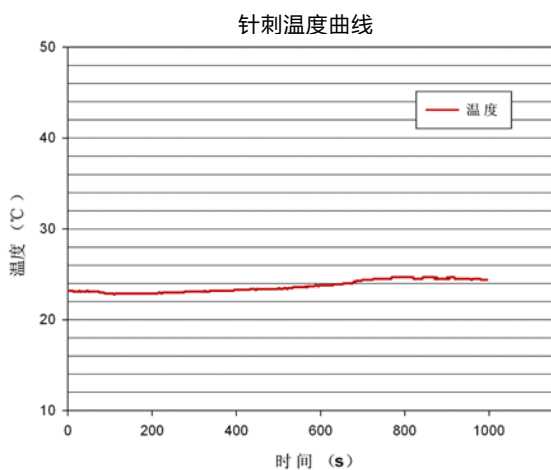
Product introduction

D、长寿命 Long Cycle Life

2.4V/16Ah钛酸锂电池5C循环寿命曲线图



E、高安全性 High Safety



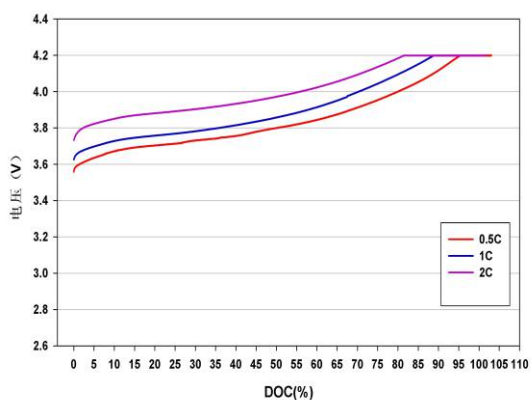
产品简介

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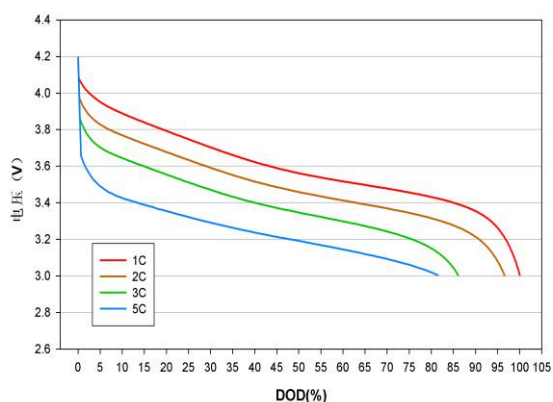
■ 三元锂电池的性能特点 The performances of NMC battery

