



# EAW RSX212L Series 2 Way Self Powered Line Array Loudspeakers Owner's Manual

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**EAW RSX212L Series 2 Way Self Powered Line Array Loudspeakers**



## IMPORTANT SAFETY INSTRUCTIONS

### IMPORTANT SAFETY INSTRUCTIONS – READ THIS FIRST

#### Safety Instructions

Read and heed all warnings and safety instructions in this manual before using this product. Failure to follow these precautions may result in damage, injury, or death.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any amplifier ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.



12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from

tip-over. In addition, use only with the Caster Pallets and flybars specified by the manufacturer, or sold with the apparatus. When a Caster Pallet is used, use caution when moving the apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. The AC Mains PowerCon connector (the appliance coupler) is used as the disconnect device. This connector shall remain readily accessible and operable.
15. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, does not operate normally, or has been dropped.

## **WARNING**

- To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
- If the AC mains connectors on this product are not compatible with the local AC mains receptacle, employ a licensed electrician to provide the proper connector and voltage to interface with the product. Ensure that the AC power supply has a properly grounded safety ground. Failure to follow this warning could cause damage, injury, or death.

**CAUTION:** RISK OF ELECTRIC SHOCK! DO NOT OPEN!

**CAUTION:** TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE.  
REFER SERVICING TO QUALIFIED PERSONNEL.

## **FCC STATEMENT**

**CAUTION:** If this product contains a lithium battery, danger of explosion if the lithium battery is incorrectly replaced. Do not attempt to replace the battery yourself. Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**CAUTION:** Changes or modifications not expressly approved by LOUD Technologies® could void the user's authority to operate the equipment under FCC rules.

## **Correct Disposal of this Product**

This symbol indicates that this product should not be disposed of with your household waste, according to the WEEE Directive (2012/19/EU) and your national law. This product should be handed over to an authorized collection site for recycling waste electrical and electronic equipment (WEEE). Improper handling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with WEEE. At the same time, your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, waste authority, or your household waste disposal service.

## Electrical Warnings

### AC Mains Supply

**WARNING:** Read all instruction and cautionary notes concerning electrical power in this document.

### AC Mains Cable

#### WARNING

- If the AC mains connectors on this product are not compatible with the local AC mains receptacle, employ a licensed electrician to provide the proper connector and voltage to interface with the product. Ensure that the AC power supply has a properly grounded safety ground. Failure to follow this warning could cause damage, injury, or death.
- Ensure that AC power supply has a properly grounded safety ground. Failure to follow this warning could cause equipment damage, injury or death.

### Suspension Warnings

**WARNING:** Suspending anything, especially overhead of people, should be done with extreme caution. Always engage the services of a certified professional who is qualified to determine the requirements for and to implement overhead rigging. Only persons with the knowledge of proper hardware and safe rigging techniques should attempt to suspend loudspeakers overhead. Failure to follow these precautions may result in damage, injury, or death.

## RADIUS Series Introduction

In addition to offering renowned EAW fidelity at any output level, we are confident that RADIUS will drastically change the way you use your sound system, saving you time, effort, money and frustration and delivering superior results. The below chart contrasts the process of getting RADIUS show-ready in comparison to a 'conventional' sound system, illustrating the tremendous time savings and simplification, whether for permanent installation or portable applications.

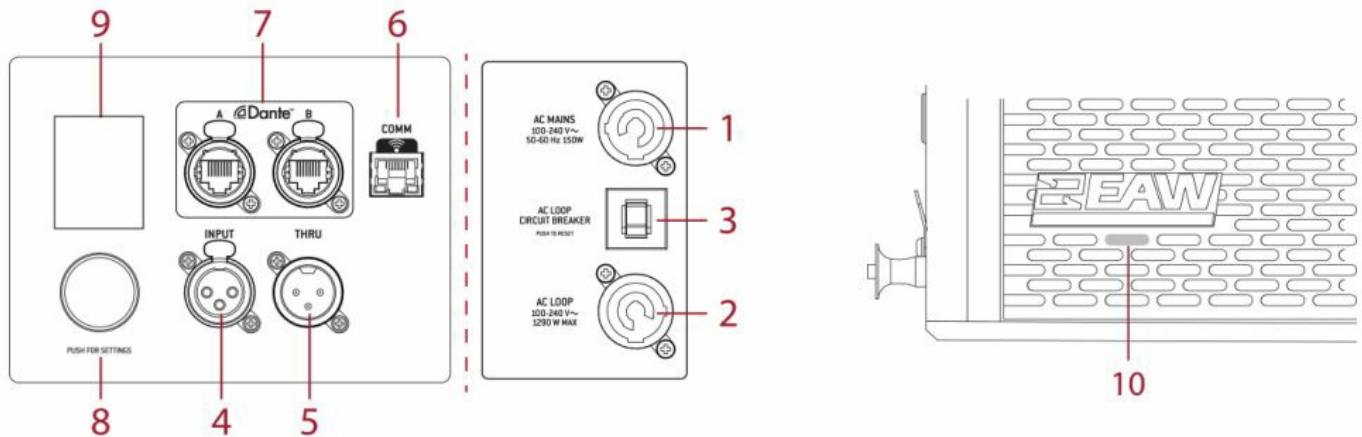
Step	Conventional Sound System	RADIUS
1	Bring equipment into space.	Bring equipment into space.
2	Connect audio cabling.	Connect power and network.
3	Verify each loudspeaker works and that cabling is not faulty (level shift or polarity inversion).	Not necessary.
4	Troubleshoot any issues found in step #3.	
5	Set up measurement system.	
6	Take measurements of system. Equalize. Repeat until system is 'tuned'.	Open Mosaic. Detect system online, select voicing and run Optilogic. Make any adjustments to taste.
7	Use system.	Use system.

This document provides basic guidance and operating instructions for using the system. The user is encouraged

to utilize EAWmosaic and Resolution to explore the range of possibilities that RADIUS can provide for their application. Additionally, this manual and the EAWmosaic Help File are frequently updated with new and beneficial information, so check back often.

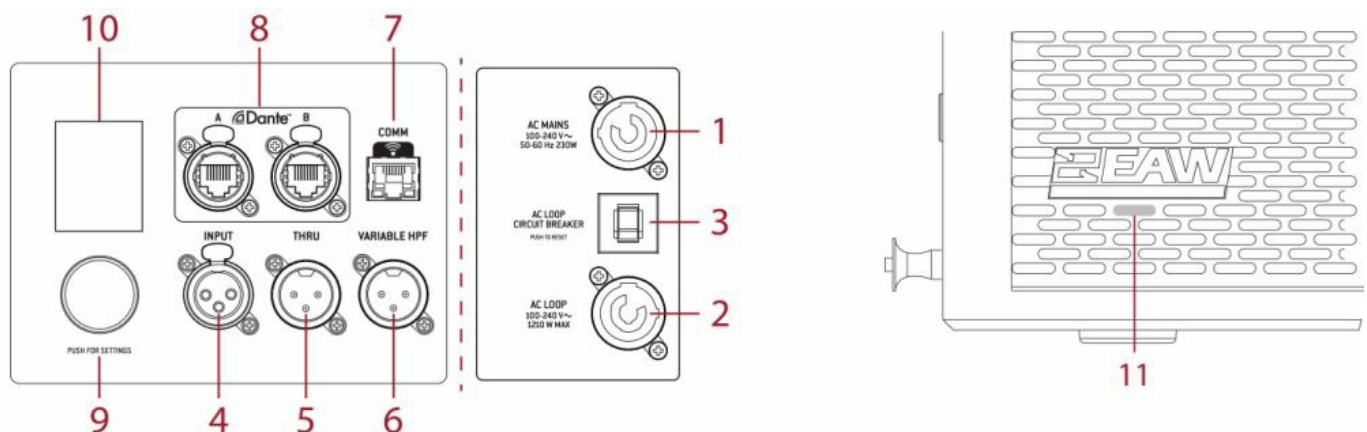
## Functionality and Operation

### RSX SERIES Point Source/ Line Array/ Monitor Connectors and Controls



1. AC Mains Input/ Connect to AC mains supply as labeled.
2. AC Mains Loop Through/ Loop AC Mains for additional RADIUS products.
3. AC Loop Circuit Breaker/ User Resettable, 12A (115 V), 6A (230 V).
4. XLRInput/ Connect Analog input signals.
5. XLRThru/ Loop input signal to additional RADIUS products, or other devices.
6. CommPort/ Enables wireless control.
7. DanteA/B/ Dual etherCON™ Connectors.
8. DSP Navigation / Edit Wheel/ Navigate, edit and select parameters.
9. LCD UI Display/ Displays the current UI information.
10. Front Panel LED/ Power Indicator/ Status.

### RSX SERIES Subwoofer Connectors and Controls



1. AC Mains Input/ Connect to AC mains supply as labeled.
2. AC Mains Loop Through/ Loop AC Mains for additional RADIUS products.
3. AC Loop Circuit Breaker/ User Resettable, 12A (115 V), 6A (230 V).

4. XLRInput/ Connect Analog input signals.
5. XLRThru/ Loop input signal to additional RADIUS products, or other devices.
6. XLR Variable HPF/ Loop input signal to additional RADIUS products, or other devices.
7. Comm/ Enables wireless control.
8. DanteA/B/ Dual etherCON™ Connectors.
9. DSP Navigation/ Edit Wheel/ Navigate, edit and select parameters.
10. LCD UI Display/ Displays the current UI information.
11. Front Panel LED/ Power Indicator/ Status.

