



# UTILITY SCALE ENERGY STORAGE

The Magellan Power ESU Series (Utility Scale Energy Storage) combines smart functionality and connectivity with high reliability, afforded by proven rugged power electronics to offer a flexible, programmable, durable and easy to install range of energy storage for generation and distribution applications.



## Features

- Rugged industrial design
- Integrates with: Lead Acid, Lithium Ion & Flow batteries
- Four quadrant inverter technology
- Dynamic real and reactive power control
- Black start capability
- Modular inverter design
- Touch screen mimic display
- Programmable grid management functions
- External control
- Smart communication protocol
- Easy to install and operate
- Modular design maximising flexibility



# MAGELLAN POWER ENERGY STORAGE | UTILITY SCALE

SPECIFICATION		
<b>Protections</b>	Transient	Surge diverters fitted to Grid input and DC output.
	Circuit Breakers	Battery input, grid input, DC load output, surge diverter.
	Grid Protections	Over voltage, under voltage, over frequency, under frequency, islanding detection.
	Inverter Protections	Inverter over voltage monitoring, inverter over load monitoring, inverter current limit, over temperature monitoring, AC contactor fault, sensing feedback faults, cooling failure.
	Battery Protections	Battery cell under/ over temperature monitoring, battery cell under/ over voltage monitoring, battery cell failure, battery health warning, battery imbalance warnings, battery over current magnetic isolator, DC earth leakage.
	User terminals	Battery positive & negative, grid actives & neutral, protective earth (optional MEN link) volt free relays, grid failure, common alarm, battery low alarm.
<b>Indications</b>	User Interface	Colour touch screen 4.5"
	Monitored System Parameters	Battery state of charge, state of health, current, cell voltages & temperatures, inverter voltages, currents, watts, VARs and temperatures, mains voltages, currents, watts, VAR, power factor & frequency, enclosure temperature.
	Mimic indications	Graphical overview of system and status, showing power flow directions and contactor positions.
	Monitoring & diagnostic download software.	"Access facility" PC software.
<b>Supervisory Control Scheduling</b>	Scheduling algorithm	Triggered from inbuilt time-of-day clock and pre-programmed times or digital inputs or via communications interfaces.
	Dynamic control	Global numerical weather forecast data together with machine learning/ neural network for load profile prediction and solar forecasting for optimal dispatch.
	AC charge control	Conventional charger with programmable parameters, programmed charging current levels automatically started or paused via scheduled events terminated by battery full condition.
	AC export control	Automatically started via scheduled event programmable at two possible export power levels terminated by low battery state of charge.
	Standby mode	Low-power consumption mode. This is automatically triggered after batteries are fully charged
	Profile Mode	Pre-configured PQ profiles with external manual override.



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BATTERY SYSTEM SPECIFICATION		
DESCRIPTION	VALUE	NOTES
Nominal Energy	91.3kWh	Per Rack
Rated Capacity	To suit application	@0.3C discharge 23 ± 5°C
Cell Capacity	63Ah	N/A
Minimum Voltage	$3V * 14 * 14 = 588V$	N/A
Nominal Voltage	$3.7 V * 14 * 14 = 725.2V$	N/A
Maximum Voltage	$4.2V * 14 * 14 = 823.2V$	N/A
Max Continuous Charge Current	1C	
Peak Charge Current	1C	
Max Continuous Discharge Current	1C	
Peak Discharge Current	1C	
Duty Cycle	1 cycle per day (for rated specified cycle life)	
Rest Time	95%	@23 ± 5°C as a new product
Cell Cycle Life	7,000	@23 ± 5°C, 1C/ 1C, 80% DoD
Operational Temperature (Optimal)	0~40°C 23 ± 5°C	Derating of batteries SoH will accelerate it if used out of 23 ± 5°C
Storage Temperature	-30~60°C	As the degradation of battery product is accelerated in high temperature, it is not recommended to store battery modules over 40°C for more than 10 hours. Degradation will be 0.1% per day and 0.15% per day when the temperature is 35°C and 45°C respectively under the condition of SoC 80%. Recommendation temperature range is 23 ±5°C.