A、倍率性能 C-rates performance

倍率充电曲线图

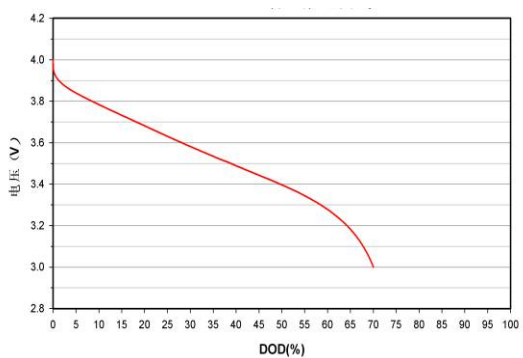


倍率放电曲线图

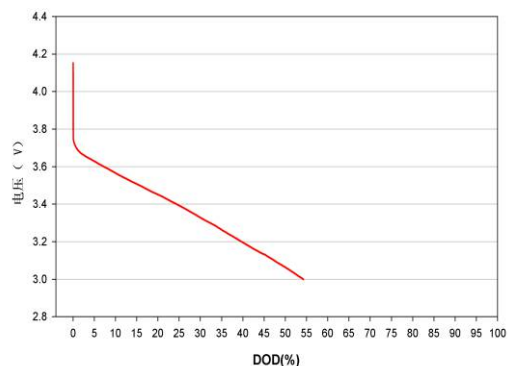


B、低温性能 Low temperature performance

-10°C 0.2C低温放电曲线

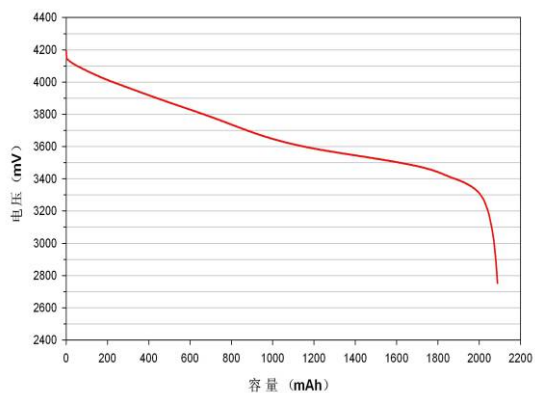


-20°C 0.5C低温放电曲线

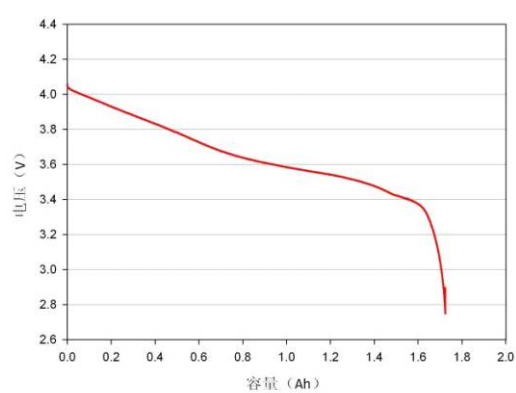


C、高温性能 High temperature performance

20°C 1C放电曲线



55°C 1C高温放电曲线

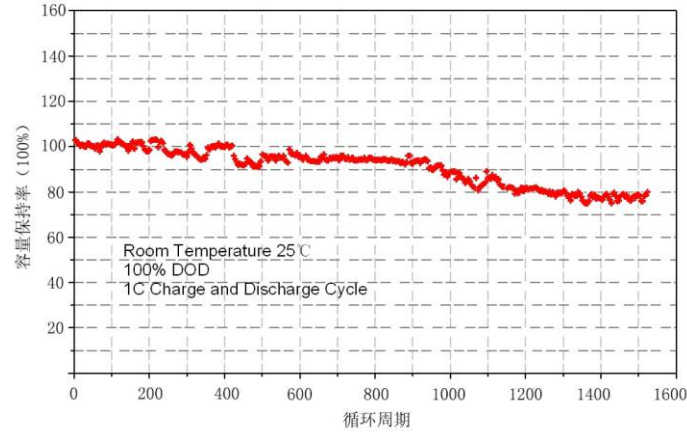


产品简介

Product introduction

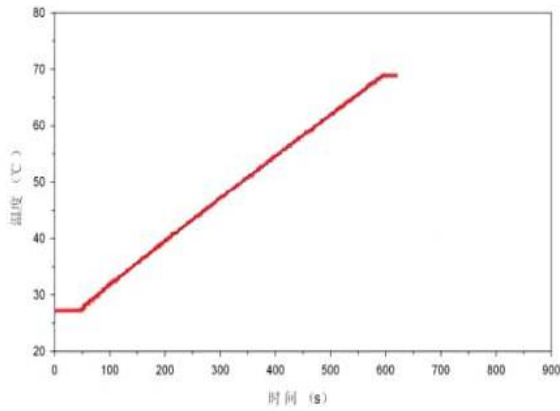
D、循环寿命 Cycle Life

三元18650圆柱电池循环曲线图

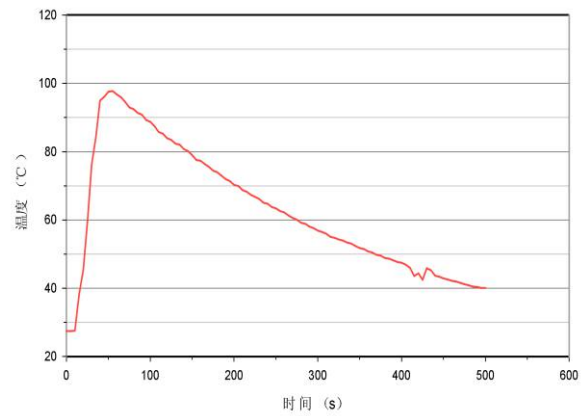


E、安全性能 Safety performance

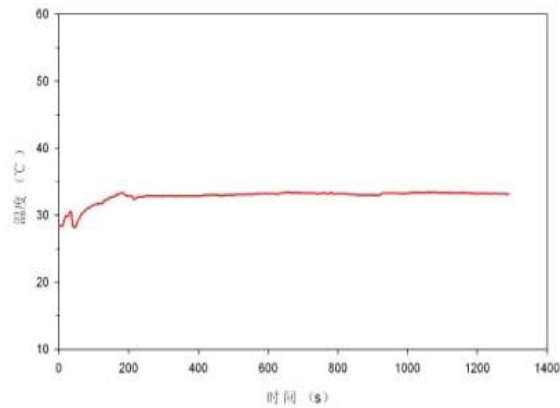
针刺温度曲线



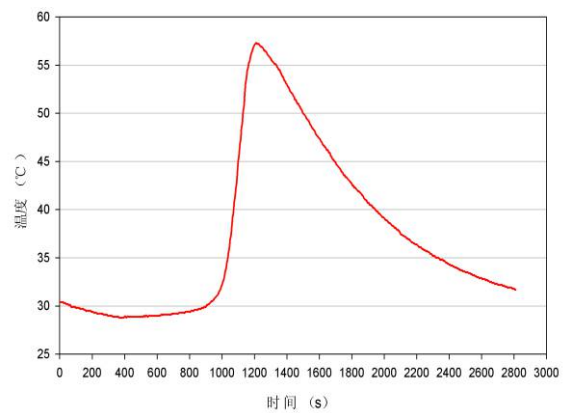
短路温度曲线



挤压温度曲线



过充温度曲线



产品简介

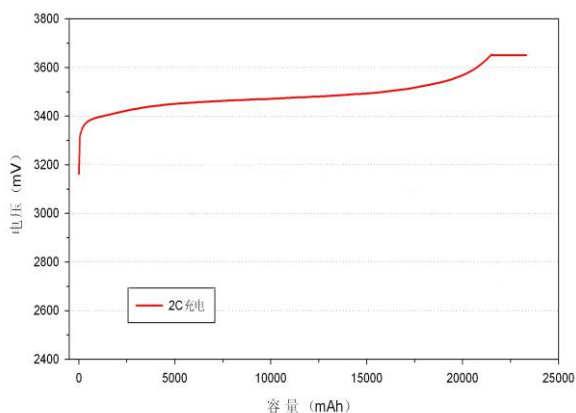
Product introduction

■ 磷酸铁锂电池的性能特点

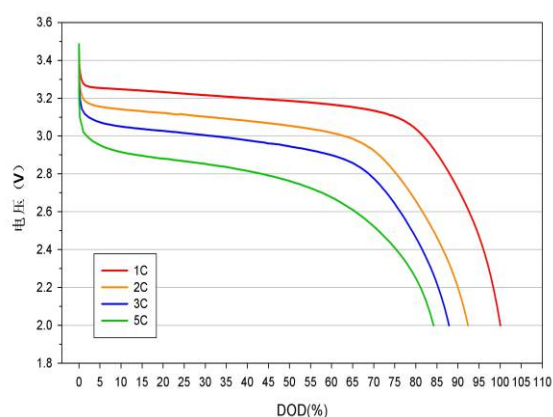
The performances of LFP battery

A、倍率性能 C-rates performance

倍率充电曲线图

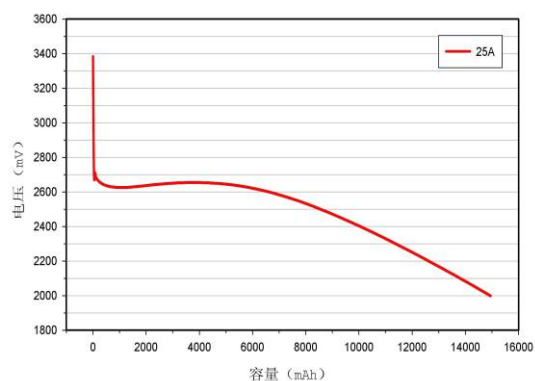


倍率放电曲线图

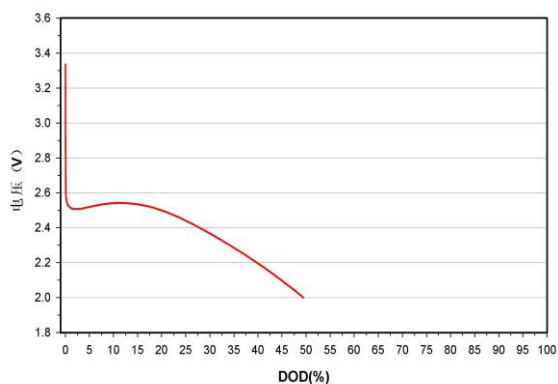


B、低温性能 Low temperature performance

-10°C 1C低温放电曲线

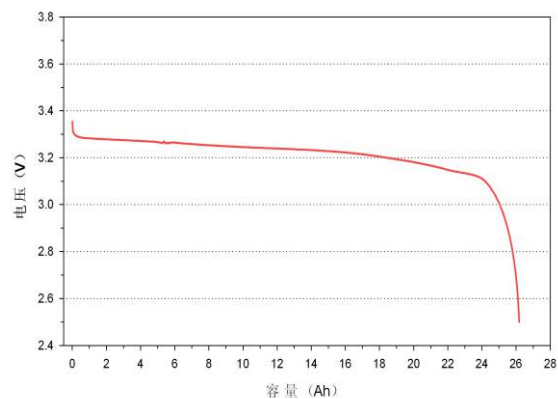


-20°C 1C低温放电曲线

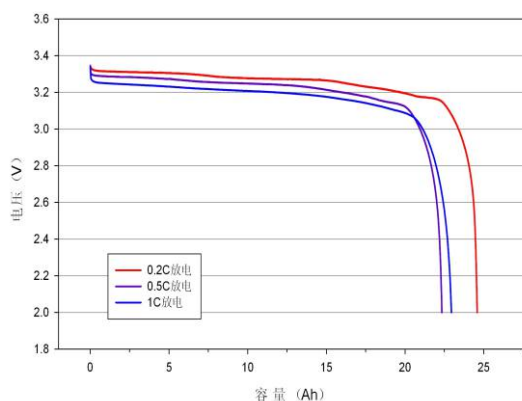


C、高温性能 High temperature performance

55°C 0.2C放电曲线



55°C倍率放电曲线

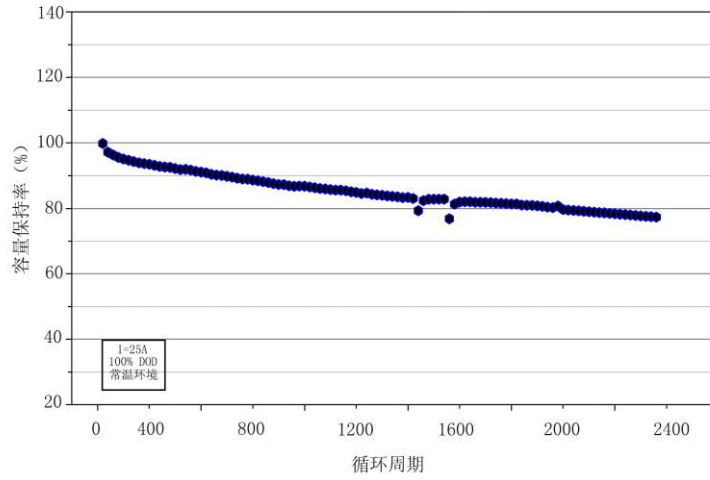


产品简介

Product introduction

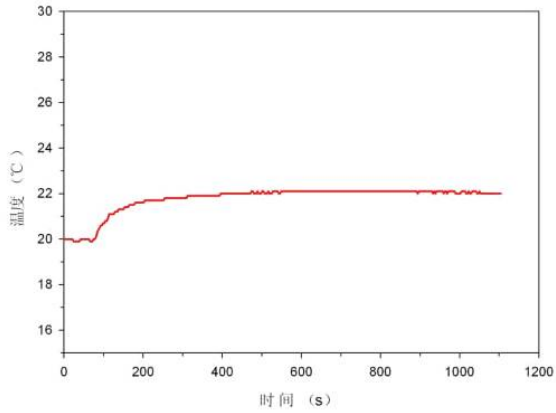
D、循环寿命 Cycle Life

25Ah铁锂电池循环曲线

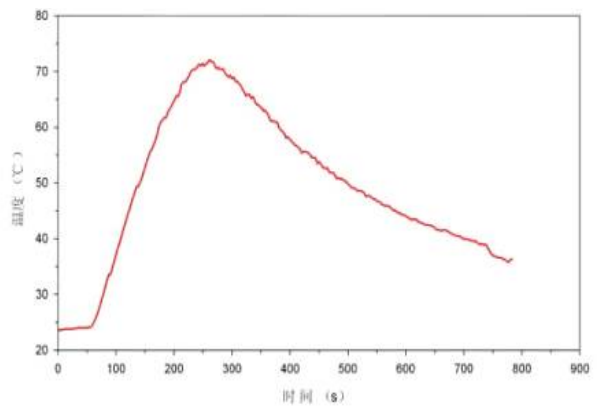


E、安全性能 Safety performance

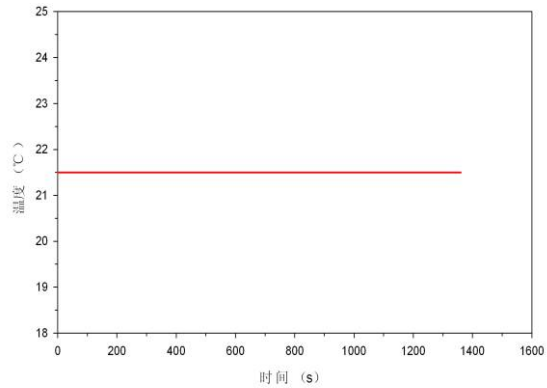
针刺温度曲线



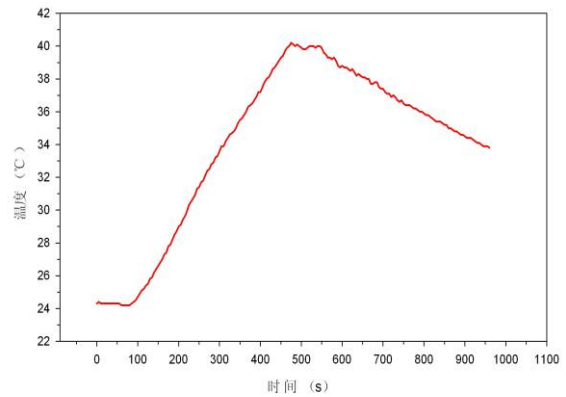
短路温度曲线



挤压温度曲线



过充温度曲线



产品简介

Product introduction

■ 单体电池规格参数

Specifications of battery cell