## AC Mains Connection



Connect the supplied AC mains cord to the Neutrik powerCON® socket on the rear of the RADIUS. The powerCON® system utilizes a locking connector. To lock, twist 1/4 turn clockwise after fully inserting it into the AC MAINS receptacle. Connect the other end to an AC mains supply receptacle, nominally 1 00V – 240V and 50Hz or 60Hz as labeled on the RADIUS. If necessary, have a qualified electrician change the cable plug as required for compatibility with the local AC mains receptacle.

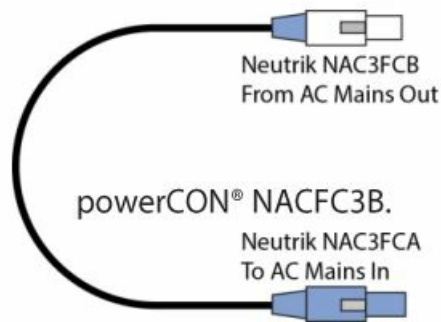
**WARNING:** Before connecting a RADIUS to the AC mains supply, completely turn down the input signal using the input level attenuator. If not, there could be excessive and possibly damaging sound levels from the loudspeaker when energized.

There is no power switch on RADIUS. When connected to the AC mains, the loudspeaker will be fully operational, with the output level controlled by the signal source feeding it.

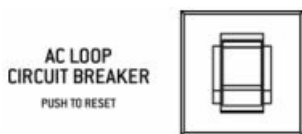
## Linking power



The Neutrik powerCON™ AC mains and AC loop connectors are wired in parallel to provide an AC mains inlet and outlet on each RADIUS. The blue AC mains inlet mates with a Neutrik powerCON® NACFC3A (supplied). The white AC mains outlet mates with a Neutrik Therefore, to loop the AC mains from enclosure to enclosure, connect an AC mains jumper cable as shown Uumper is not included with RADIUS).



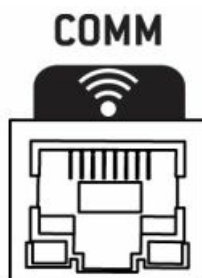
Up to three additional RSX208L, RSX212L, or RSX12 units may be looped in this fashion at normal listening level (two at maximum listening level). Up to two additional RSX18, RSX1 SF, or RSX218 units may be looped in this fashion at normal listening level (one at maximum listening level). Up to five additional RSX86, RSX89, RSX126, RSX129 or RSX12M units may be looped in this fashion at normal listening level (four at maximum listening level). Use an AC loop connector to daisy-chain AC mains power from one enclosure to another. The maximum continuous load must not exceed 12A for the 115V version and 6A for the 230V version.



**NOTE:** The circuit breaker only protects the AC loop outlet, not the AC mains connector.

If the continuous load connected to the AC loop outlet exceeds the rated load, the circuit breaker will trip. For this situation, reduce the connected load and then manually reset the circuit breaker.

## Comm



- The 100 Mb network connector is to connect RADIUS to a Wi-Fi router via CAT5 (or better) Ethernet cable, thus enabling wireless control.
- Plug one end of the Ethernet cable into the RADIUS network connector and the other end of the Ethernet cable into a LAN port on the router, NOT a WAN port. Most routers allow the use of either a straight-wired cable or crossover cable, but if you have a choice, a straight-wired Ethernet cable is the way to go to ensure smooth operation with any router.

**Warning:** If needed, complete directions for setting up the router may be found in the EAWmosaic Help File.

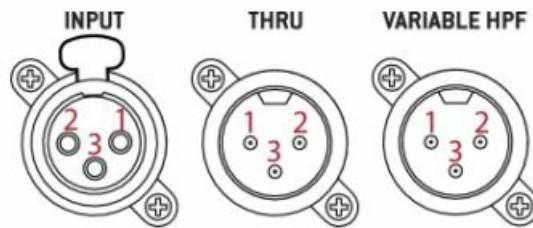
## Audio Connections

### Analog Audio

Connect the output from your line-level signal source to the XLR-3F INPUT connector on the rear panel. This is an electronically balanced input. Users must provide their own XLR cables. The XLR-type connectors on the rear of each RADIUS are designed for professional audio signal levels, nominally 0 dBu (= 0.775 V). Normally, use the female XLR as the signal input. Use a male XLR as a loop-thru output to connect the same signal input to an

additional RADIUS\*.

**The wiring convention is as follows:**

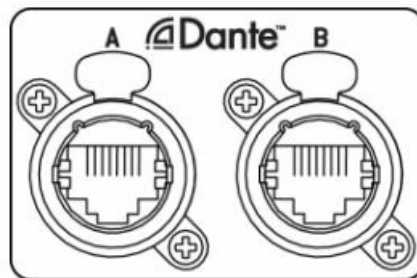


- **Pin 1:** Shield
- **Pin 2:** +/Hot
- **Pin 3:** - / Cold

Typically, a RADIUS array or full-range loudspeaker is connected to the VARIABLE HPF output of a RADIUSsubwoofer to "split" the work. The subwoofer handles all the low frequencies and the array loudspeaker handles the rest. As a result, it is more efficient and a bit louder.

## Dante A/ B

### Digital Audio



- These Dante ports are for connecting one RADIUS to another RADIUS (or another Dante-enabled device) via CAT5 (or better) Ethernet cable. This features dual Dante ports for daisy chaining.

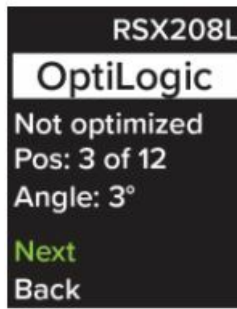
## DSP Navigation/ Edit Wheel



- Rotate (or push-click) the encoder to open settings, navigate the user interface and edit parameters and select values.
- This endless rotary wheel allows you to navigate the user interface, edit sections of RADIUS and navigate within screens to select sub-menus, pages and parameters, as well as select values during editing.

## LCD UI Display





- The LCD UI Display is one of the most vital features of RADIUS as it displays all the menu navigation information. When RADIUS is powered on, it will load up the last state it was in when powered off.

## Front Panel LED

- The front panel LED illuminates when the AC Mains in of RADIUS is plugged into a suitable AC power supply. The color of the LED, however, is dependent on the current state of the RADIUS.

These LEDs vary slightly depending on whether EAWmosaic is being used or not. In this case, we're looking at the hardware IJ only, so NO EAWmosaic. See below:

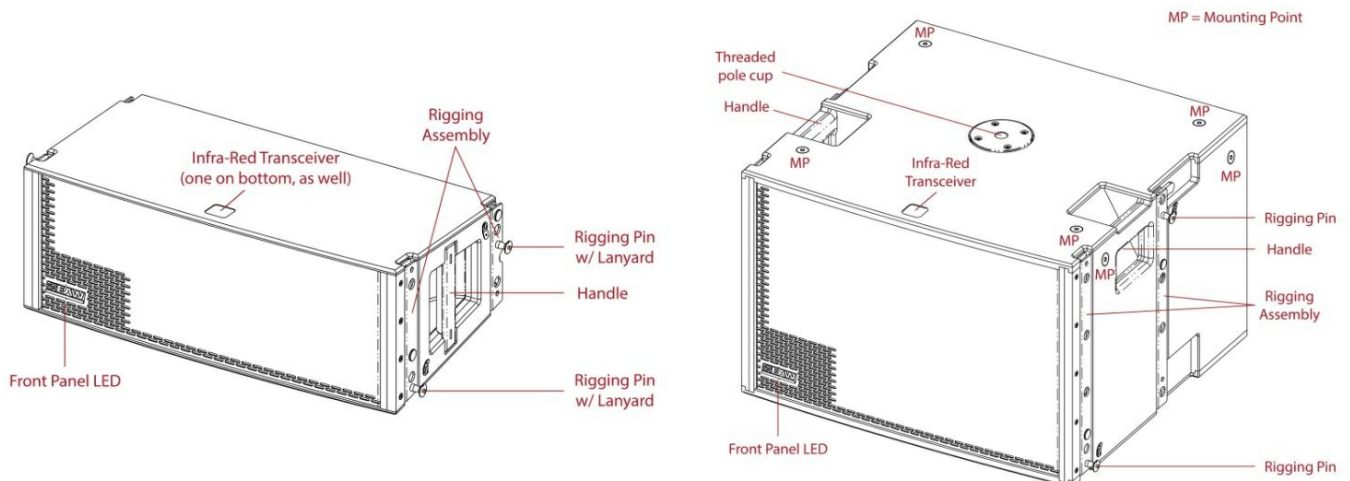
MODE	BOOT	NORMAL	LIMITING	FAULT	ADVERTISE	IDENTIFY
OFF	OFF	OFF	OFF	OFF	AMBER	WHITE

- As seen above, the front panel LED only illuminates in 'Advertise' or 'Identify'.

