

Reliable Backup for Healthcare

ESS400 ENERGY STORAGE SYSTEM



Hybrid SuperCapacitors

Musashi's Hybrid SuperCapacitor (HSC) products deliver unparalleled high-power density energy storage to meet the diverse needs of a wide range of healthcare applications.


Reliable power backup is essential for medical facilities to ensure patient safety and regulatory compliance. The ESS400 paired with a 3-phase UPS enables seamless generator transfer, reduces costs, and saves space while supporting the requirements of sensitive medical equipment. It offers a 15 to 20-year, 100K-cycle lifespan, eliminating costly power upgrades while meeting growing peak power demands.

Benefits for Healthcare Applications


- 🏠 **Reliable Backup** for healthcare facilities
- 🏠 **Compatible with NFPA99-Compliant** stand-by generators that support load within 10 seconds during power disruption
- 🏠 **Paired with a 3-Phase UPS**, the ESS400 enables transfer to generator in seconds
- 🏠 **Eliminate Batteries** to save space & cost; safeguards emergency power for medical IT infrastructure, imaging equipment, and operating theaters
- 🏠 **Peak Power Support** for medical imaging equipment



High Power Density
Saves space in your facility or enclosure



Long Product Life
15 to 20 years even in the most challenging environments



High Cycle Life
Achieve up to 100K+ full discharge/recharge cycles



Safe and Reliable
No thermal runaway & over 3M hours of field operation; UL1973



MUSASHI
Energy Solutions

ESS400

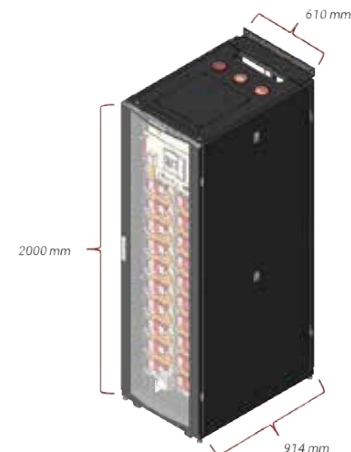
ENERGY STORAGE SYSTEM

Specification Overview

| | Item | Description |
|-------------------------|--|---|
| Basic Parameters | Cell Type | Hybrid SuperCapacitor |
| | Nominal Voltage | 480 Vdc |
| | Maximum Voltage | 594 Vdc |
| | Minimum Voltage | 384 Vdc |
| | Maximum Charging Current | 200A |
| | Minimum Charging Duration | 5 minutes |
| | Maximum Discharge Current | 1000 A |
| | Discharge Duration (@ 333kW) | 33.2 seconds |
| | Maximum Power Output | 400 kW |
| | Cycle Life | >100,000 @ 100% DOD; >400,000 @ 80% DOD |
| | Weight (Maximum) | 600 kg / 1,320lbs |
| | Dimensions (WxDxH) [mm / in] | 610 x 914 x 2000 / 24 x 35.98 x 80 |
| | Communication Interface | Modbus TCP, Dry Contact |
| Protection | Over/under temperature, over/under voltage, short circuit, communication failure | |
| Design Life | 15 years | |
| Environment | Certification | UL 810A, UN 3508, UL 1973, UL 9540A, RoHS |
| | IP Level | IP 20 |
| | Storage Temperature | 0 - 40°C (10 - 30°C recommended) |
| | Transportation Temperature | -10°C to 50°C |
| | Operating Temperature | 0 - 40°C (10 - 30°C recommended) |
| | Relative Humidity | 90% and less |
| | Max. Operating Altitude | 0 - 3000m |
| | Transport | Hazard class 9, designed to IEC 60068-2-6, 27 |
| Seismic | Designed for OSHPD Compliance | |

| | Cell | Module | Full Cabinet |
|------------------------------------|--------------------------|------------------------|----------------------------|
| Configuration | Single Cell | 8S5P | 20 modules in series |
| Usable Capacity | 3.4 Wh | 137 Wh | 2740 Wh |
| Nominal Voltage | 3.0 Vdc | 24 Vdc | 480 Vdc |
| Operation Voltage Range | 2.4 - 3.71 Vdc | 19.2 - 29.7 Vdc | 384 - 594 Vdc |
| Dimension (WxDxH) [mm / in] | 150x16x93 / 5.9x0.63x3.7 | 203x737x114 / 8x29x4.5 | 610x914x2000 / 24x35.98x80 |
| Weight | 323g / 11oz | 20kg / 44.18lbs | 600kg / 1,320lbs |

| BOL Back-UpTime @ 25°C 384V-594V DC (Number of Cabinets) | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|------|
| Load (KW) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 100 | 122 | 253 | 385 | 516 | 647 | 778 | 910 | 1041 |
| 250 | 43 | 96 | 148 | 201 | 253 | 306 | 358 | 411 |
| 400 | 23 | 56 | 89 | 122 | 155 | 188 | 220 | 253 |
| 600 | | 34 | 56 | 78 | 100 | 122 | 144 | 166 |
| 800 | | 23 | 40 | 56 | 73 | 89 | 106 | 122 |
| 1200 | | | 23 | 34 | 45 | 56 | 67 | 78 |
| 1600 | | | | 23 | 32 | 40 | 48 | 56 |
| 2000 | | | | | 23 | 30 | 37 | 43 |



Note: Backup times are an estimate, and do not account for resistances external to cell (busbar, UPS, etc)