规格型号 Model	材料体系 Material	标称容量 Nominal capacity	标称电压 Nominal voltage	电池重量 Weight	电池尺寸 Dimensions	工作温度 Operating temperature
TKLD-2.4V/16Ah	LMO/LTO	16Ah	2.4V	650g±10	110*13.1*216mm	-30°C-55°C
TKLD-2.4V/20Ah	LMO/LTO	20Ah	2.4V	680g±10	135*14*165mm	-30°C-55°C
TKLD-2.4V/25Ah	LMO/LTO	25Ah	2.4V	880g±10	135*14*206mm	-30°C-55°C
TKLD-2.4V/26Ah	LMO/LTO	26Ah	2.4V	1080g±10	115.5*32.6*170mm	-30°C-55°C
TKLD-3.7V/2.1Ah	NMC/C	2.1Ah	3.7V	43.5g±2	φ18 mm*65 mm	-20°C-55°C
TKLD-3.2V/30Ah	LFP/C	30Ah	3.2V	600g±5	160*9.2*220mm	-10°C-60°C

■ 单体电池图片

Pictures of battery cell



2.4V/16Ah



2.4V/20Ah



2.4V/25Ah



2.4V/26Ah



3.7V/2.1Ah



3.2V/30Ah

■ 电池模组图片

Pictures of battery module



48V/16Ah



12V/25Ah



36V/26Ah



37V/240Ah

产品简介

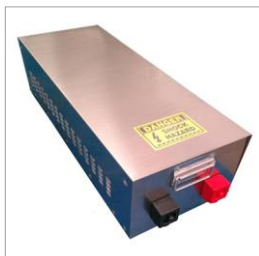
Product introduction

■ 储能电池系统

Energy storage battery system



UPS电源
UPS power supply



通信后备电源
Communication backup
power supply



微网储能电源
Micro grid energy storage system



光伏储能电源
Photo-voltaic energy
storage system

■ 动力电池系统

Power battery system



电动轿车电池
Electric vehicle battery



电动巴士电池
Electric bus battery



电动叉车电池
Electric forklift battery



牵引机车电池
Traction locomotive battery

产品应用案例

Product application cases

便携式电源系统

Portable power supply system



产品应用

TKLFP-7625系列备用电源系统是“天康”根据用户机房设备供电需求所开发的磷酸铁锂便携式电源产品，适用于各企事业单位机房、网络中心、监控室等户内场所动力电源、储能电源领域应用。

Product applications

TKLFP-7625 series standby power supply system is the product of LFP battery portable power supply developed by “Tiankang” according to the power needs of user equipment, it is applicable to all enterprises and institutions, computer network center, monitoring the power supply, the household power storage applications.

产品组成及特点

本产品由磷酸铁锂电池模块、BMS电池管理系统模块、相关电气控制件、喷塑箱体等组成，具有安全、平稳、耐高温及长寿命性能。

