NEOUSYS TECHNOLOGY

A Cure for Sudden Loss of Power

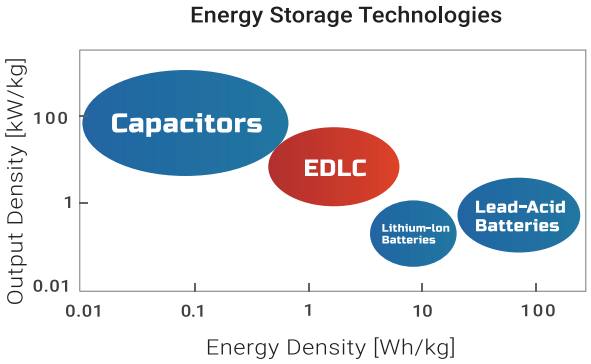
Industrial-grade intelligent supercapacitor-based power backup module

www.neousys-tech.com

Supercapacitor-based Power Backup Solution

Battery vs. Supercapacitor

For decades, battery has been the preferred form of energy storage as it has high energy density (10~100 Wh/kg). However, limited by operating temperature (typically 0°C~40°C) and cycle life (2 years or 500 charge-discharge cycles), battery is neither rugged nor durable enough for industrial applications. Supercapacitor, also called electric double-layer capacitor (EDLC), is an emerging category of capacitor offering 10~100 times more energy density than electrolytic capacitor (1~10 Wh/kg). In addition to its impressive energy density, supercapacitor also has a wide operating temperature range (-40°C~85°C) and long operating life (10 years or 500,000 charge-discharge cycles). These two traits help make it a reliable industrial power backup solution.

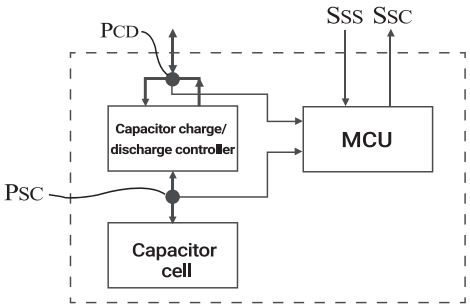


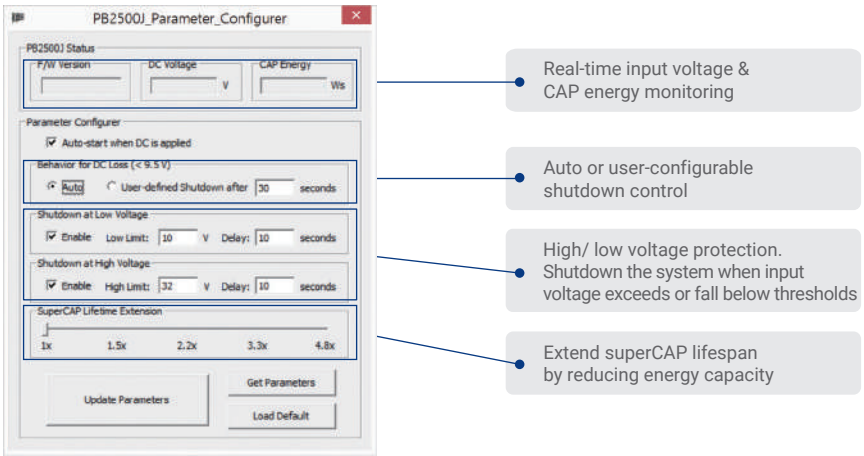
Neousys' Patented CAP Energy Management Technology

To design and create a reliable supercapacitor-based power backup system requires fundamental techniques such as charge/ discharge control, active load balance and DC/ DC regulation. But the real challenge is how to get the most out of the capacitor energy while ensuring the system shuts down safely during the blackout.

At Neousys Technology, we have patented an architecture (R.O.C. Patent No. I598820) that incorporates a microprocessor along with supercapacitor and charge/ discharge controller. The proprietary firmware embedded in the MCU not only monitors energy level continuously, it also automatically initiates soft-shutdown to prevent data loss/ corruption.

The patented architecture provides sophisticated features such as real-time energy monitoring, high/low voltage protection and auto/ manual shutdown control. Users can also extend the lifespan of ultracapacitors up to 4.8x via the parameter configuration utility.





Supercapacitor-based Power Backup Solution vs. UPS

Combining supercapacitors and our patented architecture, Neousys introduces a revolutionary supercapacitor-based power backup solution for industrial applications. Compared to battery-based UPS, it has wider operating temperature, extended operating life, adequate backup time to secure your embedded controller against unforeseen power outages.

