

Energy Storage Redefined!

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 an electrified world with flexible configurations.

For over a decade, we have been at the forefront of automated high-volume HSC manufacturing, accumulating valuable expertise to deliver energy storage solutions for a variety of industries.

Key Specifications

- Up to 400kW per cabinet
- Voltage Range: 384 - 594 Vdc
- Up to 10,000 kW seconds of energy storage per cabinet
- Parallel cabinets for higher power, longer autonomy or redundancy
- Designed to meet all UL/CE Requirements



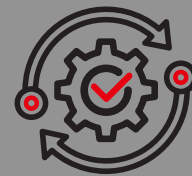
High Power Density

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 1M+ full discharge/recharge cycles



Safe and Reliable

No thermal runaway and over 3M hours of field operation



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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	1100 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 RTU, Modbus TCP, Dry Contact
Protection	Over/under temperature, over/under voltage, short circuit, insulation breakdown, 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)