Product configuration and characteristics

This product is composed of LFP battery module, BMS module, the relevant control electric parts, plastic spraying case etc., it has a safe, stable, high temperature and long life performance.

典型客户

上海电气、上海交大。

Typical customers

Shanghai Electric, Shanghai Jiaotong university.

技术参数

Technical parameters

型号 Model	TKLFP-7625	工作电压范围(DC) Working voltage range (DC)	60V-87.6V
电池材料 Battery material	LFP	重量 Weight	32kg
电量 Electricity	1.92kWh	外形尺寸(长*宽*高) Dimensions (L*W*H)	650×370×160.5mm
电芯规格 Cell model	3.2V/25Ah	工作温度 Working temperature	-10 — 60℃
额定容量 Nominal capacity	25Ah	热管理方式 Thermal management mode	强制风冷 Forced air cooling
额定电压 Nominal voltage	76.8V		

产品应用案例

Product application cases

光伏路灯钛酸锂电源

(客户定制产品)



产品应用

TKLTO-1216系列光伏路灯电源是“天康”根据用户新型太阳能路灯工况需求所开发的电源产品，适用于一般城镇、乡镇和农村道路的太阳能路灯供电系统。

产品组成及特点

本产品由钛酸锂电池模块、控制器、太阳能板、喷塑箱体等组成，具有高安全性、耐低温性能和长循环寿命性能。

典型客户

飞利浦照明、苏州云博、尚智信。

技术参数

型号 Model	TKLTO-1216	工作电压范围(DC) Working voltage range (DC)	10V-13.5V
电池材料 Battery material	LTO	输出电压/电流 Output voltage / current	12V 3A
电量 Electricity	0.192kWh	外形尺寸(长*宽*高) Dimensions (L*W*H)	790×257×46mm
电芯规格 Cell model	2.4V/16Ah	工作温度 Working temperature	-20 — 55°C
额定容量 Nominal capacity	16Ah	热管理方式 Thermal management mode	自然冷却 Natural cooling
额定电压 Nominal voltage	12V		

LTO power supply for photo-voltaic street lamp(Customized)



Product applications

TKLTO-1216 series photo-voltaic street lamp power supply is developed by “Tiankang” according to user requirements of new types solar street conditions, applicable to solar street lamp power supply system for urban and rural roads, villages and towns.

