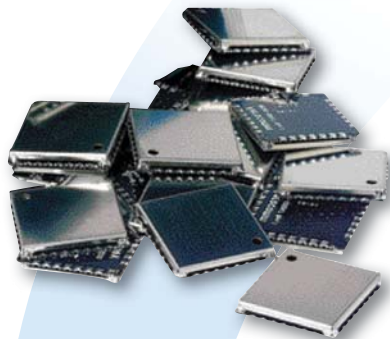




Innovative **Technology**  
for a **Connected** World



# AC4790-1X1 900MHz Radio Module

## THE FASTEST WAY TO WIRELESS

Laird Technologies' tiny AC4790-1x1 radio modules put the power of a pre-configured peer-to-peer protocol into the smallest, most cost-sensitive wireless applications. Despite their small size, 1x1 modules can communicate with any other in-range 1x1 radio module (even in harsh industrial conditions) allowing for virtually infinite range.

The AC4790-1x1's RF protocol features a dynamic addressing scheme that simplifies node-to-node communication. The radio module identifies the most efficient transmission path, so OEMs can design routing sequences that optimize the RF network. This makes 1x1 ideal for a wide variety of industrial applications that must rely on smooth, constant data flow.

Using field-proven 900MHz FHSS technology that utilizes unlicensed frequency bands\*, these modules reject interference, enable co-located system operation, and ensure data integrity. Integration is easy. OEMs simply solder the radio modules and antennas into place, then power-on. Hopping, synchronization, and data TX/RX is performed in the firmware.

## FEATURES

- True peer-to-peer protocol
- Ultra-fast sync time (25 msec)
- Smallest form factor: 1.0" x 1.0"
- API commands to control packet routing
- Software-adjustable sensitivity
- Network node discovery
- Range up to 1 mile

## MARKETS

- Commercial Buildings
- Field Surveillance
- Utility Management
- Recreation
- Fleet Telemetry

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### FLEXIBLE RF PROTOCOL

Laird Technologies' embedded transparent protocol simplifies the OEM's integration process by utilizing drop-in installation. As each radio module receives raw data, it manages the over-the-air protocol to assure successful communication. Headers, data packet length, and CRCs are not required. The RF232 supports simple cable-replacement to complex peer-to-peer configurations, broadcast communication to all radio modules or address packets to a specific destination using unique MAC addresses embedded in each radio module.

### SPECIFICATIONS

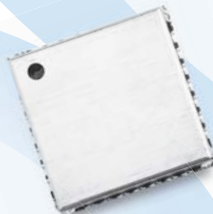
Parameter	AC4790-1x1
Interface	SMT
Frequency band (software selectable) (North America)**	902-928 MHz
Modulation	FHSS FSK
Serial interface options	3V TTL
Serial interface data rate	Up to 115.2 Kbps
Output power (w/ 3dBi antenna)	0mW-10mW variable
Current consumption (transmit/receive)†	80mA / 28mA
Channels	Up to 48 (North America)**
Security	One-byte system ID
Voltage	3.3V
Sensitivity	-99 dB @ full RF data rate
Range (line-of-sight w/ 3dBi antenna)	Up to 1 mile (1.6 km)
Temperature	-40° to +80°C
Humidity (non-condensing)	10% to 90%
Dimensions	1.0 x 1.0 x 0.2 inches (25.4 x 25.4 x 6.0 cm)
Weight	< 0.5 oz (< 15 g)
Antenna	External, via SMT pad

\*The 900MHz band is approved in the Americas and Australia as an unlicensed spectrum subject to approval by device.

\*\*For products and specifications suited to non-U.S. countries (e.g. Australia and Europe), please contact Laird Technologies.

†Current consumption assumes 50% transmitter on-time

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.



AC4790 1X1 is not FCC approved. Laird Technologies will assist with the approval process for high volume customers.

### RF PROTOCOL MODES

- a) Communication
  - Unicast (one-to-one addressing)
  - Broadcast (one-to-multiple addressing)
- b) Acknowledgement mode (ACK)
  - API with hardware and/or software ACK indication
- c) Ultra-fast sync time:
  - Up to 25 simultaneous conversations;
  - Intelligent self-extending session time requires only one 25 msec sync
- d) Remote over-the-air configuration
- e) Sensadjust, software-controlled RF desensitizer wards off interference
- f) Random back-off
- g) Network node discovery
- h) Dynamic radio data table:
  - Retains data from up to 8 radio modules

### INTERFACE PROTOCOL

- a) On-the-fly transceiver configuration:
  - Full API control
  - Destination address
  - RF transmit power
  - RF channel
  - Broadcast/addressed
- b) Raw data or transmit/receive API
- c) Long range mode, enables sensitivity control
- d) A/D, generic digital I/Os
- e) Variable baud rate
- f) RF packet size, timeout control
- g) Onboard temperature sensor
- h) Handshaking, CTS/RTS
- i) Session indicator
- j) Error detection
  - Onboard CR
  - Duplicate packet filtering
- k) Data encryption standard (DES)

LWS-SPEC-AC4790 1X1 0209

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