

PRODUCT SPECIFICATION DOCUMENT

# AP500 Module

Rugged, high-output battery storage  
for industrial power applications.





# AP500 Module

## Key Performance Parameters

Rated Power : 500 kVA

Battery Capacity : 509 kWh (Expandable to 679 kWh)

On/Off-Grid Switching : < 20ms (UPS-Grade)

System Efficiency : Up to 92.2%

## Key Benefits



### Ultimate OPEX Reduction

Achieve 30%-80% in total energy cost savings through comprehensive fuel optimization, peak shaving & valley filling (arbitrage), and demand charge management.



### Open & Scalable Platform

Modular design for on-demand scaling. Standard APIs enable seamless integration with third-party asset management platforms, protecting your long-term investment.



### Mission-Critical Reliability

<20ms UPS-grade seamless switching and BESS fault bypass capabilities ensure uninterrupted power for your critical loads.



### Plug & Play Deployment

Standard 10-foot container design with integrated quick-connect interfaces simplifies global logistics and on-site deployment

## Typical Application Scenarios



Mining



Construction



Large Scale Events



Critical Facility  
Backup Power



Microgrids



Equipment Rental

## Detailed Technical Specifications

### PERFORMANCE

Rated Power	500 kVA
Overload Capacity	625 kVA (60s)
Peak Power	750 kVA (10S)
System Round Trip Efficiency	Up to 92.2%
Total Harmonic Distortion, THD	< 3% ( Current), < 2% (Voltage)
Off-Grid Voltage/Frequency Accuracy	±1% / ±0.1%
Power Response Time	< 200 ms
Grid/Off-Grid Switch Time	< 20 ms (UPS-level)
Power Control Accuracy	± 2% of Rated Power

### ELECTRICAL

AC Connection	3-Phase 4-Wire + PE
Rated AC Voltage	415 VAC (Multi-voltage configurable)
Voltage Range	400 VAC (-10% ~ +15%)
Rated Frequency	50 / 60 Hz
Rated AC Current	695 A (@ 415V)
Max. AC Current	1043 A (10 seconds@ 415V)
Power Factor Range	0 (ind) ... 1 ... 0 (cap)
Short-circuit Current Rating	50 kA, 0.5s

### ENERGY

System Round Trip Efficiency	Up to 92.2%
Cell Chemistry	LiFePO4
Nominal Capacity	509 kWh
Usable Capacity	458 kWh (90% DoD)
Rated Charge/Discharge Time	hours (at 500 kW)
Cycle Life	>7000 cycles @ 80% DoD, 70% EoL
Battery Management System	utomotive-grade BMS with cell-level monitoring
Thermal Management	Intelligent liquid cooling system with low-temperature pre-heating

### MECHANICAL

Dimensions L x W x H	2991 x 2438 x 2591 mm (Standard 10ft Container)
Weight	9,000 kg
Transport ComplianceC	SC Certified (Convention for Safe Containers)
Transport Features	Standard Corner Castings, Forklift Pockets
Enclosure Material & Coating	High-strength Weathering Steel, Outdoor Anti-corrosion Coating
Structural StrengthD	esigned to meet local wind load, snow load, and seismic requirements (details available on request)
Cable Entry	Bottom/Side entry with quick-connect ports

### ENVIRONMENTAL

Protection Class	IP54 ( Upgradable to IP65)
Operating Temperature	20°C to +50°C
Storage Temperature	-25°C to +55°C
Operating Humidity	0 ~ 95% (Non-condensing)
Operating Altitude	≤3000m
Noise Level	<60 dB(A) @7m
Corrosion Protection Class	SO 12944 C4 Compliant (C5 Optional)
Vibration & Shock Resistance	compliant with UN 38.3 transportation safety certification, including vibration & shock tests

