MHB® 闽华电源
MINHUA POWER SUPPLY

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VRLA BATTERY

阀控式密封铅酸蓄电池

MHB® 闽华电源
MINHUA POWER SUPPLY

福建省闽华电源股份有限公司
FUJIAN MINHUA POWER SOURCE CO.,LTD.

Longqiao Industrial Park, Anxi Economic Development Zone,Fujian Province
福建省泉州市安溪经济开发区龙桥工业园

SINCE1992

MINHUAGROUP.COM

CATALOGS

ABOUT THE COMPANY
关 于 企 业

VRLA BATTERY
阀 控 铅 酸 电 池

PARAMETERS AND MAINTENANCE
电 池 参 数 与 维 护

MHB 闽华电源
MINHUA POWER SUPPLY

MHB POWER was established in 1992, with its production base located in the Anxi Economic and Technological Development Zone, Quanzhou, Fujian Province. The company has a total construction area of over 200,000 square meters and employs more than 1,200 people.As a leading manufacturer in China's battery plate industry, MHB POWER is a high-tech enterprise dedicated to the integrated development, production, sales, and service of new energy products. The company's product portfolio includes battery plates, starting batteries (automotive and motorcycle batteries), backup batteries (general-purpose, high-power, and long-life types), industrial batteries, and power batteries. These products are widely used in transportation, power reserves, uninterruptible power supply (UPS) systems, and renewable energy storage applications.

闽华电源于1992年成立，生产基地位于福建省泉州市安溪经济开发区，占地面积310亩，总建筑面积超20万平方米，员工超1200人。作为国内蓄电池极板行业领先的生产制造商，闽华电源是一家致力于新能源产品研发、生产、销售、服务一体化的高新企业。公司产品涵盖蓄电池极板、启动电池(汽车电池、摩托车电池)、备用电池(通用型、高功率型、长寿命型等)、工业电池、动力电池等，广泛应用于交通运输、电力储备、不间断电源系统及可再生能源储能等领域。

SINCE1992

FUJIAN MINHUA POWER SOURCE CO.,LTD.

Fujian Minhua Power source Co.. Ltd. is one of the main drafting units of the national standards in the industry, and has served as the vice chairman of China Battery Industry Association, and won the honor of “Top 10 Enterprises in Storage Battery Industry of China's Light Industry”, “China Well-known Trademark”, “High and New Technology Enterprise of Fujian Province” and so on. High-tech Enterprise” and other honors. In the lead-acid battery industry in Fujian Province, Minhua Power Supply has always maintained the first position in terms of revenue and tax. The company was awarded the title of “Big Taxpayer” of private enterprises in Quanzhou City from 2016 to 2020, and paid more than 156 million yuan of tax in 2016, which is one of the top 100 private enterprises in Quanzhou City.

闽华电源是行业国家标准的主要起草单位之一，曾担任中国电池工业协会副理事长，并荣获“中国轻工业蓄电池行业10强企业”“中国驰名商标”“福建省高新技术企业”等荣誉。在福建省铅酸电池行业中，闽华电源常年保持着营收和税收第一的位置。公司曾获得泉州市2016—2020年民营企业“纳税大户”称号，并且在2016年度纳税达1.56亿元，是泉州市民营百强企业。

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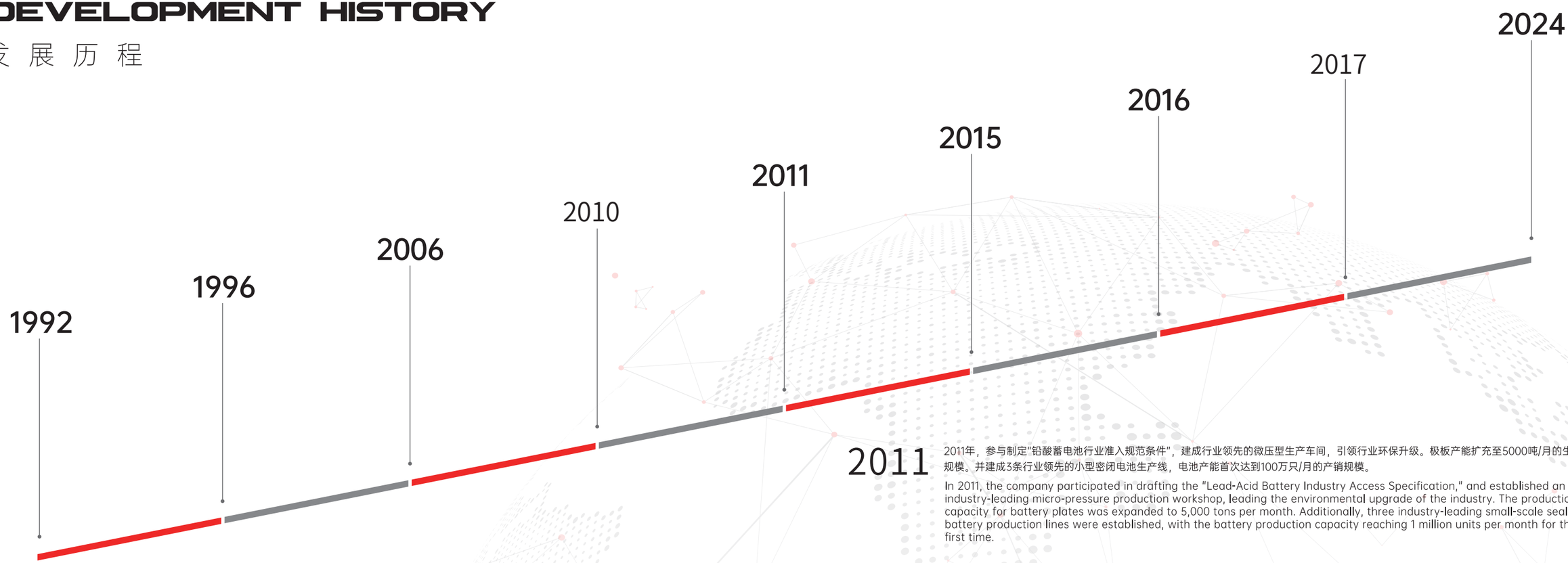
DEVELOPMENT HISTORY

发 展 历 程



1992 公司成立于1992年，专注于生产铅酸阀控式电池极板。

Founded in 1992, the company was specialized in production of lead acid VRLA battery plates.

1996 自1996年以来，我们开始研发和生产启动电池，业务范围从电池极板扩展至启动电池。

Since 1996, we began the researches, development and production of starter batteries, the business range expanded from battery plates to starter batteries.

2006 2006年，工厂搬迁至新设施，生产能力扩大至每月2500吨电池极板和50万只电池。

2006 The factory moved to the new facility and the production capacity enlarged to 2500 tons/month of battery plates and 500,000pcs batteries per month.

2010 2010年，公司进行了股权改革，成立了董事会和股东大会，从而规范了公司治理。

2010，The company underwent a shareholding reform in 2010, the director board and shareholder meeting established, thereby standardizing the corporate governance.

2011 2011年，参与制定"铅酸蓄电池行业准入规范条件"，建成行业领先的微压型生产车间，引领行业环保升级。极板产能扩充至5000吨/月的生产规模。并建成3条行业领先的小型密闭电池生产线，电池产能首次达到100万只/月的产销规模。

In 2011, the company participated in drafting the "Lead-Acid Battery Industry Access Specification," and established an industry-leading micro-pressure production workshop, leading the environmental upgrade of the industry. The production capacity for battery plates was expanded to 5,000 tons per month. Additionally, three industry-leading small-scale sealed battery production lines were established, with the battery production capacity reaching 1 million units per month for the first time.

2015 2015，通过福建省环保厅组织的环保核查；通过国家工信部组织的铅蓄电池行业规范条件核查。二期极板车间建成，极板产能扩充至7500吨/月生产规模，极板技改项目被国家工信部评为"清洁生产重点示范项目"。

In 2015, the company passed the environmental inspection organized by the Fujian Provincial Department of Environmental Protection and the industry standard inspection organized by the Ministry of Industry and Information Technology. The second phase of the battery plate workshop was completed, expanding the production capacity to 7,500 tons per month. The plate technology upgrade project was recognized by the Ministry of Industry and Information Technology as a "Key Demonstration Project for Clean Production."

2016 2016年，企业年度纳税达1.56亿元，荣获福建省泉州市民营百强企业荣誉称号。

In 2016, the company's annual tax payment reached 156 million yuan and was honored with the title of "Top 100 Private Enterprises in Quanzhou, Fujian Province."

2017 2017年，被国家工信部评为首批"绿色工厂"。

In 2017, it was recognized by the Ministry of Industry and Information Technology of China as one of the first batch of "Green Factories."

2024 战略重组成功，开启全新征程。2024年度纳税超7000万元，上榜泉州市民营企业营收及纳税“双百强”榜单。

Successfully restructured, embarking on a new journey. In 2024, annual tax payments exceeded 70 million yuan, ranking among Quanzhou's Top 100 Private Enterprises in Revenue and Taxation.

HONOURS & QUALIFICATIONS

荣 誉 资 质

PATENT ACCUMULATION, TECHNOLOGICAL LEADERSHIP 专利积累，技术领先

Fujian Minhua Power Source Co., Ltd. has demonstrated exceptional performance in the field of patents. As of now, the company Over 100 patents, including invention patents, utility model patents, and design patents. These patents cover a wide range of technologies related to lead-acid batteries and their components, showcasing the company's leading position in product development and technological innovation. Through continuous technological advancements, Minhua Power Source consistently enhances its product competitiveness, providing strong support for market promotion and brand value enhancement.

福建省闽华电源股份有限公司在专利方面表现卓越。截至目前，公司已拥有超过100项专利，包括发明专利、实用新型专利以及外观设计专利。这些专利广泛覆盖了铅酸蓄电池及其相关组件的技术领域，充分体现了公司在产品研发和技术创新方面的领先地位。闽华电源通过持续的技术创新，不断提升产品的核心竞争力，为市场推广和品牌价值的提升提供了强有力的支持。

Our company has obtained ISO 9001 Quality Management System, ISO 14001 Environmental Management System, and OHSAS 18001 Occupational Health and Safety Management System certifications. Our products comply with GB/T 19639, IEC 60896-21/22, and other Chinese and international standards, and the entire product range meets UL, IEC, RU, TLC, RoHS, and CE certification requirements.

我们公司已通过 ISO 9001 质量管理体系、ISO 14001 环境管理体系及 OHSAS 18001 职业健康安全管理体系认证，产品符合 GB/T 19639、IEC 60896-21/22 等中国与国际标准，且全系列产品均符合 UL、IEC、RU、TLC、RoHS、CE 等认证要求。

- 2011年参与制定“铅酸蓄电池行业准入规范条件”。
  In 2011, the company participated in the formulation of the "Access Standards for the Lead-Acid Battery Industry."
- 2012年被国家工商行政管理总局认定为“中国驰名商标”。
  In 2012, The State Administration for Industry and Commerce of the People's Republic of China has recognized it as a “Famous Trademark of China”.
- 2014福建省科学技术厅授予“福建省铅酸电池企业工程技术研究中心”。
  In 2014, Fujian Provincial Science and Technology Department awarded “Fujian Lead-Acid Battery Enterprise Engineering Technology Research Center”.
- 2015年被中国轻工业协会评为“中国轻工业铅蓄电池行业10强企业”。
  In 2015, it was recognized as one of the "Top 10 Enterprises in the Lead-Acid Battery Industry of China's Light Industry" by the China National Light Industry Council.
- 2016年被中国电池工业协会评为“企业信用评价AAA级信用企业”。
  In 2016, it was rated as an "AAA Credit Enterprise" in the Corporate Credit Evaluation by the China Battery Industry Association.
- 2016年被中国轻工业联合会评为“中国轻工业百强企业”。
  In 2016, it was honored as one of the “Top 100 Enterprises in China Light Industry” by China Light Industry Federation.
- 2016年企业年度纳税达1.56亿元，荣获福建省泉州市纳税功勋企业称号。
  In 2016, the company’s annual tax payment reached 156 million yuan and was awarded the title of "Outstanding Taxpayer Enterprise" in Quanzhou, Fujian Province.
- 2017年被国家工信部评为首批“绿色工厂”。
  In 2017, it was designated as one of the first "Green Factories" by the Ministry of Industry and Information Technology of China.
- 2020年被中国电池工业协会授予“副理事长”。
  In 2020, the company was awarded the title of "Vice Chairman" by the China Battery Industry Association.
- 2022年被中国电器工业协会蓄电池分会授予“理事单位”。
  In 2022，Awarded “Director Unit” by Storage Battery Branch of China Electrical Appliance Industry Association.
- 2024年战略重组成功，开启全新征程。2024年度纳税超7000万元，上榜泉州市民营企业营收及纳税“双百强”榜单。
  In 2024, the successful reorganization marked a new journey. Annual tax payments exceeded 70 million yuan, ranking among Quanzhou’s Top 100 in revenue and taxation.