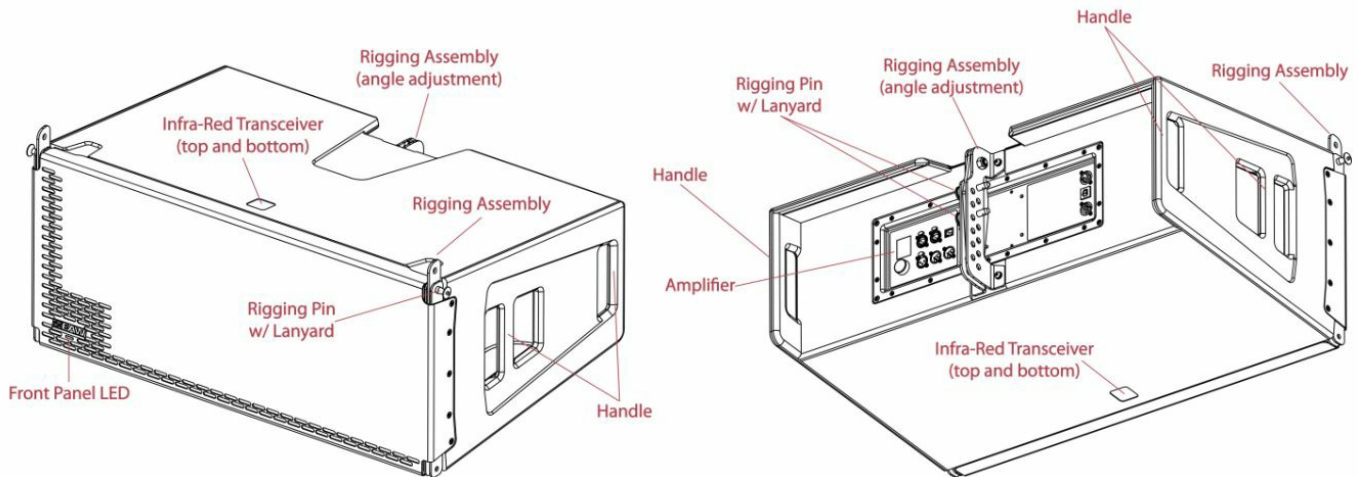
Advertise is engaged when a speaker is selected in the discovery shelf in EAWmosaic. This enables you to see the speaker that's been selected, identify it and drag it into the appropriate group. The amber color of the LED makes it clear that it is not yet in the rig and still under EAWmosaic control. Once identified, the LED will turn white.

This is a manual process that can only occur when in setup mode, NOT show mode. An overview of EAWmosaic is explained later in this manual. There is even greater detail in the EAWmosaic Help File.

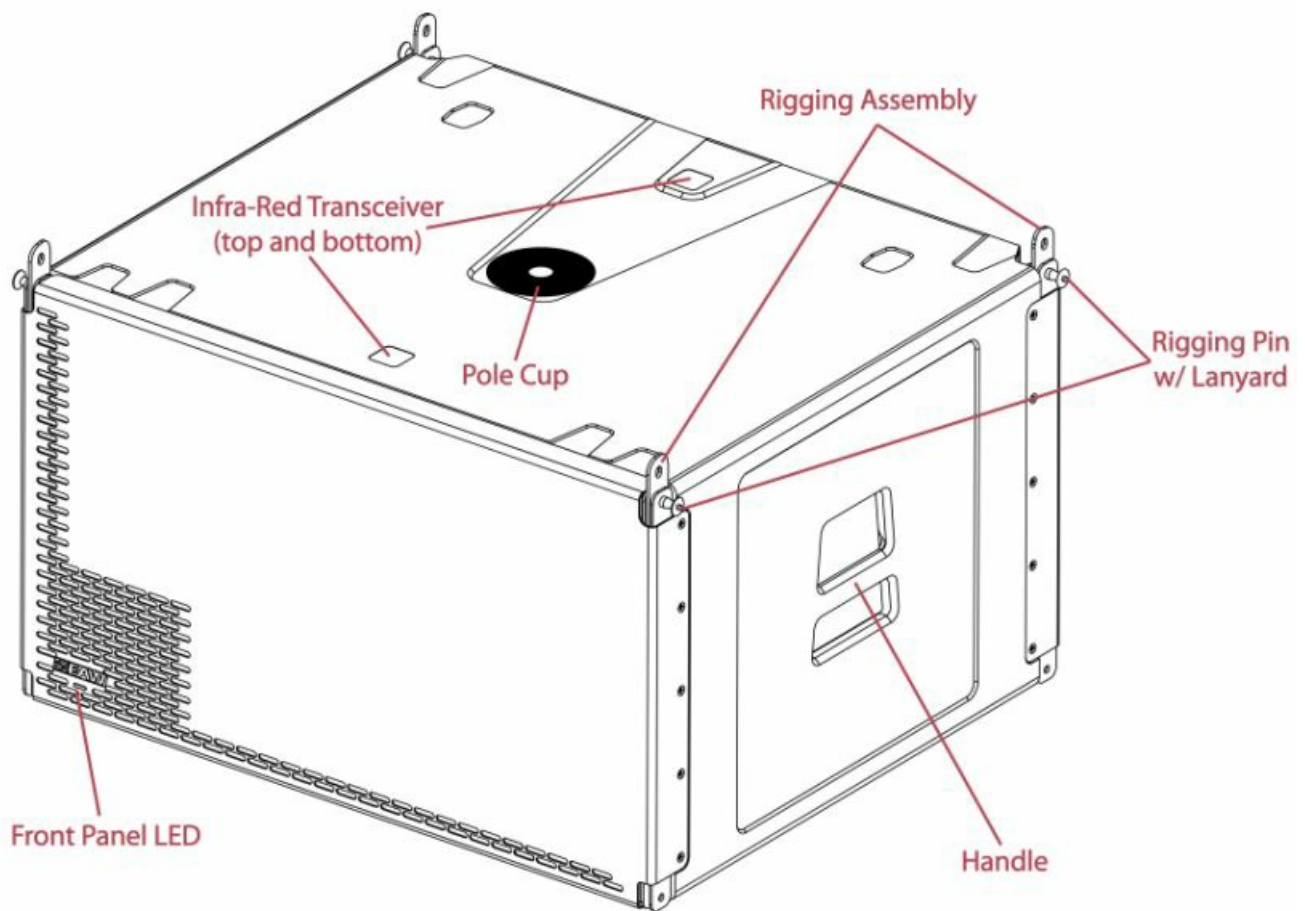
## RSX208L / RSX12 Walkaround



## RSX212L Walkaround



## RSX1 SF Walkaround



### Infrared (IR) Transceivers [RSX Line Array/ Flyable Subwoofer]

Each time a user powers on a RADIUS, the modules immediately use the IR transceivers to query neighboring RSX devices. RADIUS recognizes each unit individually and as arrays, then presents that information to EAWmosaic. The user only needs to identify where each RADIUS is located within the venue (left, right, etc.). The system will determine which modules are within each array, how that array is configured, and their position in the array stack.

**Note:** RSX Line Array modules have two IR Transceivers; one on the top of the array and one on the bottom of the

array. I.J RSX18F modules have 4 IR Transceivers, two on top and two on bottom (front and back).

### Rigging Assemblies/ Rigging Pins [RSX Line Array/ Flyable Subwoofer]

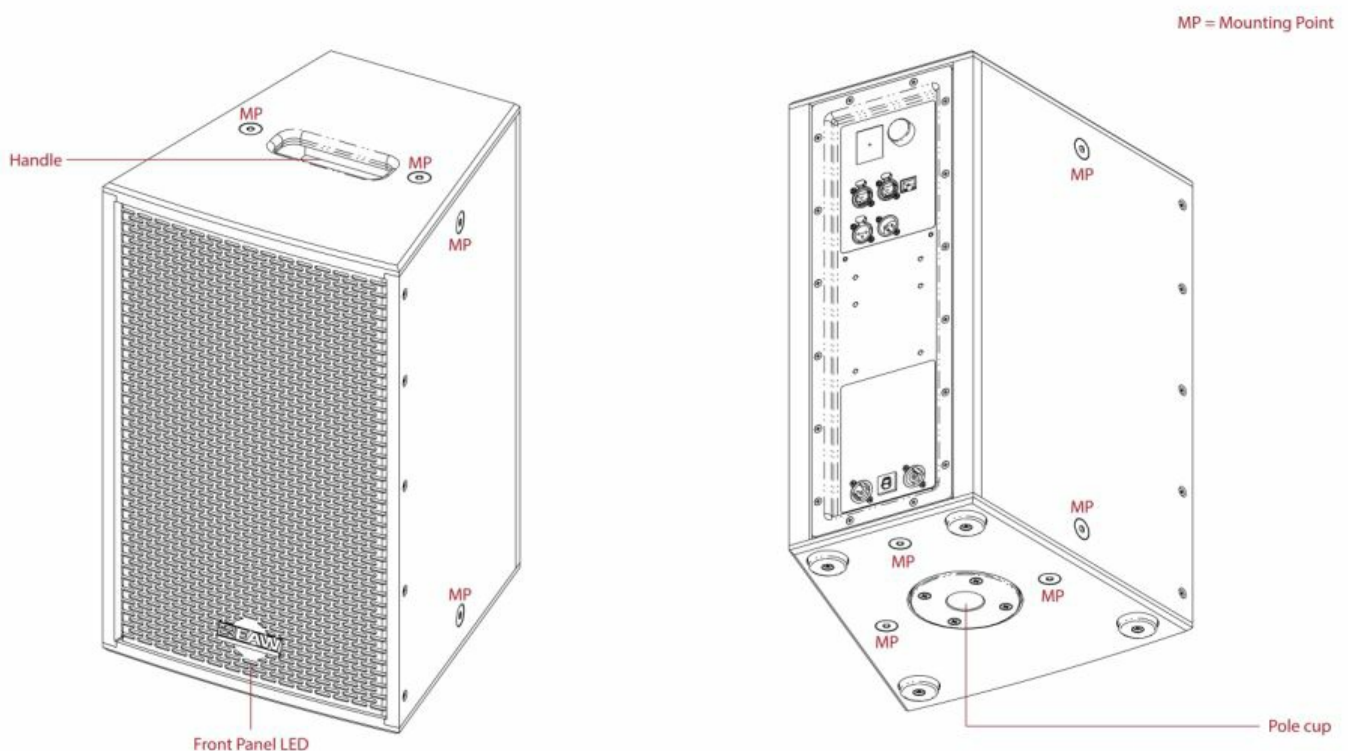
- Every flyable RSX model comes with Rigging Assemblies with connected Rigging Pins on each side.