	PB-2500J	PB-9250J / 4600J-SA	Off-line UPS	Interactive UPS	On-line UPS
Energy storage technology	Supercapacitor	Supercapacitor	Battery	Battery	Battery
Backup time	1 ~ 3 mins	1 ~ 10 mins	> 30 mins	> 30 mins	> 30 mins
Operating temperature	**-25°C ~ 65°C**	**-25°C ~ 65°C**	0°C ~ 40°C	0°C ~ 40°C	0°C ~ 40°C
Lifespan	**> 10 yrs @ 25°C**	**> 10 yrs @ 25°C**	2 yrs @ 25°C	2 yrs @ 25°C	2 yrs @ 25°C
Regulated power output	Yes	Yes	No	No	Yes
Shutdown control	Automatic, plug and play	Automatic, plug and play	Via RS-232 and software	Via RS-232 and software	Via RS-232 and software

PB-9250J

Standalone Intelligent Supercapacitor-based Uninterruptible Power Backup Module

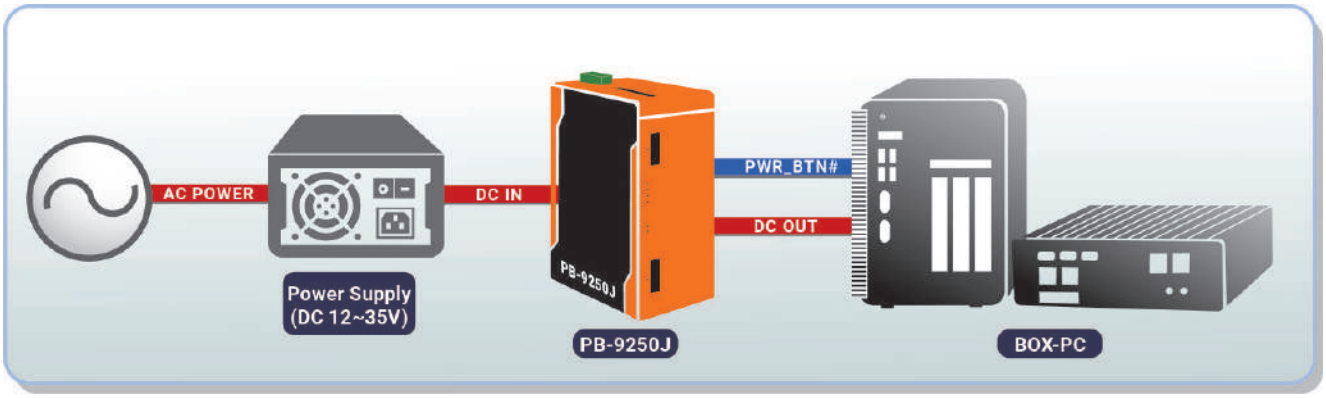
- Universal standalone power backup module compatible with all box-PCs
- Supercapacitor-based, -25 to 65°C wide temperature operation
- 9250 watt-second energy capacity
- Maximum 180W output power for the connected back-end system
- Up to 10 years lifespan, and 500,000 charging/ discharging cycles
- Patented CAP energy management technology*
- - Extends back-up time in the event of an unforeseen power outage
  - Monitors energy and power consumption to extend operation time for safe system shutdown
- Versatile operating mode
  - Normal backup mode
  - Ignition control mode for standard box-PC and in-vehicle controller
  - UltraCAP energy/ lifespan configuration
- EN50155 certificate

Introduction

PB-9250J-SA is a standalone power backup module that can protect your box-PC against power outages. Utilizing state-of-the-art supercapacitor technology, it can operate in harsh environments from -25 to 65°C, and have extremely high durability lasting up to 10 years.

PB-9250J-SA is composed of eight 370F/ 3.0V supercapacitors, which offers 3.3 times longer lifespan than its 2.7V counterpart, and stores 9250 watt-second energy to offer extra extended operation time to backup your system. Thanks to Neousys' patented CAP energy management technology, It can reliably supply 180W power to the back-end system and automatically manage boot and shutdown without installing additional drivers/ software. In addition to UPS-like power backup mode, it also offers two advanced ignition control modes for in-vehicle usage. PB-9250J-SA can work with either standard box-PC or in-vehicle controller to provide stable power supply and execute user-configurable power-on/ power-off delay according to IGN signal input.

Featuring various modes, automatic shutdown control and up to 180W output power, PB-9250J-SA can work with most off-the-shelf box-PCs. And with properties such as maintenance-free energy storage and uninterruptible power supply, PB-9250J-SA can prevent data loss for the connected back-end system during power outage in harsh industrial environments!