RESEARCH DEVELOPMENT
研 究 与 开 发

HIGH LEVEL R&D TEAM 高级研发团队

Collaborating with renowned universities and research teams across multiple dimensions, we have established a research talent team with diverse educational backgrounds and technical expertise. We actively engage in cutting-edge technology research and application.

与著名高校及科研团队多维度合作，建成由多学历层次和专业技术背景构成的科研人才队伍，积极开展前沿技术研究与应用。

ADVANCED STANDARD 先进标准

Minhua is one of the main drafters of national standards in the industry. It is the vice-chairman unit of the China Battery Industry Association, one of the top ten enterprises in the lead-acid battery industry in China's light industry, and a "High-tech Enterprise in Fujian Province".

闽华是行业国家标准主要起草单位之一，为中国电池工业协会副理事长单位，中国轻工业铅蓄电池行业10强企业，“福建省高新技术企业”。

GREEN INDUSTRY 绿色产业

Guided by the concept of green development, Minhua adheres to clean production, environmental friendliness, and constantly upgrades production equipment. It has been rated as a national "Key Demonstration Project of Cleaner Production" by the Ministry of Industry and Information Technology.

闽华以绿色发展观为指引，秉持清洁生产、环境友好，不断升级生产设备，被工信部评为全国“清洁生产重点示范项目”。

AUTOMATED PRODUCTION
自 动 化 生 产

AUTOMATED PRODUCTION LINE 自动化产线

Through advanced intelligent technology, we have achieved automated production of UPS batteries. The company uses the latest automation equipment and intelligent control systems to ensure an efficient and stable production process. From raw material input to finished product delivery, the entire process is monitored in real-time by intelligent systems, ensuring consistent and reliable product quality. Intelligent production not only enhances production efficiency but also significantly improves the stability of product quality. Minhua Power is committed to providing high-performance, high-quality UPS battery solutions and leading industry innovation and development.

通过先进的智能化技术，实现了UPS电池的自动化生产。公司采用最新的自动化设备和智能控制系统，确保生产过程高效、稳定。从原材料投入到成品出库均由智能系统实时监控，保证了产品品质的一致性和可靠性。智能化生产不仅提升了生产效率，还大幅提高了产品品质的稳定性。闽华电源致力于为客户提供高性能、高品质的UPS电池解决方案，引领行业创新发展。

ENERGY STORAGE BASE 储能基地

Specializing in the research, development, manufacturing, and sales of a full range of valve-regulated sealed lead-acid batteries and lead-acid battery plates. Our products cover four main types: standby, starting, stationary, and energy storage, with over 600 specifications to meet diverse regional and customer needs. With a wide variety of products and extensive coverage, suitable for various application scenarios, we offer diverse and high-quality battery solutions backed by comprehensive product coverage, stable product quality, and exceptional technology and service.

专业研发、制造和销售全系列阀控式密封铅酸蓄电池及铅酸蓄电池极板。产品涵盖备用、起动、固定和储能四大类型，共600多个规格品种，充分满足不同区域和各类客户的需求。品类丰富、覆盖广泛，适用于各类应用场景，凭借全面的产品覆盖、稳定的产品品质、卓越的技术与服务，具备为客户提供多样化、高品质的电池解决方案的能力。

APPLICATION FIELDS
应用领域

不间断电源系统 | UPS Power Supply

应急照明 | Emergency Lighting

安防系统 | Security Systems

电动玩具和工具 | Electric Toys and Tools

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SMALL VRLA BATTERY
小型阀控铅酸电池

The Small VRLA battery is a maintenance-free, compact battery that uses valve-regulated technology to manage internal pressure and prevent electrolyte leakage. It features strong sealing, high safety, and long lifespan, making it widely used in high-reliability applications such as communication equipment, UPS power supplies, emergency lighting, and security systems. Additionally, it is suitable for various installation environments and is more environmentally friendly compared to traditional batteries.

小型阀控铅酸电池是一种免维护的紧凑型电池，采用阀控技术调节内部压力，防止电解液泄漏，具有密封性强、安全性高、寿命长等特点，广泛应用于通信设备、UPS电源、应急照明、安防系统等对可靠性要求较高的领域，同时适用于多种安装环境，并且相较于传统电池更加环保。

MS SERIES Small VRLA Battery

小型阀控铅酸电池系列

The MS small sealed series is our company's backup power series for batteries with a 20-hour rate capacity of ≤30Ah. It uses a unique Pb-Ca-Sn-Al alloy for the grid material and active material formulation. The battery features resistance to overcharging and deep discharging, with long storage and service life and minimal self-discharge. Precision manufacturing processes and stringent quality control ensure excellent consistency, making the battery suitable for various applications, whether single or in series/parallel configurations. Its fully sealed, maintenance-free design requires no upkeep during use.

小型阀控铅酸电池（MS）系列为我公司电池20小时率容量≤30Ah之备用电源型系列产品，采用独特配方的 Pb-Ca-Sn-Al合金作为板栅材料以及活性物质配方，电池具有耐过充电及过放电，储存及使用寿命 长并且自放电极小。精密的制造工艺以及严苛的质量控制，使电池具备极佳的一致性，在单颗电池及多颗电池串并联等不同应用环境均能适用。全密封免维护的结构设计，使用过程中无需任何维护与保养。

PRODUCT APPEARANCE 产品外观

USAGE SCENARIOS 使用场景

PRODUCT FEATURE 产品特点

Unique Pb-Ca-Sn-Al Alloy Grid Material
独特配方的 Pb-Ca-Sn-Al合金板栅材料

Precision Craftsmanship, Exceptional Consistency
精密工艺，一致性绝佳

Suitable for both single-cell and series-parallel battery configurations
单颗电池或多颗电池的串并联，不同应用环境均适用

Ampere-Hour: 1.3Ah - 30Ah

Voltage: 4 Volts - 12 Volts

ISO IEC TLC RoHS CE

MS SERIES

Small VRLA Battery 小型阀控铅酸电池系列

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量(20HR) Capacity	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
2-FM-4	MS4-4	4	4	48	48	100	105	0.48	F1/F2
3-FM-1.3	MS1.3-6	6	1.3	97	24	51	55	0.27	F1
3-FM-2.8	MS2.8-6	6	2.8	66	33	97	101	0.56	F1
3-FM-3.2	MS3.2-6	6	3.2	125	33	60	64	0.63	F1
3-FM-3.3	MS3.3-6	6	3.3	134	34	60	64	0.64	F1
3-FM-3.3B	MS3.3-6	6	3.3	70	47	100	106	0.59	F1/F2
3-FM-3.4	MS3.4-6	6	3.4	70	47	100	106	0.62	F1/F2
3-FM-3.5	MS3.5-6	6	3.5	70	47	100	106	0.63	F1/F2
3-FM-3.5C	MS3.6-6	6	3.6	70	47	100	106	0.65	F1/F2
3-FM-4F	MS4-6	6	4	70	47	100	106	0.68	F1/F2
3-FM-4G	MS4-6	6	4	70	47	100	106	0.70	F1/F2
3-FM-4	MS4-6	6	4	70	47	100	106	0.71	F1/F2
3-FM-4.5C	MS4.5-6	6	4.5	70	47	100	106	0.73	F1/F2
3-FM-4.5D	MS4.5-6	6	4.8	70	47	100	106	0.75	F1/F2
3-FM-5C	MS5-6	6	5	70	47	100	106	0.78	F1/F2
3-FM-5	MS5-6	6	5	70	47	100	106	0.80	F1/F2
3-FM-5B	MS5-6	6	5	70	47	100	106	0.83	F1/F2
3-FM-6B	MS6-6	6	6	85	47	100	106	0.92	F1/F2
3-FM-6C	MS6-6	6	6	85	49	112	118	1.06	F1/F2
3-FM-7B	MS7-6	6	7	151	35	94	100	1.13	F1/F2
3-FM-7	MS7-6	6	7	151	35	94	100	1.17	F1/F2
3-FM-9B	MS9-6	6	8.4	151	35	94	100	1.25	F1/F2
3-FM-9	MS9-6	6	8.6	151	35	94	100	1.33	F1/F2
3-FM-12C	MS12-6	6	12	151	50	94	100	1.65	F1/F2
3-FM-12	MS12-6	6	12	151	50	94	100	1.83	F1/F2
3-FM-12D	MS12-6	6	12	151	50	94	100	1.85	F1/F2
3-FM-14	MS14-6	6	14	108	71	140	140	2.10	+F2 -F1
6-FM-1.3无台阶	MS1.2-12	12	1.2	97	43	52	57	0.55	F1

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量(20HR) Capacity	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
6-FM-1.3台阶	MS1.3-12	12	1.2	97	45	52	57	0.55	F1
6-FM-2.3-1	MS2.2-12	12	2.2	70	48	99	102	0.76	F1
6-FM-2.3	MS2.3-12	12	2.3	178	35	61	66	0.92	F1
6-FM-2.7B	MS2.7-12	12	2.7	80	56	99	103	1.05	F1
6-FM-2.9	MS2.9-12	12	2.9	80	56	99	103	1.20	F1
6-FM-3.3	MS3.3-12	12	3.3	134	67	60	65	1.30	F1
6-FM-3.5	MS3.5-12	12	3.5	134	67	60	65	1.33	F1
6-FM-4H	MS3.6-12	12	3.6	90	70	101	105	1.31	F1/F2
6-FM-4D	MS4-12	12	4	90	70	101	105	1.38	F1/F2
6-FM-4	MS4-12	12	4	90	70	101	105	1.40	F1/F2
6-FM-4I（铸焊）	MS4-12	12	4	90	70	101	105	1.41	F1/F2
6-FM-4.5C-3（铸焊）	MS4.5-12	12	4.5	90	70	101	105	1.44	F1/F2
6-FM-4.5D（铸焊）	MS4.5-12	12	4.8	90	70	101	105	1.46	F1/F2
6-FM-5B（铸焊）	MS5-12	12	5	90	70	101	105	1.48	F1/F2
6-FM-5F-1（铸焊）	MS5-12	12	5	90	70	101	105	1.52	F1/F2
6-FM-5	MS5-12	12	5	90	70	101	105	1.60	F1/F2
6-FM-5I	MS5-12	12	5	90	70	101	105	1.66	F1/F2
6-FM-5A-1(铸焊）	MS7-12	12	5	151	65	94	98	1.71	F1/F2
6-FM-6.3(铸焊)	MS7-12	12	6	151	65	94	98	1.83	F1/F2
6-FM-6.3A(铸焊)	MS7-12	12	6.2	151	65	94	98	1.85	F1/F2
6-FM-4.1（铸焊）	MS7-12	12	4.1	151	65	94	98	1.78	F1/F2
6-FM-5.2（铸焊）	MS7-12	12	5.2	151	65	94	98	1.82	F1/F2
6-FM-7I-3（铸焊）	MS7-12	12	6.5	151	65	94	98	2.00	F1/F2
6-FM-7F-3（铸焊）	MS7-12	12	7	151	65	94	98	2.05	F1/F2
6-FM-7E（铸焊）	MS7-12	12	7	151	65	94	98	2.08	F1/F2
6-FM-7.2E（铸焊）	MS7.2-12	12	7.2	151	65	94	98	2.10	F1/F2
6-FM-7.5C（铸焊）	MS7.5-12	12	7.5	151	65	94	98	2.16	F1/F2
6-FM-7.5H（铸焊）	MS7.5-12	12	7.5	151	65	94	98	2.20	F1/F2

