



Overview

The Lithium radio product line provides a CubeSat compatible communication system for extreme environment applications. Lithium radios feature on-the-fly selectable frequency selection and output power. They are compatible with standard amateur radio ground stations capable of communication at 9600 bps, or higher bit rates using GMSK modulation.

The Lithium series radios (Li-1) are half-duplex radios with adjustable communications parameters. Custom frequencies and deviations are available per customer requirements.

The Lithium series radios are available as an SMT module that can be placed on a half size PC104 board or can be integrated into larger more complex systems without incurring RF complexity in host products.

A digital command and data interface is provided to the radios. Through this interface the radio is configured, data is received, and data is sent for transmission. The interface protocol is serial UART and configurable up to 115.2 kbps. A packet protocol with checksums is implemented between the host and radio for robust access.

The radios communicate using a subset of the AX.25 packet protocol (custom protocols can be ordered). The AX.25 packet source and destination call signs are configurable.



Figure 1--Picture of the Li-1 Radio.

Applications:

- **CubeSat Kit systems**
- **High altitude balloon missions**
- **Rovers or other remotely operated vehicles**
- **Remote embedded systems**

Features:

- **FSK/GMSK transceiver**
- **Frequencies:**
 - 130 – 450MHz
- **Input voltages:**
 - Digital 3.3V
 - Radio power supply (5-9V)
- **Output transmit power: 250 mW – 4 W**
- **Power usage:**
 - Receive < 200 mW
 - Transmit: < 10 W¹
- **Data rate: 9.6 kbps²**
- **Protocol support: AX.25**
- **Serial interface: 3.3V UART**
- **Form factor:**
 - SMT module (32 mm x 62 mm)
- **Operating Temperature: -30 to +70 °C**

Options:

- **AES 128 or 256 Encryption³**
- **Connector options RA SMA, MCX**

For more information, contact:
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Li-1 emits RF radiation that may interfere with the use of other devices. Users must maintain proper licenses during operation.



Li-1 is static sensitive, take the necessary precautions



Li-1 requires proper termination of transmitter in 50 Ohm load during operation.

¹ Transmission power is configurable by the user. Maximum is noted.

² Higher data rates require special licensing, 38.4kbps, 76.8kbps.

³ Encryption not AX.25 compliant.