



Energy Storage System Solution

LFP Battery System / Magic Cube

- Rotational design of standard 10ft shipping container for easy transportation and installation
- Built-in fire protection system and meeting UL 9540A safety test standard
- Battery system with built-in site controllers, offering flexible scalability from 708kWh to 7.7MWh



Ancillary Services



Solar-Plus
Storage



Energy-Heavy
Industries



Microgrids



Fully-Integrated Battery Solutions

Redefining Safety and Performance with Effortless Installation, Remarkable Scalability, and Integrated Fire Protection System

Delta's Magic Cube battery system is designed for grid-scale and medium to large-scale industrial energy storage applications. Built on a standard 10ft shipping container with unique designs and simple installation procedure, the battery system can be rapidly deployed. Magic Cube battery system is high energy density, offering scalability from 708 kWh to 7.7 MWh. This flexibility allows it to accommodate varying spatial and capacity requirements for different sites, optimizing land utilization. In addition, Magic Cube

features a redundant communication support for the field site with built-in site controllers, enhancing the communication stability of the energy storage system. It also incorporates several environmental sensors and a fire protection system to ensure the safety of the energy storage system.



Features

High Energy Density with Flexible Scalability Configuration

- High energy density, effectively utilizing land resources
- Flexible configuration ranging from 708 kWh to 7.7 MWh battery capacity

Easy Transportation and Installation

- Whole-container transport without the need to dismantle battery modules
- Rotational design of standard 10ft shipping container
- Containers connected by flexible duct connectors on the top, tolerating positioning errors and reducing on-site installation time

Built-in Fire Protection System Enhancing Inherent Safety

- Real-time cell monitoring: temperature, voltage, and current of each cell
- Dual-redundant environmental sensors: smoke, temperature, humidity, hazardous gas, and flood
- Fire protection system: detection system, off-gas ventilation system, aerosol and fire sprinkler system

Integrated Control and Monitoring

- Built-in site controllers seamlessly integrating battery and PCS without the need for additional space
- Built-in Human-Machine Interface (HMI): on-site access to real-time field information
- Dual-redundant communication: enhancement of communication stability and monitoring efficiency

Product Configuration and Design

Battery System

Container Connector

- Flexible duct connector design for flexible installation
- Quick installation of busbars, auxiliary power cables and communication cables

Embedded HVAC

- Built-in air conditioner for better heat management
- Cooler installation is not required, saving both space and cost

Battery Zone



Quick Wiring Design

- Onsite work can be performed without opening containers to avoid the risk of exposure to water vapor and foreign particles
- Simplified wiring allows for shorter work duration, allowing for shorter work duration

AIO (All-In-One) Container

Auxiliary Power and Control Zone

DC Power Distribution Zone

Reinforced Storage Container

- Three-layer structure composed of double steel plate and fireproof rock wool boards (fire retardant up to 60 minutes)
- Cables and wires in accordance with IEC 6033
- IEEE 693 Recommended Practice for Seismic Design of Substations
- Corrosion protection in ISO 12944 C5M (Optional for C5H enclosure)
- Access control for vandalism prevention

Battery Container

Redundancy Detection System

- Smoke detectors
- Hazardous gas detectors
- Temperature sensors
- Door sensors
- Flood detectors
- Humidity sensors

Battery Module Protection

- Real-time monitoring of each battery cell
- Big data for aging/abnormality detection
- Insulation design of battery module
- Built-in fuse
- Cell balancing mechanism



Fire Safety Protection

- Off-gas ventilation system
- Aerosol
- Fire sprinkler system
- Fire alarm horn & strobe

