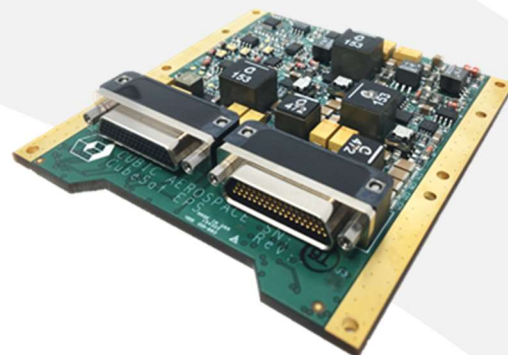




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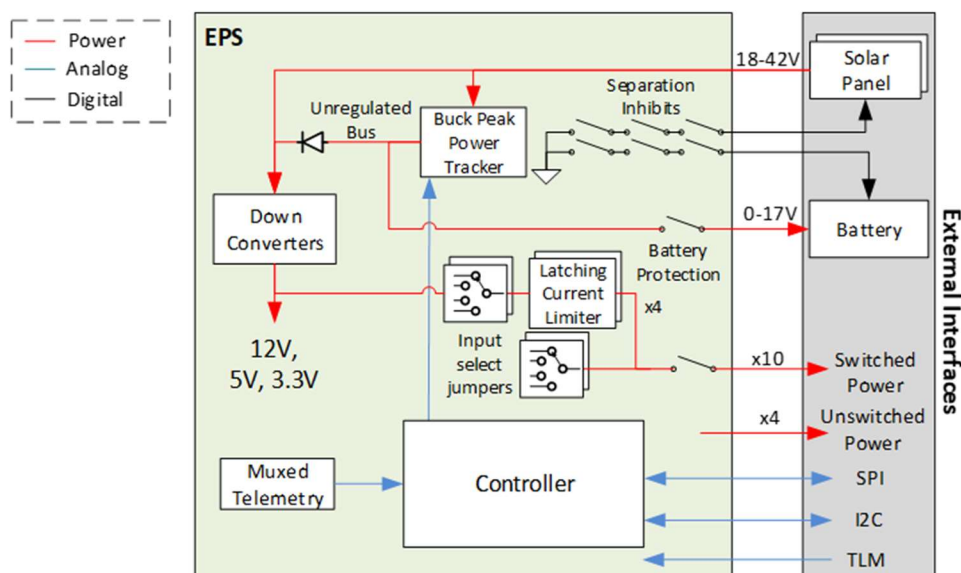
## 150-Watt SmallSat Electric Power System



### OVERVIEW

Ibeos' 150-Watt SmallSat Electric Power Subsystem (EPS) is a radiation tolerant, flexible peak power tracking solution capable of efficient solar array power conversion and battery charging. The EPS card provides regulated 3.3-Volt, 5-Volt, and 12-Volt power, as well as unregulated battery power through switched and un-switched, current-limited outputs. The system accepts commands and provides telemetry via SPI and I<sup>2</sup>C interfaces. The EPS includes battery under/over-voltage and over-current protection in addition to a configurable watchdog timer for spacecraft loads.

### BLOCK DIAGRAM



### SPECIFICATIONS

Dimensions	93 x 93 x 17 mm
Mass	140 g
S/A Conversion Efficiency <sub>1</sub>	> 96%
12V Output Conversion Efficiency <sub>1</sub>	> 94%
5V Output Conversion Efficiency <sub>1</sub>	> 93%
3.3V Output Conversion Efficiency <sub>1</sub>	> 88%
Typical Quiescent Power Consumption <sub>2</sub>	1.2 W
Operating Temperature <sub>3</sub>	-40 to +105 °C
Single Event Effects	Operate through: LET > 37 Survive: LET > 55
Total Ionizing Dose	30 kRad (Si)

1. Typical Efficiency at >50% load, does not include ohmic loss from output switches
2. All converters enabled, no external loads
3. Designed to operate at full power with a 60°C interface temperature

### Power Generation

- >150-Watt maximum input power (18-42 V)
- Solar array peak power tracking

### Charging

- 16.8-Volt maximum charge voltage
- 7-Amp maximum charge current

### Outputs

- 5.0-Volt regulated bus (6 A)
- 3.3-Volt regulated bus (3A)
- 12.0-Volt regulated bus (4A)
- Unregulated battery bus (10 A)
- 10x switched outputs
  - 15 mΩ typical resistance

### C&DH

- I<sup>2</sup>C @ 400 kbps
- SPI @ 1 Mbps
- System configuration, telemetry, and output control

### Built-In Protection

- Battery over-charge/discharge
- Battery over-current
- Programmable spacecraft watchdog timer
- Output latching current limiters
- Two-fault tolerant separation inhibits

### Inquiries

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