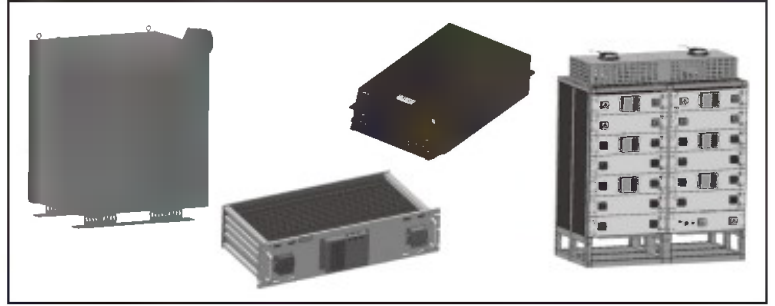


Typical application 典型应用

- Smart grid primary frequency modulation 智能电网一次调频系统
- Energy feedback system 能量回馈系统
- Tunnel locomotive, mining locomotive 隧道机车、矿用机车
- Port truck 码头车
- Pure electric bus 纯电动公交车
- Ferry, sightseeing car, golf cart, AGV and RGV 渡轮、观光车、高尔夫球车、AGV及RGV
- Energy saving elevator 节能电梯
- Hybrid power driven engineering machinery and harbor machinery 混合动力工程机械及港口机械
- Emergency UPS 应急后备电源
- Electric tools 电动工具
- Wind power, solar and other renewable energy storage 风电、光伏等可再生能源储能



Items 项目	Characteristics 特性					
Rated Voltage 额定电压	84~700 V					
Operating Temperature Rang 工作温度范围	-25~+55°C					
Capacitance Range 容量范围	1190~5710 F					
Capacitance Tolerance 容差范围(25°C)	-20~+20%					
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -25°C to 55°C 在-25°C至55°C温度范围内, 应满足规范	<table border="1"> <tr> <td>Capacitance change 容量变化</td> <td>Within 50% of the initial value at 25°C 在25°C时初始值的50%以内</td> </tr> <tr> <td>ESR_{AC} change 交流内阻变化</td> <td>Not more than 4 times of the initial specified value at 25°C 不超过25°C时初始规定值的4倍</td> </tr> </table>	Capacitance change 容量变化	Within 50% of the initial value at 25°C 在25°C时初始值的50%以内	ESR _{AC} change 交流内阻变化	Not more than 4 times of the initial specified value at 25°C 不超过25°C时初始规定值的4倍
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High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 55°C for 1000 hours 在55°C温度下, 以额定电压恒压1000h后, 应满足规范	<table border="1"> <tr> <td>Capacitance change 容量变化</td> <td>Within 20% of the initial value 在初始值的20%以内</td> </tr> <tr> <td>ESR_{AC} change 交流内阻变化</td> <td>Not more than 2 times of the initial specified value 不超过初始规定值的2倍</td> </tr> </table>	Capacitance change 容量变化	Within 20% of the initial value 在初始值的20%以内	ESR _{AC} change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
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High Temperature Storage 高温存储	The specifications shall be met after storage at 55°C for 1000 hours 在55°C温度下, 储存1000h后, 应满足规范	<table border="1"> <tr> <td>Capacitance change 容量变化</td> <td>Within 20% of the initial value 在初始值的20%以内</td> </tr> <tr> <td>ESR_{AC} change 交流内阻变化</td> <td>Not more than 2 times of the initial specified value 不超过初始规定值的2倍</td> </tr> </table>	Capacitance change 容量变化	Within 20% of the initial value 在初始值的20%以内	ESR _{AC} change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
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ESR _{AC} change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍					
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from 2.5~4.0V 在25°C温度下, 2.5~4.0V充放电循环500,000次后, 应满足规范	<table border="1"> <tr> <td>Capacitance change 容量变化</td> <td>Within 20% of the initial value 在初始值的20%以内</td> </tr> <tr> <td>ESR_{AC} change 交流内阻变化</td> <td>Not more than 2 times of the initial specified value 不超过初始规定值的2倍</td> </tr> </table>	Capacitance change 容量变化	Within 20% of the initial value 在初始值的20%以内	ESR _{AC} change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
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ESR _{AC} change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍					

