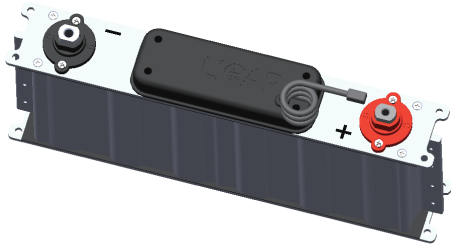


SM0500-016-PT-1



Specifications

Capacitance	Nominal Capacitance ¹	500F
	Tolerance	0%~+20%
Voltage	Nominal Voltage	16V DC
	Maximum Voltage ²	17V DC
ESR	ESR(DC)-Maximum Initial	2.1mΩ
Individual Cells	Nominal Capacitance ¹	3000F
	Nominal Voltage	2.7V DC
	Number of Cells	6
Current	Maximum Leakage ³	170mA
	Maximum Peak	1900A
	Maximum Continuous Current(ΔT=15°C) ⁴	131A
	Maximum Continuous Current(ΔT=40°C) ⁴	211A
Energy Storage	Maximum Stored Energy ⁵	17.8Wh
	Gravimetric Specific Energy ⁶	3.1Wh/kg
Power Density	Impedance Match Specific Power ⁷	5254Wh/kg
	Usable Specific Power ⁸	2522W/kg

Temperature

Temperature Characteristics	Operating Temperature Range ⁹	-40°C to +65°C
	Storage Temperature Range	-40°C to +70°C

Monitoring and Control

Monitoring and Control	Internal Temperature Sensor	NTC
	Temperature Interface	Analog
	Capacitor Voltage Monitoring	N/A
	Connector	Deutsch DTM
	Capacitor Voltage Management	Passive

Safety

Safety	Short Circuit Current	7600A
	1000V DC Insulation Resistance	≥200MΩ
	2500V DC Leakage Current	≤10mA
	Environmental Ingress Protection	IP65

Service Lifetime

Endurance	Product held at rated voltage in 65 °C environment for 1500 hours	
	Change in capacitance (% drop from nominal)	≤20%
	Change in ESR (% increase from maximum initial)	≤100%
DC Life	Product held at rated voltage in 25 °C environment	
	Life (projected)	10 Years
	Change in capacitance (% drop from nominal)	≤20%
	Change in ESR (% increase from maximum initial)	≤100%
Cycle Life	Cycling from rated to 50% voltage under constant current in 25 °C environment	
	Cycle life (projected)	1,000,000 Cycles
	Change in capacitance (% drop from nominal)	≤20%
	Change in ESR (% increase from maximum initial)	≤100%
Storage Life	Stored uncharged in original packaging in 25°C environment	
	Life	4 Years

Physical Characteristics

Mechanical Characteristics	Power Terminal	M8/M10
	Recommended Torque	20/30N.m
	Operation Vibration	IEC 255-21-1
	Transportation Vibration	IEC 60721-3-2
	Shock	IEC 255-21-2

APPLICATIONS

- Wind Turbine Pitch Control System
- Engine Start
- Bridge Power
- Peak Shaving
- UPS System