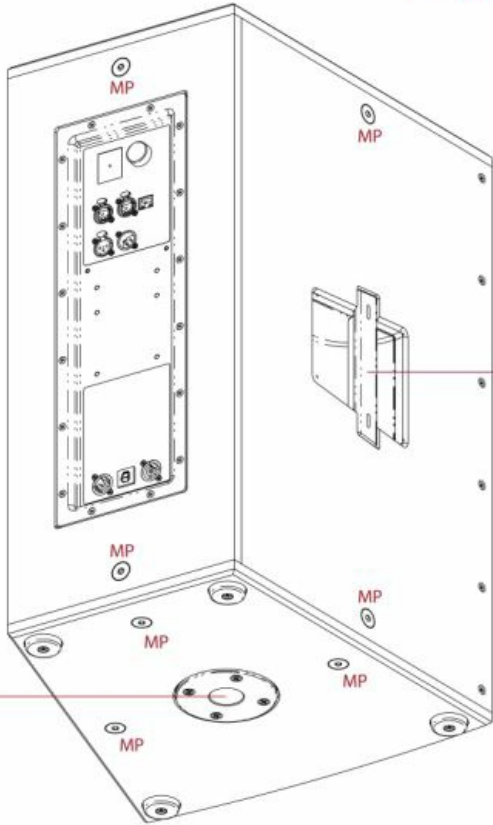
**Note:** The RSX Rigging Pins come equipped with lanyards. Additionally, the flyable RSX models ship with two extra Rigging Pins I.J and lanyards to be used as replacements/spares.

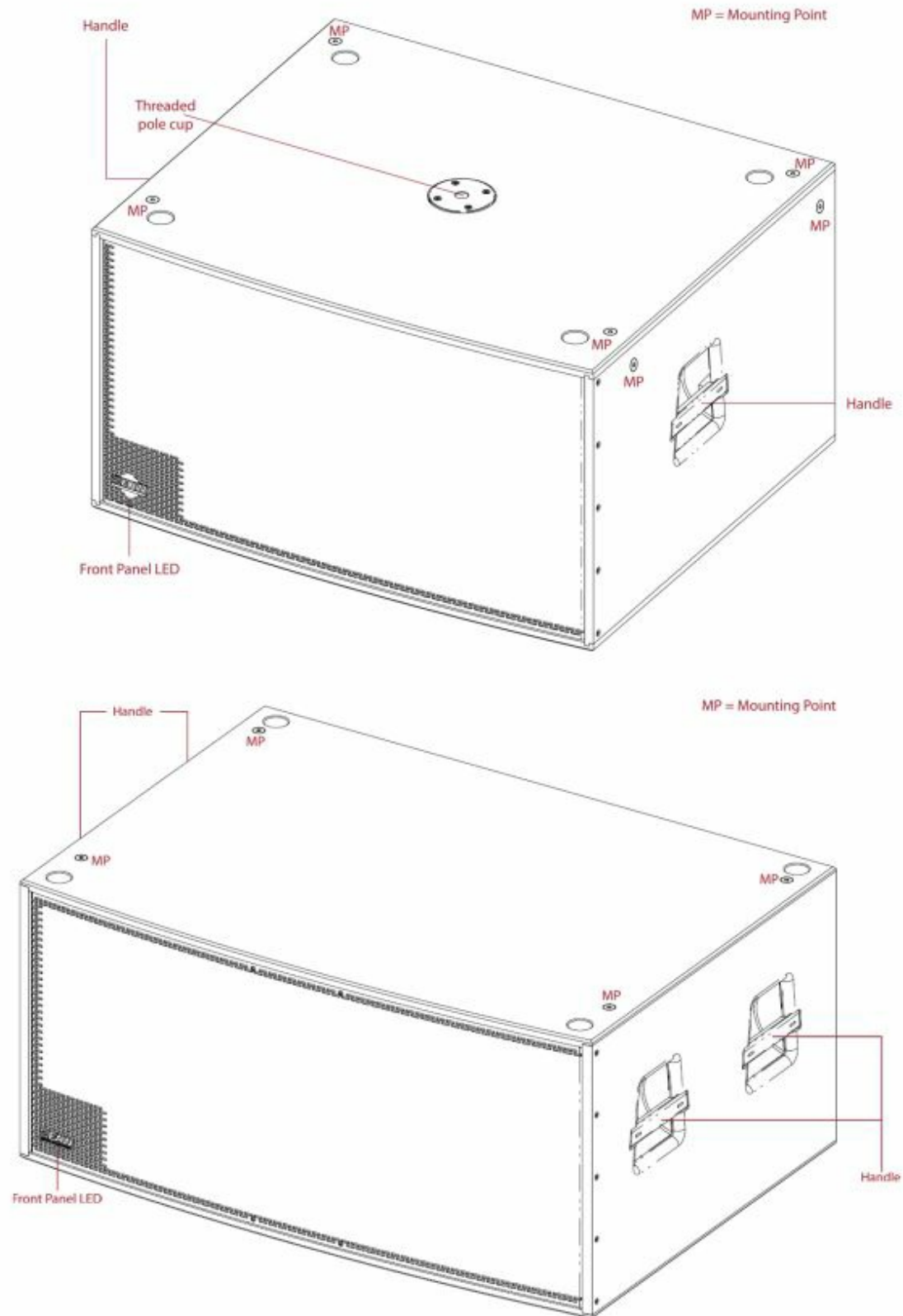
**NOTE:** The integral mounting points on the RSX enclosures are designed to support only a single enclosure. ALWAYS SUSPEND ENCLOSURES VIA EYE BOLTS DIRECTLY FROM THE STRUCTURE. NEVER SUSPEND ENCLOSURES FROM OTHER ENCLOSURES VIA EYEBOLTS. The only exception to this is utilizing a flybar and the integral array rigging on the RSX208L, RSX212L, RSX 12, and RSX18F.

Always use EAWmosaic or EAW Resolution to verify the structural integrity of the array you intend to suspend. The ONLY exception to this is with the pre-defined, pre-approved array configurations provided later in this manual.

### RSX86 / RSX89 / RSXI 26 / RSXI 29 Walkaround

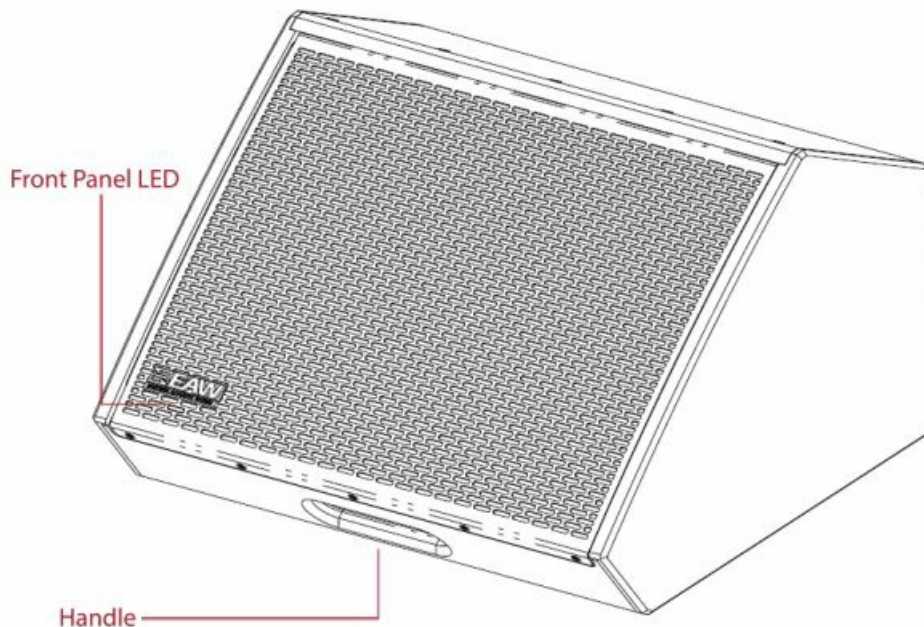






## RSX12M Walkaround





### Mounting Points (aka Fly Points and/or Rigging Points)

As seen in the images above, the RADIUS RSX12 and RSX18 subwoofers come equipped with eight (8) integrated mounting points. Four are in each corner on the top of the cabinet and two are on the top corner of each side. The RADIUS RSX218 subwoofer comes equipped with four (4) integrated mounting points located in each corner on the top of the cabinet. The RADIUS RSX86 and RSX89 full-range loudspeakers come equipped with nine (9) integrated mounting points. Two are located on either side of the top handle, two are on each side and three are on the bottom of the unit. The RADIUS RSX126 and RSX129 full-range loudspeakers come equipped with nine (12) integrated mounting points. Three are located on the top of the cabinet, two are on each side, three are on the bottom and two are on the rear panel of the unit. For RSX12x and RSX8x, always utilize at least two mounting points for suspension. For the RSX18 and RSX218, always utilize at least four mounting points.

