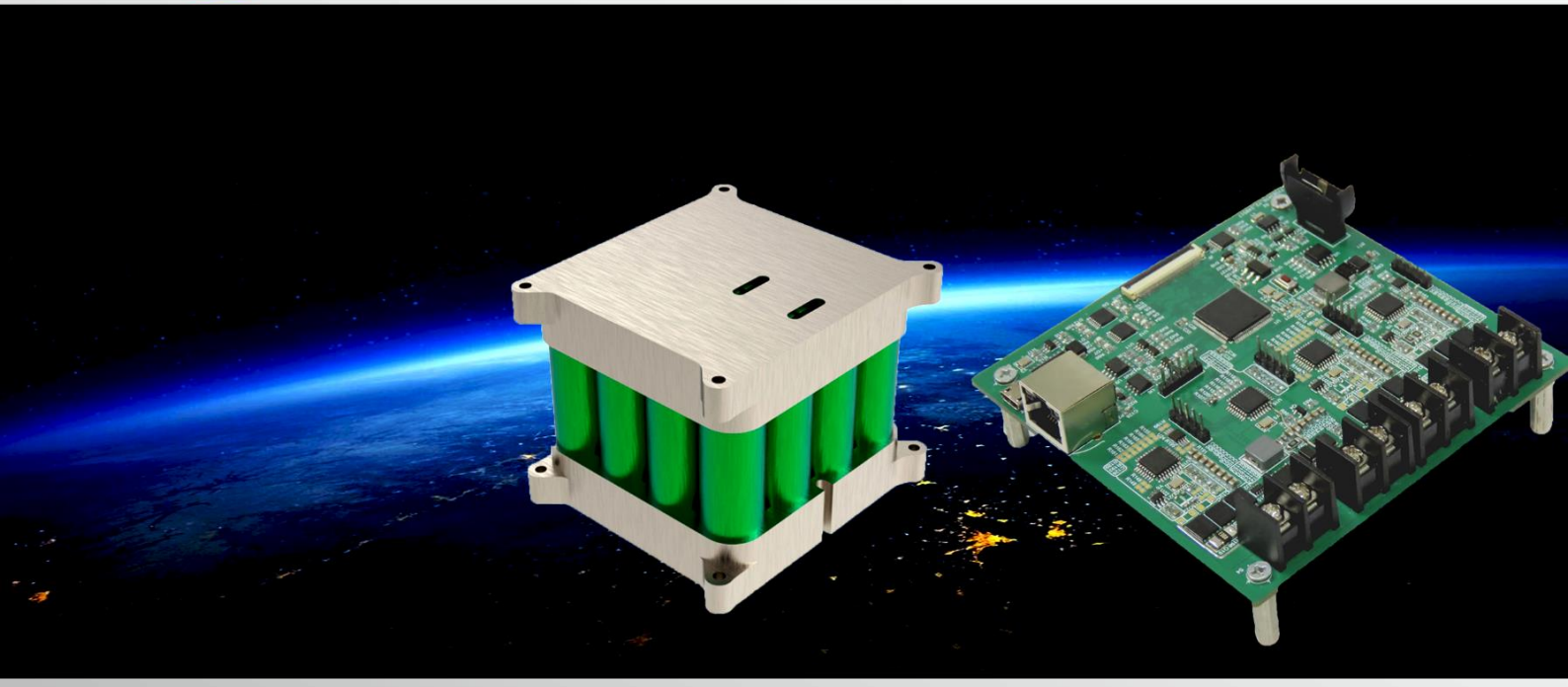
POWER

Battery & Board



DESCRIPTION

Battery Board is Designed to connect battery to EPS appropriately and keep it in safe current, voltage and temperature (with turning on/off battery heaters) during operation, while guarantees it's robust and reliable performance. The BB-N111S features three switches to support power to Satellite, and to protect Battery itself from any over/undervoltage and overcurrent. This section is self-sufficient and does not require support from any other section within the EPS. Employing CCCV method (constant current, constant voltage) enables highly efficient battery charge mechanism, that maximizes the battery life.With its high-performance switches, BB-N111S can endure up to 30A without taking any damage. Although this current limit can adjust to lower level according to customer requirements.

KEY HIGHLIGHT

>> BB-N111S uses Cortex-M7 processor
>> Accessible via CAN, I2C and RS485 networks
>> Provides full range of Telemetry and Telecommand
>> Display and audio interfaces can be implemented
>> Contain separate microcontroller for each switch
>> Autonomous protection methodsare employed to ensure solid foundation

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TECHNICAL SPECIFICATION

Functional and Performance Characteristics	
Design Life	5 years in LEO
Max. Battery Voltage	8.4V
Power Consumption	< 0.5W
Processor	ARM Cortex M7 32-bit RISC core
Processor (CPU) Clock	480 MHz
Protections	Over Voltage Protection in BCR OUT and Battery
	Under Voltage Protection in BCR OUT and Battery
	3 Switches with Customized over current protection level
Hardware features	Battery Charger with Customized current level (up to 10A)
	Fault Detection in Hardware Drive Circuit
Dissipation Power	0.5W at 30A per MOSFET
Interfaces	CAN2.0B with up to 1000 Kbps baud rate
	I2C with up to 100 Kbps baud rate
	RS 485
	USB
	Samtec PC104 Connector
	Harwin G125 Connector

TEST SPECIFICATION

Qualification and Acceptance Testing (ECSS-E10-03A)		
Test Name	QT	AT
Functional	✓	✓
Random Vibration	✓	✓
Sinusoidal Vibration	✓	✓
Mechanical Shock	✓	✓
Thermal Cycling	✓	✓
Thermal Vacuum	✓	✓
Radiation	✓	✓
EMC/EMI	✓	✓
Modal Vibration	✓	✓