MS SERIES

Small VRLA Battery 小型阀控铅酸电池系列

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量(20HR) Capacity	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
6-FM-7.5Q（铸焊）	MS7.5-12	12	7.5	151	65	94	98	2.28	F1/F2
6-FM-7J	MS7-12	12	7	151	65	94	98	2.30	F1/F2
6-FM-7.5A（铸焊）	MS7.5-12	12	7.5	151	65	94	98	2.35	F1/F2
12V9AH-5（铸焊）	MS8-12	12	8	151	65	94	98	2.42	F1/F2
6-FM-9C（铸焊）	MS9-12	12	8.4	151	65	94	98	2.45	F1/F2
6-FM-9BQ（铸焊）	MS9-12	12	8.5	151	65	94	98	2.55	F1/F2
6-FM-9F-1（铸焊）	MS9-12	12	9	151	65	94	98	2.65	F1/F2
6-FM-10B	MS10-12	12	10	151	65	110	115	3.10	F1/F2
6-FM-10D	MS10-12	12	10	151	98	94	98	3.15	F1/F2
6-FM-12B	MS12-12	12	12	151	98	94	98	3.30	F1/F2
6-FM-12Q	MS12-12	12	12	151	98	94	98	3.60	F1/F2
6-FM-12E	MS12-12	12	12	151	98	94	98	3.70	F1/F2
6-FM-13	MS13-12	12	12	181	77	167	167	4.00	T1（M5）
6-FM-13T	MS13-12	12	12	181	77	167	167	4.00	B1（M5）
6-FM-15	MS15-12	12	15	181	77	167	167	4.50	T1（M5）
6-FM-15T	MS15-12	12	15	181	77	167	167	4.50	B1（M5）
6-FM-17QT	MS17-12	12	17	181	77	167	167	4.70	T1（M5）
6-FM-17CT	MS17-12	12	17	181	77	167	167	4.70	B1（M5）
6-FM-17B	MS17-12	12	17	181	77	167	167	4.90	T1（M5）
6-FM-17BT	MS17-12	12	17	181	77	167	167	4.90	B1（M5）
6-FM-17	MS18-12	12	17.5	181	77	167	167	5.00	T1（M5）
6-FM-17T	MS18-12	12	17.5	181	77	167	167	5.00	B1（M5）
6-FM-18	MS18-12	12	18	181	77	167	167	5.30	T1（M5）
6-FM-18T	MS18-12	12	18	181	77	167	167	5.30	B1（M5）
6-FM-18B	MS18-12	12	18	181	77	167	167	5.50	T1（M5）
6-FM-18BT	MS18-12	12	18	181	77	167	167	5.50	B1（M5）
6-FM-20B	MS20-12	12	20	181	77	167	167	5.70	T1（M5）
6-FM-20BT	MS20-12	12	20	181	77	167	167	5.70	B1（M5）

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量(20HR) Capacity	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
6-FM-22B	MS22-12	12	21	181	77	167	167	6.20	T1（M5）
6-FM-22BT	MS22-12	12	21	181	77	167	167	6.20	B1（M5）
6-FM-22	MS22-12	12	20	181	77	167	167	6.60	T1（M5）
6-FM-22T	MS22-12	12	20	181	77	167	167	6.60	B1（M5）
6-FM-17D	MS17-12	12	17	181	77	167	167	5.10	T1（M5）
6-FM-17DT	MS17-12	12	17	181	77	167	167	5.10	B1（M5）
6-GFM-24立式-2-Q	MS18-12	12	18	165	126	174	174	6.50	T3（M5）
6-GFM-24立式-2-T	MS18-12	12	18	165	126	174	174	6.50	B2（M6）
6-GFM-24立式-1-Q	MS26-12	12	26	165	126	174	174	8.00	T3（M5）
6-GFM-24立式-1-T	MS26-12	12	26	165	126	174	174	8.00	B2（M6）
6-GFM-28立式-1-Q	MS28-12	12	28	165	126	174	174	8.30	T3（M5）
6-GFM-28立式-1-T	MS28-12	12	28	165	126	174	174	8.30	B2（M6）
6-GFM-24卧式-5-Q	MS13-12	12	13	175	166	125	125	5.70	T3（M5）
6-GFM-24卧式-5-T	MS13-12	12	13	175	166	125	125	5.70	B2（M6）
6-GFM-24卧式-4-Q	MS16-12	12	16	175	166	125	125	5.95	T3（M5）
6-GFM-24卧式-4-T	MS16-12	12	16	175	166	125	125	5.95	B2（M6）
6-GFM-24卧式-3-Q	MS18-12	12	18	175	166	125	125	6.40	T3（M5）
6-GFM-24卧式-3-T	MS18-12	12	18	175	166	125	125	6.40	B2（M6）
6-GFM-24卧式-2-Q	MS24-12	12	22	175	166	125	125	7.15	T3（M5）
6-GFM-24卧式-2-T	MS24-12	12	22	175	166	125	125	7.15	B2（M6）
6-GFM-24卧式-1-Q	MS26-12	12	26	175	166	125	125	7.25	T3（M5）
6-GFM-24卧式-1-T	MS26-12	12	26	175	166	125	125	7.25	B2（M6）
6-GFM-26卧式-1-Q	MS26-12	12	26	175	166	125	125	7.60	T3（M5）
6-GFM-26卧式-1-T	MS26-12	12	26	175	166	125	125	7.60	B2（M6）
6-GFM-28卧式-1-Q	MS28-12	12	28	175	166	125	125	7.90	T3（M5）
6-GFM-28卧式-1-T	MS28-12	12	28	175	166	125	125	7.90	B2（M6）
6-GFM-30卧式-1A-Q	MS30-12	12	30	175	166	125	125	8.20	T3（M5）
6-GFM-30卧式-1A-T	MS30-12	12	30	175	166	125	125	8.20	B2（M6）

MEDIUM VRLA BATTERY

中型阀控式铅酸电池

The Medium VRLA battery are sealed and designed for high safety and stability, widely used in scenarios requiring reliable backup power. Their primary applications include backup power systems for telecommunications rooms and data centers, uninterruptible power supply (UPS) systems, renewable energy systems (such as solar and wind power), signal and control systems in railways and rail transport, backup power for medical equipment, industrial control and automation systems, power support for marine and offshore platforms, and emergency power systems for government, military, and municipal infrastructure. With their long service life and low maintenance requirements, medium VRLA batteries provide stable power support for these critical areas.

中型阀控式铅酸电池是一种密封设计的电池，具备高安全性和稳定性，广泛应用于需要可靠备用电源的场景。其主要应用包括电信机房和数据中心的备用电源系统、不间断电源（UPS）系统、再生能源系统（如太阳能和风能）、铁路和轨道交通的信号及控制系统、医疗设备的备用电源、工业控制与自动化系统、海洋与石油平台的电力支持，以及政府、军用和市政基础设施的应急电力系统。中型VRLA电池以其长寿命和低维护需求，为这些关键领域提供稳定的电力保障。

APPLICATION FIELDS
应用领域

数据中心和大型机房 | Data centers and large server rooms

铁路和交通信号系统 | Railway and Traffic Signal Systems

医疗设备 | Medical Equipment

再生能源系统 | Renewable Energy Systems

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MM SERIES | Medium VRLA Battery

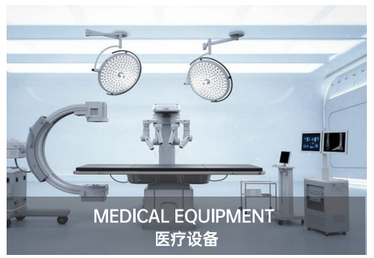
中型阀控式铅酸电池系列

The MM Series is our backup power product range with a 20-hour rate capacity between 30-250Ah. It features a high-tin Pb-Ca-Sn-Al alloy and a lead paste formula with 4BS crystal seeds, combined with a special curing process, providing the battery with an exceptionally long service life and minimal self-discharge. Precision capacity and voltage testing ensure the battery's performance, making it ideal for both centralized large-scale data centers and distributed small base stations. Its fully sealed, maintenance-free design requires no upkeep during use.

中型阀控式铅酸电池（MM）系列为我公司电池20小时率容量在30-250Ah之间的备用电源系列产品，高锡含量的 Pb-Ca-Sn-Al四元合金以及添加4BS晶种的铅膏配方搭配特殊的固化工艺，使电池具备超长的使用 寿命以及极小的自放电。精密的电池容量检验与电压检验配组，不论是在集中式大型机房还是分散式小型基站均能完美胜任。全密封免维护的结构设计，使用过程中无需任何维护与保养。

PRODUCT APPEARANCE 产品外观

USAGE SCENARIOS 使用场景



PRODUCT FEATURE 产品特点

- High-Tin Pb-Ca-Sn-Al Tetravalent Alloy Grid — 高锡含量的 Pb-Ca-Sn-Al四元合金板栅
- Lead Paste with 4BS Crystal Seeds — 添加4BS晶种的铅膏
- Special Curing Process — 特殊的固化工艺

- Ampere-Hour: 30Ah - 250Ah
- Voltage: 12 Volts

ISO IEC TLC RoHS CE

MM SERIES

Medium VRLA Battery 中型阀控铅酸电池系列

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量(20HR) Capacity	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
6-GFM-30-1-T	MM30-12	12	31	194	133	169	169	10.00	B2(M6)
6-GFM-33-1A-T	MM33-12	12	33	196	131	161	165	10.80	B3(M6)
6-GFM-33-1-T	MM33-12	12	33	196	131	161	165	10.80	B3(M6)
6-GFM-36-1-T	MM36-12	12	33	194	133	169	169	11.50	B2(M6)
6-GFM-38-6-T	MM34-12	12	26	196	165	170	170	9.50	B4(M6)
6-GFM-38-5-T	MM34-12	12	29	196	165	170	170	10.00	B4(M6)
6-GFM-38-4-T	MM34-12	12	34	196	165	170	170	11.30	B4(M6)
6-GFM-38-3-T	MM38-12	12	37	196	165	170	170	11.80	B4(M6)
6-GFM-38-2-T	MM38-12	12	37.5	196	165	170	170	12.00	B4(M6)
6-GFM-38-1-T	MML38-12	12	38	196	165	170	170	12.80	B4(M6)
6-GFM-40-1-T	MM40-12	12	40	196	165	170	170	13.20	B4(M6)
6-GFM-42-1-T	MM42-12	12	42	196	165	170	170	13.40	B4(M6)
6-GFM-48-1-T	MM48-12	12	43	196	165	170	170	14.00	B4(M6)
6-GFM-55-2-T	MM50-12	12	50	230	137	210	215	16.10	B4(M6)
6-GFM-55-1A-T	MM55-12	12	55	230	137	210	215	17.50	B4(M6)
6-GFM-55-1-T	MM50-12	12	55	230	137	210	215	18.20	B4(M6)
6-GFM-65-6-T	MM41-12	12	40	350	167	174	174	16.00	B5(M8)
6-GFM-65-4-T	MM52-12	12	52	350	167	174	174	17.20	B5(M8)
6-GFM-65-2-T	MM60-12	12	60	350	167	174	174	19.00	B5(M8)
6-GFM-65-1B-T	MM65-12	12	65	350	167	174	174	20.00	B5(M8)
6-GFM-65-1A-T	MML65-12	12	65	350	167	174	174	21.00	B5(M8)
6-GFM-75-6-T	MM50-12	12	50	260	169	213	216	18.00	B4(M8)
6-GFM-75-5-T	MM55-12	12	50	260	169	213	216	18.60	B4(M6)
6-GFM-75-4-T	MM60-12	12	60	260	169	213	216	19.00	B4(M6)
6-GFM-75-3-T	MM65-12	12	65	260	169	213	216	20.00	B4(M6)
6-GFM-75-2-T	MM70-12	12	70	260	169	213	216	20.60	B4(M6)
6-GFM-75-1A-T	MM75-12	12	75	260	169	213	216	21.50	B4(M6)
6-GFM-75-1-T	MM80-12	12	80	260	169	213	216	22.50	B4(M6)
6-GFM-75-1-Q	MM80-12	12	80	260	168	223	227	22.50	T9
6-GFM-90-2-T	MM90-12	12	90	306	167	210	213	26.50	B4(M6)
6-GFM-90-1A-T	MM100-12	12	95	306	167	210	213	27.50	B4(M6)
6-GFM-90-1-T	MM100-12	12	95	306	167	210	213	28.30	B4(M6)
6-GFM-100-7-T	MM50-12	12	50	332	173	218	223	21.00	B5(M8)
6-GFM-100-6-T	MM65-12	12	65	332	173	218	223	23.50	B5(M8)
6-GFM-100-5-T	MM70-12	12	70	332	173	218	223	24.00	B5(M8)
6-GFM-100-4-T	MM80-12	12	80	332	173	218	223	25.50	B5(M8)
6-GFM-100-3-T	MM85-12	12	85	332	173	218	223	26.50	B5(M8)
6-GFM-100-2C-T	MM90-12	12	90	332	173	218	223	27.50	B5(M8)