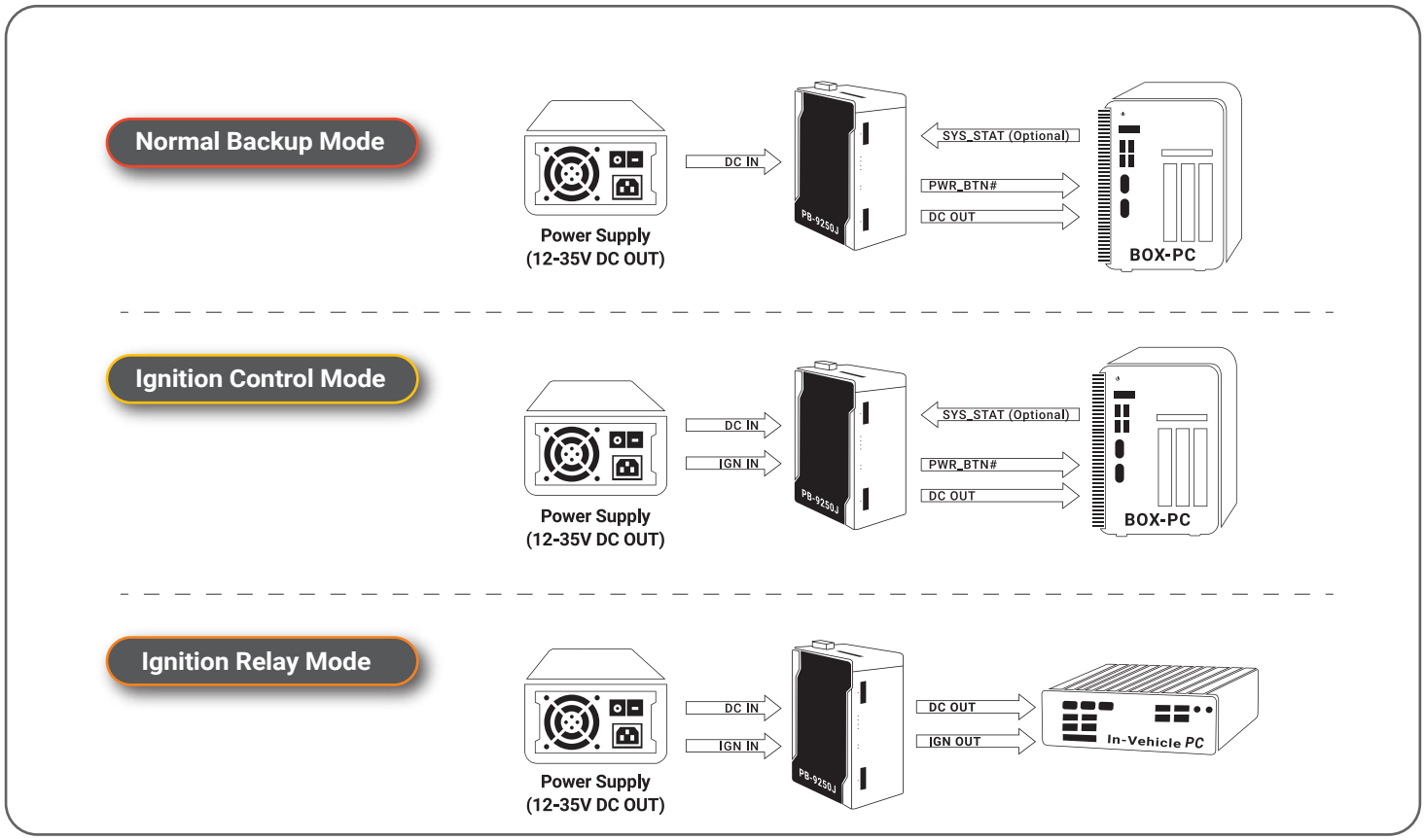


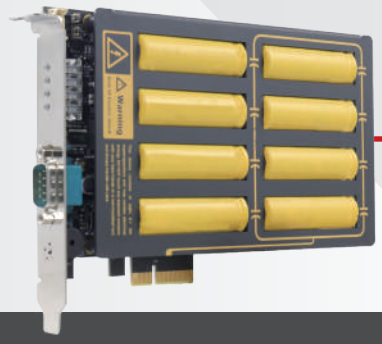
Specifications

Supercapacitor Configuration	
Composition	8x 370F, 3.0V supercapacitors
Capacity	9250 watt-second
Expected lifespan	> 10 years*
Lifecycle	500,000 charging/ discharging cycles*
Power Specification	
Input Voltage	12~35 VDC
Input Connector	1x 3-pin pluggable terminal block (V+, GND, IGN_IN)
Output Voltage	Charge mode: DC_IN bypass (DC_OUT = DC_IN) Discharge mode: 12 or 24V software-configurable
Output Power	Maximum 180W output**
Output Connector	1x 3-pin pluggable terminal block (V+, GND, IGN_OUT)
I/O Interface	
COM Port	1x DB9 for 3-wire RS-232
Iso. DIO	1x 10-pin pluggable terminal block for - PWR_BTN# output - SYS_STAT input

