

# Intelligent Li-Ion Polymer Power System Multiple Aerospace Platforms

Rockets, Missiles, Hypersonic Vehicles, Strike Weapons, Satellites



## Intelli-Pack®

### Li-Ion Polymer 2.1Ah FTS Battery

Space Environmental Qual Tested



#### BATTERY MANAGEMENT SYSTEM

- Class III PCBA with automatic overvoltage, undervoltage, short circuit and thermal protection for all cells in series, and cell balancing
- Health status is provided in real-time via a Windows GUI that includes individual cell voltages, SOC, SOH battery current and temperatures

#### FEATURES AND BENEFITS

- 180 Wh/Kg, NMC Li-Ion Cell Energy Density
- Battery box is composed of Intelli-Pack® Li-Ion Battery, 33.6Vdc, 2.1Ah
- Li-Ion Polymer Cells have no leakage and can be oriented in any direction
- Highly immune to shock and vibration
- Can be recharged from depletion to 96% in less than 1 hour (1C charge rate)
- Recharge Cycle Life > 1000 cycles at 100% Depth of Discharge to 80% Capacity
- Li-Ion Intelli-Pack® battery issues can be diagnosed and repaired in < 5 minutes
- RCC 319 for Range Safety Space Qualification for FTS Li-Ion Batteries
- Designed to pass UN38.3 Tests 1 thru 5, and 7
- Robust Design for Safety - NAVSEA S9310 Cell and Battery Level Destructive Testing

#### INTELLI-PACK® PCBA

- Up to 4A Amps continuous current  
33.6 Vdc, 2.1 Ah Li-Ion Polymer Intelli-Pack® Battery
- Automatic cell balancing during charge and internal heater control with temperature set points
- Voltage monitoring and cell balancing of all Li-Ion Polymer series cells are displayed on a Windows GUI and Data Logger via portable computer or sent via telemetry (RS-422 Comm Port)

# Li-Ion Polymer Battery

## Technical Information



### Battery Unit Physical Characteristic:

**Dimensions:** 6.36"L x 3.75"W x 1.5"H (inches)

**Weight:** 1.95 lbs (shown to right with internal BMS PCB and Connectors)

### Electrical:

**Power:** 33.6Vdc, 2.1Ah

**Current Sink:** 4 Amps Continuous  
6 Amps (Pulse, < 10 Secs)

### **Advanced Li-Ion Polymer Batteries for Aerospace Implementation Now!**

*Li-Ion Polymer combines high-energy and low internal resistance with the reliability and packaging flexibility to any box mechanical dimension*

1. **Electrolyte, no leakage:** All solid components, requiring no bulky cell housings. The result is a safer, more efficient package.
2. **Lightweight:** 180 Wh/Kg Li-Ion Polymer Cells can be stacked and wired in parallel or series to meet customer requirements
3. **Shock and Vibe:** Li-Ion Polymer meets or exceeds all shock and vibe requirements for all aerospace applications. It weighs less and has 2 to 3 times the energy density of batteries currently used on aerospace missions (i.e. Silver Zinc, Nickel Cadmium, Nickel Metal Hydride).

### Environmental Specifications:

#### **ENVIRONMENT QUAL:**

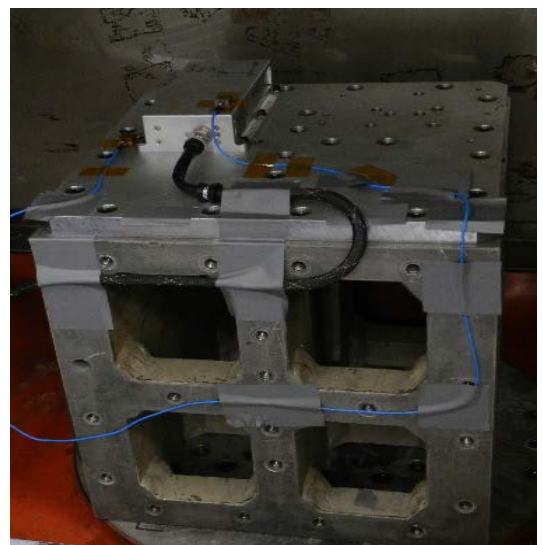
**Thermal Cycle:** -40C to +71C (24 cycles)  
-20C to +71C Fully Operational, No Heater

**Vacuum:** 1\*10<sup>-5</sup> Torr

**Thermal / Random Vib.:** +71C and -10C  
29.34 grms in Z Axis and 12.05 grms in X and Y Axis, 60 min per XYZ Axis, 0 to 2000 Hz

**Sine Vibration:** 70 and 100Hz, 18G  
500 and 700Hz, 7.8G  
1100 and 1400Hz, .6G

**Thermal / Shock:** +71C and -10C  
485G, SRS Shock in XYZ Axis  
50G, 50 msec pulse, Half-Sine Shock in XYZ Axis  
Three Hits: +/- XYZ Axis



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