

K-Series PCDU

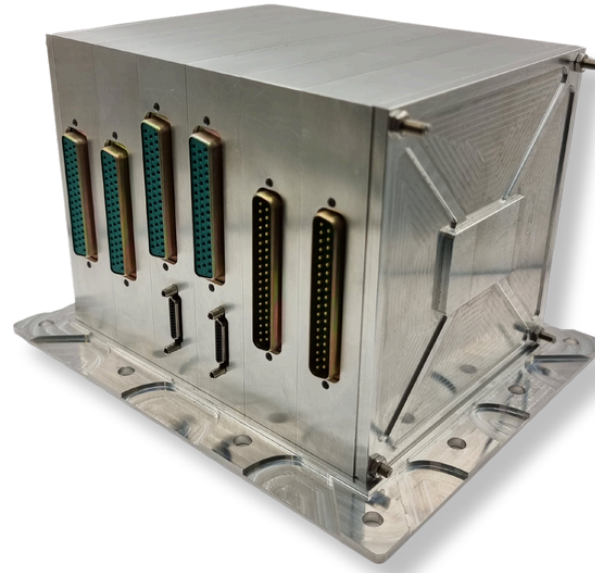
- **5x Smaller**
- **GEO Reliability**
- **Software Configurable**

We bring satellite power systems into the modern world by using digital control techniques to make more reliable and higher performance systems. Digital control offers benefits like triple voting control loops that are immune to SET and exhibit no aging effects. The power system reliability and performance is guaranteed throughout the satellite's life. Digital control delivers performance not possible with traditional techniques such as non-linear control for superior transient performance and true maximum power point tracking – even with shaded solar panels. Telemetry and telecommand is baked into every aspect of the system for maximum visibility and control.

Our vertically integrated system uses in-house designed semiconductors that are perfect for the PCDU performance. We guarantee the highest reliability – from component to system level – while also offering the latest in CMOS performance with highly integrated solutions and advanced features. Our design process starts by drawing the transistor structures in silicon allowing us to provide radiation tolerance and advanced system level redundancy. Combining CMOS integration, wide-bandgap power devices and high-speed switching we offer the best power and feature density on the market.

The system is built with speed and flexibility in mind. Our approach delivers unique features such as optional software control of voltage/current settings during integration. Final settings can be burnt into error protected fuse memories before flight. We provide off the shelf modules for speed while also being highly flexible to power the software-defined-satellite.

**Satellite power systems are still being built with techniques from the last century,
We bring the satellite power system into the modern world.**



Best-in-class Performance

0.3 – 15 kW Power Rating (Class I/II/III)

Up to 5x Higher Power Density

Excellent Transient Response

Bi-directional BCDR

Shaded Solar Panel Tolerant

Best-in-class Reliability

Single Fault Free Architecture

SET Rejecting Digital Control Loop

Over Voltage/Current/Temp. Protection

Minimal Solder Joint Quantity Design

Radiation Hardened (100 krad / 62.5 MeV)

Best-in-class Flexibility

Software-Defined Voltage and Current

Full TMTC Observability & Control

Optional Extra AIT Firmware Control

Anomaly Detection Alarm

We design next generation systems by controlling all layers of the technology stack including dedicated semiconductor design with the singular goal of delivering technical excellence.

The team has built satellite systems for NASA & ESA and has thousands of hours of on-orbit success.

