



SPBES Specification Sheet



Lithium Industrial Batteries

All SPBES systems are backed by industry leading safety, performance, and recycling systems. CellCool™, ThermalStop™ and CellSwap™ provide ideal operating conditions, thermal runaway prevention and best industry value.

System Types:

Power 65 (P65) is designed for high discharge power applications requiring high C-rates and faster cycling. The widely used P65 system provides up to 15,000 charge/discharge cycles at 80% DoD.

Power 73 (P73) also provides up to 15,000 charge/discharge cycles at 80% DoD but with an improved energy density, a 14% increase for the same weight.

Energy 88 (E88) has been designed for applications requiring lower discharge rates and greater energy density. A decrease in cost and weight provides the end user with a faster path to ROI and decreased footprint and weight.

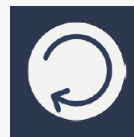
General SPBES Features	Specifications
BMS (Battery Management System)	MegaWatt ++
IMS (Information Management System)	API Interface
Engineered Design Life	5/10 year
CellCool™ Liquid Cooling	Yes
TCP Ultra Fast Internal Comms	Yes
Thermal-Stop™ Thermal Runaway Protection	Yes
E-Vent™ Safety Venting System	Yes
Operating Temperature (active heating/cooling)	15°C to 30°C
Operating Ambient Temperature Range	-40°C to +60°C
Internal Active Working Temperature	20°C to 25°C
Series Configurable	Yes
OnPoint™ Remote Active Monitoring	Yes
OnPoint™ Remote Active Programming	Yes
Parallel Configurable (capacity scalable)	Unlimited
System Voltage Range	300V to 1500V

*Specifications subject to change



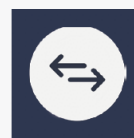
Experience

Over 20MWh of installed systems. SPBES batteries power the world's largest electric ferries, workboats and industrial machinery.



Liquid Cooling

Precisely and evenly manages internal battery temperature and provides best in class cycle life and fire safety.



CellSwap

Replace only the cells at end of system life instead of the whole system.





SPBES Specification Sheet

System Specifications for the SPBES Lithium Industrial Batteries

Single Module (BBU)	Power 65	Power 73	Energy 88
C Rate RMS (Continuous)	3C	3C	1.4C
Cycle Life @ 80% DoD	15000 cycles	TBA	TBA
Cell Chemistry	NMC	NMC	NMC
Dimensions	L 580mm, H 380mm, W 320mm	L 580mm, H 380mm, W 320mm	L 580mm, H 380mm, W 320mm
Weight	93kg	90kg	93kg
Energy	6.5kWh	7.3kWh	8.8kWh
Capacity	75Ah	85Ah	100Ah
Voltage Range	77-100VDC	77-100VDC	77-100VDC
Nominal Voltage	88.8VDC	88.3 VDC	88 VDC
RMS Continuous Current	225A	255A	140A
Max Discharge Current	450A	680A	200A
Max Charge Current	225A	255A	100A
Connectors	IP67	IP67	IP67
Terminal Isolation at Module	Contactors	Contactors	Contactors
Thermal-Stop™ Thermal Runaway Protection	Yes	Yes	Yes
Self Discharge Rate/Month	<2%	<2%	<2%
Internal resistance	17mΩ	10mΩ	13mΩ
Efficiency (at 1C)	>99%	>98%	>98%
Electrical Isolation	Open circuit when not in operation	Open circuit when not in operation	Open circuit when not in operation

Series String (1000V)	Power 65	Power 73	Energy 88
Dimensions (including racking, venting and lifting apparatus)	W 896mm, H 2550mm, D 632mm	W 896mm, H 2550mm, D 632mm	W 896mm, H 2550mm, D 632mm
Weight	1265 kg	1265 kg	1265 kg
Energy	65kWh	73kWh	88kWh
Capacity	75Ah	85Ah	100Ah
Voltage Range	770-1000VDC	770 - 1000VDC	770-1000VDC
Nominal Voltage	888VDC	883 VDC	880VDC
RMS Continuous Current	225A	255A	140A
Max Discharge Current	450A	680A	200A
Max Charge Current	225A	255A	100A
Internal Resistance	180mΩ	96mΩ	128mΩ
Electrical Isolation at DC Bus	Breaker	Breaker	Breaker
Integrated Racking System	Included	Included	Included
Communication to Higher Level System	Modbus/TCP	Modbus/TCP	Modbus/TCP

*Specifications subject to change

