

Dual Power Switching Super Capacitor Module

SCAP-002A

Product Specification

1. Product Introduction

The dual power switching capacitor module SCAP-002A has a built-in super capacitor that can provide short-term power support when the main circuit is instantly powered off or the voltage fluctuates, thereby protecting the system from being affected, avoiding data loss caused by interruptions during the equipment operation process, and providing sufficient buffer time to save data. The product has the advantages of maintenance-free, wide operating temperature range, long expected service life and high power supply capability.

2. Scenario Application

- 1) Rail transit systems, such as subways and light rails, require a stable power supply to ensure the normal operation of trains. Super capacitor buffer modules can provide additional power support when the train starts, accelerates and brakes, improving the stability and reliability of the power system;
- 2) In automated production lines, super capacitor buffer modules can provide short-term power support to ensure that the production line can continue to operate when there is a power outage or voltage fluctuation in the power grid, thus avoiding production interruptions.
- 3) In renewable energy power generation systems such as solar and wind power, the power output may be intermittent and unstable due to the influence of weather and natural environment. Super capacitor buffer modules can store excess power and release it when needed to smooth the power output and improve the stability and reliability of renewable energy power generation;
- 4) Smart grids need to be able to cope with power quality issues such as instantaneous power outages and voltage fluctuations. Super capacitor buffer modules can be used as part of smart grids to provide fast power response and ensure stable operation of the grid;
- 5) UPS systems are used to ensure that critical equipment can continue to operate when the power grid is out. Super capacitor buffer modules can be used as part of a UPS system to provide additional power support and extend the operating time of the UPS system;
- 6) In electric and hybrid vehicles, super capacitor buffer modules can be used to recover braking energy and provide additional power support when needed, improving the energy efficiency and performance of the vehicle;

3. Product Appearance



Figure 1 Front view of the dual power switching capacitor module



Figure 2 Back view of the dual power switching capacitor module



Figure 3 Capacitor

4. Technical parameters:

Input voltage	Default DC 24V, supports 19~30V wide voltage input
Input Current	0~4.2A
Total output power	72W
Output Current	3A(24VDC)
	6A(12VDC)
BACKUP OUT Voltage	24V
ADJ OUTPUT Voltage	Default 12V (5-24V output can be configured via serial port), accuracy $\pm 3\%$
Charging Current	1~3A can be set via serial port
Capacitor capacity	2.7kWs
Charging time	7 minutes (1A charging current) / 3 minutes (3A charging current)
Buffer time	$\geq 38s$ (72W output)
Power loss	$< 6.4W$
MTBF MTBF Mean Time Between Failures	$\geq 600000H$
Super capacitor charge and discharge cycles	$\geq 800,000$ times

Product protection features	Overcurrent protection, overvoltage protection, input reverse polarity protection, overtemperature protection
Indication function	LED power indicator, buffer mode indicator, discharge indicator, fault indicator, fault alarm, abnormal capacitance indicator, overvoltage indicator, overtemperature indicator
Communication interface	RS232, relay dry contact
Operating temperature	-20°C to +70°C
Operating humidity	0~90%
Volume	130x120x120mm
Certification	UL certification, CE certification

5. Functional Description

- 1) Adopt high-strength metal shell and support rail installation;
- 2) Adopting industrial-grade product design, the working temperature is -20°C~70°C, and the humidity is 0~90%;
- 3) The charging current can be flexibly set, and the charging current can be flexibly selected from 1 to 3A through the serial port configuration;
- 4) Supports real-time detection of the remaining power and operating status of the product, which can be indicated by LED lights;
- 5) Support parameter setting of input voltage through serial communication, output voltage 5~24V, voltage accuracy range $\pm 3\%$;
- 6) Support the main control unit and other modules to maintain power supply for at least 15 seconds during the dual power supply switching process of the low-voltage power distribution system;
- 7) Equipped with corresponding safety protection measures such as over-current protection and over-voltage protection;
- 8) It is completely maintenance-free, has no load reduction at high temperature, no gas emission and is environmentally friendly, and does not require additional ventilation environment;
- 9) Equipped with intelligent balancing system, it can detect and protect the voltage of each capacitor unit;
- 10) Supports built-in fault bypass, and the normal use of subsequent loads is not affected when the capacitor is charging;
- 11) Supports a wide operating temperature range and can adapt to application requirements in various harsh environmental conditions.