RAMP Bridge

Installation and Operations Guide

Laird's RAMP Bridge provides a simple, high-performance wireless Ethernet cable replacement system that eliminates the frustration, cost, and complication of its competitors, all contained in a small, durable, form factor. Say goodbye to enormous outdoor antennas that rely on directional precision and complicated alignment. Laird's RAMP Bridge makes it easier than ever to achieve industrial-strength long-range Ethernet cable replacement in any environment.

FEATURE	IMPLEMENTATION
Network architecture	Server/client
Channel Frequencies	2.412-2.462 GHz
Modulation	DSSS
Ethernet interface data rate	10/100Mbps
Channels	11 selectable
Security	128 bit AES-CCMP
RF Data Rate	Up to 54 Mbps
Sensitivity	-92 dB @ min RF data rate
Range (line-of-sight)	Up to 5.5 km (3.5 miles)
Transmit power	Up to 4W EIRP
Input Voltage	48V DC POE
Power Consumption	<7 Watts
Power supply	Power Over Ethernet (802.3af)
Temperature	-40° to +70°C
Ingress Protection	IP-67 Dust Tight and Water Immersion up to 1 m
Dimensions	355.6 x 106 mm (14 x 4.17 in.)
Weight	798 g (1.76 lbs)
Antenna	Integrated 5 dBi Omni Directional
Mounting Options	Wall Mount (Standard) Pole Mount 38.1 mm (1.5 in) to 114.3 mm (4.5 in)(optional)
Standard Interface	RJ-45 48V Power Over Ethernet (802.3af)
Configuration Software	Internal webserver for configuration

Safety

Important Notice: **Please read all instructions carefully before attempting to install and use this product.**

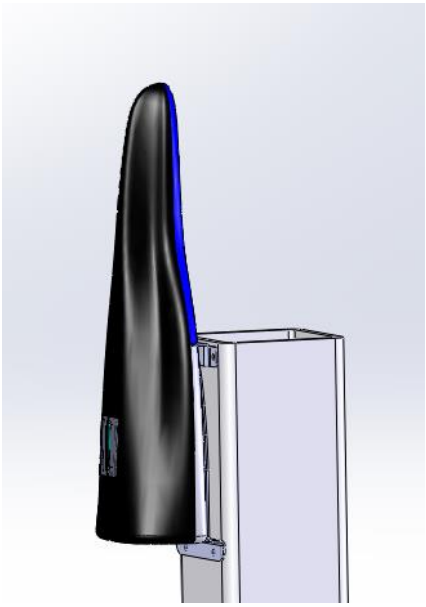
RAMP Bridge and all associated equipment should be installed in accordance with applicable local and national electric code guidelines to ensure safe operation.

Precaution

For best results, make sure the connector is clean and free from any metal flakes/dirt. Tighten the connector using a torque wrench. Also, do not remove the dust cap from connectors when not in used.

Placement

For best results, orientate RAMP Bridge vertically as shown below. The top portion of the unit contains an omni-directional antenna; for best results, the upper portion should be located in free space with no obstructions in the antennas near-field.



Device Setup and Connections

The RAMP Bridge may be powered by either a network switch that supplies 48VDC (802.3af compliant) Power Over Ethernet (POE) or by using any 802.3af compliant POE injector. If using the network switch with POE, use a standard CAT 5 or CAT 6 cable to connect the device to the switch. If using an external POE injector, set up according to the manufacturer's recommended connections. A few seconds after power is first applied to the Ramp Bridge device, the LEDs light up in a pattern from top to bottom. Once finished, the device is ready to be used or configured.

