Mars Hard Lander

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Features

- Multi-sensor module
- Wireless Data Transmission
- Custom Battery Pack
- Batteries last at least 2 Sols
- Up to 4 modular payload ports
- On board data storage
- Temperature Controlled Enclosure

Journey

Our antenna subsystem is the most challenging part of the design, requiring tight integration of multiple hardware components and extensive backend software to ensure reliable operation. To mitigate this risk, we validated each component independently before integration. Tackling this challenge has significantly strengthened our team's engineering capabilities.

Acknowledgments

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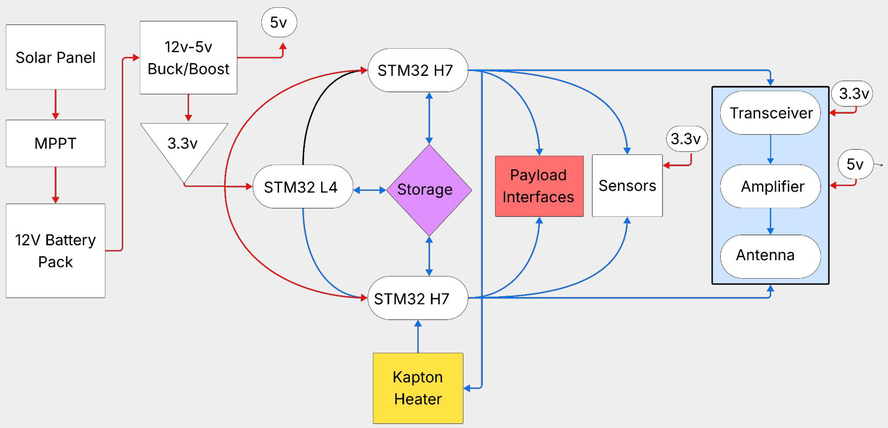
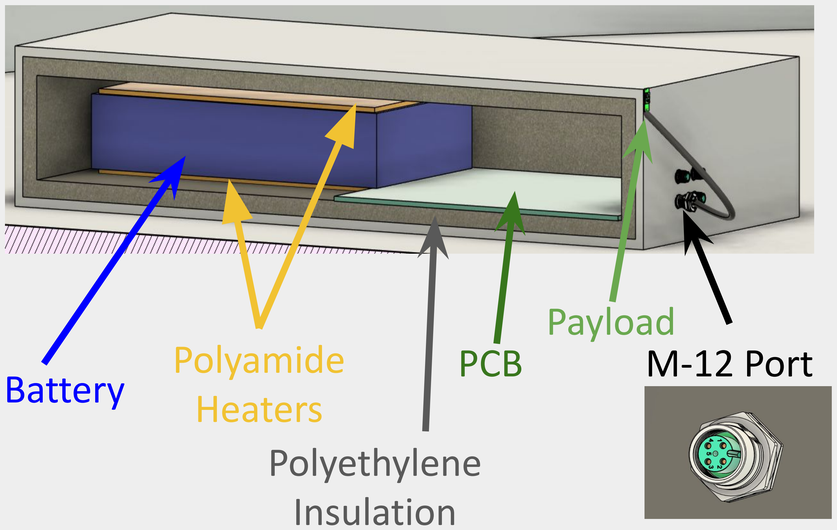
Objective

Environmentally-resilient electrical system powering a low-cost, scalable Mars hard-landers

System Diagram

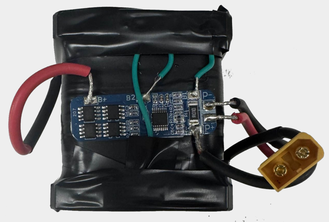


Enclosure Design



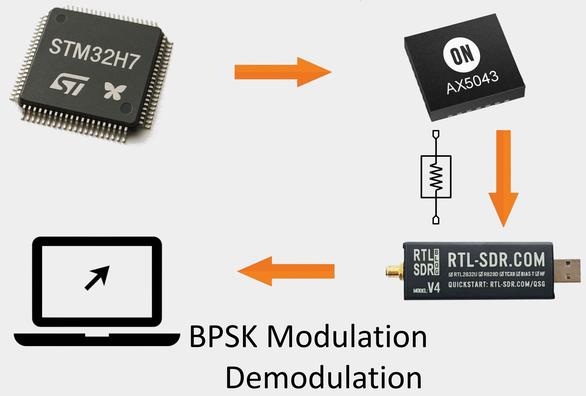
System Designs

Battery



- 18650 platform
- 3S3P battery pack
- 116 Whr capacity
- 2 Sol battery life
- XT-60 power connector

Communication



Sensor & Payloads

- **Payloads Support:**
  - Type I: 3.3v, 100mA, I2C, 10 min runtime
  - Type II: 5v, 250mA, I2C, 10 min runtime
  - Type III: 12v, 500mA, I2C, 10 min runtime

- **Sensors:**
  - BME280 (Temp,Humidity,Pressure)
  - IAM-20380HT (Gyro)
  - MLX90395 (Magnetometer)
  - 540A (Analog Accelerometer)
  - 1918 (Light Sensor)