

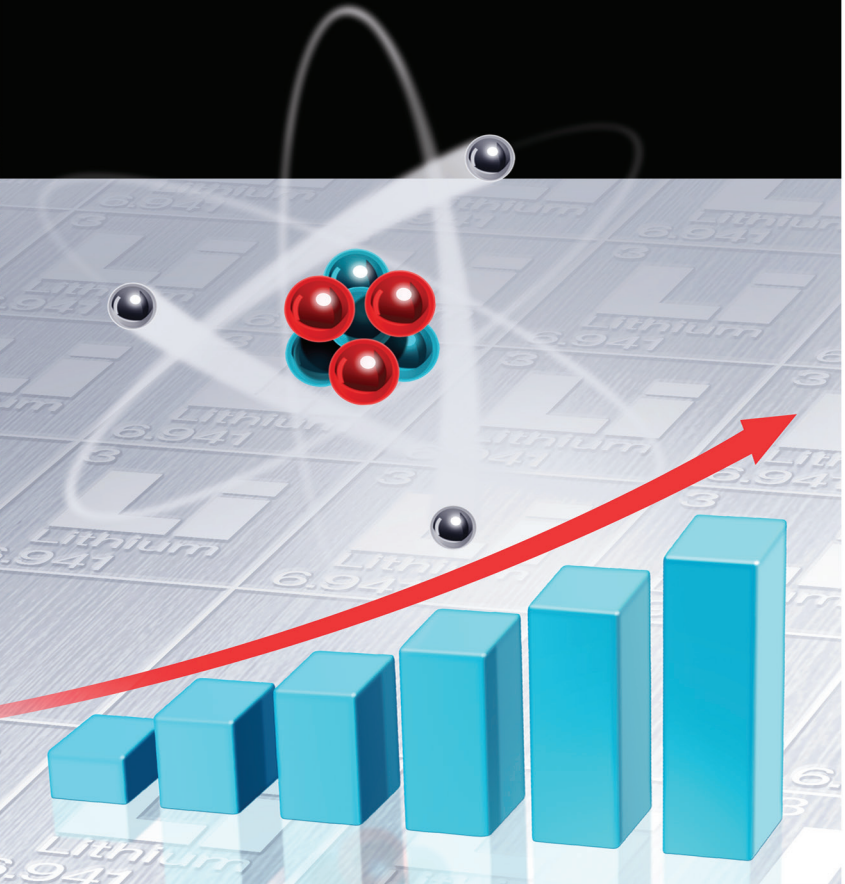


**MITSUBISHI
ELECTRIC**

CRITICAL POWER SOLUTIONS

UPS LITHIUM ION BATTERY SOLUTIONS

Appealing alternatives to VRLA batteries for all load sizes and runtimes: longer life, lower maintenance, & smaller footprint are just a few of the many benefits of lithium ion.



Advanced battery technologies available for new and retrofit UPS solutions

ADVANTAGES OF LITHIUM ION OVER VRLA

The most commonly utilized backup power source for uninterruptible power supplies has historically been lead acid batteries, either VRLA (valve regulated lead acid) or VLA (vented lead acid). However, their inherent challenges of relatively short life span (4-5 years), extensive maintenance requirements (semi-annually), and excessive weight & size have in part triggered the development of alternative energy sources, most notably, various chemistries of lithium ion solutions. Mitsubishi Electric has studied the landscape of the available emerging chemistries and confidently offers three of the best in its product offering, each possessing its own unique benefits. Lithium ion solutions provide many features & benefits that greatly exceed those of traditional lead acid products, outlined below.



LONGER OPERATING LIFE

Life span of 15-25 years before reaching end-of-life (60% of capacity). No battery replacements are expected over the lifetime of the UPS.



LIGHTER WEIGHT

5-6x lighter than VRLA solution with equivalent energy. Provides cost savings and flexibility in shipment, installation, and facilities.



HIGHER ENERGY DENSITY

3-5x the energy density of VRLA providing the equivalent amount of energy in significantly smaller footprint providing more flexibility in facility installation locations.