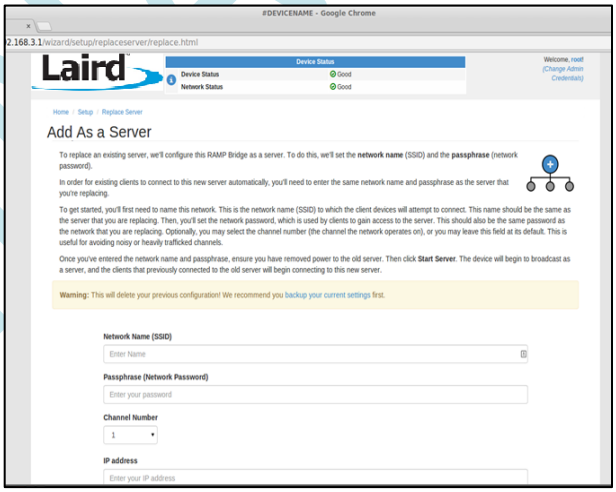
Configuration

RAMP Bridge units are configured via any standard web browser. Enter the IP address of the RAMP Bridge unit into a browser (default IP is 192.168.3.1) and log in. The default login is *root* and the default password is *summit*. We highly recommend that you immediately change the admin credentials. To do this, click **Change Admin Credentials** in the upper right side of the screen.

RAMP Bridge units are configured as either a server or a client. Each network should have only one server and can have between one and five clients. By default, units are configured as a client. To set up a network, first configure the server using the web browser as shown below.

For the server, the only configuration options:

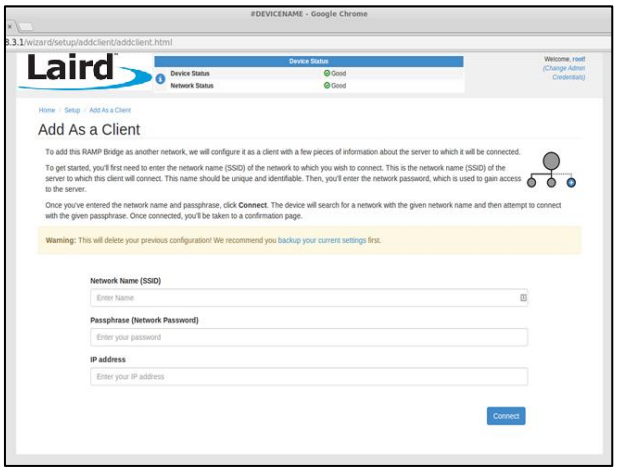
- **Network Name** – Unique name of the network shared among the server and client.
- **Passphrase** – Security key for clients to authenticate communication to server. This is used for over the air communication; it is not the same key as the device login password. The server and client(s) must have the same passphrase.
- **Channel Number** – The channel for radio communication.
- **IP Address** – The IP address used to connect to the device for configuration.



Then configure each client in the network as shown in the image to the right.

For the client, the following are the only configuration options:

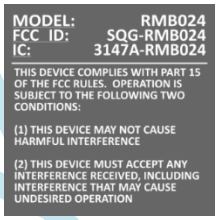
- **Network Name** – Unique name of the network shared among the server and client.
- **Passphrase** – Security key for clients to authenticate communication to server. This is used for over the air communication; it is not the same key as the device's login password. The server and client(s) must have the same passphrase.
- **IP Address** – The IP address used to connect to the device for configuration.



Once all configurations are saved, the units can be used in a point-to-point or point-to-multipoint bridging operation.

FCC Statements of Conformity

FCC Interference Statement



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE: Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

The table below indicates the recommended minimum distances of operation from the human body as shown from the MPE (Maximum Permissible Exposure) calculation:

Minimum Distance General Public/Uncontrolled Exposure	Minimum Distance Occupational/Controlled Exposure
50 cm (20 inches)	22 cm (9 inches)

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Industry Canada Statements of Conformity

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

IMPORTANT NOTE: Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

The table below indicates the recommended minimum distances of operation from the human body as shown from the MPE (Maximum Permissible Exposure) calculation:

Minimum Distance General Public/Uncontrolled Exposure	Minimum Distance Occupational/Controlled Exposure
50 cm (20 inches)	22 cm (9 inches)