

### THE FASTEST WAY TO WIRELESS

Laird Technologies' third generation 915 MHz FHSS module sets yet another standard for industrial RF communication. Based on proprietary FlexRF™ technology, this globally-accepted module will exceed most OEM application and performance requirements.

Embedded with Laird Technologies' robust server-client protocol, the LT1110 permits an unlimited number of clients to synchronize to a single server for low latency communications. The server and all clients in a network can communicate with any radio in range via either addressed or broadcast packets. The configuration and test software allows OEMs to design and test networks to suit their applications.

From the OEM integrator's point of view, the LT1110's interface (API, configuration, etc) is 100% compatible with the LT2510 allowing the OEM to choose either 915 MHz or 2.4 GHz. The enhanced API commands provide packet routing control and network intelligence. With its field-proven proprietary FHSS RF protocol and increased penetration at 915 MHz, the LT1110 rejects RF noise, excels in multipath scenarios, allows for co-located systems, and provides an extremely reliable communication link.

The LT1110 achieves RF data rates up to three times faster than our previous generation 915 MHz transceivers. Two output power levels are available, a low power module with 8 dBm conducted output power and a high power with 23 dBm conducted output power. Line of sight communication up to ½ mile and 2 miles respectively, is possible while consuming as little as 32 mA of current in full transmit mode! It also comes with a modular approval allowing higher gain antennae to greatly increase the effective range. At the same time, a range of ultra-low power modes make the LT1110 your best solution for power-restrictive or battery-operated applications.

The mini SMT package is well-suited for space-constrained designs and has the same pin-out and mechanical form factor as the 2.4 GHz LT2510 module. It is available in pick-and-place packaging for volume manufacturing. A pluggable version with two single row headers is offered for ease of integration.

### FEATURES

- Very robust in the presence of interference
- 915 MHz for improved RF penetration
- High throughput
- Ultra-low power consumption
- Long range capability
- Miniature SMT form factor
- Integrated battery monitor, temperature sensor, GPIOs and ADC
- Simple integration

### MARKETS

- Commercial buildings
- Field surveillance
- Utility management
- Recreation
- Fleet telemetry

**global solutions: local support™**

USA: +1.800.492.2320

Europe: +44.1628.858.940

Asia: +852.2268.6567

wirelessinfo@lairdtech.com

[www.lairdtech.com/wireless](http://www.lairdtech.com/wireless)

### FLEXIBLE RF PROTOCOL

Embedded into Laird Technologies' 900MHz and 2.4 GHz FHSS modules, FlexRF technology supports unrivaled flexibility in industrial wireless applications. OEMs have the ability to control and optimize both the radio module and the network, allowing them to develop a highly reliable system for their specific application.

Numerous "software hooks" empower, control, and provide flexibility. They allow designers to mold the communication link around applications, as opposed to squeezing the application into a fixed communication technology or standard. Each transceiver is designed to provide OEMs with a feature-rich, high-performance, configurable, secure, compatible, integrated solution, allowing OEMs to build the most optimized network possible.

Parameter	PRM210/211/220/221	PRM230/231/240/241
Interface	UART	
Frequency	902-928 MHz	
RF Data Rate	230 kbps / 500 kbps, depends on profile	230 kbps
Serial Interface Options	Logic level (matches supply voltage)	
Serial Interface Data Rate	Up to 460,800 baud	
Variable Conducted Output Power	-4 to +8 dBm (6.3 mW)	+13 to +23 dBm (200 mW)
Maximum Radiated Power (E.I.R.P)	+23 dBm (200 mW) with 13 dBd yagi	+29 dBm (800 mW) with 6 dBi antenna
Current Consumption		
Peak Tx	47 mA	230 mA
Peak Rx	30 mA	30 mA
Average Idle	8 mA	8 mA
Sleep	0.3µA	0.3µA
Channels	Depends on profile, up to 52	52 Channels
Sensitivity (BER 10 <sup>-6</sup> )	230 kbps RF rate: -89 dBm 500 kbps RF rate: -84 dBm	230 kbps RF rate: -89 dBm
Voltage	2.0 - 3.6 VDC	
Approximate Range (Indoor, Outdoor)	150 feet / 0.5 mile (with 2dBi dipole)	800 feet / 3.2 mile (with 2dBi dipole)
Temperature	-40° to +85° C	
Dimensions**	26 mm x 33 mm x 4 mm (Surface Mount U.FL) 26 mm x 39 mm x 4 mm (Surface Mount Ant) 25 mm x 30 mm x 4 mm (Pluggable U.FL) 25 mm x 39 mm x 4 mm (Pluggable Ant)	
Antenna	U.FL connector (PRM210, PRM220) Integrated chip antenna (PRM211/221)	U.FL connector (PRM230, PRM240) Integrated chip antenna (PRM231/241)
Approvals*	FCC ID: KQL-111010 IC: 2268C-111010	FCC ID: KQL-1110200 IC: 2268C-1110200