Product configuration and characteristics

This product is composed of LTO battery module, controller, solar panels, plastic spraying case etc., it has high safety, low temperature performance and long cycle life.

Typical customers

PHILIPS lighting, Suzhou YunBo, SUNSOUL.

Technical parameters

产品应用案例

Product application cases

光伏储能逆变系统

Photo-voltaic energy storage inverter



产品应用

TKLTO-24/48系列钛酸锂储能逆变系统是“天康”根据普通用户家庭负载功率及用电、断电频率所开发的家用储能电源产品，适用于一般电网供电家庭用电系统或加装光伏、风力发电用电系统。

Product applications

TKLTO-24/48 series LTO battery energy storage inverter system is the power supply products of "Tiankang" developed according to the general user family home storage load power and electricity, power frequency, suitable for general household electric power supply system or install photo-voltaic, wind power generation electricity system.

产品组成及特点

本产品由钛酸锂电池系统、逆变系统等部件组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

Product configuration and characteristics

This product is composed of LTO battery system, inverter system and other components, it has high safety, high rate charge / discharge performance, low temperature performance and long cycle life.

典型客户

Sun Power、Involve Audio、Gilton Energy、SSK Group.

Typical customers

Sun Power、Involve Audio、Gilton Energy、SSK Group.

技术参数

Technical parameters

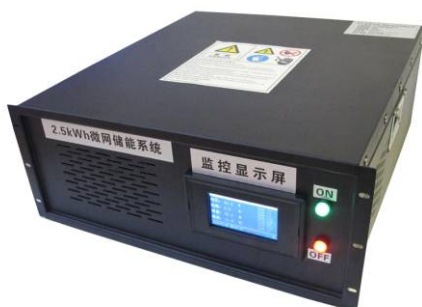
型号 Model	TKLTO-24/48	频率 Frequency	50Hz±10
电池材料 Battery material	LTO	输出电压 Output voltage	AC220V±5%
电量 Electricity	用户定制 User customization	频率 Frequency	50Hz±0.5
功率 Power	1-10kW	工作温度 Working temperature	0 — 40°C
电池电压 Battery voltage	DC24/48V	通讯接口 Communication interface	RS232/USB
输入电压 Input voltage	AC220V±35%		
保护 Protection function	过载、短路、电池高低压保护、市电高低压保护 Overload, short circuit, high, battery high/low voltage protection, AC power high/low voltage protection		

产品应用案例

Product application cases

钛酸锂储能系统

LTO battery energy storage system



产品应用

TKLTO-4850系列钛酸锂储能系统是“天康”根据各种室内场所（机房等）微电网储能供电开发的工业应用电源产品，适用于风力/光伏发电等电力来源系统应用。

Product applications

TKLTO-4850 series LTO battery energy storage system is industrial application power supply products of "Tiankang" developed according to a variety of micro grid energy storage products of indoor (outdoor) places, suitable for wind/photovoltaic power generation system.

产品组成及特点

本产品由钛酸锂电池、BMS电池管理系统、DC电源模块、继电器等系列电气件、风机、监控显示模块、喷塑箱体等组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

Product configuration and characteristics

The product is made of LTO battery, BMS module, DC power module, relay and other series of electrical parts, fan, monitor and display module, plastic spraying case, it has low temperature performance, long cycle life, high security, high rate charge/discharge performance.

典型客户

上海电气，防化研究院。

Typical customers

Shanghai Electric, Research institute of chemical defense.

技术参数

Technical parameters

型号 Model	TKLTO-4850	额定电压 Nominal voltage	48V
电池材料 Battery material	LTO	工作电压范围(DC) Working voltage range (DC)	40V-54V
电量 Electricity	2.5kWh	外形尺寸(长*宽*高) Dimensions (L*W*H)	570×510×210mm
电芯规格 Cell model	2.4V/26Ah	工作温度 Working temperature	-20 — 55℃
额定容量 Nominal capacity	50Ah	热管理方式 Thermal management mode	强制风冷 Forced air cooling

产品应用案例

Product application cases

钛酸锂基站电源

Backup power supply of LTO battery



产品应用

TKLTO-4850系列钛酸锂后备电源是“天康”根据各种室内室外通信基站储设备供电所开发的备用电源产品，适用于移动、联动、电信等各种通信场所设备及运用场所应用。

Product applications

TKLTO-4850 series LTO battery back-up power supply is the standby power supply products of "Tiankang" developed according to various of Indoor (outdoor) communication base station storage equipment power supply, suitable for various communication equipment of mobile corporation, telecommunication corporation and the other places of application.

产品组成及特点

本产品由钛酸锂电池模块、保护板、相关控制电气件、箱体等组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

Product configuration and characteristics

This product is composed of LTO battery module, protection board, the relevant control of electrical components, SUS304 case etc., it has high safety, high rate charge / discharge performance, low temperature performance and long cycle life.

典型客户

巴基斯坦电信公司 (PTCL)

Typical customers

Pakistan Telecom (PTCL)

技术参数

Technical parameters

型号 Model	TKLTO-4850	额定电压 Nominal voltage	48V
电池材料 Battery material	LTO	工作电压范围(DC) Working voltage range (DC)	40V-54V
电量 Electricity	2.5kWh	外形尺寸(长*宽*高) Dimensions (L*W*H)	795×290×190mm
电芯规格 Cell model	2.4V/26Ah	工作温度 Working temperature	-20 — 55°C
额定容量 Nominal capacity	50Ah	热管理方式 Thermal management mode	自然风冷 Natural cooling

产品应用案例

Product application cases

高压直流屏钛酸锂电源

LTO battery for high voltage DC power supply



产品应用

TKLTO-21650系列高压直流屏钛酸锂备用电源是“天康”根据各种室内机房高压供电设备所开发的高压直流屏专用钛酸锂电源产品，适用于各企事业单位机房、高压配电场所应用。

Product applications

TKLTO-21650 series high voltage DC LTO standby power supply is developed by "Tiankang" according to the application requirements of a variety of indoor high-voltage power supply equipment, applicable to machine room, high voltage distribution room etc of all enterprises and institutions.

