



# NESSCAP® Ultracapacitor Products 48V MODULES

## Features

- 48V modules with rated capacitance of 36F, 66F, 88F, 111F and 166F
- Highest power performance with ultra-low internal resistance
- Integrated UMU (Ultracapacitor Management Unit)
  - Individual cell balancing
  - Voltage and temperature diagnosis by logic output
  - Optional CAN or RS communication interface
- Rugged design to withstand harsh environments
- Typical applications
  - Transportation and automotive
  - Industrial, UPS, DVR and telecommunication



## Product & Spec.

Rated Capacitance (F)	Internal Resistance (mΩ)		Max. Current <sup>1</sup> (A)	Leakage Current (mA)	Stored Energy (Wh)	Specific Energy (Wh/kg)	Nominal Weight (kg)	Part Number
	AC (100Hz)	DC						
Discharge with constant current at 25°C			1 sec discharge rate to 1/2V <sub>R</sub>	72 hours, 25°C	at V <sub>R</sub>	Gravimetric		
36	<10.8	< 13.0	580	< 1.5	11.8	1.48	8.0	EMHSR-0036C0-048R0S
66	< 8.6	< 10.4	920	< 2.7	21.7	2.16	10.1	EMHSR-0066C0-048R0S
88	< 7.3	< 8.9	1,160	< 3.0	28.9	2.50	11.6	EMHSR-0088C0-048R0S
111	< 6.0	< 7.1	1,460	< 4.2	36.4	2.78	13.1	EMHSR-0111C0-048R0S
166	< 4.8	< 5.6	2,030	< 5.2	54.5	3.23	16.9	EMHSR-0166C0-048R0S

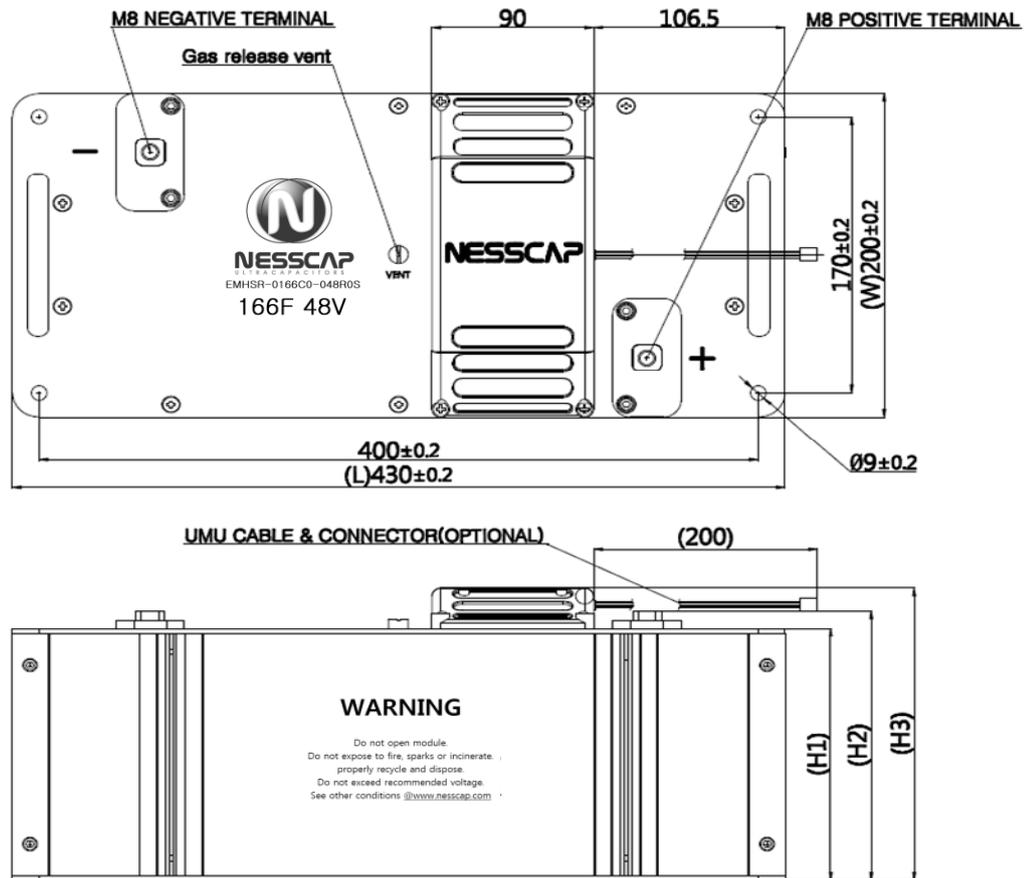
Rated Voltage, V <sub>R</sub>		48.6 V DC		
Surge Voltage		51.3 V DC		
Capacitance Tolerance		0% / +20%		
Operating Temperature Range		-40 ~ 65 °C		ΔCAP  < 5% and ΔESR < 150% of initial value measured at 25°C
Storage Temperature Range		-40 ~ 70 °C		
Lifetime	Endurance	1,500 hours at rated voltage and 65°C		ΔCAP  < 20% and ΔESR < 60% of specified value
	At Room Temperature	10 years at rated voltage and 25°C <sup>2</sup>		ΔCAP  < 30% and ΔESR < 150% of specified value
Cycle Life (25°C)		1,000,000 cycles between rated voltage and half rated voltage under constant current		ΔCAP  < 30% and ΔESR < 150% of specified value
Electronics (Ultracapacitor Management Unit)	Balancing	Active balancing		
	Monitoring	Over Voltage & Over Temperature		Requires external 5V DC input, configurable to user specific requirements
	Communication	High/Low Logic signal or Optional CAN 2.0B, J1939 or RS485		
	Signal Output	4 pin connector		
Enclosure	Output Terminals	M8 screw holes		
	Insulation Coordination	Rated insulation voltage : 1 kV DC or 2.8kV AC (50Hz, 10sec) Rated impulse withstand voltage : 6 kV DC		IEC 61287-1 (Cat: OV II)
	Protection by Enclosure	IP 65 (Dust-tight and protected against water jets)		IEC 60529
	Mounting	8 locations		4 x M8 bolt , top and bottom covers

1 – Warning: this value should not be used as continuous current  
2 – Lifetime at room temperature is a provisional value



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## Dimension



Dimensions in mm (not to scale)

Part Number	Capacitance (F)	Dimensions (mm)				
		L( $\pm 0.2$ )	W( $\pm 0.2$ )	H1( $\pm 0.2$ )	H2( $\pm 0.2$ )	H3( $\pm 0.2$ )
EMHSR-0036C0-048R0S	36	430	200	69.5	80.5	94.5
EMHSR-0066C0-048R0S	66	430	200	92	103	117
EMHSR-0088C0-048R0S	88	430	200	103	114	128
EMHSR-0111C0-048R0S	111	430	200	120	131	145
EMHSR-0166C0-048R0S	166	430	200	156	167	181

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ISO 9001, ISO 14001 and TS 16949 certified