## PROTECTION & SAFETY

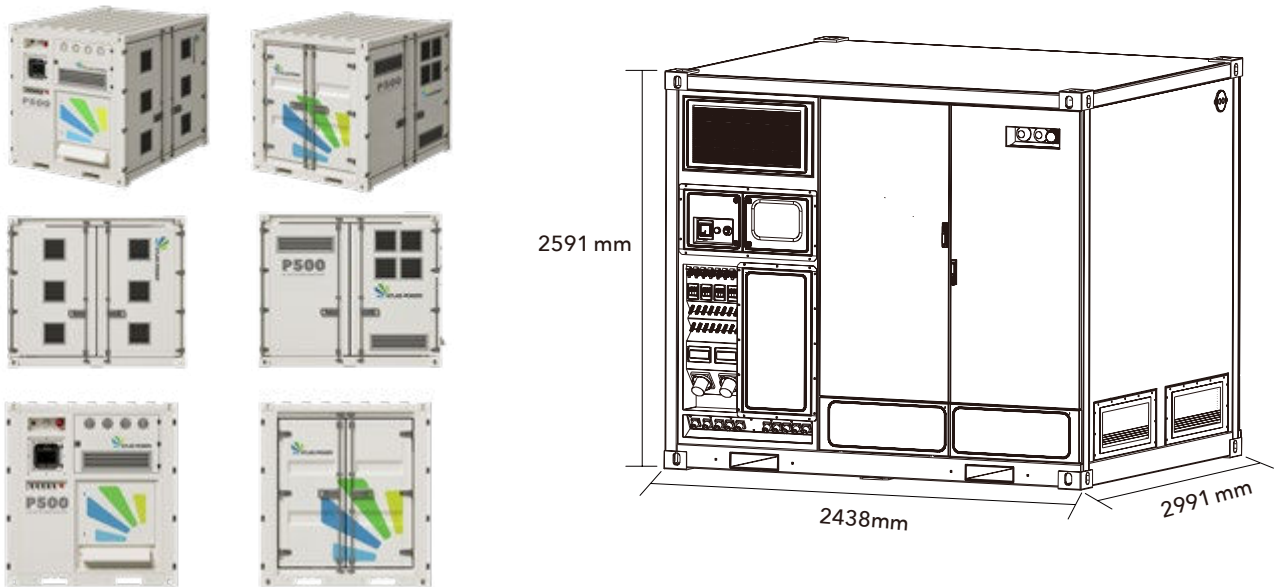
Fire Safety Sub-system	Multi-sensor Fusion Detection (Smoke, Thermal, Combustible Gas)
	FK-5-1-12 / Aerosol Fire Suppression Unit
	System-level Safety Integration
Electrical & Personnel Safety	Type A RCD Protection
	Grounding & Insulation Monitoring
	Multi-level Overcurrent/Short-circuit/Over-voltage Protection (MEN Link)Flexible Grounding Configuration

## COMPLIANCE & CERTIFICATION

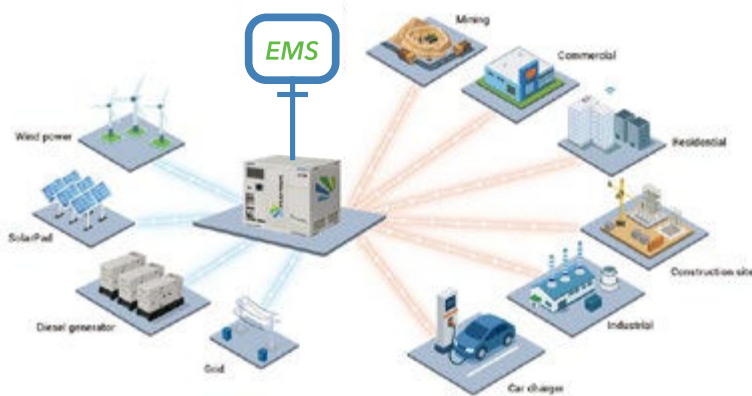
System Level Safety	E Declaration of Conformity
Battery Safety	IEC 62619
Transport Certification	UN 38.3 CSC
Grid Code Compliance	N 50549, AS/NZS 4777, VDE-AR-N 4110, PEA/MEA, etc. (configured by region)
Fire Suppression	Integrated temperature-sensitive, smoke-sensitive, and perfluorohexane automatic fire suppression system
(EMC)(Electromagnetic Compatibility)	CE Marking (EMC Directive 2014/30/EU)(Based on IEC/EN 61000 series standards)

### Dimension Drawing:

Top, Front, Side views with key dimensions.