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量(20HR) Capacity	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
6-GFM-100-1D-T	MM100-12	12	100	332	173	218	223	28.00	B5(M8)
6-GFM-100-1C-T	MM100-12	12	100	332	173	218	223	29.00	B5(M8)
6-GFM-100-1B-T	MM100-12	12	100	332	173	218	223	29.50	B5(M8)
6-GFM-100-1A-T	MM100-12	12	105	332	173	218	223	30.80	B5(M8)
6-GFM-100-1-T	MML100-12	12	105	332	173	218	223	31.00	B5(M8)
6-GFM-100-2-T	MM100-12	12	105	332	173	218	223	32.50	B5(M8)
6-GFM-120-6-T	MM75-12	12	72	406	173	207	236	26.50	B5(M8)
6-GFM-120-5-T	MM80-12	12	80	406	173	207	236	27.00	B5(M8)
6-GFM-120-4-T	MM90-12	12	82	406	173	207	236	28.50	B5(M8)
6-GFM-120-3-T	MM100-12	12	100	406	173	207	236	31.00	B5(M8)
6-GFM-120-2-T	MM100-12	12	108	406	173	207	236	32.00	B5(M8)
6-GFM-120-1B-T	MM110-12	12	110	406	173	207	236	32.80	B5(M8)
6-GFM-120-1A-T	MM120-12	12	120	406	173	207	236	34.50	B5(M8)
6-GFM-120-1-T	MML120-12	12	120	406	173	207	236	35.50	B5(M8)
6-GFM-150-6-T	MM75-12	12	80	486	171	240	240	30.50	B5(M8)
6-GFM-150-5-T	MM75-12	12	85	486	171	240	240	33.00	B4.5(M8)
6-GFM-150-4-T	MM115-12	12	115	486	171	240	240	36.50	B5(M8)
6-GFM-150-3-T	MM130-12	12	130	486	171	240	240	39.00	B5(M8)
6-GFM-150-2-T	MM140-12	12	140	486	171	240	240	40.00	B5(M8)
6-GFM-150-1B-T	MM150-12	12	150	486	171	240	240	43.00	B5(M8)
6-GFM-150-1A-T	MM150-12	12	145	486	171	240	240	45.50	B5(M8)
6-GFM-150-1-T	MML150-12	12	152	486	171	240	240	47.00	B5(M8)
6-GFM-150H-2-T	MM135-12	12	135	341	172	283	286	41.00	B5(M8)
6-GFM-150H-1-T	MM150-12	12	135	341	172	283	286	44.50	B5(M8)
6-GFM-200-4-T	MM200-12	12	150	523	240	219	223	45.00	B5(M8)
6-GFM-200-3-T	MM200-12	12	150	523	240	219	223	51.00	B5(M8)
6-GFM-200-2-T	MM200-12	12	180	523	240	219	223	53.00	B5(M8)
6-GFM-200-1C-T	MM200-12	12	190	523	240	219	223	55.50	B5(M8)
6-GFM-200-1BA-T	MM200-12	12	200	523	240	219	223	56.80	B5(M8)
6-GFM-200-1B-T	MM200-12	12	200	523	240	219	223	58.00	B5(M8)
6-GFM-200-1A-T	MM200-12	12	200	523	240	219	223	60.00	B5(M8)
6-GFM-200-1-T	MML200-12	12	200	523	240	219	223	62.00	B5(M8)
6-GFM-230-3-T	MM230-12	12	210	521	269	203	206	62.00	B5(M8)
6-GFM-230-2-T	MM230-12	12	220	521	269	203	206	63.00	B5(M8)
6-GFM-230-1-T	MM230-12	12	230	521	269	203	206	64.00	B5(M8)
6-GFM-250-2-T	MM240-12	12	240	520	269	220	225	67.00	B4.5(M8)
6-GFM-250-1-T	MM250-12	12	250	520	269	220	225	69.00	B4.5(M8)

APPLICATION FIELDS
应用领域

机房机柜 | Renewable Energy Systems

医疗设备 | Medical Equipment

工业控制与自动化 | Industrial Control and Automation

电信与数据中心 | Telecommunications and Data Centers

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STATIONARY VRLA BATTERY

固定阀控铅酸电池

Stationary VRLA battery are typically used in scenarios requiring long-term stable power, such as telecommunications base stations, uninterruptible power supply (UPS) systems, and renewable energy storage systems. They are characterized by large capacity and long service life, usually installed in a fixed position to provide backup power and ensure that critical systems continue to operate during power outages. These batteries are often mounted vertically and offer high energy density.

固定阀控铅酸电池通常用于需要长时间稳定电力的场合，如通信基站、不间断电源系统（UPS）、再生能源储能系统等。它们的设计特点是较大的容量和较长的使用寿命，通常安装在一个固定位置，主要用于提供备用电源，以确保关键系统在停电时仍能正常运行。这种电池多用于垂直安装，并且有较高的能量密度。

FRONT TERMINAL VRLA BATTERY

前置端子阀控铅酸电池

Front terminal VRLA battery are designed with terminals located at the front, making them easier to install and maintain, especially in space-constrained environments such as server rooms, data centers, and telecommunications racks. Their design allows for quick connection and replacement, making them ideal for high-density installations. These batteries are typically smaller in size but provide efficient power supply in compact spaces.

前端子阀控铅酸电池的主要设计特点是电池的端子位于前部，便于安装和维护，特别适用于空间受限的场合，如机房机柜、数据中心、电信设备机架等。由于它们的设计便于快速连接和更换，所以非常适合高密度安装的应用场景。前端子电池通常体积较小，但在紧凑的空间内提供高效的电力供应。

ML SERIES | Stationary VRLA Battery

The ML series is our 2V product range with a 20-hour rate capacity between 50-3000Ah. It features a curved grid structure, a high-tin Pb-Ca-Sn-Al alloy, and a lead paste formula with 4BS crystal seeds, combined with a special high-temperature, high-humidity curing process and a unique electrolyte formula. This provides the battery with high capacity and a design life of over 15 years in float charge. Precision manufacturing processes and stringent quality control ensure excellent consistency.

固定阀控铅酸电池系列

固定阀控铅酸电池（ML）系列为我公司电池20小时率容量在50-3000Ah之间的2V系列产品，曲面板栅结构设计，高锡含量的Pb-Ca-Sn-Al四元合金以及添加4BS晶种的铅膏配方搭配特殊的高温高湿固化工艺，独特的电解液配方，使电池具备大容量与超过15年的的设计浮充使用寿命。精密的的制造工艺以及严苛的质量控制，使电池具备极佳的一致性。

PRODUCT APPEARANCE 产品外观

PRODUCT MODEL 产品型号

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量(20HR) Capacity	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
GFM-50T	ML50-2	2	50	161	50	166	175	3.10	B5(M8)
GFM-100	M100-2	2	100	170	72	205	228	5.90	T18(M8)
GFM-150	ML150-2	2	150	172	102	208	223	8.50	T18(M8)
GFM-200B	ML200-2	2	200	172	110	334	365	12.80	B6(M10)
GFM-250	ML250-2	2	250	171	151	340	365	16.50	B6(M10)
GFM-300B	ML300-2	2	300	171	151	340	365	18.00	B6(M10)
GFM-350A	ML350-2	2	350	171	151	340	365	19.50	B6(M10)
GFM-400B	ML400-2	2	400	210	175	334	365	24.50	B6(M10)
GFM-450A	ML450-2	2	450	240	173	338	365	27.50	B6(M10)
GFM-500B	ML500-2	2	500	240	173	338	365	29.00	B6(M10)
GFM-500C	ML500A-2	2	500	240	173	338	365	30.50	B6(M10)
GFM-600B	ML600-2	2	600	300	175	335	365	36.00	B6(M10)
GFM-800B	ML800-2	2	800	410	175	331	365	51.00	B6(M10)
GFM-1000B	ML1000-2	2	1000	474	173	329	366	61.50	B6(M10)
GFM-1500A	ML1500-2	2	1500	398	350	341	383	97.00	B6(M10)
GFM-2000B	ML2000-2	2	2000	490	350	342	381	123.00	B6(M10)
GFM-2500A	ML2500-2	2	2500	712	353	341	382	171.00	B6(M10)
GFM-3000A	ML3000-2	2	3000	712	353	341	382	180.00	B6(M10)

PRODUCT FEATURE 产品特点

High-Tin Pb-Ca-Sn-Al Tetravalent Alloy Grid
高锡含量的 Pb-Ca-Sn-Al四元合金板栅

Lead Paste with 4BS Crystal Seeds
添加4BS晶种的铅膏

15 Years + Float Lifetime
15年+的浮充使用寿命

Ampere-Hour: 50Ah - 3000Ah

Voltage: 2 Volts

MR SERIES Front Terminal VRLA Battery

The MR series is our elongated battery product range with a 20-hour rate capacity between 50-180Ah. It uses high-strength ABS as the casing material and features an elongated design that provides better cooling space and resistance to degradation. The centralized venting structure minimizes installation space. With a float charge design life of over 12 years, it offers relatively low operating costs.

前置端子阀控铅酸电池系列

前置端子阀控铅酸电池（MR）系列为我公司20小时率容量在50-180Ah之间的狭长型电池产品，采用高强度的ABS作为外壳 材料以及狭长型的结构设计使电池具备更好的散热空间与抗劣变性，集中式的排气结构使安装占用空间非　常小。超过12年的浮充设计使用寿命能带来相对较低的使用成本。

PRODUCT APPEARANCE 产品外观

PRODUCT MODEL 产品型号

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量(20HR) Capacity	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
6-FT-50	MR50-12	12	50	291	106	223	230	17.00	B3(M6)
6-FT-75	MR75-12	12	72	562	116	187	194	24.50	B4(M6)
6-FT-75C	MR75-12	12	75	562	116	187	194	25.50	B4(M6)
6-FT-100	MR100-12	12	100	395	110	286	286	30.00	B4(M6)
6-FT-100B	MR100-12	12	100	395	110	286	286	33.00	B4(M6)
6-FT-100A	MR100-12	12	100	507	110	223	231	34.00	B4(M6)
6-FT-105	MR105-12	12	105	507	110	223	231	31.50	B4(M6)
6-FT-110	MR110-12	12	110	395	110	286	286	33.00	B4(M6)
6-FT-125	MR125-12	12	125	550	105	315	315	43.00	B4(M6)
6-FT-155	MR155-12	12	155	551	110	288	288	48.50	B4(M6)
6-FT-170	MR170-12	12	170	545	125	316	323	52.00	φ19-M8
6-FT-180	MR180-12	12	180	545	125	316	323	57.20	φ19-M8

PRODUCT FEATURE 产品特点

- High Strength ABS Material 高强度的ABS 材质
- Centralized Exhaust Structure Dissipates Heat Quickly 集中式的排气结构迅速散热
- Narrow Structure For Efficient use of Space 狭长结构，高效利用空间

Ampere-Hour: 50Ah - 180Ah

Voltage: 12 Volts

ISO IEC TLC RoHS CE

APPLICATION FIELDS
应用领域

政府、军用及市政基础设施 | Government, Military, and Municipal Infrastructure

铁路信号系统 | Railways and Rail Transport

电信与数据中心 | Telecommunications and Data Centers

医疗设备 | Medical Equipment

再生能源系统 | Renewable Energy Systems

工业控制与自动化 | Industrial Control and Automation

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HIGH-RATE VRLA BATTERY
高倍率阀控铅酸电池

Ultra High-Rate VRLA battery are specifically designed for applications that require high power output in a short period of time. These batteries are commonly used in situations like engine starting, emergency power supplies, and devices that need instant large current, such as generator starting systems, UPS emergency power, and high-power electric tools. The key features of ultra high-rate VRLA battery include the ability to deliver high power output in a short time, good cycle life, and strong resistance to over-discharge.

