



BA07

HIGH ENERGY DENSITY BATTERY ARRAY with ON-BOARD CHARGING SYSTEM



SUMMARY

The EXA BA07 High Energy Density Battery Array is a family of power store/delivery devices designed to provide the highest energy capacity and redundancy: From a minimum of 52 Whr to a maximum of 66 Whr per bank. All BA07 modules have integrated dual chargers at 2C or 4C and integrated Isolated Power Core for custom serialization or parallelization. The embedded PowerFlex technology enables the user to discharge the battery array with a much higher power capacity for longer times to accommodate power peaks in the payloads without having to invest more. BA07 enables your system to perform longer and better and pack more power than a similar sized satellite, the double-sided arrays are user-configurable to output 3.7V or 7.4V and can be serialized for much higher voltages. With three variant base battery cells and single- or double-sided options, all our batteries are fully customizable to your mission's needs in terms of output, cable, connectors or interfaces. Options are available as integrated Carbon Nanotubes Thermal Transfer Bus (CN/TTB) shield which allows missions to reuse the spacecraft self-generated heat, embedded thermal sensor and embedded redundant active heaters.

FEATURES

- Very high energy density cells can power big cubesats and small satellites
- Unique containment technology prevents swelling of the cells in vacuum
- The double-sided arrays can be used as serial or parallel (3.7V or 7.4V) user selectable
- Multiple BA07 modules can be serialized or parallelized due to the integrated Isolated Power Core (IPC)
- Perfectly coupled with our DMSA/M Deployable Solar Arrays and COLOSSUS PCDU
- Multiple redundant cells ensure mission survivability
- Embedded thermal sensors
- Active heating: Embedded redundant active heaters
- PowerFlex technology: Can sustain high rates of discharge for long periods of time (2C to 4C)
- Designed for LEO missions and requirements
- Separate charge and discharge ports
- Can charge and discharge at the same time
- High discharge capable for deep cycle payloads



- Flight heritage positive TRL9 since 2013
- Tested and qualified for more than 10 years
- Manufactured with space grade materials according to space standards and custom mission design
- Functional, performance, thermal bake out and vibration tests provided with documentation.
- Compatible and compliant to CubeSat Standard

PERFORMANCE

- Supply Voltage: 3.7V nominal, 4.2V at full charge for parallel or 7.4V ~ 8.4V for serial models
- Supply Current: 6.2A/8A/10A/12.4A depending on the model
- Typical internal resistance: 1 to 7 milliohms @ 25°C
- High discharge rate: 10 times the nominal capacity within 2 seconds
- High-speed charge rate: 3 times the nominal capacity

PRODUCT PROPERTIES

Variant	Power Output	Capacity	V@A	Dimensions LxWxH)	Mass
BA07-A/P	52Whr	12400mAh	4.2V	90x96x19 mm	305 grams
BA07-A/S	52Whr	6200mAh	8.4V	90x96x19 mm	305 grams
BA07-B/P	67.2Whr	16000mAh	4.2V	90x96x25 mm	375 grams
BA07-B/S	67.2Whr	8000mAh	8.4V	90x96x25 mm	375 grams

- **Operating Temperature:**
 - -30 to +80°C w/o CN/TTB option
 - -60 to +120°C with CN/TTB option
- **Radiation Tolerance:** 2 years minimum in LEO, 4 years minimum when the S/C has NEMEA shielding



MATERIALS

- **Base panel:** FR4-Tg170
- **Shielding:** Optional integrated Carbon Nanotubes Thermal Transfer Bus (CN/TTB) shield
- **Cell Material:** Lithium polymer
- **Cell Interconnector:** Invar Silver plated copper
- **Interfaces:**
 - SAMTEC multi pin gold coated interface
 - Custom choice, normally 2x Molex TMMS-105-01-G-Q-RA (two 4x5 pin connectors)
 - PTFE (Teflon) space grade cables, multi strand, silver plated copper (AWG22 to AWG24)

TESTING

- Thermal Bake out (10E-7 mbar @ 50C for 24 hours)
- Full vibration test for Dnepr and Long March 2D vibration profiles, other LV profiles available upon request
- QT and AT is performed on the unit to be shipped at no charge.

Test	QT	AT
Functional	✓	✓
Vibration	✗	✓
Thermal Cycling	✗	✓
Thermal Vacuum	✗	✓
Cable/Connector integrity	✓	✓
Polarity	✓	✓
Performance	✓	✓
Freezing/Overheating	✓	✓



CONFIGURATIONS

BA07 A/P – BA07 A/S 52 Whr	€12,000
BA07 B/P - BA07 B/S 67 Whr	€14,000

EXTRA OPTIONS

- Optional Integrated Carbon Nanotubes Thermal Transfer Bus (CN/TTB) Shield:
€500



DIMENSIONAL DRAWINGS

All dimensions are in millimeters, hole pattern is PC104

