

产品名称：双电源切换电容模块

文档分类：技术规格书

文档编号：GRG-SCAP-002A-2024081501



# 双电源切换电容模块

## SCAP-002A

### 产品规格书

编 号：2024081501

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广州广电运通智能科技有限公司

## 1. 产品简介

双电源切换电容模块 SCAP-002A 是通过内置超级电容器,能够在主电路瞬时停电或电压波动时提供短时的电力支持,从而保护系统不受影响,避免因设备工作过程期间中断而造成的数据的丢失,提供足够缓冲时间保存数据。产品具有免维护、宽工作温度范围、长预期使用寿命和高功率提供能力等优势。

## 2. 场景应用

- 1) 轨道交通系统,如地铁、轻轨等,需要稳定的电力供应来确保列车的正常运行。超级电容缓冲模块可以在列车启动、加速和制动时提供额外的电力支持,提高电力系统的稳定性和可靠性;
- 2) 在自动化生产线中,超级电容缓冲模块可以提供短暂的电力支持,确保在电网瞬时停电或电压波动时,生产线能够继续运行,避免生产中断;
- 3) 在太阳能和风能等新能源发电系统中,由于天气和自然环境的影响,电力输出可能会存在间歇性和不稳定性。超级电容缓冲模块可以存储多余的电能,并在需要时释放,以平滑电力输出,提高新能源发电的稳定性和可靠性;
- 4) 智能电网需要能够应对瞬时停电和电压波动等电力质量问题。超级电容缓冲模块可以作为智能电网中的一部分,提供快速的电力响应,确保电网的稳定运行;
- 5) UPS 系统用于确保在电网停电时,关键设备能够继续运行。超级电容缓冲模块可以作为 UPS 系统的一部分,提供额外的电力支持,延长 UPS 系统的运行时间;
- 6) 在电动汽车和混合动力汽车中,超级电容缓冲模块可以用于回收制动能量,并在需要时提供额外的电力支持,提高汽车的能效和性能;

## 3. 产品外观



图 1 双电源切换电容模块正面效果图

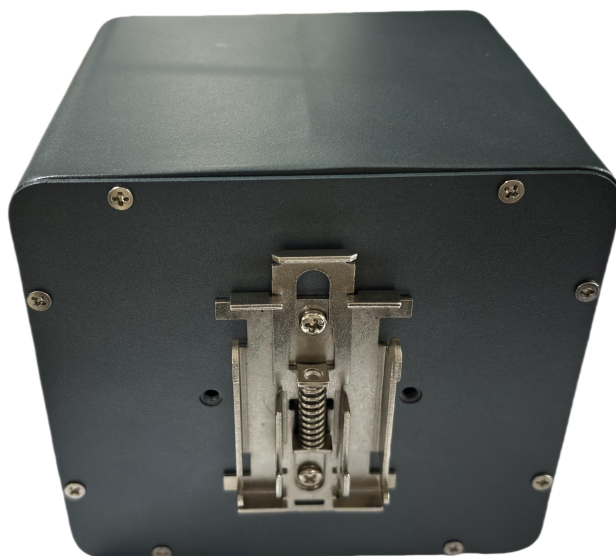


图 2 双电源切换电容模块背面效果图



图 3 电容

**4. 技术指标:**

输入电压	默认 DC 24V, 支持 19~30V 宽电压输入
输入电流	0~4.2A
输出总功率	72W
输出电流	3A(24VDC)
	6A(12VDC)
BACKUP OUT 电压	24V
ADJ OUTPUT 电压	默认 12V(可串口配置 5-24V 输出), 精度±3%
充电电流	1~3A 可通过串口设置
电容器容量	2.7kWs
充电时间	7 分钟 (1A 充电电流) / 3 分 (3A 充电电流)
缓冲时间	≥38s (72W 输出)
功率损耗	<6.4W
MTBF 平均无故障时间	≥600000H
超级电容充放电循环次数	≥80 万次
产品保护功能	过流保护、过压保护、输入反极性保护、过温保护
指示功能	LED 电量指示、缓冲模式指示、放电指示、故障指示、故障报警、电容异常指示、过压指示、过温指示
通信接口	RS232、继电器干接点
工作温度	-20° C 至+70° C
工作湿度	0~90%
体积	130x120x120mm
认证	超级电容 UL 认证, 整机 CE 认证

表 1 双电容切换电容模块技术指标表

## 5. 功能描述

关于双电源切换电容模块产品功能详细描述如下：

- 1) 采用高强度金属外壳，支持导轨式安装；
- 2) 采用工业级产品设计，工作温度-20℃~70℃，湿度 0~90%；
- 3) 充电电流可灵活设置，充电电流可通过串口配置灵活选择 1~3A；
- 4) 支持实时检测产品的剩余电量及运行状态，并可通过 LED 灯指示；
- 5) 支持通过串口通讯进行参数设置投入电压，输出电压 5~24V，电压精度范围±3%；
- 6) 支持主控单元等模块在低压配电系统双电源切换过程中满足至少 15s 内不掉电；
- 7) 具备过电流防护、过电压保护等相应的安全防护措施；
- 8) 具备完全免维护使用，高温无降载、无气体排放环保，无需额外通风环境；
- 9) 具备智能均衡系统，可对每个电容单体电压进行检测和保护；
- 10) 支持自带故障旁路，电容充电时不影响后续负载正常使用；
- 11) 支持宽工作温度范围，能够适应各种恶劣环境条件下的应用需求；
- 12) 整机具备 CE 认证（见附件一），超级电容单体具备 UL 认证（见附件二）；