\*This is only a partial list, contact your Laird Technologies representative for a complete list of approvals.

\*\*Dimensions are for the surface mount module with U.FL connector. See user manual for specific dimensions for each model.

### ORDERING INFORMATION

**PRM210** 915MHz RF Module – Low Power Surface Mount with U.FL for external antenna

**PRM211** 915MHz RF Module – Low Power Surface Mount with Integrated Antenna

**PRM220** 915MHz RF Module – Low Power Pluggable with U.FL for external antenna

**PRM221** 915MHz RF Module – Low Power Pluggable with Integrated Antenna

**PRM230** 915MHz RF Module – High Power Surface Mount with U.FL for external antenna

**PRM231** 915MHz RF Module – High Power Surface Mount with Integrated Antenna

**PRM240** 915MHz RF Module – Pluggable with U.FL for external antenna

**PRM241** 915MHz RF Module – High Power Pluggable with Integrated Antenna

**DVK-PRM220** Development Kit for Low Power Pluggable with U.FL for external antenna

**DVK-PRM221** Development Kit for Low Power Pluggable with Integrated Antenna

**DVK-PRM230** Development Kit for High Power Surface Mount with U.FL for external antenna

**DVK-PRM231** Development Kit for High Power Surface Mount with Integrated Antenna

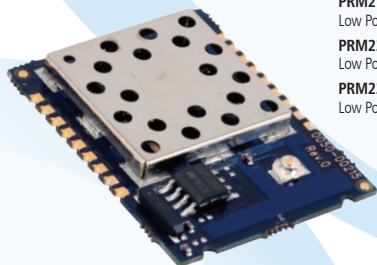
**DVK-PRM240** Development Kit for High Power Pluggable with U.FL for external antenna

**DVK-PRM241** Development Kit for High Power Pluggable with Integrated Antenna

**DVK-PRM210** Development Kit for Low Power Surface Mount with U.FL for external antenna

**DVK-PRM211** Development Kit for Low Power Surface Mount with Integrated Antenna

The details contained within the document are subject to change. Download the product specification from [www.lairdtech.com/wireless](http://www.lairdtech.com/wireless) for the most current specification.



### RF PROTOCOL MODES

- Communication
  - Unicast (one-to-one addressing)
  - Broadcast (one-to-multiple addressing)
- Fast sync time
- Random back-off
- Dynamic radio data table:
  - Retains data from up to 32 radio modules
- Configurable retries
- Auto channel

### INTERFACE PROTOCOL

- On-the-fly radio module configuration:
  - Full API control
  - Destination address
  - RF transmit power
  - RF channel
  - Broadcast/addressed
- Raw data or transmit/receive API
- Battery monitor
- A/D, PWM Output and Generic I/Os
- Variable baud rate
- Configurable RF packet size, timeout control
- Onboard temperature sensor
- Handshaking, CTS/RTS
- In-range indicator
- Error detection, onboard CRC, duplicate packet filtering

### SECURITY

- Frequency hopping air interface
- System IDs
- Unique IEEE MAC Addresses
- Proprietary hardware
- Proprietary protocol

LWS-DS-LT1110 0911

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