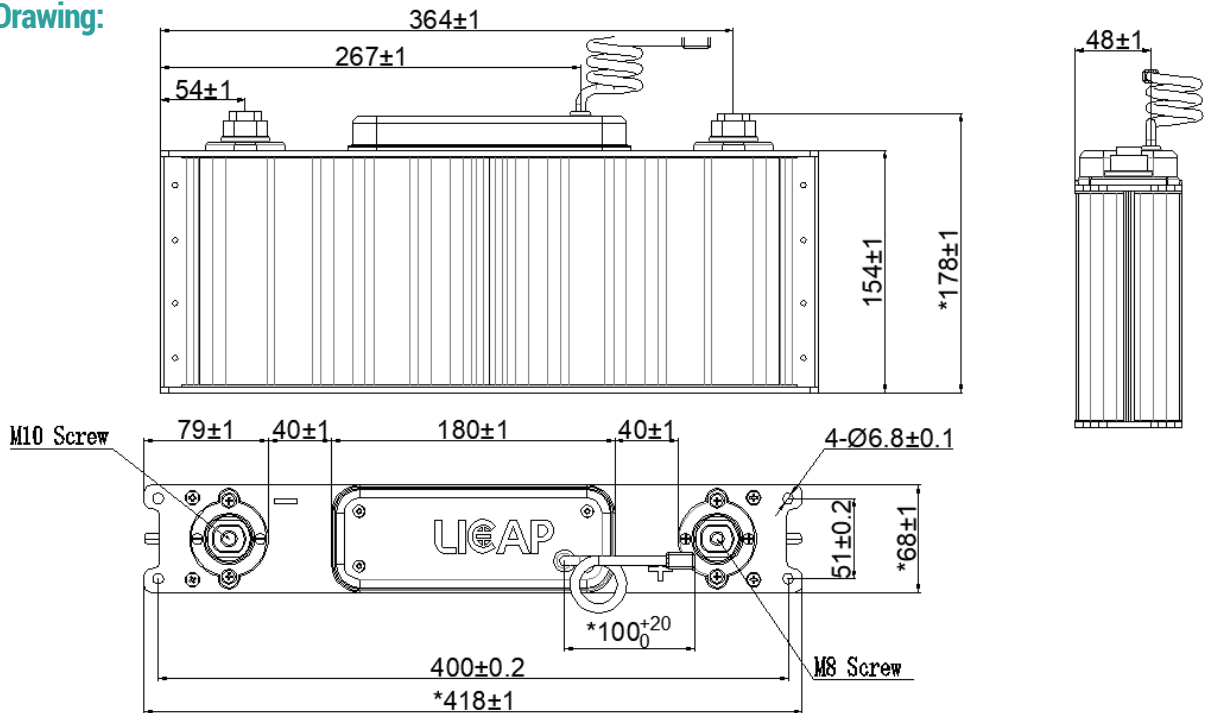


FEATURES & ADVANTAGES

- One Million Cycle Life
- 10 Years of Life
- Wide Operating Temperature Range: -40°C to +65°C
- High Power Charge & Discharge Rate
- No Lead or Toxic Substances
- No Risk of Thermal Runaway



Outline Drawing:



Pin Definitions:
 1. N/A
 2. N/A
 3. Temperature
 4. Temperature

Weight and Size

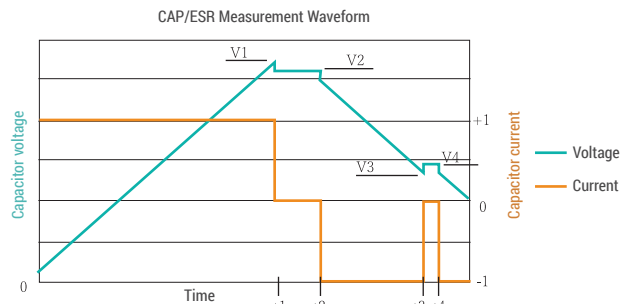
Weight: ≤5.8g | Size : 418±1mm*68±1mm*178±1mm (L*D*H)

Naming Rules:

Type	Capacitance	Rated Voltage	CMS-Capacitor Management/Monitoring
SM Supercapacitor Module	0500=500F	016=16V	PT=Passive with temperature monitoring

Notes:

1. Measure capacitance and DC internal resistance at 25°C under specified test current per Figure 1.



$V1 = V_{rated}$
 $V3 = 0.5 \times V_{rated}$
 $t2 - t1 = 15 \text{ seconds}$
 $t4 - t3 = 5 \text{ seconds}$
 $Capacitance = I \times (t3 - t2) / (V2 - V4)$
 $ESR = (V4 - V3) / I$

Figure 1

2. Surge voltage is non-repeatable and duration cannot exceed 1s.

3. Corresponding current value after 72 hours of rated voltage at 25°C.

4. $\Delta T = I_{rms}^2 \times ESR \times R_{ca}$

5. $E_{stored} = 0.5 C V_{nom}^2 / 3600$

6. $E_{max} = E_{stored} / \text{weight(kg)}$

7. $P_{max} = \frac{0.25V^2}{ESR_{DC} \times \text{weight(kg)}}$

8. $P_d = \frac{0.12V^2}{ESR_{DC} \times \text{weight(kg)}}$

9. Hold at -40°C for 16 hours, then measure capacitance and ESR. Increase temperature by 10°C, hold for hours, then measure capacitance and ESR. Continue the same process at 10°C intervals until temperature reaches 65°C.

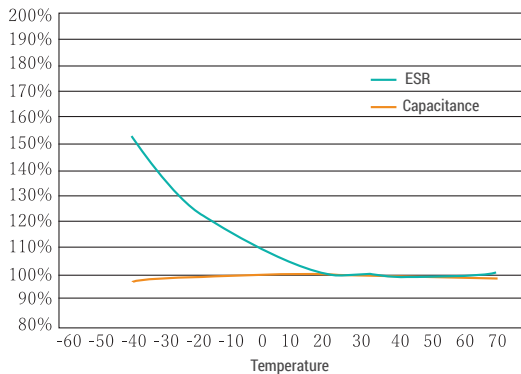


Figure 2

Specifications are subject to change without notice.

