

SkelMod

51V166F

- + 51V DC nominal voltage
- + 166 F capacitance
- + IP65 protection
- + High power output



General Specifications	Value	Unit
Electrical		
Product code	6730094	
Rated voltage	51	V
Absolute maximum voltage	54	V
Rated capacitance	166	F
DC 1s ESR rated	5.3	mΩ
Maximum series voltage	750	V
Rated maximum peak current (for 1 s duration) ^{1,9}	2252	A
Typical short circuit current (For informational purposes - do not use as operating current.)	9623	A
Maximum stored energy ²	59.9	Wh
Cells in total	18	pcs
Capacitance of individual cells	3000	F
High-pot capability	2500	VDC

Ultracapacitor management system

Internal temp sensor	NTC thermistor
Temperature interface	analogue
Cell voltage monitoring	Overvoltage alarm
Connector (mating)	Deutsch DTM04-4P

Temperature and Life	Value	Unit
Operating temperature range*		
Minimum	-40	°C
Maximum	+65	°C
Storage temperature range (uncharged)		
Minimum	-40	°C
Maximum	+50	°C

Life

Lifetime @ 51V and maximum operating temperature	1500	Hours
Lifetime @ 48V and maximum operating temperature	2500	Hours
Storage life @ RT, uncharged	10	Years
Projected cycle life @ RT, between 51 V and 25.5 V	1,000,000	Cycles
Projected cycle life @ RT, between 48 V and 24 V	2,000,000	Cycles

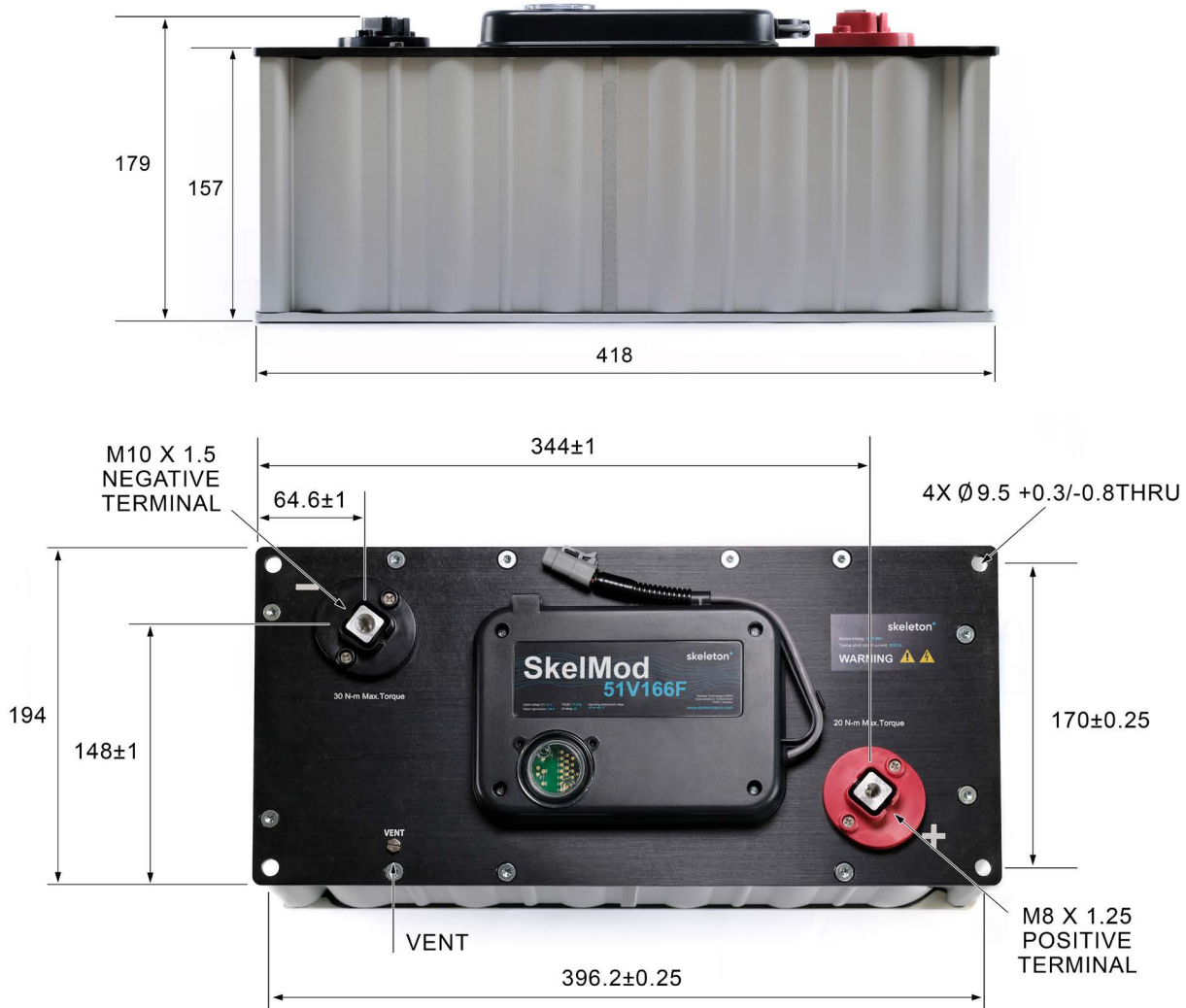
Capacitance decrease 20% from rated value;
resistance increase 100% from rated value