高倍率阀控铅酸电池是专门设计用于需要短时间内提供高功率输出的应用场合。这类电池通常用于启动、紧急电源和需要瞬间大电流的设备，如发电机启动系统、UPS应急电源、大功率电动工具等。超高倍率阀控铅酸电池的特点是能够在短时间内提供高功率输出，并且具备良好的循环寿命和较强的抗过放电能力。

GEL | DEEP CYCLE GEL DEEP CYCLE VRLA BATTERY
胶体|深循环|深循环胶体电池

GEL VRLA battery and Deep cycle VRLA battery and Deep cycle gel VRLA battery are both designed for frequent charge-discharge cycles, making them suitable for applications requiring long-term stable power supply, such as solar energy storage systems, electric vehicles, and uninterruptible power supplies (UPS). Deep cycle VRLA battery maintain a long service life even after deep discharges, while deep cycle gel VRLA battery use gel electrolytes to offer better high-temperature performance, vibration resistance, and maintenance-free operation, making them suitable for more demanding environmental conditions.

胶体电池和深循环电池和深循环胶体电池都是专为应对频繁充放电设计的电池，适用于需要长期稳定电力供应的应用，如太阳能储能系统、电动汽车和不间断电源系统（UPS）。深循环电池能够在深度放电后维持较长的使用寿命，而深循环胶体电池则通过胶体电解质提供更好的高温性能、抗震动能力，并且免维护，适合更为苛刻的环境条件。

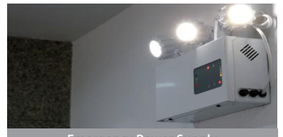
HR SERIES High-Rate VRLA Battery
高倍率阀控铅酸电池系列

MHB HR Series high-rate sealed maintenance-free lead-acid battery uses high-purity electrolytic lead to ensure excellent charge-discharge performance and low self-discharge, making it ideal for long-term storage. With advanced structural design, it delivers outstanding high-rate discharge performance. The fully sealed, maintenance-free design requires no electrolyte refilling during use.

闽华 HR 系列高倍率密封免维护铅酸电池，采用高纯度电解铅，具备优异充放电性能和低自放电率，适合长期储存使用。结构设计先进，高倍率放电表现出色。全密封免维护，使用中无需补液。

PRODUCT APPEARANCE
产品外观


UPS
不间断电源系统


Emergency Power Supply
应急电源系统


Data and Network Centers
数据与网络中心


Industrial Controls
工业控制系统

PRODUCT FEATURES 产品特性

- 6-12 years design life(25°C)
  设计寿命6至12年（25° C）
- Advanced AGM technology for superior high-rate power
  先进的AGM技术，提供卓越的高倍率放电能力
- Excellent high current performance-optimised for short discharge time
  出色的大电流性能——针对短时间放电进行了优化
- Epoxy-sealed posts eliminate leaks
  环氧密封的极柱可防止泄漏
- Optimal energy density - saves floor space
  优化的能量密度——节省占地空间
- Long Life Alloy - minimizing grid growth，reducing gassing, and extending battery life
  长寿命合金——最小化极板膨胀，减少析气，延长电池寿命

电池型号 Model	标称电压 Volts	标准容量 Capacity (10HR)	实际功率 Nominal Rate (1.67V/25℃)	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
HR1224W	12	6.6	24W/cell/15Min	151	65	94	100	2.14	F1/F2
HR1224W	12	5.3	24W/cell/15Min	90	70	101	107	1.89	F1/F2
HR1226W	12	6.6	26W/cell/15Min	151	65	94	100	2.18	F1/F2
HR1226W	12	6.5	26W/cell/15Min	151	65	94	100	2.09	F1/F2
HR1228W	12	7.0	28W/cell/15Min	151	65	94	100	2.25	F1/F2
HR1230W	12	7	30W/cell/15Min	151	65	94	100	2.39	F1/F2
HR1232W	12	7.5	32W/cell/15Min	151	65	94	100	2.32	F1/F2
HR1234W	12	7.5	34W/cell/15Min	151	65	94	100	2.36	F1/F2
HR1235W	12	7.8	35W/cell/15Min	151	65	94	100	2.51	F1/F2
HR1236W	12	8.5	36W/cell/15Min	151	65	94	100	2.47	F1/F2
HR1236W	12	7.5	36W/cell/15Min	151	65	94	100	2.71	F2
HR1242W	12	8.5	42W/cell/15Min	151	65	95	101	2.84	F1/F2
HR1255W	12	13	55W/cell/15Min	151	98	95	101	3.79	F1/F2
HR1285W	12	18.6	85W/cell/15Min	181	77	167	167	6.1	B2(M5)
HR12120W	12	38	120W/cell/15Min	197	165	170	170	11.7	B4
HR12160W	12	45	160W/cell/15Min	197	165	170	170	14.3	B4
HR12185W	12	55	185W/cell/15Min	229	138	205	211	16.3	B4
HR12215W	12	65	215W/cell/15Min	348	167	178	178	19.3	B4
HR12255W	12	70	255W/cell/15Min	348	167	178	178	21.5	B4
HR12300W	12	75	300W/cell/15Min	256	173	213	216	23.8	B5
HR12330W	12	80	330W/cell/15Min	293	173	213	216	26.8	B5
HR12350W	12	85	350W/cell/15Min	293	173	213	216	27.5	B5
HR12360W	12	100	360W/cell/15Min	330	173	213	216	30.1	B5
HR12370W	12	100	370W/cell/15Min	330	173	212	220	30.8	B5
HR12400W	12	100	400W/cell/15Min	330	173	213	216	31.3	B5
HR12430W	12	100	430W/cell/15Min	330	173	213	216	32.1	B5
HR12460W	12	120	460W/cell/15Min	408	177	225	225	37.6	B5
HR12480W	12	115	480W/cell/15Min	379	174	214	217	40.6	B5
HR12510W	12	140	510W/cell/15Min	483	170	238	239	43.7	B5
HR12560W	12	145	560W/cell/15Min	483	170	238	239	46.6	B5
HR12605W	12	170	605W/cell/15Min	532	207	214	220	55.0	B5
HR12650W	12	170	650W/cell/16Min	532	207	214	220	55.6	B5
HR12700W	12	180	700W/cell/15Min	532	207	214	220	57.6	B5
HR12705W	12	190	705W/cell/15Min	532	207	214	220	59.1	B5
HR12750W	12	185	750W/cell/15Min	532	207	214	220	59.6	B5
HR12800W	12	210	800W/cell/15Min	522	240	218	224	67.2	B5
HR12820W	12	215	820W/cell/15Min	522	240	218	224	69.2	B5
HR12845W	12	225	845W/cell/15Min	496	259	227	233	74.6	B5
HR12890W	12	235	890W/cell/15Min	496	259	227	233	77.2	B5
HR12950W	12	230	950W/cell/15Min	521	268	220	226	77.6	B5
HR121000W	12	250	1000W/cell/15Min	521	268	220	226	79.6	B5
HR12390FT	12	95	390W/cell/15Min	508	110	235	235	34.1	B4(M8)
HR12550FT	12	140	550W/cell/15Min	551	110	288	288	48	B4(M8)
HR12600FT	12	150	600W/cell/15Min	550	125	281	281	51.6	B5
HR12700FT	12	180	700W/cell/15Min	560	125	318	318	60.1	B5
HR12750FT	12	190	750W/cell/15Min	560	125	318	318	64.2	B5
HR12800FT	12	210	800W/cell/15Min	541	154	322	322	75.6	B6
HR12900FT	12	225	900W/cell/15Min	541	154	322	322	80.2	B6
HR121000FT	12	240	1000W/cell/15Min	541	154	322	322	84.6	B6
HR500W	2	170	500W/cell/15Min	85	172	353	364	10.6	B5
HR750W	2	250	750W/cell/15Min	102	176	338	349	13.9	B5
HR1000W	2	340	1000W/cell/15Min	145	176	338	349	19.1	B5
HR1200W	2	410	1200W/cell/15Min	185	176	338	349	23.2	B6
HR1500W	2	510	1500W/cell/15Min	225	176	338	349	29.1	B6
HR2000W	2	680	2000W/cell/15Min	266	176	338	349	36.6	B6

GEL VRLA BATTERY SERIES

The Gel Valve-Regulated Lead-Acid (VRLA) Battery series is a range of gel-based products with capacities between 18-250Ah, specifically designed for critical data center applications. By leveraging the advantages of gel technology, it provides reliable backup power. The gel electrolyte enhances durability, allows deep discharges, and offers superior thermal stability, making it an ideal choice for harsh environments. Tailored for uninterruptible power supply (UPS) systems, it ensures seamless power transmission and protects critical equipment from power outages.

PRODUCT APPEARANCE 产品外观

PRODUCT FEATURE 产品特点

Germany imported colloidal agent

德国进口胶体剂

Normal operation at -35℃

零下35℃正常工作

Curved grids for excellent performance in both discharging and charging

深度放电情况下具备良好的充电回复性能

Ampere-Hour: 18Ah - 250Ah

Voltage: 12 Volts

胶体阀控铅酸电池系列

胶体阀控铅酸电池系列为公司容量在18-250Ah之间的胶体系列产品，专为关键任务数据中心应用而设计，利用胶体技术的优势提供可靠的备用电源。其胶体电解质可提高耐用性、允许深度放电并提供卓越的热稳定性，使其成为恶劣环境的理想选择。它是为不间断电源系统量身定制的，可确保无缝电力传输并保护关键设备免受断电影响。

Product Model 产品型号

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量(10HR) Capacity	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
6-FM-18	MSG18-12	12	18	181	77	167	167	5.30	T1（M5)
6-FM-18T	MSG18-12	12	18	181	77	167	167	5.30	B1（M5)
6-GFM-40-1-T	MMG40-12	12	40	196	165	170	170	13.20	B4(M6)
6-GFM-75-3-T	MMG65-12	12	65	260	169	213	216	20.00	B4(M6)
6-GFM-75-1A-T	MMG75-12	12	75	260	169	213	216	21.50	B4(M6)
6-GFM-75-1-T	MMG80-12	12	80	260	169	213	216	22.50	B4(M6)
6-GFM-100-1D-T	MMG100-12	12	100	332	173	218	223	28.00	B5(M8)
6-GFM-100-1C-T	MMG100-12	12	100	332	173	218	223	29.00	B5(M8)
6-GFM-100-1B-T	MMG100-12	12	100	332	173	218	223	29.50	B5(M8)
6-GFM-100-1A-T	MMG100-12	12	105	332	173	218	223	30.80	B5(M8)
6-GFM-100-1-T	MMG100-12	12	105	332	173	218	223	31.00	B5(M8)
6-GFM-120-1A-T	MMG120-12	12	120	406	173	207	236	34.50	B5(M8)
6-GFM-150-1B-T	MMG150-12	12	150	486	171	240	240	43.00	B5(M8)
6-GFM-150-1A-T	MMG150-12	12	145	486	171	240	240	45.50	B5(M8)
6-GFM-150-1-T	MMG150-12	12	152	486	171	240	240	47.00	B5(M8)
6-GFM-200-1B-T	MMG200-12	12	200	523	240	219	223	58.00	B5(M8)
6-GFM-200-1A-T	MMG200-12	12	200	523	240	219	223	60.00	B5(M8)
6-GFM-200-1-T	MMG200-12	12	200	523	240	219	223	62.00	B5(M8)
6-GFM-230-1-T	MMG230-12	12	230	521	269	203	206	64.00	B5(M8)
6-GFM-250-1-T	MMG250-12	12	250	520	269	220	225	69.00	B4.5(M8)

DEEP CYCLE VRLA BATTERY

The Deep Cycle Valve-Regulated Lead-Acid (VRLA) Battery series is a range of deep cycle products with capacities between 5-250Ah. With the use of premium raw materials and sophisticated design, these batteries exhibit excellent charging recovery performance even in deep discharge applications, while also offering an exceptionally long cycle life. The curved plate grid design increases the contact area of the plates during both charging and discharging, enhancing the battery’ s charge acceptance and making recharging easier. With excellent consistency in open-circuit voltage and capacity, the batteries ensure a long service life for the entire battery group, even when used in parallel configurations.