Ratings for HMAE Series HMAE 系列额定值

HMAA Modules HMAE 模组

U _p 额定电压	U _{min} 最低电压	Rated Cap. 25°C/额定容量	ESR _{DC} 直流内阻	Rated Current 额定电流	Size 尺寸 L×W×H	Weight 重量	P/N 产品代码
(V)	(F)	(F)	(mΩ)	(A)	(mm)	(Kg)	-
4.2	2.5	900000	1	2000	286×210×1020	50	SCMHAE4R29010MA
56	35	7500	5	262	610×910×170	85	SCMHAE056758MA
72	45	8300	5	375	975×695×162	115	SCMHAE072838MA
84	52.5	5710	6.5	300	900×570×160	110	SCMHAE084578MA

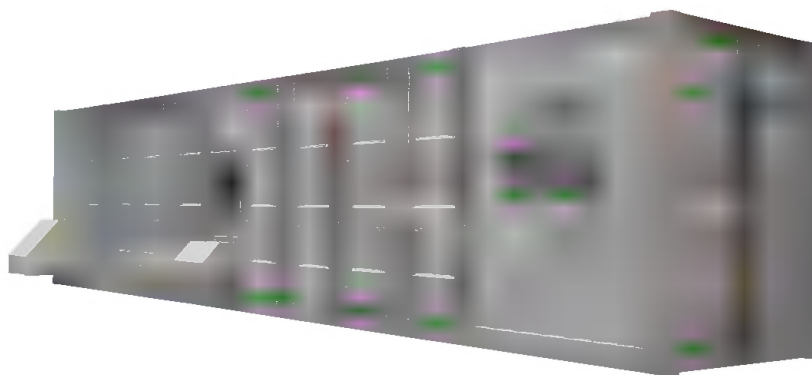
HMAA System HMAE 系统

U _p 额定电压	U _{min} 最低电压	Rated Cap. 25°C/额定容量	ESR _{DC} 直流内阻	Rated Current 额定电流	Size 尺寸 L×W×H	Weight 重量	P/N 产品代码
(V)	(F)	(F)	(mΩ)	(A)	(mm)	(Kg)	-
650	405	1480	20	600	1500×1250×1950	1790	SCMHAE650148MA
650	405	2100	18	850	1500×1350×1950	1980	SCMHAE650218MA
700	490	1190	30	500	1500×1150×2060	2250	SCMHAE700118MA

*Customer products are available on request.

Typical application 典型应用

- Smart grid primary frequency modulation
智能电网一次调频系统



超级电容器系统HMAE 820V 6666F 参数

HMAE 820V 6666F parameters for supercapacitor system

项目 Items	参数 Criteria
HMAE 820V 833F 柜体总数 Total number of cabinets	8 个
HMAE 820V 833F 柜体串联数 Number of cabinet series connections	1 串
HMAE 820V 833F 柜体并联数 Number of parallel cabinets	8 并
额定容量 Rated Capacitance (25°C)	6666 F
直流内阻 ESR _{DC} (25°C)	10 mΩ
工作电压区间 Working voltage range	600 ~ 820 V
工作电压区间内储存能量 Energy stored within the operating voltage range	495 kwh
浪涌电压 Surge Voltage	907 V
额定工作电流 Rated current	4800 A
峰值工作电流 Peak current(≤30s)	14400 A
工作温度范围 Operating Temperature Range	-25°C ~ +55°C
存储温度范围 Storage temperature Range	-40°C ~ +70°C
额定工作电压 Rated Voltage	864 V
额定储能 Rated energy storage	714 kwh (超级电容装机容量 Installed capacity of supercapacitors)
系统重量 System weight	28000 kg
尺寸 size	12192×2800×2896 mm
循环寿命 cycle life(600V ~ 820V)	500,000 (容量衰减 capacity fade < 20%) 承诺 (运行期间不起火、不爆炸) Commitment (no fire or explosion during operation)