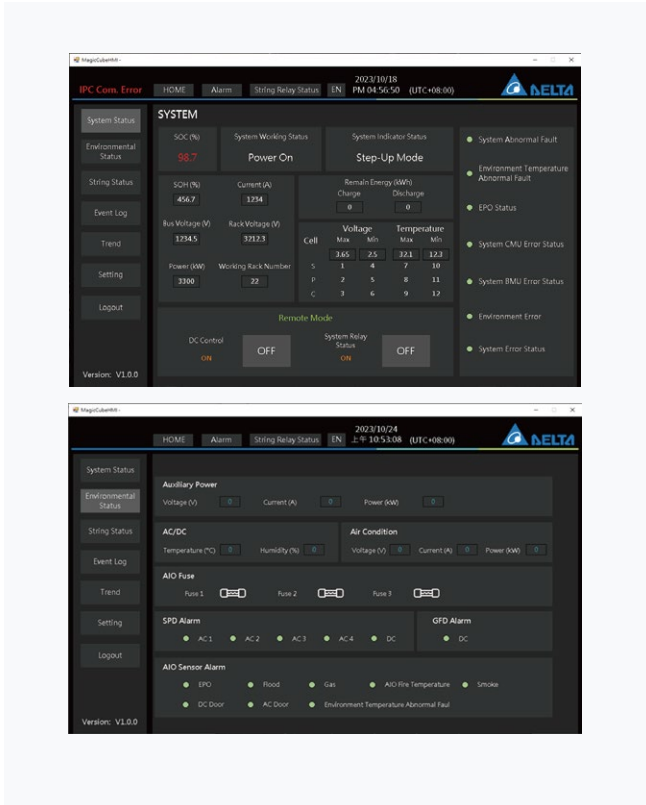
Safety Certification

- UL 9540A
- UL 1973
- IEC 62619 include fire propagation
- UN38.3
- IEC 60730

Software Interface

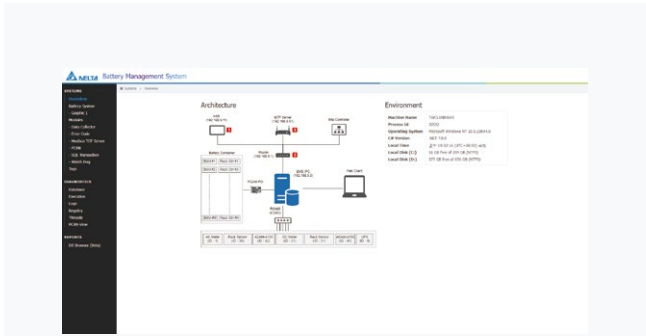
Human Machine Interface (HMI)

- Easy Commissioning**
 On-site view of real-time information on the battery system
- Real-time Monitoring**
 Operation information, environment status, UPS status, warnings, and battery information (ex. SOC, SOH, voltage, current, temperature), etc
- Convenient Maintenance**
 Service mode option enables technicians to maintain the battery system easily



Battery Management System (BMS)

- Clear Overview of Battery Status**
 Intuitive UI for real-time display of battery string parameters
- Quick Diagnosis and Debugging**
 Easy access to error codes, database, daily logs, and entry records



System Overview



Battery Analysis Reports

Specifications – Battery System

Model Name	EBSU-CE2818S22P00	EBSB-CE2818S4P00
Battery System Specification	Battery System (6 Containers with 22 Strings Battery)	Battery Container with 4 Strings Battery
Battery Cell	LFP 280Ah Cell	
DC Voltage Range	1069 –1400 Vdc	
Per String Configuration	396S-1P	
Per String Modules	18 Modules	
Installed Capacity	7788 kWh	1416 kWh
DC Usable Capacity	6666 kWh	1212 kWh
Rated Power	3333 kW @0.5CP	606 kW @0.5CP
Max. Charging/Discharge Current	3080A	
Recommend DoD	90%	
Aux. Power	220/380 Vac (3P4W) +/-5% (source: OVC II)	
Environment		
Environment Condition	Outdoor	
Altitude	< 2000m	
Operating Temperature	-30°C to +50°C	
Environment Humidity	0 – 100 % RH (No condensing)	
Storage Temperature	1 month: -20°C ~ +45°C, <70% RH humidity; 1 year: 0°C ~ +35°C, <70% RH humidity	
Ingress Protection	IP54; Type 3R, NEMA 3R compliance	
Corrosion Resistance	Comply with Severity-1 (IEC 60068-2-52); Pass 720-hour salt mist test (ISO 9227), ISO 12944 Level C5M	
Container Standard	ISO 668	
Seismic Level	IEEE 693 (Tai-power, 0.5G, 2% damping)	
Monitoring & Operating		
Measurement Accuracy	Voltage: ± 0.5% ; Current: ± 1% ; Temperature: ± 2°C ; SOC: ≤5%	
HMI	Display of the information on the battery system	
BMS Log	90 days	
BMS Power Backup	UPS power backup for 60 minutes	
Time Calibration	Built-in NTP server	
Safety Protection		
Fire Safety Equipment	Off-gas ventilation system, aerosol and fire sprinkler system	
Detection Sensor (Per Container)	Temperature (x2), smoke (x2), gas (x2), flood (x2), humidity (x4), door (x4)	
Mechanical Information		
Dimension (W x D x H)	2438 × 2990 × 2896mm (Per Container)	
Weight	< 16,000kg (Per Container)	



More Information

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