**NOTE:** The integral mounting points on the enclosure are designed to support only a single enclosure. ALWAYS SUSPEND ENCLOSURES VIA EYEBOLTS DIRECTLY FROM THE STRUCTURE. NEVER SUSPEND ENCLOSURES FROM OTHER ENCLOSURES VIA EYEBOLTS.

**Note:** RSX Line Array modules have no mounting points but can be flown using the attached rigging hardware and compatible I.J flybar assemblies.

### Handles

- The built-in handles on all RADIUS cabinets – except the RSX86, RSX89, and RSX12M – indicate that they should always be lifted, carried and moved by at least two people.

**Note:** NEVER attempt to suspend ANY RADIUS unit by the handles. Failure to follow these precautions may result in damage to the I.J equipment, personal injury, or death.

### Pole Cup

All RADIUS Series models – except the RSX208L, RSX212L, RSX218, and RSX12M – have a built-in pole cup. The pole cups on the RSX12 and RSX18 subwoofers are threaded for extra security. Be sure to tighten the pole to the subwoofer before placing a full-range loudspeaker on top of the pole.

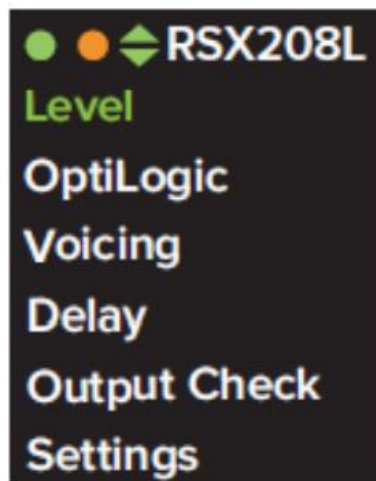
Check to make sure that the support surface (e.g. floor, etc.) has the necessary mechanical characteristics to support the weight of the subwoofer(s) and loudspeaker(s). Failure to follow these precautions may result in damage to the equipment, I.J personal injury, or death.

## Rear Panel Home Screen and Menu Navigation

The RADIUS Series Loudspeaker's LCD Display and DSP Navigation / Edit Wheel are used to monitor the loudspeaker's status and adjust its DSP settings. Rotate the DSP Navigation / Edit Wheel to change the highlighted sub-menu or to change parameter values. Press it to select a sub-menu or to enter values.

Upon power on and initialization of the loudspeaker the Main Menu is displayed. Here the user can adjust the RADIUS loudspeaker output level, alignment delay settings, voicing profile and user preferences, initiate a test of the loudspeaker's output and run the Array Optimization sequence. If the Home Screen is displayed, pressing or turning the DSP Navigation / Edit Wheel reveals the Main Menu.

### Level

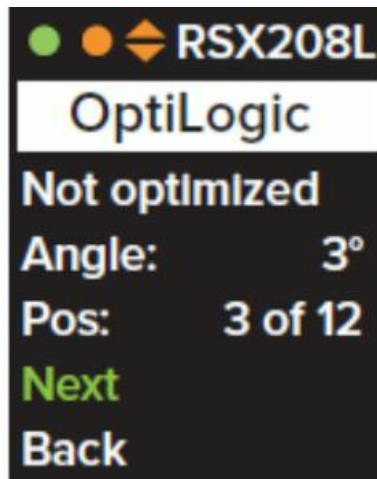


Selecting Level allows adjusting to the loudspeaker's output level in 0.5 dB increments ranging from – 10 dB to +10 dB. Rotating the DSP Navigation / Edit Wheel changes the level value and pressing it Forest the Mais Menu, After 5 seconds have passed with no change to the Level parameter the Home Screen is displayed.

### OptiLogic (For line array items only)

RADIUS Series Line arrays feature Array Detection and optimisation that makes it easier and faster to sound better. The user enters a few parameters – minimum and maximum audience distances and array height – then initiates the optimization sequence. Using integrated infrared transceivers and tilt sensors, the position and splay angle of each RSX module within the array is automatically detected. The modules are grouped accordingly, and the system's acoustical output is optimized to compensate for array size, audience geometry and throw distance. Array Optimization can be used with or without a network or software application.

From any RS module within the array, select the OptiLogic sub-menu to show the status of the loudspeaker within the array. If the array has not already been optimized, or if the array has changed since it was last optimized, the display will indicate "Not optimized". The position of the speaker within the array is indicated. The speaker's splay angle relative to the speaker above it (Angle) is also show. Select Next to proceed with the entry of parameters needed for the optimization sequence or select Back to return to the Main Menu.



1. Enter the Array Height, measured as the distance between the ground and the Top of the upper-most RADIUS loudspeaker in the array.
  - Rotate the DSP Navigation / Edit Wheel to highlight Top then press it.
  - Rotate the DSP Navigation / Edit Wheel to specify the height then press it to enter the value.
  - The array height parameter ranges from minimum 0 m/feet to maximum 99.0 m / 324 feet
  - Select Next to proceed with the optimization sequence.
  - Select Back to return to the OptiLogic sub-menu.
2. Enter the Audience parameters, measured as the distance from the point on the ground directly beneath front of the array to the Front and to the Rear of the desired coverage area.
  - Rotate the DSP Navigation / Edit Wheel to highlight Front then press it.
  - Rotate the DSP Navigation / Edit Wheel to specify the distance then press it to enter the value.
  - Rotate the DSP Navigation / Edit Wheel to highlight Rear then press it.
  - Rotate the DSP Navigation / Edit Wheel to specify the distance then press it to enter the value.
  - Front and Rear parameters range from minimum 0 m/feet to maximum 999.0 m / 3276 feet. Select Back to return to the Array Height sub-menu.
3. Select Optimize to finalize parameter entry and initiate the optimization sequence. The display will indicate "Optimizing Array..." When optimization is complete, the OptiLogic sub-menu will be shown and status will indicate "Optimized".
4. Select Back to return to the Main Menu or Next to repeat the optimization sequence using different audience and array height parameters.

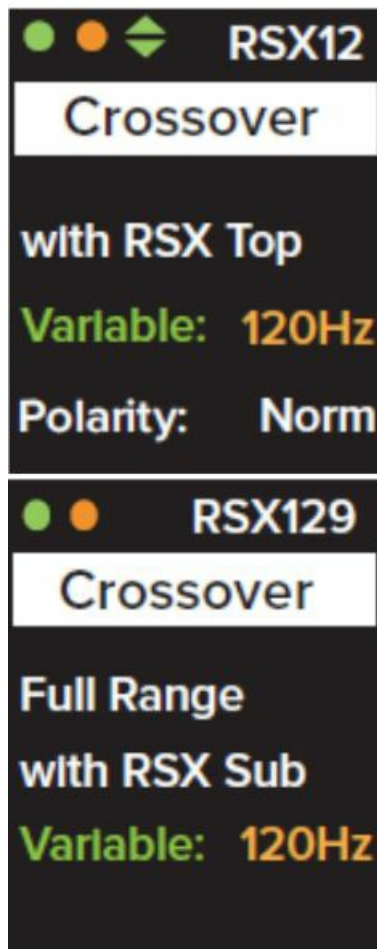
Upon completion of optimization, settings for all RS line array modules in the array are adjusted for optimum performance across the specified coverage area. Equalization adjustments are made to compensate for low frequency coupling depending upon the number of modules in the array. Additional EQ is applied to compensate for high frequency energy loss between each module and its defined coverage area.

The optimization functions independently for each discrete array employed in a multi-array system. Generally, for a stereo line array system, the optimization sequence will be performed on both sides of the system utilizing the same Audience and Array Height settings per array. For more complex venues, differing settings can be utilized but care must be taken not to overlap coverage areas from these arrays.

## Crossover

Seeti by seeing ali x Topimization of the subwoofer for use with other RADIUS models By selecting Variable, it's possible to configure a specific LPF frequency to optimize the subwoofer for use with other loudspeakers.



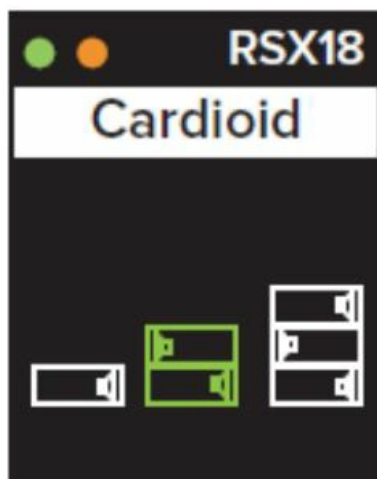


- Rotate the DSP Navigation / Edit Wheel to highlight Var and then press it.
- Rotate the DSP Navigation / Edit Wheel to dial in the preferred frequency in 1Hz increments.
- Press DSP Navigation / Edit Wheel to enter the value.

