



## Router Install Guide and User Manual

The Ammbr router is a triple link router. For the RF links, it has two 2x2 MIMO 5GHz links for the router and one 2x2 MIMO 2.4Ghz for the local AP. For backhaul, a Gigabit Ethernet connection is provided. This can also be used for an optional POE. Future option can accommodate a fiber connection. Typical installations would require mounting the unit, installing the antennae, applying power through POE and optional backhaul if available.

### Installation:

Installation should be performed by a qualified professional.

Ensure all the parts are included in your kit. Part included are:

1x ARRA router.

2x omni directional dual band white antennae with N-Type male connectors.

2x directional 15dBi panel 2x2 MIMO antennae with hardware mounting kit.

4x cables with N-Type connectors.

1x 24W gigabit POE injector. Power input is 100VAC to 240VAC 50-60Hz.

1x Hardware kit with:

1x mounting bracket.

2x stainless steel 50mm to 70mm hose clamps

4x Wall anchors

4x #6 philips pan head screw 1-3/4”

1x Ethernet cord grip and cap

1x install hex tool

1x Router secure lock pin screw

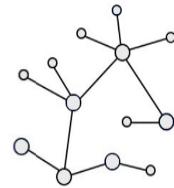
Other items not included to finish install:

Length of shielded Cat5 or better plenum outdoor rated Ethernet cable for backhaul and/or power

Additional hardware for a suitable mounting location such as 1-1/2" to 2" round pole, a square wooded post, or wall.

## Mounting the router:

Plan your install. Ideally the router should be mounted outdoors at least 3 meters high and above any potential interference of building, vegetation, hills or other objects. A power source/backhaul should be within maximum distance of 100 meters. If long range directional antennas are planned to be used, the RF cables should be kept to a minimum. (Long range distance can be improved by increasing the height of the router. This is to clear buildings, vegetation, and curvature of the earth.)



To mount your router, securely mount the bracket to the mounting pole using the bracket and hardware. The three fingers of the bracket should be facing up. The front of the bracket should be kept clear as this would interfere with the router mounting. Mount the router to the bracket. The three fingers of the bracket will fit into three slots on the router. The cord grip should be facing down. Secure the router by inserting the locking screw pin to the bottom of the router to the bracket. The tool provided is used to secure this pin screw.

The router has been shipped with the external Ethernet connector configured to provide internet to a computer or switch from the router. Route the cord grip on a shielded ethernet cable and plug it into the router. Tighten down the cord grip to the Ethernet connector to secure the cable and to make a weatherproof connection. Secure the Ethernet cable every two to three meters to the pole. The router may be used to provide backhaul to the router. Remove the cover with the tool provided. The internal ethernet pigtail will be connected to the unmarked port or marked "LAN." Remove the pigtail from this port and reconnect it to the port marked "WAN." Replace cover.

## Antenna connections:

Installation should be performed by a qualified professional.

There are six female N-type connectors used to connect the antennae. They have color coded rings around the connector for the bands used. There are two yellow connectors that identifies the 2.4GHz AP. There are two pink connectors that are used for radio 1 of the 5GHz router. The other two connectors are green for radio2 of the 5GHz router.

Install the two omnidirectional antennae to the two yellow connectors.

For best performance, securely install one directional 15dBi panel antenna on the pole pointing towards the location of another router in the router providing backhaul. To mount the antenna, place the short side of the L-bracket on the four studs on the

back of the antenna. Install the 4 flat washers, 4 spring washers followed by the four 8mm nuts. Tighten nuts. Secure L-bracket to a  $\phi 30\text{mm} \sim \phi 50\text{mm}$  pole with u-bolt and saw tooth clamp. (Note: different holes/slots can be used to set to the desired inclination.) Securely mount the second directional 15dBi panel antenna vertically below the first directional antenna, following the installing instructions above. Point the second directional antenna to an area which may be served with backhaul. Using two provided RF cables, connect the first antenna to the green connectors. Using the remaining two provided RF cables, connect the second directional antenna to the pink connectors.