REDUCED MAINTENANCE

A visual inspection is recommended only once a year. Battery replacement services not expected over the lifetime of the UPS system.



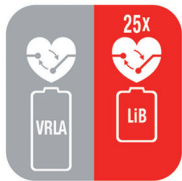
HIGHER EFFICIENCY

96% efficiency provides more cost savings over the lifetime of the UPS and batteries.



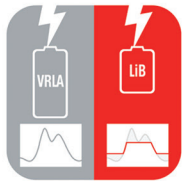
INTEGRATED BMS

LiB batteries include integrated battery management providing real time data and trending as well as safety monitoring and control.



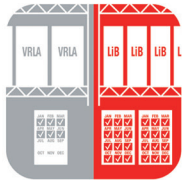
HIGHER CYCLE LIFE

LiB possesses the ability to be cycled 25X more than VRLA, enabling longer life span, peak shaving, and grid stabilization capabilities.



EXPANDED FUNCTIONALITY

Peak shaving saves utility costs by supporting load at peak demand. Batteries are discharged during peak demand and recharged during lower cost periods.



LONGER SHELF LIFE

Shelf life of 2 years before recharging is required. Increases options for timing of purchase and installation.



LOWER TCO OVER 20 YEARS

Over 65% of the total cost of ownership of the UPS system is reduced by lower maintenance, no battery replacement, and lower operating costs.

UPS LITHIUM ION BATTERY SOLUTIONS

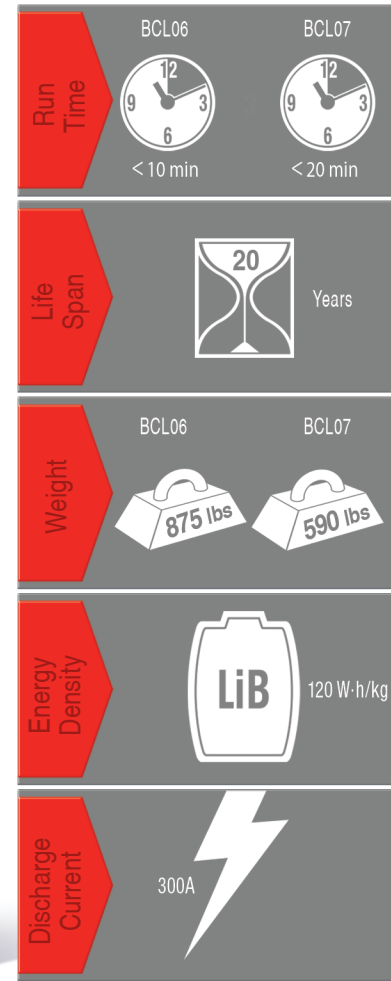
BCL04-BB
BCL04-BBA01

Samsung LMO/NMC Battery Technology
Lithium Manganese Oxide/NMC Mix (LMO)
 Ideal for high power applications



BCL06
BCL07

Saft LFP Battery Technology
Lithium Iron Phosphate (LFP)
 Ideal for short runtime applications



BATTERY MANAGEMENT SYSTEM



DATA COLLECTION

Real time data collection helps to predict failure and improve safety and reliability

DATA TRENDING

Smart monitoring of state of charge and state of health, temperatures, and battery values can be used for data trending

SAFETY

Advanced battery management ensures safe operation and prevents over temperature, over current and abnormal voltage conditions

SAFETY

HOW SAFE IS LITHIUM ION?

The battery technologies utilized in mission critical applications are far different than those found in cell phones and other consumer devices. Strict UL and utility code testing requirements for LiB at the cell, module, rack, and system levels ensure safe performance. Additionally, Mitsubishi Electric's own rigorous six month testing methodology has validated the safe and reliable operation of all lithium ion batteries with multiple UPS systems.