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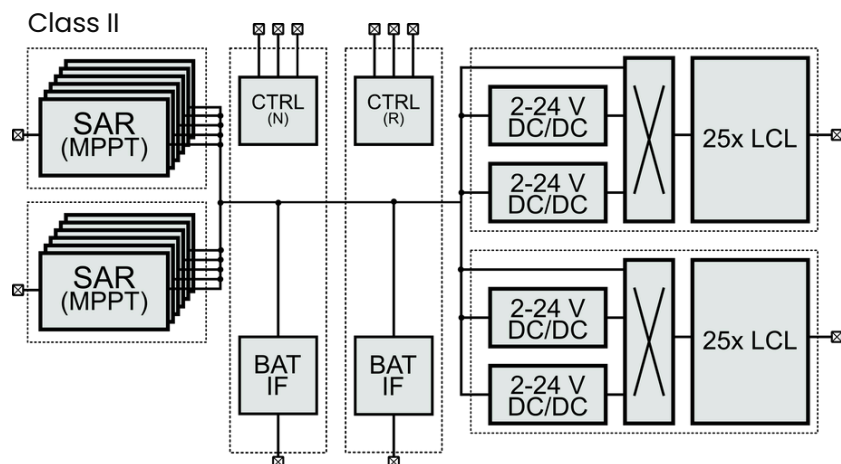


SPHERICAL

info@spherical-systems.com
Rotterdam/Noordwijk, NL



Baseline Architecture (Unregulated MPPT)



MPPT (Maximum Power Point Tracking) solar array regulators using a true maximum power algorithm for optimal power conditioning even when solar panels are shaded. Each SAR can be implemented with a cold redundant copy for highest reliability.

Unregulated main bus with direct battery connection for good efficiency. Fully protected with redundant LCLs in flight and separation switch in integration.

Highly flexible power regulation and distribution using isolated converters. All power distribution and LCLs designed for rapid reconfiguration.

Optional Modules

- Hold-down and Release Mechanisms
- Motor driver
- High Voltage DC/DC Converter
- Power Processing Unit

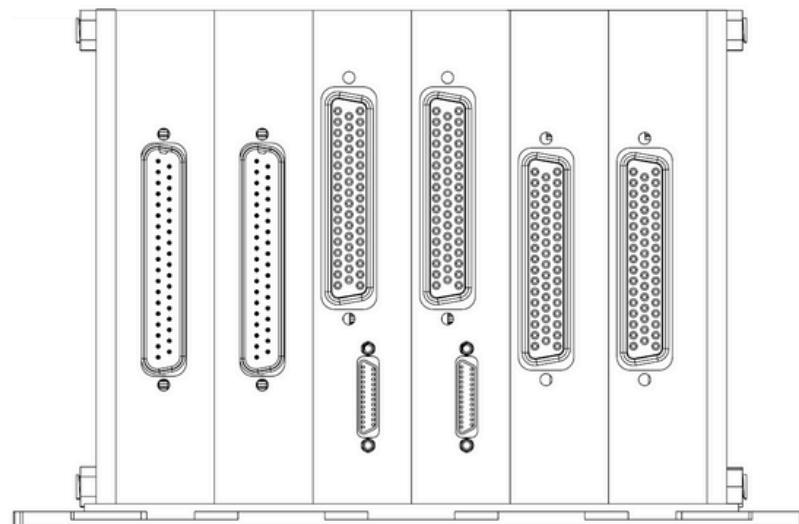
K-Series Power Ranges

- Class I: 0.3 - 1 kW
- **Class II: 1 - 5 kW**
- Class III: 5 - 15 kW

Derived Products and Subsystems

- Isolated & Non-Isolated Secondary Power Regulators
- Point-of-Load (POL) Regulators

Class II



Technical Details (other configurations possible)

Battery Voltage	28 V (nominal)		
BCDR Power	3.0 kW		
SA Voltage	36 – 100 V		
SA Power	250 W (per channel)		
DU Voltage	3.3 – 24 V (regulated)		
DU Power	> 100 W (per channel)		
LCL Voltage	1.8 – 28 V		
LCL Current	0.5 – 20 A		
LCL Classes	LCL 1-10	RLCL 0.5 – 2B	HLCL 1-10
Radiation (TID)	100 krad		
Radiation (See)	62.5 MeV·cm²mg (Si)		
Temperature	–40°C – +85°C		
Digital Interface	RS422	CAN	
Flight Switches	Integrated		
Pre-launch Current	< 1 mA		
Dimensions	126x161x126 mm		
Mass	<2kg		
Quality Standards	ECSS	NASA GEVS	

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