PRODUCT APPEARANCE 产品外观

深循环阀控铅酸电池系列

深循环阀控铅酸电池系列为公司容量在5-250Ah之间的深循环系列产品，极优的原材料与精湛的设计，使电池具备在深度放电的应用环境下还能够具备良好的充电回复性能，同时具备超长的循环使用寿命。曲面板栅设计使极板在充电及放电时接触面积大而具备良好的充电接受性能使回充电更容易。一致性极佳的开路电压与容量，使电池即使在配组使用时也能够保证良好的电池群体寿命。

Product Model 产品型号

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量(10HR) Capacity	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
6-FM-5	MSD5-12	12	5	90	70	101	105	1.60	F1/F2
6-FM-5I	MSD5-12	12	5	90	70	101	105	1.66	F1/F2
6-GFM-40-1-T	MMD40-12	12	40	196	165	170	170	13.20	B4(M6)
6-GFM-75-3-T	MMD65-12	12	65	260	169	213	216	20.00	B4(M6)
6-GFM-75-1A-T	MMD75-12	12	75	260	169	213	216	21.50	B4(M6)
6-GFM-75-1-T	MMD80-12	12	80	260	169	213	216	22.50	B4(M6)
6-GFM-100-1D-T	MMD100-12	12	100	332	173	218	223	28.00	B5(M8)
6-GFM-100-1C-T	MMD100-12	12	100	332	173	218	223	29.00	B5(M8)
6-GFM-100-1B-T	MMD100-12	12	100	332	173	218	223	29.50	B5(M8)
6-GFM-100-1A-T	MMD100-12	12	105	332	173	218	223	30.80	B5(M8)
6-GFM-100-1-T	MMD100-12	12	105	332	173	218	223	31.00	B5(M8)
6-GFM-120-1A-T	MMD120-12	12	120	406	173	207	236	34.50	B5(M8)
6-GFM-150-1B-T	MMD150-12	12	150	486	171	240	240	43.00	B5(M8)
6-GFM-150-1A-T	MMD150-12	12	145	486	171	240	240	45.50	B5(M8)
6-GFM-150-1-T	MMD150-12	12	152	486	171	240	240	47.00	B5(M8)
6-GFM-200-1B-T	MMD200-12	12	200	523	240	219	223	58.00	B5(M8)
6-GFM-200-1A-T	MMD200-12	12	200	523	240	219	223	60.00	B5(M8)
6-GFM-200-1-T	MMD200-12	12	200	523	240	219	223	62.00	B5(M8)
6-GFM-230-1-T	MMD230-12	12	230	521	269	203	206	64.00	B5(M8)
6-GFM-250-1-T	MMD250-12	12	250	520	269	220	225	69.00	B4.5(M8)

PRODUCT FEATURE 产品特点

Curved grids for excellent performance in both discharging and charging
深度放电情况下具备良好的充电回复性能

The curved grid design increases contact area and enhances charge acceptance
曲面板栅设计增大接触面积，提高充电接受性能

Batteries exhibit excellent consistency, ensuring longevity even when used in groups
电池一致性佳，组配使用也能确保寿命

Ampere-Hour: 5Ah - 250Ah

Voltage: 12 Volts

DEEP CYCLE GEL VRLA BATTERY

深循环胶体阀控铅酸电池系列

The Deep Cycle Gel Valve-Regulated Lead-Acid (VRLA) Battery series offers deep cycle gel products with capacities between 18-250Ah. These batteries use a specially imported gel electrolyte from Germany. In addition to excellent deep discharge and charging performance, they also exhibit superior low-temperature performance. Even in environments as cold as -35°C, the batteries remain fully operational. The unique grid structure design facilitates easier charging, ensuring the battery can charge normally even in conditions with insufficient sunlight or low solar panel efficiency.

深循环胶体阀控铅酸电池系列公司容量在18-250Ah之间的深循环胶体系列产品。采用德国进口的专用胶体剂。该电池除具有良好的深放电充电性能外，还具有良好的低温性能。即使在零下 35 °C 的环境下，蓄电池也能正常使用。特殊的栅格结构设计使蓄电池充电更容易，即使光照不足，太阳能电池板工作效率低，也能正常充电。

PRODUCT APPEARANCE 产品外观

Product Model 产品型号

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量(10HR) Capacity	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
6-FM-18	MSDG18-12	12	18	181	77	167	167	5.30	T1（M5)
6-FM-18T	MSDG18-12	12	18	181	77	167	167	5.30	B1（M5)
6-GFM-40-1-T	MMDG40-12	12	40	196	165	170	170	13.20	B4(M6)
6-GFM-75-3-T	MMDG65-12	12	65	260	169	213	216	20.00	B4(M6)
6-GFM-75-1A-T	MMDG75-12	12	75	260	169	213	216	21.50	B4(M6)
6-GFM-75-1-T	MMDG80-12	12	80	260	169	213	216	22.50	B4(M6)
6-GFM-100-1D-T	MMDG100-12	12	100	332	173	218	223	28.00	B5(M8)
6-GFM-100-1C-T	MMDG100-12	12	100	332	173	218	223	29.00	B5(M8)
6-GFM-100-1B-T	MMDG100-12	12	100	332	173	218	223	29.50	B5(M8)
6-GFM-100-1A-T	MMDG100-12	12	105	332	173	218	223	30.80	B5(M8)
6-GFM-100-1-T	MMDG100-12	12	105	332	173	218	223	31.00	B5(M8)
6-GFM-120-1A-T	MMDG120-12	12	120	406	173	207	236	34.50	B5(M8)
6-GFM-150-1B-T	MMDG150-12	12	150	486	171	240	240	43.00	B5(M8)
6-GFM-150-1A-T	MMDG150-12	12	145	486	171	240	240	45.50	B5(M8)
6-GFM-150-1-T	MMDG150-12	12	152	486	171	240	240	47.00	B5(M8)
6-GFM-200-1B-T	MMDG200-12	12	200	523	240	219	223	58.00	B5(M8)
6-GFM-200-1A-T	MMDG200-12	12	200	523	240	219	223	60.00	B5(M8)
6-GFM-200-1-T	MMDG200-12	12	200	523	240	219	223	62.00	B5(M8)
6-GFM-230-1-T	MMDG230-12	12	230	521	269	203	206	64.00	B5(M8)
6-GFM-250-1-T	MMDG250-12	12	250	520	269	220	225	69.00	B4.5(M8)

PRODUCT FEATURE 产品特点

Germany imported colloidal agent

德国进口胶体剂

Normal operation at -35℃

零下35℃正常工作

The curved grid design increases contact area and enhances charge acceptance

曲面板栅设计增大接触面积，提高充电接受性能

Ampere-Hour: 18Ah - 250Ah

Voltage: 12 Volts

APPLICATION FIELDS
应用领域

Energy Reserve for Large Transport Systems | 大型交通工具能源储备

Railways and Rail Transport | 铁路信号系统

Telecommunications and Data Centers | 通讯与数据中心

Renewable Energy Systems | 再生能源系统

Industrial Control and Automation | 工业控制与自动化

OPZV | OPZS VRLA BATTERY

大型管式阀控铅酸电池

OPZV and OPZS, as industry-leading valve-regulated sealed lead-acid batteries, each shines in the field of energy storage with its unique advantages.

OPZV与OPZS.作为行业领先的阀控密封铅酸蓄电池，各自以其独特的优势在能源存储领域大放异彩。

产品特点 | PRODUCT FEATURE

进口PVC-SiO2隔板
Imported PVC-SiO2 separator

使用寿命超长
Extremely long service life

深度放电回充性能好
Good deep discharge recharge performance

OPZV batteries are renowned for their excellent deep cycle capabilities and ultra-long lifespan. They are designed specifically for applications requiring frequent charge and discharge cycles and high durability, such as solar energy storage systems and wind energy storage stations. These batteries ensure the continuity and stability of energy supply.

OPZS batteries, on the other hand, are known for their high energy density and outstanding performance. They can provide greater energy output within a limited space, making them an ideal choice for data centers, communication base stations, and critical facility backup power. Their stable voltage output and rapid response capability provide a solid support for the continuous operation of equipment.

OPZV电池 以其卓越的深循环能力和超长寿命而闻名，专为需要频繁充放电和高耐用性的应用设计，如太阳能储能系统、风能储能站等，确保能源供应的连续性和稳定性。

而OPZS电池，则以其高能量密度和出色的性能表现著称，能够在有限的空间内提供更大的能量输出，是数据中心、 通信基站及关键设施备用电源的理想选择。其稳定的电压输出和快速响应能力，为设备的持续运行提供了坚实的后盾。

OPZV | OPZS SERIES

大型管式系列

Ampere-Hour: 200Ah-3000Ah　　Voltage: 2 Volts

This series includes our large-scale energy storage batteries with capacities ranging from 200-3000Ah. The positive plate is a tubular plate, and the negative plate is a pasted plate. The batteries feature good deep discharge recovery performance and an exceptionally long service life. They use imported PVC-SiO2 separators to effectively prevent issues such as dendrite short circuits, thereby extending the battery's lifespan.