Selecting Polarity allows the user to invert the subwoofer's polarity. Norm is the default mode.

Rotating the DSP Navigation / Edit Wheel changes the selected crossover settings in real time. Pressing the DSP Navigation / Edit Wheel, or after 5 seconds have passed with no press or turn of the DSP Navigation / Edit Wheel, the Main Menu is displayed.

#### **Cardioid (For RSX18/RSX18F/RSX218)**

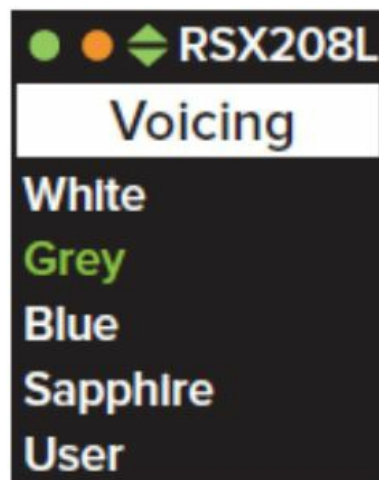


Selecting Cardioid allows the user to configure the subwoofer for Cardioid functionality. In Cardioid mode, 2 or 3 subwoofers must be stacked together with one facing toward the rear. In a 2 subwoofer Cardioid setup, the top subwoofer faces to the rear. In a 3 subwoofer Cardioid setup, the middle subwoofer faces the rear.

Pressing then rotating the DSP Navigation / Edit Wheel allows for selection of 1 (normal mode / non-Cardioid), 2 or 3 (Cardioid mode) subwoofers. Once the proper configuration is selected (for 2 or 3 subwoofer Cardioid configurations) pressing then turning the DSP Navigation / Edit Wheel allows the user to identify the position of the subwoofer in the Cardioid setup (top or bottom in a 2- subwoofer setup and top, middle or bottom in a 3- subwoofer setup). Once the proper position is selected, pressing the DSP Navigation / Edit Wheel returns the user to the Main Menu. This procedure should be performed for each subwoofer in a cardioid setup.

## Voicing

System optimization is further streamlined using four pre defined voicing profiles based on feedback compiled from key touring and installation contacts. These provide a variety of tonal starting points depending on the musical style and user preference. In addition, one user-defined profile is available for selection, and can be configured using the EAW Mosaic application for iOS. Below, the target response and a brief explanation are provided for each voicing.



- White
  - White represents a nominally flat voicing. It should be used when the most neutral, uncolored system response is desired.
- Grey
  - Compared to White, the Grey voicing provides a low-frequency boost with a gradual high-frequency roll-off.
- Blue
  - Blue voicing provides a more significant low-frequency boost, coupled with the same high-frequency roll-off as Grey, but with more mid-frequency attenuation.
  - This voicing is most suitable for high-SPL performances with significant upper-mid content. The more extensive mid- and high-frequency attenuation is sometimes useful to combat fatigue with midrange-heavy instruments, as the ear is most sensitive to this range of frequencies.
- Sapphire
  - Sapphire voicing combines the low-frequency boost and high-frequency attenuation of Blue, but with the addition of additional very high-frequency emphasis for additional “air” and clarity.
  - This voicing is especially suitable for high-quality audio playback (without the need for supplemental equalization) and was the result of feedback from several touring audio engineers.

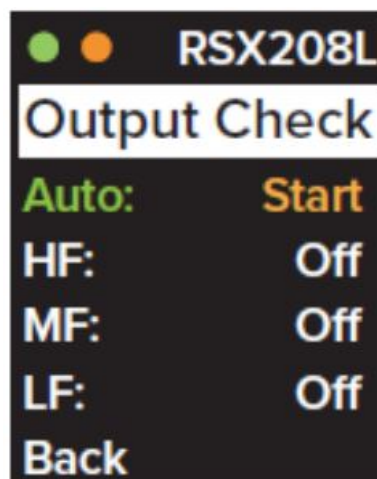
- User
  - One voicing profile is reserved for the user to define and save for later recall. Using the EAW Mosaic application for iOS, the user can customize the voicing and store it to this profile. Later, loading the User voicing will recall the stored voicing profile.
  - This profile remains in the loudspeaker's memory until a factory reset is performed or until it is altered by a user via EAWmosaic.

Rotating the DSP Navigation / Edit Wheel changes the selected voicing profile in real time. Pressing the DSP Navigation / Edit Wheel, or after 5 seconds have passed with no press or turn of the DSP Navigation / Edit Wheel, the Main Menu is displayed.

## Delay

Selecting Delay allows adjusting to the loudspeaker's alignment delay in 1 ms increments ranging from 0 to 150 ms in 0.1 ms increments between 0 and 10 ms and in 1 ms increments above 10 ms. For reference, the equivalent distance is displayed in meters and in feet. Rotating the DSP Navigation / Edit Wheel changes the delay value, and pressing it returns to the Main Menu. After 5 seconds have passed with no change to the Delay parameter, the Home Screen is displayed.

## Output Check

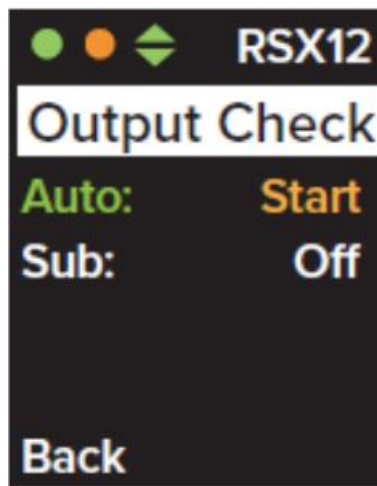


Transducers and amplifier channels can quickly be checked without the need for an external noise generator and any associated cables or test equipment. Individual transducers and amplifier channels can be tested manually or via an automated sequence.

**Warning:** Initiating Output Check automatically or manually will cause the loudspeaker to emit pink noise. To ensure against potentially dangerous exposure to high sound pressure levels, it is presumed eves that airing press tie equipment in predicting high sound.

## Auto

Using the Auto mode, a 2-second burst of pink noise is emitted first from the HF, then the MF, and then the LF transducer. Lastly, another 2-second pink noise is emitted from all transducers simultaneously. To initiate the Auto Output Check sequence, follow these steps.



1. Rotate the DSP Navigation / Edit Wheel to select Auto.
2. Press the DSP Navigation / Edit Wheel to initiate the automatic test procedure.
  - **Note:** Status changes from “Start” to “Stop”. Press it again to terminate the test sequence at any point.
3. A 2-second pink noise burst is emitted per transducer.
  - **Note:** When a channel is emitting pink noise, its status changes to indicate “On”. It changes back to “Off” after the 2 second burst is complete.
4. A 2-second pink noise burst is emitted from all transducers simultaneously.
  - **Note:** Status for all drivers changes to “On” during this pink noise burst. They change back to “Off” upon completion.
5. Auto status changes to “Start” to signify the end of the Output Check cycle.

#### HF: MF: and LF:

Pink noise can be activated for manual testing of individual or combinations of transducers and their corresponding amplifier channels.

1. Rotate the DSP Navigation / Edit Wheel to select HF, MF or LF.
  - Press then turn the DSP Navigation / Edit Wheel to change the status to “On” and activate pink noise for the selected channel.
  - Press then turn the DSP Navigation / Edit Wheel to change the status to “Off” and deactivate pink noise for the selected channel.

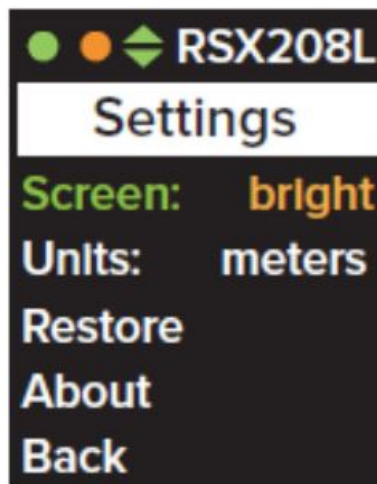
**Note:** Pink noise can be activated for any combination of amplifier/transducer channels. Pink noise will continue to be emitted until the channel’s status is manually changed to “Off” by the user or because of running the Auto Output Check sequence.

Select Back to exit Output Check and return to the Main Menu.

#### Settings

From the Settings menu, it’s possible to configure LCD display preferences, restore the loudspeaker to factory default settings, and view network address and firmware version information.

#### Screen



- To accommodate aesthetically sensitive situations where the bright LCD display may be distracting, RADIUS provides three options for the user to optimize the LCD display behavior and brightness.
- To change settings, rotate the DSP Navigation / Edit Wheel to select Screen.

### **Bright**

- The default setting suitable for well-illuminated indoor/outdoor venues or when operating in bright sunlight.
- Menu navigation and parameter entry is performed with the LCD display at maximum brightness.
- The Home Screen is also displayed at maximum brightness.