产品组成及特点

本产品主要由钛酸锂电池组和高压直流屏组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

Product configuration and characteristics

This product is mainly composed of LTO battery and high voltage DC equipment, it has high safety, high charge/discharge rates performance, low temperature performance and long cycle life.

典型客户

国家电网、安徽电气集团

Typical customers

State Grid, Anhui Electric Group.

技术参数

型号 Model	TKLTO-21650	额定电压 Nominal voltage	216V
电池材料 Battery material	LTO	工作电压范围(DC) Working voltage range (DC)	180V-243V
电量 Electricity	10.8kWh	外形尺寸(长*宽*高) Dimensions (L*W*H)	800×625×2200mm
电芯规格 Cell model	2.4V/26Ah	工作温度 Working temperature	-20 — 55℃
额定容量 Nominal capacity	50Ah	热管理方式 Thermal management mode	强制风冷 Forced air cooling

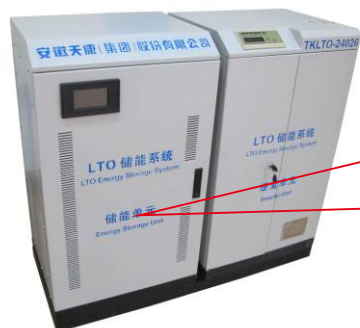
Technical parameters

产品应用案例

Product application cases

家用储能钛酸锂系统

Household energy storage system of LTO battery



产品应用

TKLTO-24026-10系列钛酸锂储能系统电源是“天康”根据用户家庭负载功率及用电、断电频率所开发的家用储能电源产品，适用于一般电网供电家庭用电系统或加装光伏、风力发电用电系统。

Product applications

TKLTO - 24026 - 10 series household energy storage system of LTO battery is developed by "Tiankang" according to the requirements of power and electricity of user home load, suitable for general home with electric power supply system and installed photo-voltaic / wind power generation system.

产品组成及特点

本产品由钛酸锂电池模块、BMS电池管理系统模块、相关控制电气件、电量及控制显示屏、逆变系统、喷塑箱体等组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

Product configuration and characteristics

This product is composed of LTO battery module, BMS module, related electrical parts, power control and display module, inverter system, plastic spraying case and other components, it has low temperature performance, long cycle life, high security, high rate discharge performance.

典型客户

RCT Solutions GmbH、Bouendeu Clean Tech、AKB Energy.

Typical customers

RCT Solutions GmbH, Bouendeu Clean-tech, AKB Energy.

技术参数

Technical parameters

型号 Model	TKLTO-24026-10	额定电压 Nominal voltage	240V
电池材料 Battery material	LTO	工作电压范围(DC) Working voltage range (DC)	200V-270V
电量 Electricity	6.24kWh	输出电压 Output voltage	AC220V 50HZ
功率 Power	10kVA	外形尺寸(长*宽*高) Dimensions (L*W*H)	1130×455×1035mm
电芯规格 Cell model	2.4V/26Ah	工作温度 Working temperature	-20 — 55°C
额定容量 Nominal capacity	26Ah	热管理方式 Thermal management mode	自然冷却 Natural cooling

产品应用案例

Product application cases

钛酸锂储能电池模组

LTO battery modules for energy storage



产品应用

TKLTO-28128系列钛酸锂储能系统是“天康”根据各种室内场所（机房等）微电网储能供电开发的工业储能电源产品，适用于市电/风力/光伏发电等电力来源系统应用。

Product applications

TKLTO-28128 series LTO battery energy storage module is the power supply products developed by "Tiankang" according to the powering requirements for a variety of micro-grid energy storage, suitable for application in electric / wind / photo-voltaic power generation power system.

产品组成及特点

本产品由钛酸锂电池、BMS电池管理系统、交流风机、喷塑箱体等组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

Product configuration and characteristics

This product is composed of LTO battery, BMS, AC fan, plastic spraying case etc. It has high safety, high rate charge / discharge performance, low temperature performance and long cycle life.

典型客户

国家电网、南瑞集团、上海电器科学研究所。

Typical customers

State Grid, NARI Group, Shanghai Electrical Apparatus Research Institute.

技术参数

Technical parameters

型号 Model	TKLTO-28176	额定电压 Nominal voltage	28.8V
电池材料 Battery material	LTO	工作电压范围(DC) Working voltage range (DC)	24V-32.4V
电量 Electricity	5kWh	外形尺寸(长*宽*高) Dimensions (L*W*H)	697×572×282mm
电芯规格 Cell model	2.4V/16Ah	工作温度 Working temperature	-20 — 55℃
额定容量 Nominal capacity	176Ah	热管理方式 Thermal management mode	强制风冷 Forced air cooling

产品应用案例

Product application cases

钛酸锂储能系统

LTO battery energy storage system



产品应用

TKLTO-648130系列钛酸锂储能系统是“天康”根据用户各种室内场所（机房、配电房等）以及户外场所离网/并网系统所开发的储能电源产品，适用于一般电网供电、光伏发电、风力发电等系统配置。

Product applications

TKLTO-648130 series of LTO battery energy storage system is the energy storage power supply products developed by “Tiankang” according to off-grid and on-grid power system of user various indoor places (machine room, power distribution room etc.) and outdoor places, it is applicable to the general power grid, photo-voltaic power generation system and wind power generation system.

产品组成及特点

本产品由钛酸锂电池模块、BMS电池管理系统模块、相关控制电气件、喷塑箱体等组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

Product configuration and characteristics

This product is composed of LTO battery module, BMS module, related control electric parts, plastic spraying case & cabinet and other components, it has low temperature performance, long cycle life, high security, high rate charge/discharge performance.

典型客户

国家电网、大唐国际。

Typical customers

State Grid, DATANG International.