## EMS & Platform Architecture



### Business-Goal-Driven Intelligent Brain

EMS is the core intelligence of the AP500, transforming complex power scheduling into a straightforward solution aligned with your business objectives. You don't need to be an electricity expert—simply choose your desired outcome: reduce electricity costs, save fuel, or ensure critical power supply.

## One Click Business Modes

**Basic Mode:** For all users, ready to use right out of the box

### Grid Optimisation Mode

Connect to the grid, and it automatically saves on your electricity bills.

- **Peak Shaving & Valley Filling:** Automatically charges during off peak hours and discharges during peak hours to capitalize on electricity price differences (arbitrage).
- **Demand Charge Management:** Reduces power peaks in real-time to avoid costly demand charges.
- **PV Self-Consumption:** Prioritizes the use of solar power to maximize the return on your green energy investment.

### Fuel Saver Mode

Connect to the genset, and it automatically saves on fuel.

- **Silent Run:** Automatically shuts down the genset during night-time or low-load periods, with the battery providing zero-noise, zero emission power.
- **Efficiency Optimization:** Intelligently starts and stops the genset, ensuring it always operates within its optimal fuel efficiency range.

### Critical Power Mode

Protect your core equipment with an uninterruptable power supply.

- **Grid-interactive UPS (<20ms):** In case of a grid outage, it seamlessly switches to battery power in milliseconds (<20ms), providing uninterruptible power for servers, production lines, and other critical loads.
- **Redundant Bypass Mode:** In extreme scenarios, such as a BESS fault, the system can automatically start a backup genset and bypass the BESS to ensure critical loads remain powered without fail.

**Advanced Mode:** For professionals, unlocking full potential (License required)

### Grid Optimisation Mode

Integrates multiple energy sources (grid, genset, PV) to form an adaptive, selfhealing, and resilient microgrid, enabling seamless on-grid and off-grid transitions.

### Fuel Saver Mode

BESS works in tandem with the genset, utilizing "Virtual Synchronous" technology to smooth out power surges. This allows you to drive heavy loads like crushers with a smaller genset, significantly reducing CAPEX and fuel consumption while protecting the generator from impact.

### Critical Power Mode

Leverages the BESS's rapid response capabilities to participate in grid ancillary services (such as frequency regulation), turning your energy storage asset into a revenue stream.



## Configuration & Options

Customize your AP500 for specific project demands with these modular upgrades:

- **Extended Energy Capacity (679 kWh)**  
Expands the standard 509 kWh capacity to 679 kWh, providing longer duration for large-scale energy time-shifting applications.
- **Harsh Environment Protection (IP65)**  
Upgrades the standard IP54 liquid-cooled enclosure to an IP65 rating with industrial air conditioning, designed for extreme dust, salt spray, or humidity.
- **Critical Load High-Speed Switching (STS)**  
Replaces the standard <20ms contactor with a Static Transfer Switch (STS), achieving <4ms transfer times for sensitive data center loads.
- **DC-Coupled PV Integration**  
Adds a DC/DC MPPT module to the standard architecture, enabling direct connection of PV strings for maximum green energy efficiency.
- **Direct Injection Fire Suppression**  
Enhances the standard system-level suppression with module-level direct injection technology for precise, early-stage fire safety.
- **Satellite Communication**  
Adds satellite connectivity to the standard 4G/LTE module, ensuring reliable monitoring in remote off-grid locations.
- **Galvanic Isolation Transformer**  
Integrates an isolation transformer for projects requiring full electrical separation between the BESS and the grid.
- **Advanced Grid Services Software**  
Unlocks advanced algorithms (Frequency Regulation, Economic Dispatch) on top of the standard EMS for additional revenue generation.

## Service & Support

Backed by a global network, we ensure maximum uptime and ROI for every AP500.

### Global NOC (7x24)

Proactive remote monitoring and diagnostics for the cloud to resolve issues before the impact operations.

### Localized Support

Proactive remote monitoring and diagnostics for the cloud to resolve issues before the impact operations.

### Comprehensive Warranty

Standard 1-Year system / 5-Year battery warranty, extendable up to 5 years for total peace of mind.

### Professional Training

Standard 1-Year system / 5-Year battery warranty, extendable up to 5 years for total peace of mind.

Contact our energy experts today to tailor your AP500 solution



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