### **Dim**

- When maximum brightness settings become too distracting such as in darker theaters or evening outdoor events, the LCD display can be dimmed.
- Menu navigation and parameter entry is performed with the LCD display at reduced brightness.
- The Home Screen is also displayed at reduced brightness.
- For the most aesthetically sensitive applications, the home screen can be turned off.
- Menu navigation and parameter entry is performed with the LCD display at reduced brightness.
- The Home Screen is also displayed at reduced brightness.

### **Off**

- For the most aesthetically sensitive applications, the home screen can be turned off.

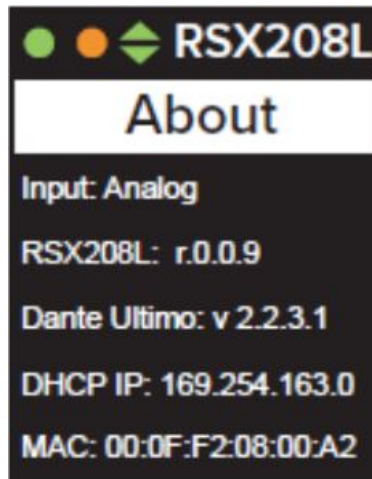
### **Units**

- Select meters or feet as the preferred unit of measurement for height and distance parameters.

### **Restore**

Factory settings can quickly and easily be restored. This is convenient for managing rental inventories or for resetting a mobile production system prior to deployment to the next venue or job site. It can also be used when troubleshooting loudspeakers exhibiting distorted audio, poor frequency response, low output, etc. Certain settings in the loudspeaker can only be accessed via EAWMosaic. These settings can be the cause of what may

appear to be poor performance when the speaker is isolated on the test bench, or when compared to other units in inventory. All settings are reset to factory default when the Restore procedure is performed.



1. Rotate the DSP Navigation / Edit Wheel to select Restore.
2. Press the DSP Navigation / Edit Wheel and the Restore factory defaults? prompt appears.
3. Select No to return to the Settings sub-menu without changing any of the loudspeaker settings.
4. Select Yes to restore factory default settings and return to the Main Menu.

**About:** The About screen provides information about the loudspeaker's current input source, model number, firmware and network address details.

## Radius Home Screen

After 5 seconds have passed with no turn or press of the DSP Navigation / Edit Wheel the Home Screen is displayed showing primary settings, levels and statuses at a glance.

The Control IP is the IP address assigned to the modules DSP.

Three indicators are listed below the Control IP. A & B represent the two Dante inputs, whereas C represents the filtered control port.



- **GRAY:** Not plugged in, or no signal on the cable (network is not active)
- **RED:** Active network connection with speed
  - (ie two speakers connected together but not to anything else).
  - Normally, Ethernet Green LED ON, Yellow LED OFF
- **GREEN:** Active network connection with dispnetwork speed

- Input will indicate whether a Dante or Analog signal is being detected.
- This can be toggled in the Resolution or changed by assigning/unassigning in Dante Controller.



- The Dante IP is the IP address assigned to the Dante Card.
- Under the Dante IP, is the name that has been configured for the module in Dante Controller.

## A Further Look into Dante™

### Introduction

Dante- Digital Audio Network Through Ethernet – is an industry standard in digital audio networking, delivering unmatched audio quality, extremely flexible routing and offers significant cost savings compared to traditional analog cable runs. RADIUS Series loudspeakers may be connected to any Dante-enabled audio network. As such, it is a perfect solution for connecting to a Dante-enabled mixer.

The dual Dante ports allow daisy chaining and the filtered Wi-Fi control port eliminates the need for an Ethernet switch in many situations. With flawless interoperation with hundreds of Dante-enabled products, the Dante connectors truly expand the RADIUS Series' functionality and application flexibility in any professional environment.

### Why use Dante?

Why use Dante? There simply isn't enough space here to explain all the benefits of Dante, but a small sampling:

- Automatic configuration
- **Uncompressed low latency digital audio:** >150 us
- **High channel count:** up to 1024 (512 x 512) channels per link
- **Maximum sampling rate:** 192 kHz
- **Maximum bit depth:** 32 bits
- Switchable and routable
- Can easily handle long distances and/or multiple locations
- Daisy-chain or use for system redundancy
- Massive cost savings

### Using a Wi-fi Router with EAWmosaic



EAWmosaic connects to RADIUS via a user-provided Wi-Fi router. No special features are required from the router except that it provides both wired and wireless connectivity. It is recommended that the router also include a DHCP server to simplify IP address assignment. When connecting the Wi-Fi router to the RADIUS network, it is important to remember the following rules:

1. Do not exceed 10 'hops' when looping the network on RADIUS modules.
2. Connect the Wi-Fi router to a filtered port on the rear of a RADIUS enclosure. These ports have an RJ-45 connector (instead of EtherCon) and are labeled "COMM" and remove the Dante audio traffic to maximize the router's ability to handle control data and communicate with the iPad. Using a 'Dante' port for this purpose will also work, but you may experience reduced communication performance when online with the system via EAWmosaic.
3. For best results, keep the RADIUS network isolated from corporate or enterprise networks with significant other traffic. Networks providing internet access and other non-essential functions can significantly reduce network performance, including slowing system discovery and control and in extreme cases, compromising Dante audio.

## Using EAWmosaic



## What is EAWmosaic?

With an extremely approachable design for engineers and system techs of all levels, EAWmosaic offers powerful design, prediction and system optimization. This single, comprehensive app solution delivers intuitive and powerful control over your RADIUS system. EAWmosaic will virtually model, predict and evaluate a loudspeaker system's performance for any user-defined venue. It will also predict direct SPL levels and frequency response throughout this virtual venue. Most importantly, it allows for modeling a design that is safe for any specified application.

## Why use EAWmosaic?

EAWmosaic should be installed and utilized for a multitude of reasons. First, it helps predetermine any issues that may arise, including safety, weight, angle, flybar and more. EAWmosaic determines coverage. Are the SPL and frequency response as desired everywhere in the venue? Should three or four arrays be used? How many subwoofers should be employed in this particular system? Should the subwoofer(s) be flown or placed on the floor? What voicing mode is best for this system?

EAWmosaic is free.

## How does EAWmosaic work?



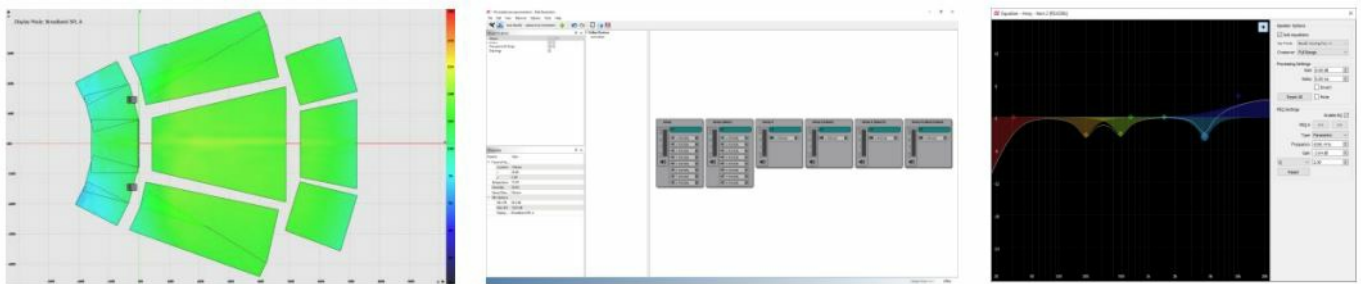


Consult the EAWmosaic Help File or watch the tutorial videos available for more information on the features and benefits of EAWmosaic, but in summary: EAWmosaic works by helping improve the sound of the Radius system. Significant features such as loudspeaker discovery, grouping, control, monitoring and venue optimization are provided via a Wi-Fi-connected iPad or offline in advance. Additionally, when a Dante-enabled mixer (or other Dante source) is connected to RADIUS loudspeakers via the Dante network, Dante signals from the network can be routed directly to the RADIUS speakers. Together these features assist in deciding which speakers to use for a venue, where to place them in the venue and how to configure them for the best results possible. If there is a problem with a speaker, it helps diagnose and work around the issue.

## Device and Download Requirements

EAWmosaic control software requires Apple iPad. EAWmosaic requires at least one (and allows up to 10) iPads running iOS 8 or higher. iPads running anything other than iOS 8 or higher are not supported. EAWmosaic is completely useable offline for design purposes with local file saving. These settings can then be applied to a connected system later. EAWmosaic can be installed via iTunes on Mac or PC, or from the App Store directly from a supported iPad. Complete download and install instructions may be found by visiting the EAWmosaic Help File.

## Using EAW Resolution 2



### What is Resolution 2?

EAW Resolution<sup>TM</sup> 2 is a tool to assist sound system designers and engineers to select, configure, and implement EAW loudspeaker products. Resolution<sup>TM</sup> 2 predicts direct sound pressure level (SPL) in a 'virtual' venue. Signal processing can be applied in software, and the resulting frequency response calculated for 'virtual microphones' throughout the model. Additionally, Resolution<sup>TM</sup> 2 performs mechanical calculations for a given array or loudspeaker configuration to assist the user in correctly rigging their sound system.

### Why use Resolution 2?

Same as EAWmosaic, it helps predetermine any issues that may arise, including safety, weight, angle, flybar and more. Resolution, also like Mosaic, determines coverage. Resolution is more robust however, allowing the user to place microphones on the surfaces and the options to choose specific passbands.