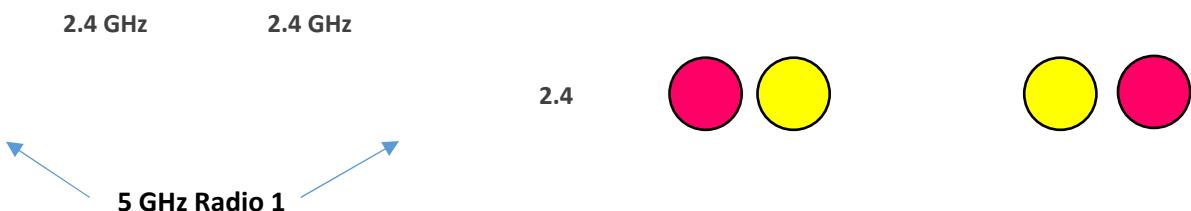
The omni-directional antenna have an estimated range of 330 meters outdoor unobstructed. Actual performance will vary based on environmental conditions and actual installation. The directional panel antenna can be as high as 3 km. Actual performance will vary based on environmental conditions, actual installation, and gain of antennae.

Color map:

Top:



Bottom:



### **Power/Backhaul final connection:**

Find a suitable location for POE. It should be dry and located indoors near a power source. Connect the Ethernet cable installed to the router into the port marked “POE”. If additional ethernet connection is needed (i.e. backhaul or computer), it may be plugged in to the port marked “LAN”. Ensure this connection is correct as it may damage equipment that may not have POE enabled connections. Connect the AC pigtail to the POE. Insert the other end of the plug to an AC outlet. An adapter plug may be needed. POE power indicator light should come on within 15 to 30 sec.

### **Operation:**

The Amnbr router will take approx. 1 min to boot. Typically no configuration is needed. The 5GHz radio 1 (pink) defaults to channel 149. The 5GHz radio 2 (green) defaults to channel 48. Default bandwidth is 80MHz for the 5GHz links and 20MHz for 2.4GHz.

After the unit has booted, scanning the available Wi-Fi connections should show available generic SSID of ARRA and a specific SSID node similar to ARRA/AMR-FRAN-00xxxx. It is best to use the generic SSID of ARRA to connect as it will connect to the best node available. It will also support roaming as users move from one location to another. If it is desired to connect to a specific node, ARRA/AMR-FRAN-00xxx may be used.

Once associated with ARRA node, a voucher login window will appear (On some occasions due to network traffic or other interference, it may take up to a minute for the voucher login in window to appear). The user must have a valid voucher to have access to the internet via the ARRA router. User may purchase a voucher based on time or data amount. Time is available for 1 or 24 hours. Data is available in 100M, 1G or 10G amounts. Vouchers are available at the local franchisee.

For the franchisee, vouchers can be generated as many as needed. They may be printed for use during the day or emailed. Vouchers become valid at the time of first login use and expires when time or data is exhausted so vouchers can be presold for future use. The web site for voucher generation is [vouchers.arranetworks.com](http://vouchers.arranetworks.com). A user name and password is required to gain access to generate vouchers. The voucher generation page will have buttons for 1hr, 24hr, 100M, 1G, and 10G. The type of voucher must be selected by clicking the appropriate button. The button will be highlighted to show selection. Then use the up/down selector arrows to select how many vouchers to generate. An estimated number of pages are shown to plan for printing of vouchers. Alternately the number of vouchers can be entered manually by clicking on the

selection number. Once all the desired options are selected, the go button will generate/print the vouchers. The menu button (three horizontal bars) allow for logout and access to admin page. Another user name and password is required. This admin page will show the current users logged in and usage.

## **FCC Statement**

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the 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.

## **FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .This equipment should be installed and operated with minimum distance 40cm between the radiator& your body.

## Initial deployment firmware updates and support:

Router is configured for remote support and firmware updates. If there are issues with the install on these pilot and initial deployments, please notify the home office. Please have the node name ready for assistance and diagnostics.

## For advanced users:

Options to change configuration.

### CAUTION!!!

Incorrect changes to the configuration page can potentially brick this router and may not be recoverable. Proceed with caution!

Router firmware configuration can be accessed as follows:

Associate to the SSID of the router to be changed.

Go to [thisnode.info](http://thisnode.info). Alternatively access with the IP address of the router to be changed.

Radio parameters can be viewed/changed such as channel, bandwidth, etc.

Diagnostics of RF links and data links.

Router can be re-booted.

