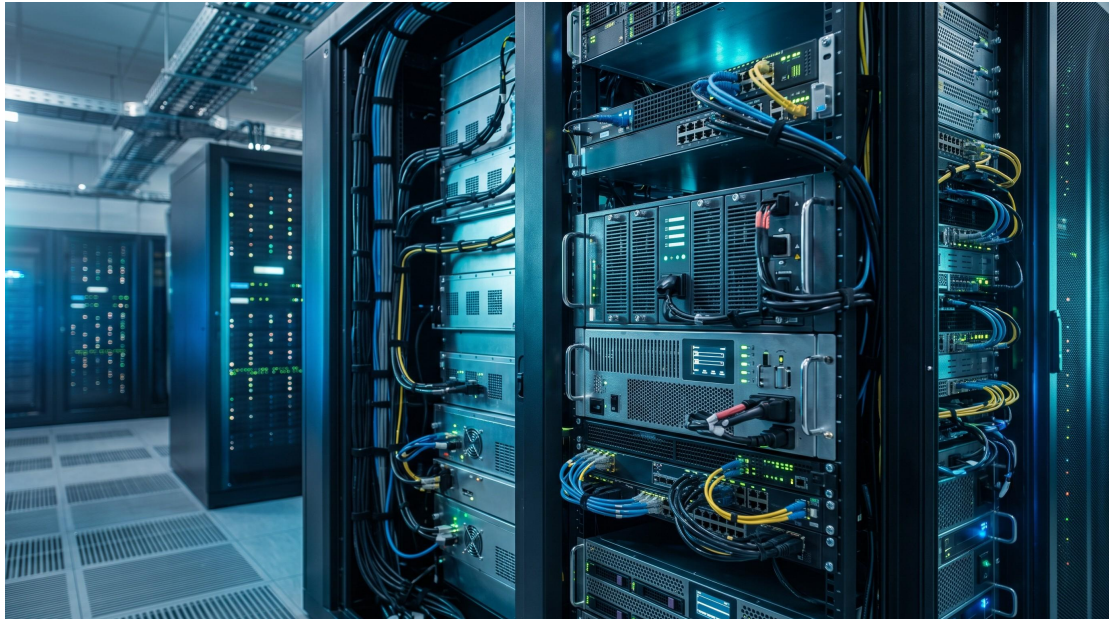


Delta Telecom Power System Battery Management Unit (BMU) Configuration - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

The Delta Telecom Power System Battery Management Unit (BMU) Configuration represents a paradigm shift in carrier-grade DC power plant intelligence, delivering comprehensive cell-level oversight, adaptive charge control, and predictive health analytics for mission-critical telecommunications infrastructure. Engineered for seamless integration within Delta's renowned Telecom Power System (TPS) family, this BMU configuration provides unprecedented visibility into battery string performance, enabling operators to transition from reactive maintenance to prescriptive asset management. The system is purpose-built to maximize battery lifespan, ensure uninterrupted service availability during grid anomalies, and reduce total cost of ownership across 5G RAN, edge data centers, and core network facilities.



ARCHITECTURE & CHASSIS DESIGN

The Delta BMU Configuration is architected around a modular, hot-swappable control unit that occupies a dedicated management slot within the Delta TPS rectifier cabinet or operates as a standalone 1RU shelf-mounted aggregation point. The core BMU module features a high-reliability 32-bit ARM Cortex-M7 microcontroller with dedicated floating-point unit, ensuring deterministic execution of complex impedance spectroscopy and coulomb-counting algorithms. Each BMU manages up to 24 series-connected VRLA or Li-ion cells per string, with galvanic isolation between the measurement front-end and the communication backplane. The chassis employs a ruggedized zinc-plated steel enclosure with a matte powder-coat finish, providing excellent EMI shielding and corrosion resistance in uncontrolled thermal environments.

HARDWARE FEATURES

At the heart of the system lies a precision 24-bit delta-sigma analog-to-digital converter that samples each cell voltage with $\pm 0.05\%$ accuracy, alongside individual cell temperature sensors employing NTC thermistors with $\pm 0.5^{\circ}\text{C}$ tolerance. The BMU configuration supports passive and active balancing modes, with a maximum bypass current of 2A for rapid equalization of weak cells. Integrated string current sensing utilizes a Hall-effect transducer with a 0.1% linearity error, enabling precise state-of-charge (SoC) and state-of-health (SoH) estimation. Communication interfaces include dual isolated RS-485 ports supporting Modbus RTU, a 10/100BASE-TX Ethernet port for SNMP v3 and HTTPS web-based management, and a CAN 2.0B bus for direct interaction with the Delta TPS system controller. Visual status is provided by a tri-color LED array indicating normal, warning, and alarm conditions per string.

COMPLIANCE & STANDARDS

The Delta BMU Configuration is designed to meet and exceed the most stringent international standards for telecom power equipment. It carries CE marking, UKCA approval, and complies with EN 60950-1 / EN 62368-1 for safety, ETSI EN 300 386 for EMC, and Telcordia GR-1089-CORE for lightning and AC power fault immunity. The unit is RoHS 3 compliant and adheres to the

European Directive 2011/65/EU. Battery management algorithms are aligned with IEEE 1188 recommendations for VRLA maintenance and IEEE 1625 for Li-ion safety.

TECHNICAL SPECIFICATIONS

The following table summarizes the key operational parameters of the Delta Telecom Power System Battery Management Unit (BMU) Configuration. All values are nominal at 25°C unless otherwise specified.

Parameter	Specification
Form Factor	1RU 19-inch rack-mount or slot-in module for Delta TPS
Cells Managed	Up to 24 series-connected cells per string
Voltage Measurement Accuracy	±0.05% of reading
Cell Temperature Accuracy	±0.5°C
Balancing Current	Up to 2A passive/active
String Current Sensing	Hall-effect, 0.1% linearity
Communication Interfaces	Dual isolated RS-485 (Modbus RTU), 10/100BASE-TX Ethernet (SNMP v3, HTTPS), CAN 2.0B

Power Supply	Powered from the monitored battery string, 18-60 VDC input
Operating Temperature	-20°C to +65°C (standard), -40°C to +75°C (extended)

ORDERING OPTIONS

Ordering options for the Delta BMU Configuration include the base BMU control module (P/N: TPS-BMU-24), a 12-cell variant (P/N: TPS-BMU-12) for smaller strings, and an extended temperature range version (P/N: TPS-BMU-24-ET) rated for -40 ° C to +75 ° C operation. A comprehensive accessory kit (P/N: TPS-BMU-ACC) provides current transducers, temperature sensor harnesses, and communication cables for single-string deployments. For multi-string aggregation, the TPS-BMU-HUB enables up to eight BMU modules to share a single Ethernet uplink, reducing cabling and switch port consumption.

