



## Power Vault 50 50 KWh Distributed Energy Storage Unit

### GS-BP-50-25: 25 KVA

#### Greensmith Battery Operating System III

Uniform battery operating environment, communication and control protocols across all Greensmith units

#### Advanced BMS

- Real-time battery module measurement and report: voltage, current, temperature, Cell Capacity, SOC, Efficiency and SOH
- Active balancing that keeps cells balanced at all times
- Battery module protections against under/over-voltage, temperature and over current
- In-field configurations: DOD, voltage protection ranges, power ramp rates and charge rates
- Dynamic, real-time power control. Switch between charge and discharge in less than 2 seconds
- Ethernet, serial and Web-based communication and control
- Peer-to-peer networking across multiple units to form larger, virtual unit
- Support drop-in custom modules
- Smart Grid ready

#### Power

AC Voltage Options	208 V <sub>AC</sub>	183-229 V <sub>AC</sub>
	240 V <sub>AC</sub>	211-264 V <sub>AC</sub>
	480 V <sub>AC</sub>	422-528 V <sub>AC</sub>
Maximum Continuous Power Options	25 KW (25 KVA)	Charge or discharge
Maximum Reactive Power Options	25 KVR	Capacitive or inductive
Maximum Power Ramp Time	< 2 Seconds	Ramp Rate Adjustable
Number of Phases	3	
Maximum Current per Phase (25 KVA Model)	70 A	208 V <sub>AC</sub>
	62 A	240 V <sub>AC</sub>
	30 A	480 V <sub>AC</sub>
Nominal Grid Frequency	60 Hz	Adjustable
Grid Frequency Range	59.3-60.5 Hz	Adjustable
Power Factor	> 0.99	At Full Load



### Energy

Energy Storage Capacity	50 KWh	Nominal
Round Trip Efficiency	> 85%	At Rated Power
House Keeping Power	< 100 W	At Idle
Standby Energy Loss Rate	< 35% per year	Grid is Available

### Battery Module

Type	lithium Iron	
Nominal Capacity	102.5 Ah	
Cycle Life	>1,000	100% DOD
	>2,000	90% DOD

### Battery Cabinet

Enclosure Rating	NEMA 3R	Optional
Cabinet Dimensions	91(H)"x72(W)"x36"(D)	
Weight	2,300 lbs	
Transportation	Lifting hooks	

### Inverter Cabinet

Enclosure Rating	NEMA 3R	
Dimensions and Weights	74" (H) x 45"(W) x 26.875"(D) 1,732 lbs	

### Thermal Management

Operating Temperature	0 - +50 °C	
Optimum Storage Temperature	15 - +25 °C	
Cooling	Forced Air	
Cooling Power	< 1 KW	

### Communication & Control

Connection Types	Ethernet, 3G Wireless Broadband, RS232, RS485	
Protocols	TCP, UDP, Modbus, HTTP, Web Services	
Data Formats	Binary Encoded Values, XML	
Network Security	SSL with X509 Certificate	Optional
System Response Time	< 200 ms	

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Greensmith continually makes product changes to improve performance and enhance functionalities. Specifications are subject to change to reflect these improvements.



### Maintenance and Reliability

Swappable 48Vdc tray for easy replacement, storage, and maintenance to maximize shelf life

Protection at cell, module, tray and system levels

Redundant communication and control paths

Remote, non-interruptive firmware update

### DESS Management Web Portal

Application and Web Portal available from Greensmith to centrally manage a large number of storage units over the Internet

System-to-system integration for unit control and utility integration

Web browser-based graphical interface for operation, real-time monitoring and reporting

Central database archive all historical data for analysis

### Supported Solutions

Peak Shaving

Renewable Integration

Load Following

Backup Power

Voltage & Frequency Regulation