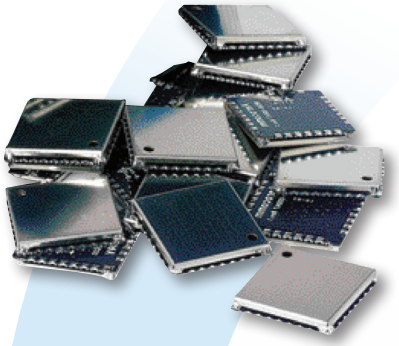
Laird TECHNOLOGIES®

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

global solutions: **local** support™

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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

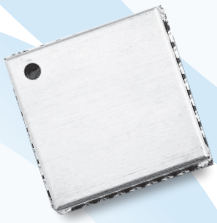
Parameter	AC4790–1x1
Interface	SMT
Frequency band (software selectable) (North America)**	902-928 MHz
Modulation	FHSS FSK
Serial interface options	3V TTL
Serial interface data rate	Up to 115.2 Kbps
Output power (w/ 3dBi antenna)	0mW-10mW variable
Current consumption (transmit/receive)†	80mA / 28mA
Channels	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-tim

The details contained within the document are subject to change. Download the product specification from 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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