XLHVSupercapacitor

High Voltage Modules

Features and benefits

- Standard 19" rack mounting
- Systems up to 1500V and higher
- Large capacitance for high energy density
- UL recognized
- Estimated life up to 20 years*

Applications

- Enhanced STATCOM
- Ancillary services
- Fast frequency regulation
- Industrial backup/ridethrough
- Power storage for grid systems
- Solar firming

*Supercapacitor lifetimes vary based on charge voltage and temperature. See Eaton's application guidelines or contact your local Eaton sales representative for more information on lifetime estimates

Description

Eaton supercapacitors are high reliability, high power, ultra-high capacitance energy storage devices utilizing electric double layer capacitor (EDLC) construction combined with proprietary materials and processes. This combination of advanced technologies allows Eaton to offer a wide variety of capacitor solutions tailored to applications for backup power, pulse power and hybrid power systems.

They provide millions of charge/discharge cycles All products feature low ESR for high power density with environmentally friendly materials for a green power solution. Eaton supercapacitors are maintenance-free with design lifetimes up to 20 years* and operating temperatures down to -40 °C and up to +85 °C.

Ratings

Capacitance	62.5 – 94.4 F
Working voltage	102 - 144 V
Surge voltage	112 - 158 V
Capacitance tolerance	-0% to +20% (+20 °C)
Operating temperature range	-40 °C to +65 °C (internal cell temperature)

Specifications

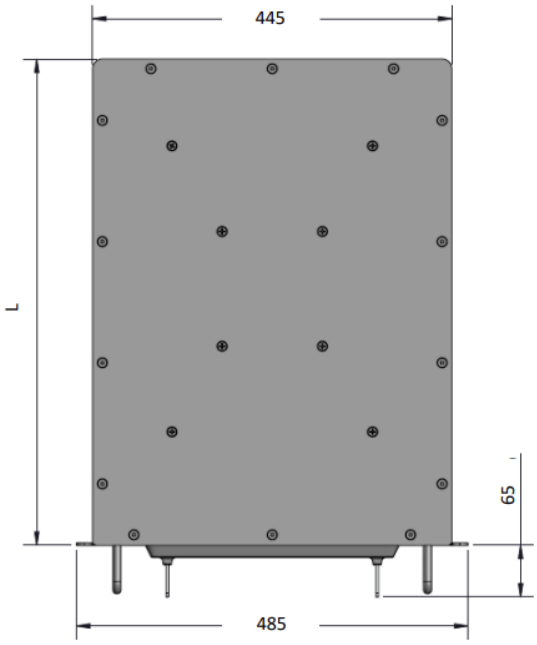
Maximum Operating Voltage (V)	Capacitance[1] (F)	Part Number	Maximum initial ESR[1] (mΩ)	Continuous current[6] (A)	Peak current[5] (A)	Nominal leakage current[2] (mA)	Peak power[4] (kW)	Stored energy[3] (Wh)	Thermal resistance[7] Rth (°C/W)	Short circuit current**,[9,8] (A)
102	94.4	XLHVS1020944C0B00	9.7	64	2500	9	270	137	0.38	10500
144	62.5	XLHVS1440625C0B00	12.5	56	2500	8	420	180	0.38	11500

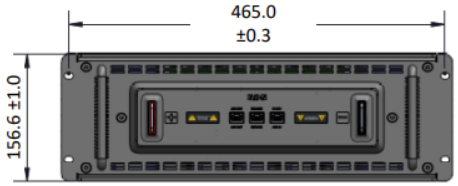
Performance

Parameter	Capacitance Change (% of initial value)	ESR (% of initial maximum value)
Lifetime — 1,500 hours at maximum rated voltage and operating temperature	≤ 20%	≤ 200%
Lifetime - 1,000 hours at maximum rated voltage and operating temperature XLHVS144	≤ 20%	≤ 200%
Charge/discharge cycling[9] — 1,000,000 at +20 °C	≤ 20%	≤ 200%
Storage, uncharged, up to +35 °C — 3 years	≤ 5%	≤ 10%

1. Capacitance, Equivalent Series Resistance (ESR) and Leakage current are measured according to IEC62391-1.
2. Leakage current at +20 °C after 72 hour charge and hold.
3. Stored Energy (Wh) = $\frac{\frac{1}{2}C\,V^2}{3600}$
4. Peak Power (W) = $\frac{V^2}{4\,ESR}$
5. Peak current for 1 second from full rate voltage to half voltage (A) = $\frac{\frac{1}{2}CV}{1+ESR\ x\ C}$
6. Continuous current with a 15 °C temperature rise. Continuous current (A) = $\sqrt{\frac{\Delta T}{ESR\ x\ Rth}}$
7. Thermal resistance (Rth) cell body temperature to ambient in open air in degrees C per Watt (°C/W).
8. Short circuit current is for safety information only. Do not use as operating current.
9. Cycling between maximum working voltage and half voltage with 3 seconds rest at +20 °C.
10. Testing and verification of product under end application conditions is recommended

Dimensions (mm) and Mass (g)





Part Number	L (max, mm)	Typical Mass (kg)
XLHVS1020944C0B00	481	30
XLHVS1440625C0B00	603	38

Safety and Certifications

Agency information	UL810a, Guide BBBG2, File MH46887; IEC62933, CE
Operating voltages	Maximum series connection: 1500V, High Potential Test (hipot) 4000V
Seismic Test	IEC 60068-3-3, Zone 4
Environmental	RoHS and REACH compliant, lead free
Warnings	Do not overvoltage, do not reverse polarity
Shipping	No restrictions, per UN3499 with all cells <10 watt-hours. Shorting wire must be applied across power terminals.

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