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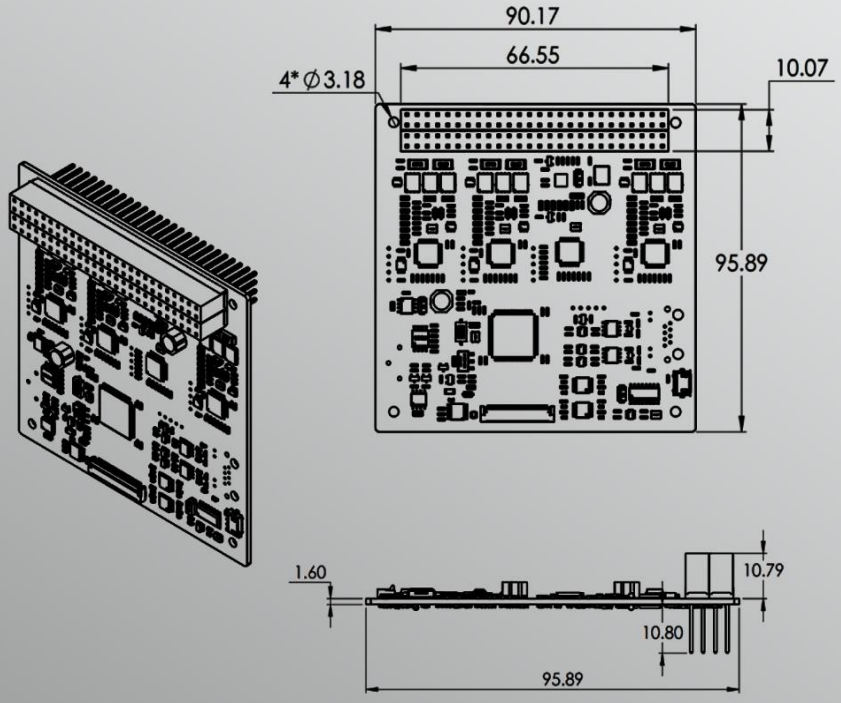
TECHNICAL SPECIFICATION

Environmental and Mechanical Characteristicof Battery Board	
Mass	100g
Dimensions	90 mm × 96 mm × 25mm
Operating Temperature	-40˚C to 85˚C
Storage Temperature	-50˚C to 100˚C
Radiation Tolerance	10 kRad
Vacuum	10^-5 torr
Vibration	According to Nasa General Environmental Verification Standards

DRAWING



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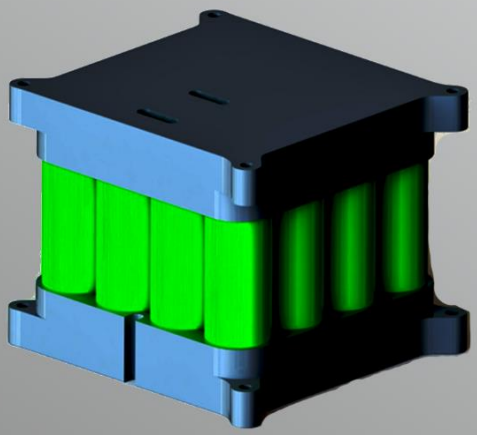
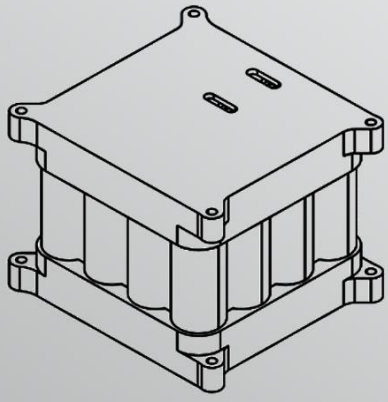
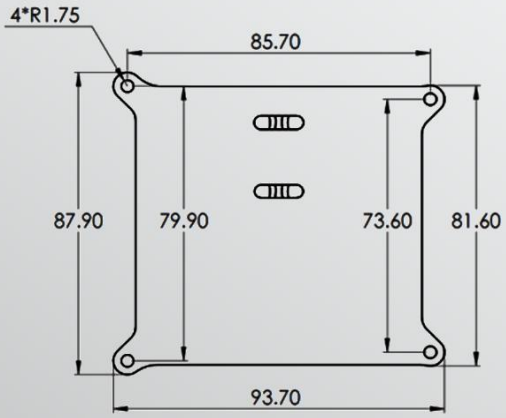
TECHNICAL SPECIFICATION

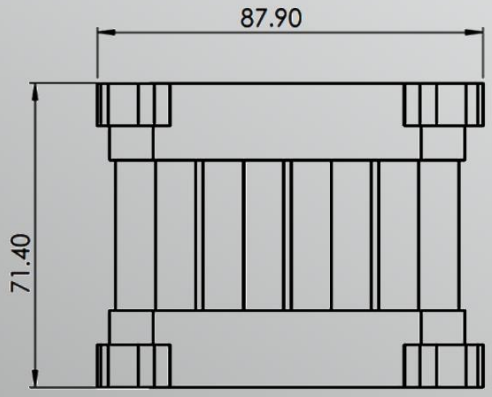
Environmental and Mechanical Characteristic of 200 Wh Battery Pack	
Mass	1000 g
Dimensions	94 mm × 88 mm × 71.5 mm
Operating Temperature	-5˚C to 15˚C
Storage Temperature	-20˚C to 50˚C
Radiation Tolerance	10 kRad
Vacuum	10^-5 torr
Vibration	According to Nasa General Environmental Verification Standards

DRAWING









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