



BA08

HIGH ENERGY DENSITY BATTERY ARRAY with ON-BOARD CHARGING SYSTEM



SUMMARY

At a thickness of 23mm millimeters, the EXA BA08 High Energy Density Battery Array is a power store/delivery device designed to provide the highest energy capacity and redundancy at 88Whr per bank. All BA08 modules have integrated quad 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. BA08 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. BA08, as all the batteries in this family, has the unique capability to charge and discharge simultaneously, giving you a longer mission time and extending the life of the battery. Options are available as integrated Carbon Nanotubes Thermal Transfer Bus (CN/TTB) shield which allows missions to reuse the spacecraft self-generated heat and embedded redundant active heaters.

FEATURES

- 23 mm thick with dual battery cells
- Very high energy density cells can power from 1U to 27U missions
- Unique containment technology prevents swelling of the cells in a vacuum
- The double-sided arrays can be used as serial or parallel (3.7V or 7.4V) user configurable
- Multiple BA08 modules can be serialized or parallelized due to the Isolated Power Core (IPC)
- Capability to charge and discharge at the same time (simultaneously)
- Multiple redundant cells ensure mission survivability
- Embedded redundant thermal sensors
- Embedded redundant active heaters self-powered, optronically activated (5V-TTL)
- Module of choice for Micro satellite COLOSSUS architectures assembly
- Designed for LEO missions and requirements
- Stand-alone charge port available



- 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 with ISIS and Pumpkin Structures and compliant to CubeSat Standard
- Charging cables provided by default and custom Interface available

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/16A/20A depending on the model or user choice
- Typical internal resistance: 1 to 3 milliohms @ 25°C
- Simultaneous charge and discharge capability
- High discharge rate: 10 times the nominal capacity within 2 seconds
- High-speed charge rate: 3 times the nominal capacity

PRODUCT PROPERTIES

- **Mechanical:**
 - **Mass:** 270 grams
 - **Dimensions:** 101mm x 99mm x 23mm (not including connector)
- **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:** Silver plated copper
- **Interfaces:**
 - 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-5 mbar @ 50C for 24 hours)
- Full vibration test for Soyuz, Falcon9, Falcon Heavy, Electron 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	✗	✓
Connector integrity	✓	✓
Polarity	✓	✓
Power performance	✓	✓
Protection systems performance	✓	✓
Temp. Sensor and Active heater	✓	✓
Freezing/Overheating	✓	✓



PRICING

BA08/EM 88Whr	Engineering model, discharge at 14A max	€12,000
BA08/A 88Whr	Flight model, discharge at 14A max	€16,000
BA08/B 88Whr	Discharge unlimited (20A nominal, 200A within 2 seconds)	€18,000

EXTRA OPTIONS

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



MECHANICAL / DIMENSIONS

All dimensions are in millimeters, hole pattern is PC104

