Richardson Electronics
POWER & MICROWAVE TECHNOLOGIES

UltraPEM™

Multibrand Pitch Energy Modules

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rellpower.com

Richardson Electronics has been an industry-leader in providing high-quality products and outstanding engineering support for over 75 years. As a global operation, our company has grown to include a team of experts with diverse backgrounds that can guide you with your mission critical applications. Serving our customers is a value infused in the company culture, and we stand behind every component we deliver.

What We Do Best

- Identify & Design-in New, Disruptive Technologies
- Industry Leader in Power & Microwave Technologies
- Provide Technical Expertise & Engineered Solutions
- Provide Exceptional Global Support
- Provide High Quality Products for Over 75 Years

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Ultracapacitor-based energy storage solutions have significantly enhanced reliability in electric pitch control systems. Ultracapacitors, unlike batteries, have the ability to deliver quick bursts of power in a short time frame, an ideal function for emergency pitching in a wind turbine generator (WTG).

The UltraPEM™ Pitch Energy Modules (Patented Technology) is a drop in replacement for batteries in pitch systems ranging from 150 to 500Vdc and can be installed with no modifications to the battery box. Our Pitch Energy Module (PEM) works with existing chargers and controllers.

We have designed our PEM with owners and installers alike in mind, by eliminating the need for modifications of the wiring harness, installation of additional brackets, or the need to relocate existing components. This greatly reduces installation time, reduces labor costs, and decreases downtime. With over 1 million charge-discharge cycles, our Ultracapacitor Pitch Energy Modules can provide 15 plus years of reliable operation without maintenance.

Features
- Estimated lifetime of 15+ years
- Drop-in replacement for *SSB, *Alstom, *Senvion, and *Suzlon pitch systems.
- Wide operating temperature from -40 to 65°C
- No hazardous chemicals

Benefits
- Easy installation - no modifications necessary
- Improved turbine reliability
- Reduced O&M cost
- Designed, assembled, tested, and supported in the USA

UltraPEM-SSB

UltraPEM-S88

ASSESSMENT

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Product Specifications

Environment	UltraPEM-SSB	UltraPEM-S88
Operating Temperature (Min. and Max.)	-30°C – 65°C	-30°C – 65°C
Shelf Life Uncharged:		
At 25°C and Below	4 Years	4 Years
At 35°C	2 Years	2 Years
At 45°C	6 Months	6 Months
Electrical		
Rated Capacitance	18.75 F	10 F
Min. Capacitance, Initial	18.75 F	10 F
Max. Capacitance, Initial	20.25 F	10.8 F
Typical ESR	69 mΩ	138 mΩ
Nominal Voltage	96 VDC	164 V
Surge Voltage	99 VDC	186 V
Max. Continuous Current	50 A	50 A
Max. Series Voltage	1000 V	1000 V
Short Circuit Current*	1.39 kA	753 A
Stored Energy Typical	86,400 Joules	52,020 Joules
Physical		
Mass		
Power Terminals	1/4" Fastons	1/4" Fastons
Environmental Protection	IPX0	IP54

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Manufacturing Capabilities

As a highly specialized international distributor and manufacturer, Richardson Electronics produces a wide variety of RF and microwave components, subsystems, as well as electron tube and vacuum devices. In order to meet our customers' stringent requirements, Richardson Electronics utilizes its unique manufacturing processes, equipment, technical expertise and in-house design team.

Our extensive in-house knowledge of materials, RF & microwave and High Voltage applications, coupled with our outstanding quality control, customer specific manufacturing capabilities, make us an ideal vendor-of-choice for many applications.

Richardson Electronics in-house capabilities include:

- Energy Storage Integrator
- PCB Engineering & Manufacturing Capabilities
- Air-Wound Inductors and RF Coil Making
- Brazing, Welding and Joining Operations
- Electromechanical Assembly
- High Voltage Assembly
- Machining
- Plating, Chemical Processing and Finishing
- Solder Dipping
- RF Assembly
- We provide contract manufacturing, custom/private labeling, and testing services for our customers.

Richardson Electronics is dedicated to providing products and services of the highest quality. We are a UL-DQS registered firm, and our facilities are certified to ISO9001 and ISO13485. We maintain our own Corporate Quality Management System.

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