附件一：整机 CE 认证证书



**CVC**  
**CVC Testing Technology Co., Ltd.**

## Certificate of Compliance

No. LVD24-10079

About the Low Voltage Directive 2014/35/EU

**Applicant:** Guangzhou GRG Intelligent Technology Solution Co., Ltd.  
 9,11 Kelin Road, Science City, High-tech Industrial Development Zone, Guangzhou, China

**Product/Material:** Dual power switching capacitor module

**Trade Mark:** 

**Model/Type:** SCAP-002A

**Rated Specification:** INPUT: 24V 4.2A,  
 BACKUP OUT: 24V 3A,  
 ADJ OUTPUT: 12V 6A,  
 TOTAL OUTPUT POWER: 72W

**Tested According to:** EN IEC 62368-1:2020

**Referred to the Technical Report:** RZCE2024-0576-LVD

*This certificate of compliance is based on an evaluation of a tested sample of the product mentioned above. It does not imply assessment of series-production of the product. The applicant should hold the whole technical report at the disposal of the competent authority.*

*Provided it is also in conformance with other applicable EU/EC directives, the manufacturer or its authorized European representative may draw up an EU/EC Declaration of Conformity and affix the CE-mark shown below to each conforming product.*

  中国认可  
 国际互认  
 检测  
 TESTING  
 CNAS L8095

**CE**

Signed by:   
 Chen Huiwen  
 检验检测专用章  
 Date of Issue: Aug. 16, 2024

CVC Testing Technology Co., Ltd.  
 No. 3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, 510663, P. R. China  
 Tel.: +86-20-32293888, Fax: +86-20-32293889. E-mail: [office@cvc.org.cn](mailto:office@cvc.org.cn)  
[www.cvc.org.cn](http://www.cvc.org.cn)

LTC-G-0001-LVD-G2

附件二：超级电容 UL 认证证书：

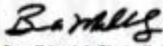
**CERTIFICATE OF COMPLIANCE**

<b>Certificate Number</b>	UL-US-2155674-3
<b>Report Reference</b>	MH46367-20081210
<b>Date</b>	20-Oct-2022
<b>Issued to:</b>	LS Materials Co., Ltd. 6&7F Hi-Tech Center 39 LS-ro 116beon-gil Dongan-gu Anyang-si, Gyeonggi-do 14118 Republic of Korea
<b>This is to certify that representative samples of</b>	BBBG2 - Capacitors, Electrochemical - Component See Addendum Page for Product Designation(s).
	Have been evaluated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.
<b>Standard(s) for Safety:</b>	UL 810A, 1st Ed., Issue Date: 2008-10-07, Revision Date: 2022-05-03
<b>Additional Information:</b>	See the UL Online Certifications Directory at <a href="https://iq.ulprospector.com">https://iq.ulprospector.com</a> for additional information

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Recognized Component Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.


Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.



Bruce Mahan, Director, North American Certification Program  
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at <http://ul.com/about-us/location>

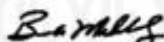


# CERTIFICATE OF COMPLIANCE

**Certificate Number** UL-US-2155674-3  
**Report Reference** MH46367-20081210  
**Date** 20-Oct-2022

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Model	Category Description
LSUC 2.5V 110F	Capacitors, Electrochemical - Component
LSUC 2.5V 320F	Capacitors, Electrochemical - Component
LSUC 2.5V 380F	Capacitors, Electrochemical - Component
LSUC 2.7V 100F	Capacitors, Electrochemical - Component
LSUC 2.7V 120F	Capacitors, Electrochemical - Component
LSUC 2.7V 320F	Capacitors, Electrochemical - Component
LSUC 2.7V 350F	Capacitors, Electrochemical - Component
LSUC 2.7V 400F	Capacitors, Electrochemical - Component
LSUC 2.7V 450F	Capacitors, Electrochemical - Component
LSUC 2.7V 600F	Capacitors, Electrochemical - Component
LSUC 2.7V 800F	Capacitors, Electrochemical - Component
LSUC 2.8V 100F	Capacitors, Electrochemical - Component
LSUC 2.8V 120F	Capacitors, Electrochemical - Component
LSUC 2.8V 320F	Capacitors, Electrochemical - Component
LSUC 2.8V 350F	Capacitors, Electrochemical - Component
LSUC 2.8V 360F	Electrochemical Capacitors
LSUC 2.8V 400F	Capacitors, Electrochemical - Component
LSUC 2.8V 400F X	Electrochemical Capacitors
LSUC 2.8V 450F	Capacitors, Electrochemical - Component
LSUC 2.8V 600F	Capacitors, Electrochemical - Component
LSUC 2.8V 720F	Electrochemical Capacitors
LSUC 2.8V 800F	Capacitors, Electrochemical - Component
LSUC 2.8V 900F	Electrochemical Capacitors
LSUC 3.0V 100F	Capacitors, Electrochemical - Component
LSUC 3.0V 350F	Capacitors, Electrochemical - Component
LSUC 3.0V 380F	Capacitors, Electrochemical - Component
LSUC 3.0V 430F	Capacitors, Electrochemical - Component
LSUC 3.0V 480F	Capacitors, Electrochemical - Component
LSUC 3.0V 500F	Electrochemical Capacitors



Bruce Mahrenholz, Director North American Certification Program

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