XLR-16 Supercapacitor

16.2 V, 500 F Module

Features and benefits

- Long life energy storage, up to 20 years*
- Very low Equivalent Series Resistance (ESR)
- Wide operating temperature range
- Cost effective backup power and large energy recapture
- High efficiency (> 98%) under broad operating conditions
- High reliability, green solution
- Low operating costs and maintenance free

Applications

- Backup power
- Peak power shaving, pulse power
- Engine starting
- Regenerative energy capture for transportation
- Remote power for sensors, LEDs and switches

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 can be applied as the sole energy storage or in combination with batteries to optimize cost, life time and run time. System requirements can range from a few microwatts to megawatts. 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 +65 °C.

*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

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Ratings

Capacitance	500 F
Maximum operating voltage	16.2 V
Surge voltage	17.1 V
Capacitance tolerance	-5% to +20%
Operating temperature range	-40 °C to +65 °C

Specifications

Capacitance[1] (F)	Part number	Maximum working voltage (V)	Maximum initial ESR[1] (mΩ)	Leakage current[1, 2] (mA)	Stored energy[3] (Wh)	Peak power[5] (kW)	Pulse current[4] (A)	Continuous current[6] (A)
500	XLR-16R2507-R	16.2	1.7	5	18.2	38.6	2189.2	122

Performance

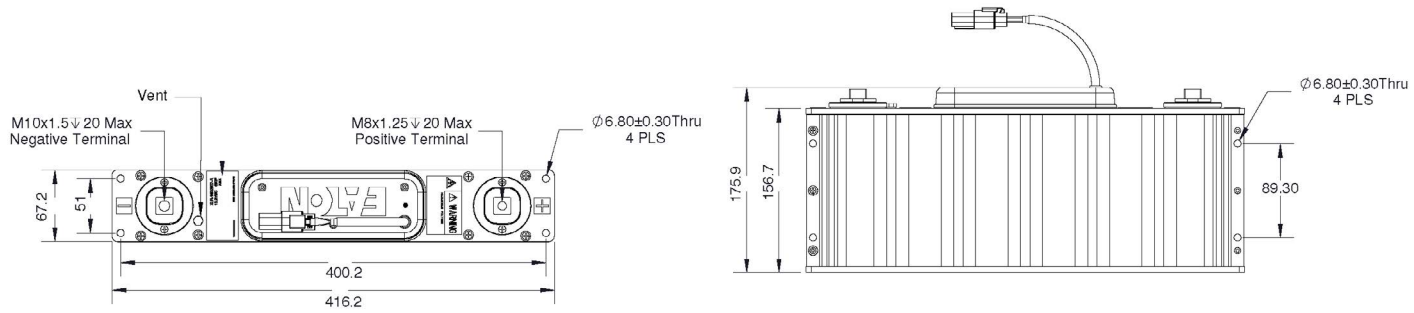
Parameter	Capacitance Change (% of initial value)	ESR (% of initial maximum value)
Lifetime: (1500 hours at maximum temperature and voltage)	≤ 20%	≤ 200%
Charge/Discharge Cycles[7] (1,000,000 at +25 °C)	≤ 20%	≤ 200%
Storage: (3 years, uncharged, < +35 °C)	≤ 5%	≤ 10%

1.Capacitance, Equivalent Series Resistance (ESR) and Leakage current are measured according to IEC62391-1 with current in milliamps (mA) = 8 x C x V.
2. Leakage current at +20 °C after 72 hour charge and hold at rated voltage.
3. Stored Energy (Wh) = $\frac{0.5 \times C \times V^2}{3600}$
4. Pulse current for 1 second from full rate voltage to half voltage. (A) = $\frac{0.5 \times V \times C}{1 + ESR \times C}$
5. Peak Power (W) = $\frac{V^2}{4 \times ESR}$
6. Continuous current with a 15 °C temperature rise.
7. Cycling between rated voltage and half voltage, 3 second test at +25 °C.

Safety and Certifications

Agency information	UL810a (cells)
Shock and vibrations	SAE J2464 & J2380
Environmental	RoHS, HF
Shipping	No restrictions, per UN3499 ship with shorting wire

Dimensions (mm)



Part numbering system

Typical Mass: 5.7 kg

XLR	–16R2	50	7	-R
Family code	Voltage (V) R = decimal	Capacitance (µF) Value	Multiplier	Standard product
XLR=Family Code	16R2 = 16.2 V	Example 507 = 5.0x10^7 µF or 500 F		

Packaging information

Standard packaging: Bulk, 1 piece per box

Part Marking

- Manufacturer
- Capacitance (F)
- Module operating voltage (V)
- Family code or part number

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