技术参数

Technical parameters

型号 Model	TKLTO-648130	额定电压 Nominal voltage	648V
电池材料 Battery material	LTO	工作电压范围(DC) Working voltage range (DC)	540V-729V
电量 Electricity	84.24kWh	外形尺寸(长*宽*高) Dimensions (L*W*H)	2400*705*1928mm
电芯规格 Cell model	2.4V/26Ah	工作温度 Working temperature	-20 — 55℃
额定容量 Nominal capacity	130Ah	热管理方式 Thermal management mode	风冷 Air cooling

产品应用案例

Product application cases

UPS钛酸锂电源



LTO battery for UPS



产品应用

TKLTO-192100系列钛酸锂电源是“天康”根据各种室内场所（机房、配电房等）设备不间断供电所开发的UPS备用电源产品，适用于各企事业单位办公场所、网络机房、医院等场所应用。

Product applications

TKLTO-192100 series LTO power supply is the LTO battery backup power supply products developed by "Tiankang" according to the uninterrupted power supply equipment of various of indoor places (machine room , power distribution room etc.,) it is applicable to all enterprises and institutions, offices, hospitals and other network room.

产品组成及特点

本产品由钛酸锂电池模块、相关控制电气件、喷塑箱体及UPS主机等组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

Product configuration and characteristics

This product is composed of LTO battery module, relevant control electric parts, plastic spraying case and UPS master, it has high safety, high rate charge/discharge performance, low temperature performance and long cycle life.

典型客户

工商银行、医院/机房、江苏兴达集团数据管理中心。

Typical customers

ICBC, Hospital / room, Data management center of Jiangsu Xingda group .

技术参数

Technical parameters

型号 Model	TKLTO-192100	额定电压 Nominal voltage	192V
电池材料 Battery material	LTO	工作电压范围(DC) Working voltage range (DC)	160V-216V
电量 Electricity	19.2kWh	外形尺寸(长*宽*高) Dimensions (L*W*H)	940×735×1160mm
电芯规格 Cell model	2.4V/26Ah	工作温度 Working temperature	-20 — 55℃
额定容量 Nominal capacity	100Ah	热管理方式 Thermal management mode	自然冷却 Natural cooling

产品应用案例

Product application cases

电动轿车电池

Electric vehicle battery



产品应用

Product applications

TKNMC-74240系列电动轿车三元锂电池组是“天康”根据用户纯电动轿车负载参数及运行工况所开发的动力锂电池产品，适用于电动轿车、物流车、环卫车等各类型纯电动车辆应用。

TKNMC-74240 series NMC lithium battery for electric vehicle is the power battery pack developed by “Tiankang” according to user pure EV load parameters and working condition in all-day running, applicable to all kinds of pure electric vehicles especially EV, electric logistics truck, electric sanitation truck etc.

产品组成及特点

Product configuration and characteristics

本产品由三元锂电池模块、BMS电池管理系统、相关控制电气件、充放电及通信接口、箱体等组成，具有安全、稳定、高效运行、高能量密度性能，行驶里程长等特点。

This product is composed of NMC battery module, BMS and related control electrical parts, charging / discharging & CAN terminal and battery case etc, it has performances of safety, stability, high efficient running, high energy density and long travel distance etc.

典型客户

Typical customers

众泰、卡威。

ZOTY AUTO, KAWEI AUTO.

技术参数

Technical parameters

型号 Model	TKNMC-74240	额定电压 Nominal voltage	74V
电池材料 Battery material	NMC	工作电压范围(DC) Working voltage range (DC)	60V-84V
电量 Electricity	18kWh	重量 Total weight	约180kg
电芯规格 Cell model	3.7V/2.1Ah	工作温度 Working temperature	-20 — 55℃
额定容量 Nominal capacity	240Ah	热管理方式 Thermal management mode	自然冷却 Natural cooling

产品应用案例

Product application cases

电动大巴钛酸锂电池

LTO battery for electric bus



产品应用

TKLTO-624200系列电动大巴钛酸锂动力电池系统是“天康”根据用户12米电动大巴负载运行及快速充电需求所开发的钛酸锂动力电池产品，适用于安凯等品牌6-12米纯电动大巴及快充需求应用。

Product applications

TKLTO-624200 series electric bus LTO battery system is the high power battery products developed by “Tiankang” according to the load power and fast charging demands of 12 meters electric bus, it is applicable to many kinds of electric bus as their length is 6-12 meters (ANKAI pure electric bus etc).

产品组成及特点

本产品由钛酸锂电池模块、BMS电池管理系统、相关控制电气件、风机、快充接口、箱体等组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

Product configuration and characteristics

This product is composed of LTO battery module, BMS, related control electric parts fan, fast charging port, case etc, it has high safety, low temperature performance, long cycle life, high security, high rate charge/discharge performance.

典型客户

安凯大巴、黄海大巴、正道大巴、一汽客车。

Typical customers

ANKAI bus, HUANGHAI bus, HK bus, FAW bus.

技术参数

Technical parameters

型号 Model	TKLTO-624200	额定电压 Nominal voltage	624V
电池材料 Battery material	LTO	工作电压范围(DC) Working voltage range (DC)	520V-702V
电量 Electricity	124.8kWh	电池箱体数量 Quantity of battery box	11PCS
电芯规格 Cell model	2.4V/16Ah	工作温度 Working temperature	-20 — 55°C
额定容量 Nominal capacity	200Ah	热管理方式 Thermal management mode	强制风冷 Forced air cooling

产品应用案例

Product application cases

电动叉车钛酸锂电池

LTO battery for electric forklift



产品应用

TKLTO-48320系列钛酸锂电池系统是“天康”根据用户叉车全天候高负载及快速充电运行工况所开发的专用钛酸锂动力电池产品，适用于合力、杭叉等各品牌2-2.5T电动叉车应用。

Product applications

TKLTO-48320 series LTO battery system is the fast charging power supply of electric forklift developed by "Tiankang" according to user forklift working condition in all-day high power load requirements and fast charging requirement, applicable to 2-2.5T electric forklift application such as Heli forklift, Hangcha forklift etc.

产品组成及特点

本产品由钛酸锂电池模块、BMS电池管理系统、相关控制电气件、直流风机、直流快充接口、箱体等组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

Product configuration and characteristics

This product is composed of LTO battery module, BMS and related control electrical parts, DC fan, DC fast charging interface etc., it has low temperature performance, long cycle life, high security, high rate charge/discharge performance.

典型客户

合力、杭叉。

Typical customers

Heli, Hangcha.

