RM024 Series

2.4 GHz ISM-Band Multipoint Wireless Modules

INDUSTRY-LEADING FLEXIBILITY AND PERFORMANCE IN M2M

Laird's RM024 series modules are built on the core technology and RF expertise of Laird's seven generations of Frequency Hopping Spread Spectrum (FHSS) devices. An improved RF frontend and a long list of configurable options yields the best of both worlds: very low power consumption and extremely long range. The RM024 excels in serial cable replacement scenarios, signage, agricultural applications and more. Available in 125 mW (FCC) or 10 mW (CE) variants, the RM024 provides the most reliable wireless link in the ISM band with several inbuilt mechanisms to reject interference, boost throughput, and achieve unparalleled range.

UNPARALLELED PERFORMANCE IN EXTREME ENVIRONMENTS	POWERFUL API FOR A MORE INTELLIGENT NETWORK	PERSONAL SUPPORT FROM DESIGN TO MANUFACTURE

In difficult environments with extreme demands, no ISM-band RF module performs like the RM024. Built for **industrial temperatures from -40°C to 85°C (-40°F to 185°F),** the RM024 is perfect for any environment. **Interference avoidance mechanisms** bring reliability to uncertain deployments. The broad range of output power options and sleep modes allows you to opt **for high power and long range (up to 4km)** or **short range and low power.** The modules' improved RF frontend achieves **an RF data stream of up to 500 kbps.**

The RM024's upgradeable firmware and programmable API allow the device to be customized for a broad range of use cases, and advanced functionality via AT commands. Using the **Laird Configuration Utility** for programming and testing, the RM024 may be placed into a wide variety of configurable modes. The RM024's architecture allows for large networks of **up to 16 million nodes.** The RM024's link is robust, but much simpler than technologies like Zigbee. The RM024 offers an intelligent network that **excels even in the presence of co-located systems**.

Laird's support team is always standing by to provide integration support, analysis, and troubleshooting for all currently supported hardware. Working on-site with Laird engineers in the US, Europe, and Asia, Connectivity Solutions Support is your personal bridge to all of Laird's software, experience, and expertise. Laird guarantees a fast response and is **dedicated to seeing your product through design to manufacturing**. Laird's online support center serves as an archive of many common questions, as well as **hundreds of support documents and software files.**

Features at a Glance

- **Improved RF Frontend** – 2.4GHz FHSS radio, 280 kbps or 500kbps data rate, optional external antenna and range of 2.5 miles (4km)
- **Unique server/client implementation**, fully configurable with a maximum network size of 16 million devices
- **Robust interference avoidance** due to FHSS implementation, strong immunity to interference and multipath signals
- **Access to the Laird Configuration Utility**, a complete software utility for configuration and testing.

Application Areas

Serial Cable Replacement

Digital Signage / Displays

Industrial Automation

Connectivity Solutions Support Center:
http://ews-support.lairdtech.com
www.lairdtech.com/wireless

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Category	Feature	Implementation		
General	Form Factor	SMD-ANT+U.FL, Pluggable-ANT+U.FL, SMD-U.FL, Pluggable-U.FL		
	Antenna	External antenna through U.FL connector or dual antenna with integrated antenna and U.FL		
	Serial Interface Data Rate	Baud rates from 1200 bps to 230400 bps. Non-standard baud rates are also supported.		
	Channels	FCC: 42 or 78 selectable channels, CE: 42 selectable channels		
	Security	Channelization, System ID, and Vendor ID		
	Min. Flash (EEPROM) Memory Endurance	1000 Write/Erase Cycles		
Transceiver	Frequency Band	2400 – 2483.5 MHz		
	RF Data Rate (Raw)	280 kbps or 500 kbps selectable		
	Hop Bin Spacing	900 kHz over 79 hops, 1500 kHz over 43 hops		
	RF Technology	Frequency Hopping Spread Spectrum		
	Modulation	MSK		
	Maximum Output Power Conducted	FCC: +5 to +21 dBm selectable, CE: +3.5 to +10 dBm		
	Supply Voltage	2.3 – 3.6 V ± 50 mV ripple		
	Current Draw	**RM024 Version**	**FCC (125 mW)**	**CE (10 mW)**
		100% Tx	136 mA	40 mA
		1/8 Tx (when selected)	40 mA	40 mA
		100% Rx	36 mA	36 mA
		Rx average (idle current)	9.5 µA	9.5 mA
		Deep sleep	.38 µA	.38 µA
	Receiver Sensitivity (1% PER)	-95 dBm at 280 kbps RF rate; -94 dBm at 500 kbps RF rate		
	Range (based on external 2.0 dBi antenna at 280 kbps RF Data Rate		Outdoor (line-of-sight)	Indoor (estimated)
		FCC	2.5 miles (4 km)	1300 ft. (400 m)
		CE	0.6 miles (1.0 km)	328 ft (100 m)

ORDERING INFORMATION

RM024-S125-C-30	SMT	125 mW	u.FL Jack	RM024125C30
RM024-S125-M-30	SMT	125 mW	Chip Antenna	RM024125M30
RM024-P125-C-30	Pluggable	125 mW	u.FL Jack	RM024125C30
RM024-P125-M-30	Pluggable	125 mW	Chip Antenna	RM024125M30
RM024-S10-C-20	SMT	10 mW (CE)	u.FL Jack	RM02410C30
RM024-S10-M-20	SMT	10 mW (CE)	Chip Antenna	RM02410M30
RM024-P10-C-20	Pluggable	10 mW (CE)	u.FL Jack	RM02410C30
RM024-P10-M-20	Pluggable	10 mW (CE)	Chip Antenna	RM02410M30
RM024-P10-M-24	Pluggable	10 mW (CE)	Chip Antenna	RM02410M30

DEVELOPMENT KITS

Part #	Description
DVK-RM024-CE	RM024 Developer Kit, Pluggable, 3.3V TTL Serial, 10mW, Multiple Ant, CE Approved
DVK-RM024-FCC	RM024 Developer Kit, Pluggable, 3.3V TTL Serial, 125mW, Multiple Antenna

REVISION HISTORY

Version	Date	Notes	Approver
1.0	15 May 2015	Initial Release	Jonathan Kaye
2.0	2 Feb 2015	Update to new template	Jonathan Kaye

Connectivitiy Solutions Support Center:
http://ews-support.lairdtech.com
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