Mechanical	
Dimension	80 mm (W) x 128 mm (D) x 175 mm (H)
Weight	1.7 kg
Mounting	DIN-rail mounting and wall-mounting
Environmental	
Operating Temperature	-25°C ~ 65°C -40°C ~ 85°C with reduced energy capacity
Storage Temperature	-40°C ~ 85°C
Vibration	Compliant with IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
Shock	Compliant with IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
Certification	Compliant with EN50155:2007, CE/FCC Class A, according to EN 55032 & EN 55035

** To achieve > 10 years lifespan under 24/7 at 65°C operation, please charge PB-9250J-SA to 6525J energy level using the 4.8x SuperCAP Lifetime Extension setting. Once the rated lifetime or cycle life has been reached, the capacity of supercapacitor may decrease up to 30% and ESR may increase up to 100% from initial values.*
*** Backup time for uninterruptible operation may be reduced when sustaining a back-end system with high power consumption.*





PB-2500J

Standalone Intelligent Supercapacitor-based Uninterruptible Power Backup Module

- Supercapacitor-based, -25 to 65°C wide temperature operation
- 2500 watt-second energy capacity
- Up to 10 years lifespan and 500,000 charging/ discharging cycles
- Patented CAP energy management technology
  - Maximizes back-up time in an event of unforeseen power outage
  - Monitors energy consumed and estimates the time required for system shutdown
- User-configurable operating parameters
  - Auto/ manual shutdown control
  - High/ low voltage protection
  - UltraCAP energy/ lifespan configuration

Introduction

Neousys' PB-2500J series is an innovative power backup solution for demanding industrial applications. Utilizing supercapacitor technology, it features -25°C to 65°C operating temperature range and extremely high durability. Compared to traditional battery-based UPS systems, PB-2500J series can sustain superb reliability in extreme temperature environments and eliminates the drawback of battery performance degradation over time.

PB-2500J series is composed of eight 100F supercapacitors to provide 2500 watt-second stored energy to sustain your computer during power outage and depending on your system's power consumption, it could be from seconds to minutes. But what makes PB-2500J novel is its patented CAP energy management technology, an on-board processor that constantly monitors power consumption and evolves with the system. During a power outage, it maximizes the system operation time by estimating the perfect time to initiate system shutdown to prevent data loss.

PB-2500J series is available in two form-factors; PB-2500J-PCIe is a plug-and-play PCIe card specifically designed for Neousys Nuvo-6000 (except Nuvo-6108GC/ IGN) while PB-2500J-CSM is designed for Nuvo-5000E/ P and Nuvo-7000E/ P series.

When it comes to industrial embedded controllers, stability and data loss prevention during power outages are just as important. Neousys' PB-2500J series aims to redefine reliability and take it to another level. With PB-2500J series, unexpected power loss and unstable power lines are a thing in the past!

Specifications

	PB-2500J-PCIe	PB-2500J-CSM
Supercapacitor configuration	8x 100F, 3.0V ultracapacitors	
Capacity	2500 watt-second	
Expected lifespan	>10 years @ 25°C with 2500 w·s capacity* 76,000 hours @ 35°C with 2500 w·s capacity* 34,000 hours @ 45°C with 2500 w·s capacity* 15,000 hours @ 55°C with 2500 w·s capacity* 7,200 hours @ 65°C with 2500 w·s capacity* Expected lifespan is 2.2x when configured as 2100 watt-second energy capacity, or 4.8x when configured as 1750 watt-second energy capacity.	
Lifecycle	500,000 charging/ discharging cycles*	
Communication interface	3-wire RS-232	
Dimension	Half-length PCIe card 167 mm (W) x 111 mm (H)	-
Operating Temperature	-25°C ~ 65°C	
Storage Temperature	-40 °C~ 70°C	
EMC	CE/FCC Class A, according to EN 55022 & EN 55024	

**Once the rated lifespan or cycle life has been reached, the capacity of ultracapacitor may decrease up to 30% and ESR may increase up to 100% from initial values.*

Worldwide Office

www.neousys-tech.com

Neousys Technology Inc.
15F., No.868-3, Zhongzheng Rd.,
Zhonghe Dist., New Taipei City, 23586, Taiwan
Tel: +886-2-22236182 Fax: +886-2-22236183
E-mail: sales@neousys-tech.com

Neousys Technology America, Inc.
3384 Commercial Avenue, Northbrook,
IL 60062, USA
Tel: +1-847-656-3298
E-mail: sales@neousys-tech.com

Neousys Technology China Co., Ltd.
Room 431, Building 33, Guiping Road 680,
Shanghai, 200233, China
Tel: +86-2161155366
E-mail: sales.cn@neousys-tech.com