技术参数

Technical parameters

型号 Model	TKLTO-48320	工作电压范围(DC) Working voltage range (DC)	44V-59.4V
电池材料 Battery material	LTO	外形尺寸(长*宽*高) Dimensions (L*W*H)	1110*540*795mm
电量 Electricity	15.36kWh	重量 Total weight	约1120kg
电芯规格 Cell model	2.4V/16Ah	工作温度 Working temperature	-20 — 55°C
额定容量 Nominal capacity	320Ah	热管理方式 Thermal management mode	强制风冷 Forced air cooling
额定电压 Nominal voltage	48V		

产品应用案例

Product application cases

电动高压叉车钛酸锂电池



LTO battery for electric high-voltage forklift



产品应用

TKLTO-50430系列钛酸锂电池系统是“天康”根据用户叉车全天候高负载及快速充电运行工况所开发的电动高压叉车专用钛酸锂动力电池产品，适用3T左右电动叉车应用。

Product applications

TKLTO-50430 series LTO battery system is the fast charging power supply of electric high-voltage forklift developed by “Tiankang” according to user forklift working condition in all-day high power load requirements and fast charging requirement, applicable to approx. 3T electric forklift application.

产品组成及特点

本产品由钛酸锂电池模块、BMS电池管理系统、相关控制电气件、MSD、直流快充接口、箱体等组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

Product configuration and characteristics

This product is composed of LTO battery module, BMS and related control electrical parts, MSD, DC fast charging interface etc., it has low temperature performance, long cycle life, high security, high rate charge/discharge performance.

典型客户

山东新力。

Typical customers

Shandong Xinli.

技术参数

型号 Model	TKLTO-50430	额定电压 Nominal voltage	504V
电池材料 Battery material	LTO	工作电压范围(DC) Working voltage range (DC)	420V-567V
电量 Electricity	15.12kWh	外形尺寸(长*宽*高) Dimensions (L*W*H)	1180×922×295mm
电芯规格 Cell model	2.4V/16Ah	重量 Total weight	约420kg
额定容量 Nominal capacity	30Ah	工作温度 Working temperature	-20 — 55°C
热管理方式 Thermal management mode		风冷 Air cooling	

Technical parameters

产品应用案例

Product application cases

牵引机车动力电池系统



产品应用

TKLTO-576108系列钛酸锂动力电池系统是“天康”根据用户特种车辆（重机车、煤车、动车等）特殊应用工况所开发的高功率动力电源产品，适用于地铁、高铁、矿车、港机等作业场所应用。

产品组成及特点

本产品由钛酸锂电池模块、BMS电池管理系统模块、相关控制电气件、高压控制盒、直流充电座、直流风扇、MSD、喷塑箱体等组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

典型客户

中车集团、中铁建工集团。

技术参数

型号 Model	TKLTO-576108	最大放电电流 Maximum discharge current	400A
电池材料 Battery material	LTO	工作电压范围(DC) Working voltage range (DC)	430V-648V
电量 Electricity	62kWh	外形尺寸(长*宽*高) Dimensions (L*W*H)	2775*1475*1085mm
额定容量 Nominal capacity	108Ah	重量 Total weight	约3.5吨
额定电压 Nominal voltage	576V	工作温度 Working temperature	-20 — 55℃
最大充电电流 Maximum charge current	300A	热管理方式 Thermal management mode	强制风冷 Forced air cooling

LTO battery system for traction locomotive



Product applications

TKLTO-576108 series LTO power battery system is the high power battery products developed by “Tiankang” according to the special application condition requirements of user special engineering vehicles (heavy truck, tramcar etc.), it is applicable to subway engineering, high-speed rail engineering, heavy transport vehicles, and RTG application.

Product configuration and characteristics

This product is composed of LTO battery module, BMS module, related control electrical parts, high voltage control box, DC charging port, DC fan, MSD, spray-painted case, it has high safety, high rate charge/discharge performance, low temperature performance and long cycle life.

Typical customers

CRRC, China Railway Construction Engineering Group.

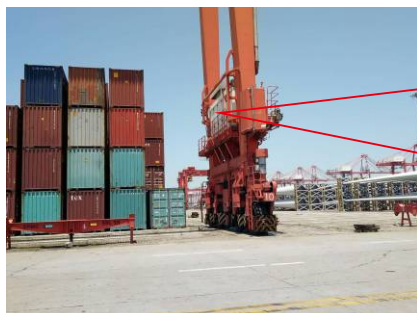
Technical parameters

产品应用案例

Product application cases

港机RTG钛酸锂电池系统

LTO battery system for RTG container crane



产品应用

天康TKLTO-68080系列钛酸锂动力电池系统是“天康”根据用户港口集装箱起重设备特殊应用工况所开发的高功率动力电源产品，适用于轮胎式集装箱门式起重机、轨道式集装箱门式起重机等港机场所应用。

Product applications

TKLTO-68080 series LTO power battery system is the high power battery products developed by “Tiankang” according to the special application condition requirements of user port container crane equipment, it is applicable to RTG container crane and RMG container crane etc port equipment application.

产品组成及特点

本产品由钛酸锂电池模块、BMS电池管理系统模块、相关控制电气件、高压控制盒、直流风扇、MSD、喷塑箱体及机柜等组成，具有高安全性、高倍率充放电性能、耐低温性能和长循环寿命性能。

Product configuration and characteristics

This product is composed of LTO battery module, BMS module, related control electrical parts, high voltage control box, DC fan, MSD, spray-painted box and cabinet, it has high safety, high rate charge / discharge performance, low temperature performance and long cycle life.

典型客户

太仓港、大连港、华东重机、马来西亚关丹港。

Typical customers

Taicang port, Dalian port, HDHM, Kuantan port Malaysia.

技术参数

Technical parameters

型号 Model	TKLTO-68080	最大持续工作电流 Max continuous operating current	320A
电池材料 Battery material	LTO	工作电压范围(DC) Working voltage range (DC)	552V-745V
电量 Electricity	54.4kWh	外形尺寸(长*宽*高) Dimensions (L*W*H)	约1800*700*1720mm
额定容量 Nominal capacity	80Ah	工作温度 Working temperature	-20 — 55℃
额定电压 Nominal voltage	680V	热管理方式 Thermal management mode	风冷 Air cooling



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