该系列为我公司为容量在200-3000Ah之间的大型储能电池产品，正极板为管式极板，负极板为涂膏式极板，电池具备深度放电回充性能好及使用寿命超长等特点。采用进口的PVC-SiO2隔板，有效抑制电池枝晶短路等问题点，增加了电池的使用寿命。

PRODUCT APPEARANCE 产品外观

PRODUCT MODEL 产品型号

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量(20HR) Capacity	电池尺寸 Dimension(MM)				电池重量 Weight(KG)	端子类型 Terminal
				长(L)	宽(W)	高(H)	总高(TH)		
OPzV 200	OPzV 200	2	200	103	206	355	390	18.2	B7(M8)
OPzV 250	OPzV 250	2	250	124	206	355	390	22.4	B7(M8)
OPzV 300	OPzV 300	2	300	145	206	355	390	26.4	B7(M8)
OPzV 350	OPzV 350	2	350	124	206	471	506	29	B7(M8)
OPzV 420	OPzV 420	2	420	145	206	471	506	34.5	B7(M8)
OPzV 490	OPzV 490	2	490	166	206	471	506	39	B7(M8)
OPzV 600	OPzV 600	2	600	145	206	646	681	48	B7(M8)
OPzV 800	OPzV 800	2	800	191	210	646	681	65	B7(M8)
OPzV 1000	OPzV 1000	2	1000	233	210	646	681	78.5	B7(M8)
OPzV 1200	OPzV 1200	2	1200	275	210	646	681	93	B7(M8)
OPzV 1500	OPzV 1500	2	1500	275	210	796	831	115	B7(M8)
OPzV 2000	OPzV 2000	2	2000	397	212	772	807	155	B7(M8)
OPzV 2500	OPzV 2500	2	2500	487	212	772	807	192	B7(M8)
OPzV 3000	OPzV 3000	2	3000	576	212	772	807	228	B7(M8)

工厂型号 Factory Model	电池型号 Model	标称电压 Volts	标准容量 (20HR) Capacity	电池尺寸 Dimension(MM)				重量±5%(Kg)			端子类型
				长(L)	宽(W)	高(H)	总高(TH)	干重	湿重	酸重	
OPzS 200	OPzS 200	2	200	103	206	355	410	12.9	17.4	4.5	B8(M10)
OPzS 250	OPzS 250	2	250	124	206	355	410	15.4	20.4	5	B8(M10)
OPzS 300	OPzS 300	2	300	145	206	355	410	17.8	23.8	6	B8(M10)
OPzS 350	OPzS 350	2	350	124	206	471	526	21.3	28.3	7	B8(M10)
OPzS 420	OPzS 420	2	420	145	206	471	526	24.5	32.7	8.2	B8(M10)
OPzS 490	OPzS 490	2	490	166	206	471	526	28.2	38	9.8	B8(M10)
OPzS 600	OPzS 600	2	600	145	206	646	701	33.4	45.4	12	B8(M10)
OPzS 800	OPzS 800	2	800	191	210	646	701	46.9	62.9	14	B8(M10)
OPzS 1000	OPzS 1000	2	1000	233	210	646	701	57.4	77.4	20	B8(M10)
OPzS 1200	OPzS 1200	2	1200	275	210	646	701	67.7	91.7	24	B8(M10)
OPzS 1500	OPzS 1500	2	1500	275	210	796	851	83.8	113.8	30	B8(M10)
OPzS 2000	OPzS 2000	2	2000	397	212	772	827	110	150	40	B8(M10)
OPzS 2500	OPzS 2500	2	2500	487	212	772	827	139.4	189.4	50	B8(M10)
OPzS 3000	OPzS 3000	2	3000	576	212	772	827	164.8	224.8	60	B8(M10)

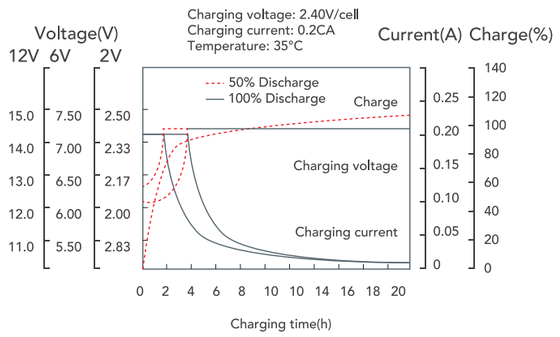
CHARGING CHARACTERISTICS

- Floating charge voltage must be kept at a appropriate level to compensate self-discharge in batteries, which can keep the battery in a fully charged condition at all times. The optimum floating charge voltage for the battery is 2.25-2.30V per cell under normal temperature(25℃). When the electric power supply is not stable, the equalizing charge voltage for the battery is 2.40-2.50V per cell under normal temperature(25℃). But long time equalised charge should be avoided and less than 24 hours.
- The chart as below shows the charging characteristics at a constant current (0.1CA) and a constant voltage(2.23V/cell) after discharge of 50% and 100% of the 10HR rated capacity. The time of fully charge varies by the discharge level, initial charge current and temperature. It will be recover 100% discharge capacity in 24 hours, if charging a fully discharging battery with constant current and constant voltage of 0.1CA and 2.23V respectively at 25℃. The initial charge current of battery is 0.1CA-0.3CA.
- For the VRLA storage battery, charging should be in constant voltage and constant current method.

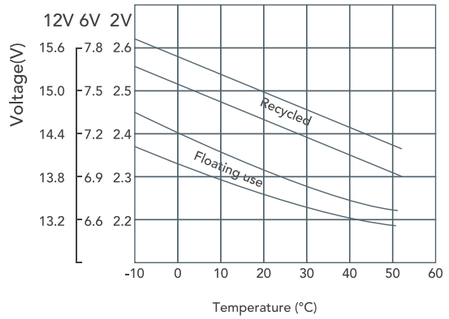
A: Charge of float battery
Charging voltage: 2.23-2.30V/cell (25℃) (suggest to set it at 2.25V/cell)
Max. Charging current: 0.3CA
Temperature compensation: -3mV/C.cell (25℃)

B: Charge of cycle battery
Charging voltage: 2.40~ 2.50V/cell (25℃) (suggest to set it at 2.45V/cell)
Max. Charging current: 0.3CA
Temperature compensation: -5mV/C.cell (25℃)

Charging characteristics curve as below:



The relationship between charging voltage and temperature:



充电特性

- 浮充电压必须保持在一个适当值以弥补电池的自放电，使电池一直处于完全充电状态。在常用温度条件下(25°C)最佳浮充电压为2.25-2.30V/单格。在电网不稳时，通常温度(25°C)下最佳均充电压为2.40-2.50V/单格。但均充时间不宜过长，小于24小时为佳。
- 电池于50%和100%的放电条件下，10小时率放电后用0.1CA定电流、2.23V/单格定电压充电的充电特性。完全充电时间根据电池的放电程度、充电初期电流和温度的不同而不同。完全放电电池在25°C时分别用0.1CA定电流和2.23V/单格定电压进行充电，24小时内即可恢复100%放电容量。电池充电的初期电流为0.1CA-0.3CA。
- 对于阀控密封式铅酸蓄电池，使用恒压限流充电方法:

A: 浮充使用电池的充电

充电电压:2.23~2.30V/单体(25C)(建议设置为2.25V/单体)

最大充电电流:0.3CA

温度补偿系数:-3mV/C单体(25°C)

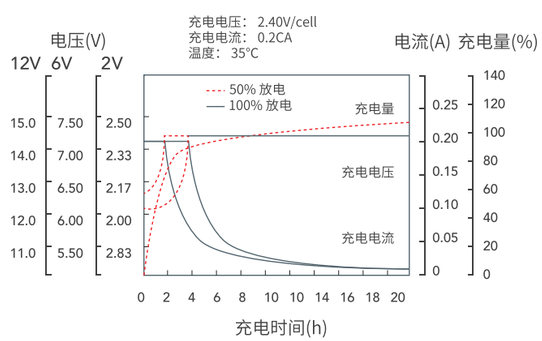
B: 循环使用电池的充电

充电电压:2.40~2.50V/单体(25°C)(建议设置为2.45V/单体)

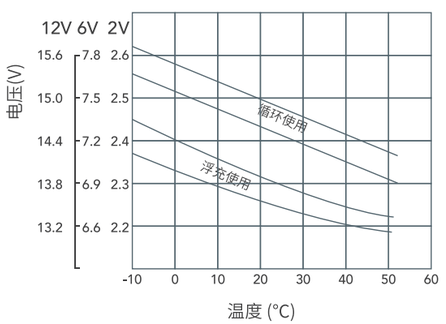
最大充电电流:0.3CA

温度补偿系数:-5mV/C单体(25°C)

充电特性曲线如下：



充电电压和温度的关系如下



DISCHARGE CHARACTERISTICS

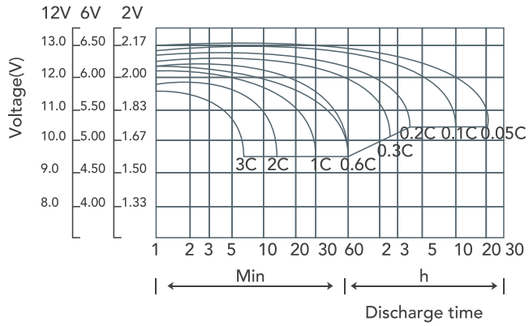
放电特性

Discharge capacity

Right picture shows the curve:

Discharge capacity varies along with the change of discharge current(discharge rate), the smaller discharge current, the more the capacity increases; conversely, the larger the discharge current, the less the capacity.

Small size battery discharge curve:

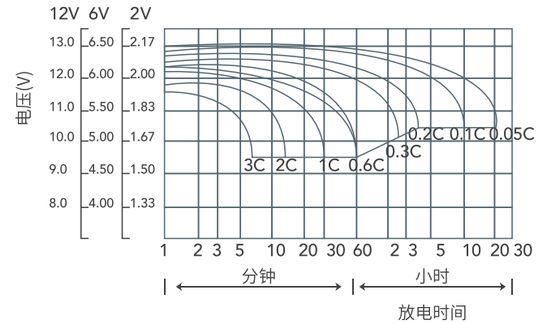


放电容量

右图为电池放电特性曲线：

放电容量随放电电流(放电率)大小变化而变化，放电电流越小，放电容量越多；放电电流越大，放电容量越少。

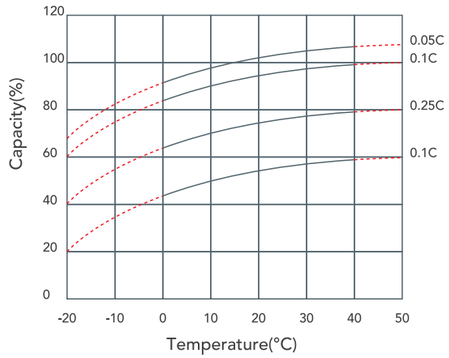
小密电池放电曲线：



Temperature influences on capacity

Right picture shows the curve:

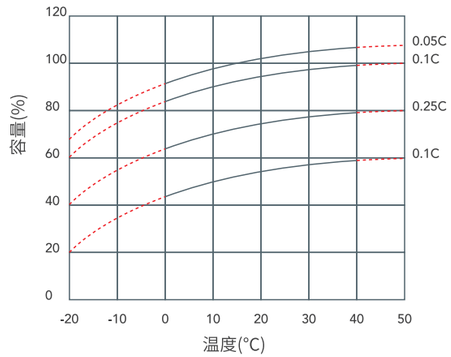
Discharge capacity increases as the temperature goes higher; a lower temperature decreases the discharge capacity.



温度对电池容量的影响

右图为温度影响电池容量变化曲线：

温度升高，电池放电容量增加；温度降低，电池放电容量下降。



The relationship between the discharge current and the final voltage

In general, the final voltage is low in high current discharge, while in long time low current discharge, lead sulfate is formed on the electrode plates, which may cause distortion and shedding of active materials and bending of plates. So the final discharge voltage of small size battery should be set higher to protect the battery.

Discharging a lead acid battery beyond the final discharge voltage (which is called over-discharged) must be avoided in practical applications. As above, over-discharged can only obtain very less additional capacity, but may damage the battery.

Recommended Discharge
Final Voltage Table As Below:

Discharge current	Discharge final voltage
< 0.1Ca	≥1.75V/cell
0.11~0.25Ca	≥1.70V/cell
0.26~1.0Ca	≥1.60V/cell
> 1.1Ca	≥1.40V/cell

放电电流大小与终止电压的关系

总的来说，大电流放电时，电池终止电压的设定相对较低，相反长时间小电流连续放电将形成较致密的硫酸铅层，容易使极板增长造成极板上活性物质变形、脱落及极板的变形，所以需调高小密电池的终止电压以保护电池。

放电超过终止电压(过放电)的情况在实际中应尽量避免。如上所述，过放电只能获得很小的附加容量，但可能会造成电池的损坏。

推荐放电终止电压如下

放电电流	放电终止电压
< 0.1Ca	≥1.75V/cell
0.11~0.25Ca	≥1.70V/cell
0.26~1.0Ca	≥1.60V/cell
> 1.1Ca	≥1.40V/cell

BATTERY LIFE

电池寿命

▶ The battery life of floating charge is influenced by discharge frequency, discharge depth, float charge voltage and service environment. The gas absorption mechanism described preciously can explain that the negative plates absorb the gas the generate in the battery and compound water at normal float charge voltage.Therefore, capacity will not decrease due to electrolyte depletion.