Power & energy

Specific Practical Power, P_{specific}^7	8.52	kW/kg
Max stored Energy, E_{stored}^2	59.9	Wh
Specific Energy, E_{specific}^3	4.1	Wh/kg

Physical parameters	Value	Unit
Mass, typical	14.4	kg
Dimensions, L (max), W (max), H (max)	418 x 194 x 179 mm	
Recommended torque on power terminals	20 (M8) / 30 (M10)	Nm
Environmental protection for enclosure	IP65	
Vibration	ISO 16750-3, Table 12	
Shock	IEC 60068-2-27, -29	

Thermal	Value	Unit
Thermal resistance (R_{ca}), typical	0.40	°C/W
Thermal capacitance (C_{th}), typical	13.0	kJ/°C
Max continuous current ¹⁰ , $\Delta T = 15^\circ C$	85	A _{RMS}
Max continuous current ¹⁰ , $\Delta T = 40^\circ C$	137	A _{RMS}



$$(1) \text{ Maximum peak current (1 sec)} = \frac{\frac{1}{2} CV}{C \times ESR + 1s} \quad (2) E_{\text{stored}} = \frac{\frac{1}{2} CV^2}{3600} \quad (3) E_{\text{specific}} = \frac{E_{\text{stored}}}{\text{mass}}$$

$$(4) P_{\text{density}} = \frac{P_{\text{max}}}{\text{volume}} \quad (5) E_{\text{density}} = \frac{E_{\text{stored}}}{\text{volume}} \quad (6) P_{\text{max}} = \frac{V^2}{4 \times ESR}$$

$$(7) P_{\text{specific}} = \frac{P_{\text{max}}}{\text{mass}} \quad (8) R_{\text{th}} = \frac{\Delta T}{DC \ 1s \ ESR \times I^2}$$

(9) The stated maximum peak current should not be exceeded during use. If the limit is to be exceeded by the customer, Skeleton must be consulted beforehand and give approval for the exceeded power load.

(10) These values of current refer to begin of life conditions of the product, for system design 200% ESR should be considered.

Standard markings

- + Name of manufacturer, part number, serial number, rated voltage
- + Rated capacitance, negative and positive terminals, warning marking
- + Total energy in watt-hours

Notes

- + All information provided on this data sheet and all subsequent supercapacitors sales and testing are subject to Standard Terms of Service (ToS) available on www.skeletontech.com, document General Terms of Sale for Skeleton Technologies GmbH