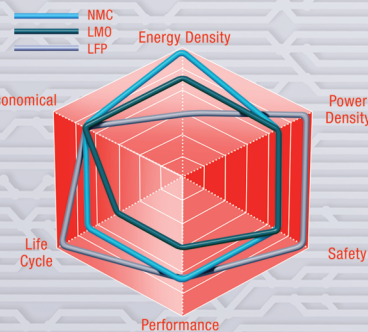
RETROFITS

DOES RETROFITTING YOUR VRLA OR VLA WITH LITHIUM ION MAKE SENSE FOR YOU?

Lithium ion options effectively operate at higher temperatures and require less cooling, generating additional cost savings. LiB also includes integrated battery monitoring systems, which are less complex and significantly easier to install than VRLA add-on options. Being both lighter in weight and smaller in rack size, installing lithium ion cabinets will provide longer life and better space utilization than replacing with new VRLA cabinets.

TECHNOLOGY

The latest generation of lithium ion batteries deliver extremely long and reliable life with a high level of safety. Various lithium ion chemistries are better suited for different applications. Mitsubishi Electric provides multiple solutions to best fit your needs.



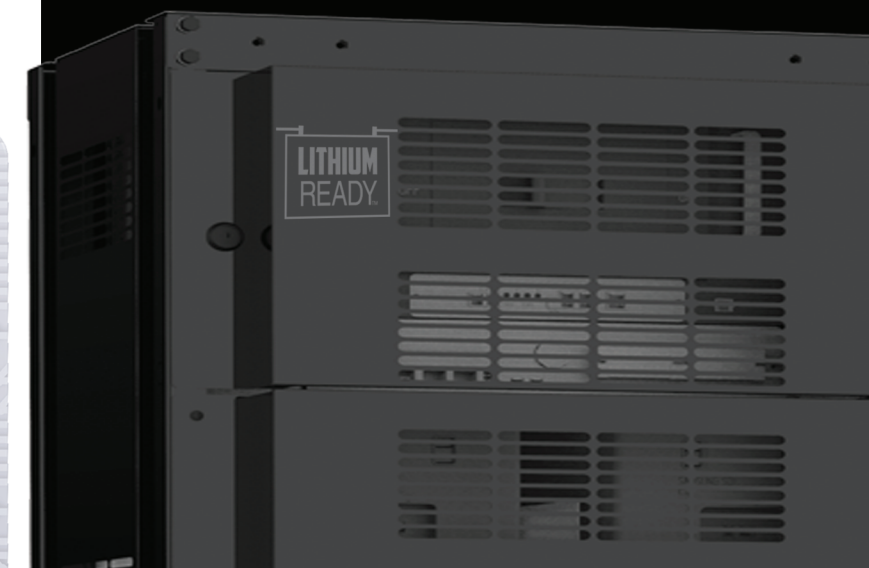
COMMUNICATION

All solutions include a BMS (Battery Management System) that monitors State of Health (SoH), State of Charge (SoC), alarms, and other parameters to ensure safe operation. Trending and remote operation are enabled. Multiple communication protocols are available.



SERVICE

No maintenance is required due to abundant real time data available at all times. A single yearly visual inspection drastically reduces downtime costs when compared to traditional battery maintenance plans. Batteries are expected to last the lifetime of the UPS.



ABOUT US

The Mitsubishi Electric name has long been recognized as one of the world's leaders in the manufacture of electrical products. From its founding in 1921, Mitsubishi Electric has been at the forefront of technical ingenuity and product innovation. Since 1964, Mitsubishi Electric has been manufacturing precision engineered highly reliable Uninterruptible Power Supplies and solving the challenges of American critical facilities since 1985. Mitsubishi Electric leads the way in technological advances of critical power supplies and is the only major brand that manufactures its own semiconductors. Mitsubishi Electric holds the highest efficiency rating for the AC-Double Conversion (VFI) category on the Energy Star web site and openly shares reliability data.

With the total cost of an unplanned data center outage now estimated at \$500K-\$1M, minimize your risk of significant loss by choosing the best UPS to protect your business.


DON'T LET YOUR BUSINESS GO DARK™



CRITICAL POWER SOLUTIONS

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