▶ Proper float charge voltage is necessary, because corrosion speed will be accelerated as the temperature rises that may shorter battery's life. Also the higher the charge current, the faster the corrosion. Therefore, the float charge voltage should always be set at 2.25V/cell, using a battery charger with voltage accuracy of 2% or better.

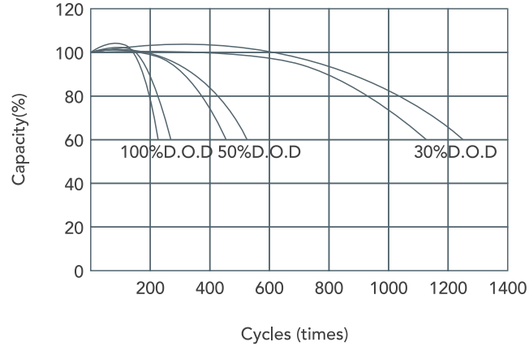
▶ 电池的浮充寿命受放电频率、放电深度、浮充电压和使用环境的影响。在正常浮充电压（2.23V/单格）下，根据电池内部气体的复合机制，负极板吸收电池内部产生的气体，实现物质的还原，确保电池的正常浮充寿命。

▶ 随着温度的升高，腐蚀速度会加快，这可能会缩短电池的寿命，而且充电电流越大，腐蚀速度越快，因此，适当的浮充电压是有必要的。 浮充电压应设置在2.25V/单格，且充电器的电压精准度在±2%或更高。

A Cycle life:

The cycle life of a battery depends on the depth of discharge(DOD), and the smaller the DOD, the longer the cycle life.

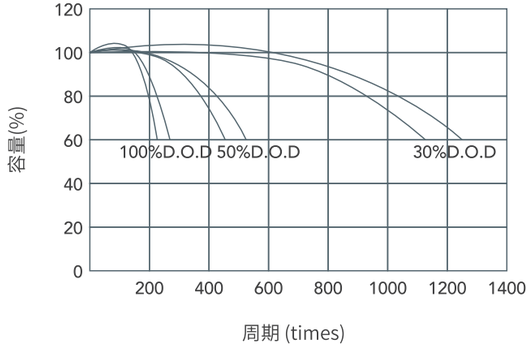
Cycle life curve as below:



A 循环使用寿命：

循环使用下的电池寿命受放电深度(DOD)的影响，DOD 越小，循环使用寿命越长。

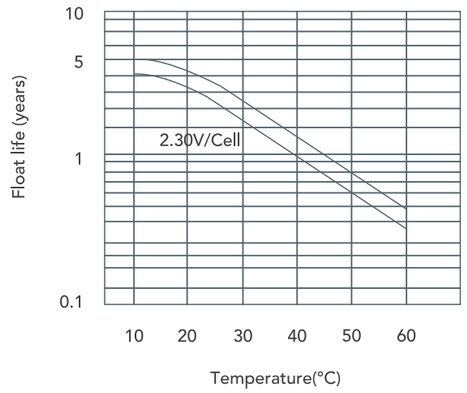
循环寿命曲线如下：



B Standby life:

The float charge life is affected by temperature, and the higher the temperature , the shorter the float charge life. The design cycle life is based on 20℃.

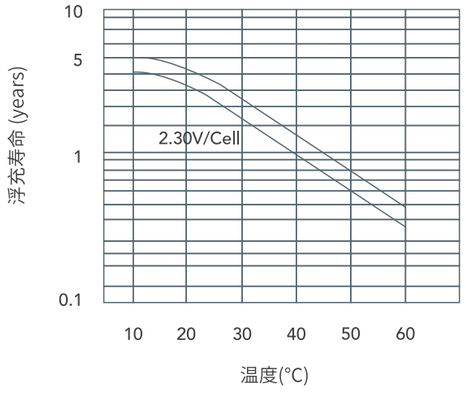
Small size battery standby life curve as below:



B 浮充使用寿命：

浮充使用寿命受温度的影响，温度越高，使用寿命越短。 且电池的设计浮充寿命基于20°C。

小密电池使用寿命曲线如下：



STORAGE INSPECTION

Storage:

The battery is delivered in a fully charged condition. Please note the points before installation as below:

A. Ignitable gases may be generated from the storage battery. Provide sufficient ventilation and keep the battery away from the sparks and naked flame.

B. Please check for any damage to the packages after arrival, then unpack carefully to avoid damage to the battery.

C. Unpacking at the installation location, please take out the battery by supporting the bottom instead of lifting the terminals. Attention that sealant may be disrupted if the battery is moved with force on the terminals.

D. After unpacking, check the quantity of the accessories and the exterior.

Inspection:

A. After verifying no abnormality in the battery, install it on the prescribed location (e.g. cubicle of battery stand)

B. If the battery is to be accommodated in a cubicle, place it at the lowest place of the cubicle whenever it is practicable. Keep at least 15mm distance between the batteries.

C. Always avoid installing the battery close to a heat source (such as a transformer)

D. Since s storage battery may generate ignitable gases, avoid installing close to an item that produces sparks (such as switch fuses).

E. Before making connections, polish the battery terminal to bright metal.

F. When a multiple number of the batteries are used, first connect the inner-battery in a correct manner, and then connect the battery to the charger or the load.

In these cases, the positive(+) of the storage battery should be securely connected to the positive(+) terminal of the charger or the load, and negative(-) to negative(-).
Damage to the charger may be caused by the incorrect connection between battery and charger. Make sure all connections are correct. The tightening torque for each connecting bolt and nut shall be in accordance with the below chart.

Applicable Bolts	Torque requirement
M5	2.0~4.0N*m(20~40kgf*cm)
M6	4.5~8.0N*m(45~80kgf*cm)
M8	11~13N*m(110~130kgf*cm)

储存&检查

储存：

电池在出厂前属于满电荷状态，安装前请注意以下几点：

A. 电池中可能会产生少量的氢气或氧气。需要提供足够的通风，并使电池远离火花以及明火。

B. 请在电池到达后检查包装是否有损坏，然后小心打开包装，以避免损坏电池。

C. 在电池安装地附近将电池包装打开，托住电池底部将电池取出，请勿提端子，注意！如果在端子上用力使电池移动，密封胶可能开裂。

D. 拆箱后，检查配件数量及外观。

检查：

A. 在验证电池无异常后，将其安装在规定的位置(例如：电池房)。

B. 如果电池要装在电池房，应尽可能将其放在电池房最低处，电池之间保持至少15毫米以上的距离。

C. 始终避免电池安装时靠近热源(如变压器)。

D. 由于蓄电池可能产生可燃的气体，避免安装时接近易产生火花的装置(如保险丝)。

E. 在连接之前，擦净电池端子，而使其呈现金属光亮。

F. 当使用多个电池时，首先使电池间正确连接，再将电池用充电器或负载连接。

在这个情况下，电池正极应与充电器或负载的正极连接，负极与负极连接。如果电池与充电器连接不正确，充电器会被损坏，一定注意不要连接错误。每个连接螺母与螺栓一定扭紧，扭紧扭矩按下表所示

适用螺栓	扭矩规定
M5	2.0~4.0N*m(20~40kgf*cm)
M6	4.5~8.0N*m(45~80kgf*cm)
M8	11~13N*m(110~130kgf*cm)

PRECAUTIONS MAINTENANCE

注意事项&检修

Cautions

A. Do not use vacuum cleaner and dry cloth(especially chemical fiber) but damp cloth to clean the battery, in order not to cause any static electricity and danger. Keep the battery away from organic solvents, such as gasoline.

B. A storage battery may generate ignitable gases, avoid placing near a naked flame or short-circuiting the battery.

C. Do not attempt to dismantle the storage battery. If sulfuric acid splashes on skin or clothes due to mechanical damage, rinse immediately with water, If splashed into the eyes wash with a large amount of fresh water and get treatment immediate.

D. It is very dangerous to throw battery into fire, avoid such conduct at all times.

E. A ventilation opening is required when the storage battery is operated in a cubicle or case containing the battery should be provided with sufficient ventilation.

F. One may get electric shock if touch an electrical conductor, Be sure to wear rubber gloves before inspection or maintenance work.

G. Please take rust proof conduction on the battery connectors.

H. Theoretically operating temperature is -20 - 50℃, but operating under 15 - 25℃ is recommended for longer service life.

I. Please contact us before using 4 or more batteries in parallel.

J. Mixed use of batteries with different capacities, different histories and of different manufacturer is liable to cause damage to the battery or the equipment,consult with us if such necessity is present.

注意事项

A.请用湿布清洁电池。保持电池远离有机溶剂，如汽油，请勿使用含这些物质的布清洁电池。避免使用吸尘器和干布(特别是化纤布)，因为可能会产生静电而引起危险。

B.蓄电池会产生可点燃的气体，因此避免放置在明火附近或短路电池。

C.请勿试图拆卸蓄电池。如果硫酸由于机械损伤溅在皮肤或衣服上，立即用水冲洗，如果溅入眼睛，用大量淡水清洗，并立即去医院进行处理。

D.请勿将电池投入火中，有破裂的危险。

E.当电池放入容器或袋子内使用时，需要有排气口，应对电池房和机箱提供足够的通风。

F.如果触摸导体，可能会受到电击，在检查或维护工作之前，一定要戴上橡胶手套。

G.请在电池连接器上进行防锈处理。

H.电池允许使用温度范围为-15-45℃，但建议在15-25℃以下操作，以延长使用寿命。

I.4个或4个以上电池组并联使用前请先与我们联系。

J.混合使用不同容量、不同生产日期和不同生产制造商的电池可能会对电池或设备造成损坏，如果有需要这样做时，请与我们联系。

MAINTENANCE In order to prevent battery troubles, inspect the battery regularly in the following manner and keep records. ▼

Monthly check			
What to inspect	Method	Stand spec	Measures in case of irregularity
Total battery voltage during float charge	Measure total voltage by voltmeter	Float charge voltage* number of batteries	Adjusted to the float charge voltage number of batteries
Half year check			
Total battery voltage during float charge	Measure total battery voltage by voltmeter of class 0.5 or better	Total battery voltage shall be product of float charge voltage with battery quanting	Adjust if the voltage value is outside standard
Individual battery voltage during float charge	Measure total battery voltage by voltmeter of class 0.5 or better	Within 2.25±0.1V/cell	Contact us for remedy; Any battery showing errors greater than permissible value shall be repaired or replaced
Appearance	Check for damage or leakage at container and cover	Replaced by electric tank or roof without damage or leakage acid	If leakage is found verify the cause, for container and cover having cracks, the battery shall be replaced
	Check for contamination by dust, etc	Battery no dust pollution	If contaminated, clean with wet cloth.
	Check for rust in the cubicle, battery stand, connecting plates, connecting wires and terminals	Battery holder Plate Connecting cable Termination rust	Perform cleaning, rust preventive treatment, painting of touch up.
One-year inspection (following inspection shall be added to six-months inspection)			
Connecting parts	Tighten bolts and nuts	Checking (connecting screw stud books and torque)	

维护技巧 为了防止电池损坏，按下列方法定期检查电池并做记录。 ▼

每月检查			
内容	方法	检测标准	出现异常时的处理
浮充中的总电压	用电压表测量总电压	浮充电压*电池数	调整至浮充电压*电池数
半年检查			
浮充中的总电压	用精度为0.5或更精确的电压表测量电压总电压	总电压为（浮充电压*电池数）	电压值偏高正常时应调整电压
浮充时单格电池电压	用精度为0.5或更精确的电压表测量单个电压	在2.25±0.1V/单格范围内	向我们咨询纠正错误，任何电池超过允许值时，应修理更换
外观	检查电槽和上盖有无损坏或漏酸	换成电槽或上盖无损坏或漏酸	如有，应更换
	检查电池是否被灰尘等污染	电池无灰尘污染	如果污染用湿布清洁
	检查电池架，连接板，连接电缆和端子是否有生锈等异常	电池架\连接板\连接电缆\端子无生锈	查找原因，并进行清扫、除锈、修补。
年度检查（年度检查除半年检查项目外，还应加上下面项目）			
连接件	拧紧螺母和螺栓	检查（连接螺册和螺柱扭矩）	