Resolution's venue view (prediction) and network view (control) work hand in hand. Radius line items coupling and HF shading may be determined by the venue model and array configuration. It also is a great tool for pre-sales. Customers will be able to see the final setup prior to any purchase. Therefore, realistic expectations have been set for all interested parties which results in a better relationship between the buyer and seller. Resolution 2 is free, and all future improvements and updates are free of charge as well.

## System Requirements

EAW Resolution 2 requires an IBM®-compatible PC with Windows 10® operating systems, including a standard Ethernet port to connect the computer to the network and control Radius loudspeaker modules. Though processor speed and memory size primarily impact only calculation time, the following specifications are recommended for useful operation:

	MINIMUM REQUIREMENTS	RECOMMENDED SPECIFICATIONS
Processor	2.2 GHz Dual Core Processor	2.8 GHz Quad Core Processor
Memory	2 GB RAM	8 GB RAM
Screen Resolution	1024 x 768 display resolution	1920 x 1080 display resolution
Operating System	Windows 10	
Storage	1 GB available HD space	

- Currently, Resolution does not support 4k screens

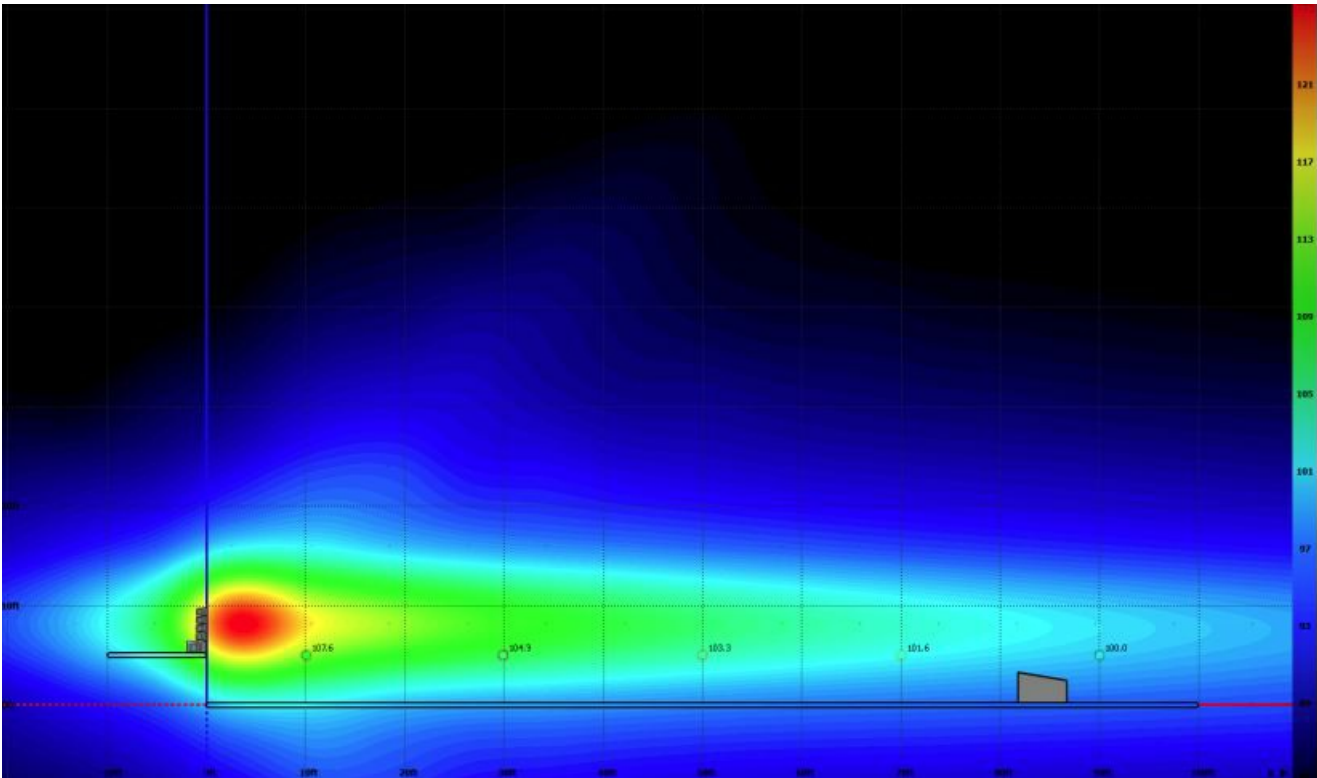
Array Quick-Start Guide

In almost all cases, it is essential for the operator to employ EAWmosaic to perform a system prediction in advance of flying an array or he mailes, this edition precedes the bear covet rain short one respect typical use ass.

**NOTE:** These do not represent ‘maximum throws’, but rather are intended to provide a range of pre-defined configurations that will provide excellent results for typical applications. Greater throws and consistency are possible by manipulating trim height, array angles and configurations. For any configuration other than those listed here, always use EAWmosaic or EAW Resolution to confirm that the configuration is safe and conforms to the needed design factor (specified by the user).

Ground-Supported Array, 100-foot Throw

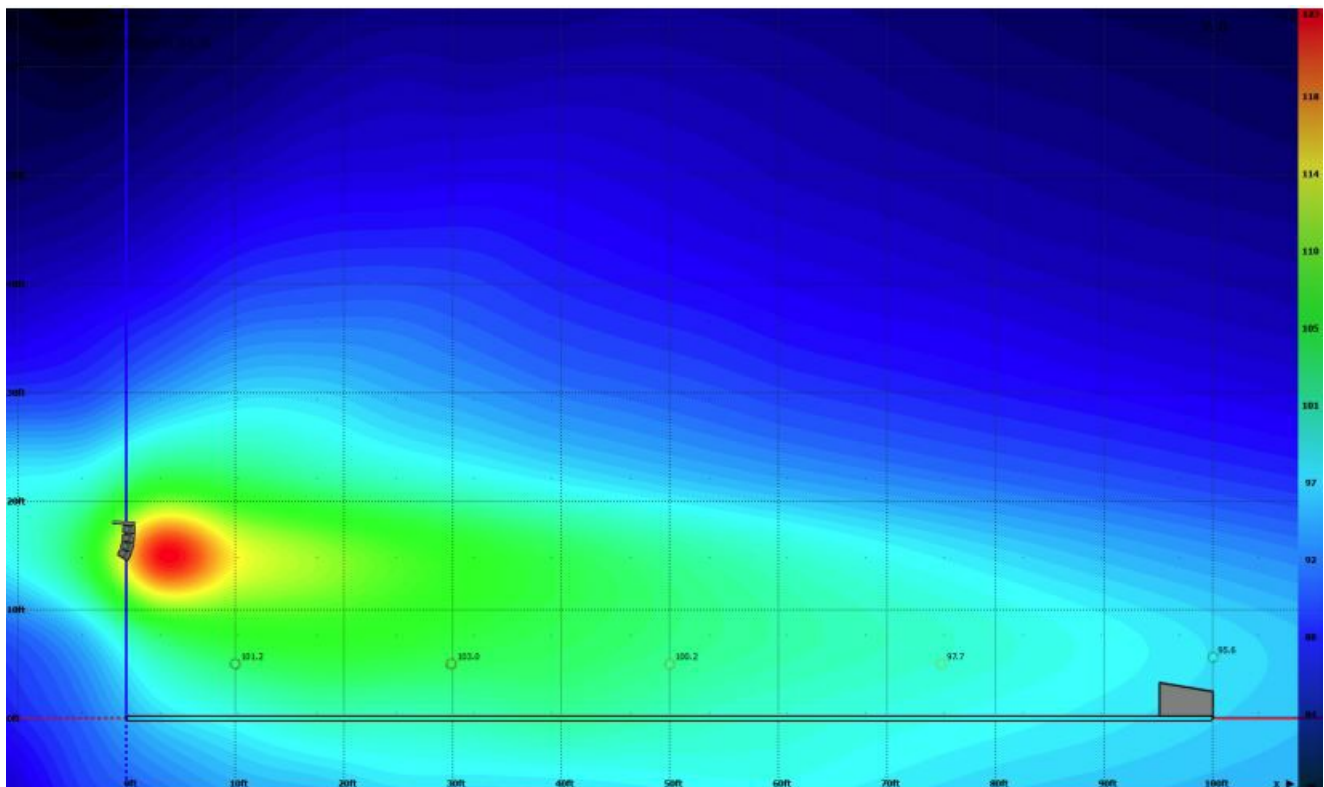
When rigging points are not available to an array, RSX208L can be ground-stacked on the flybar to form a very high-output, controlled PA system. For this configuration, it is strongly recommended to elevate the system such that some or all the RSX208L enclosures are above head height. The RSX12 subwoofer can also be used for this purpose.



- **Equipment:** (4) RSX208L per cluster
  - (1) RSX12 per cluster
- **Max Audience Distance:** 100 ft/15.6 m
- **Stage Height:** 5 ft/1.5m
- **Continuous SPL:** 107 – 100 dBA from 10ft/3.1 m to 100ft/31m
- **Rigging Configuration:** Splays: 0 (RSX208L #1-flybar), 0, 0, 0
- **Total System Weight:** 238 lbs/108 kg

### Flown Array, 100-Foot Throw

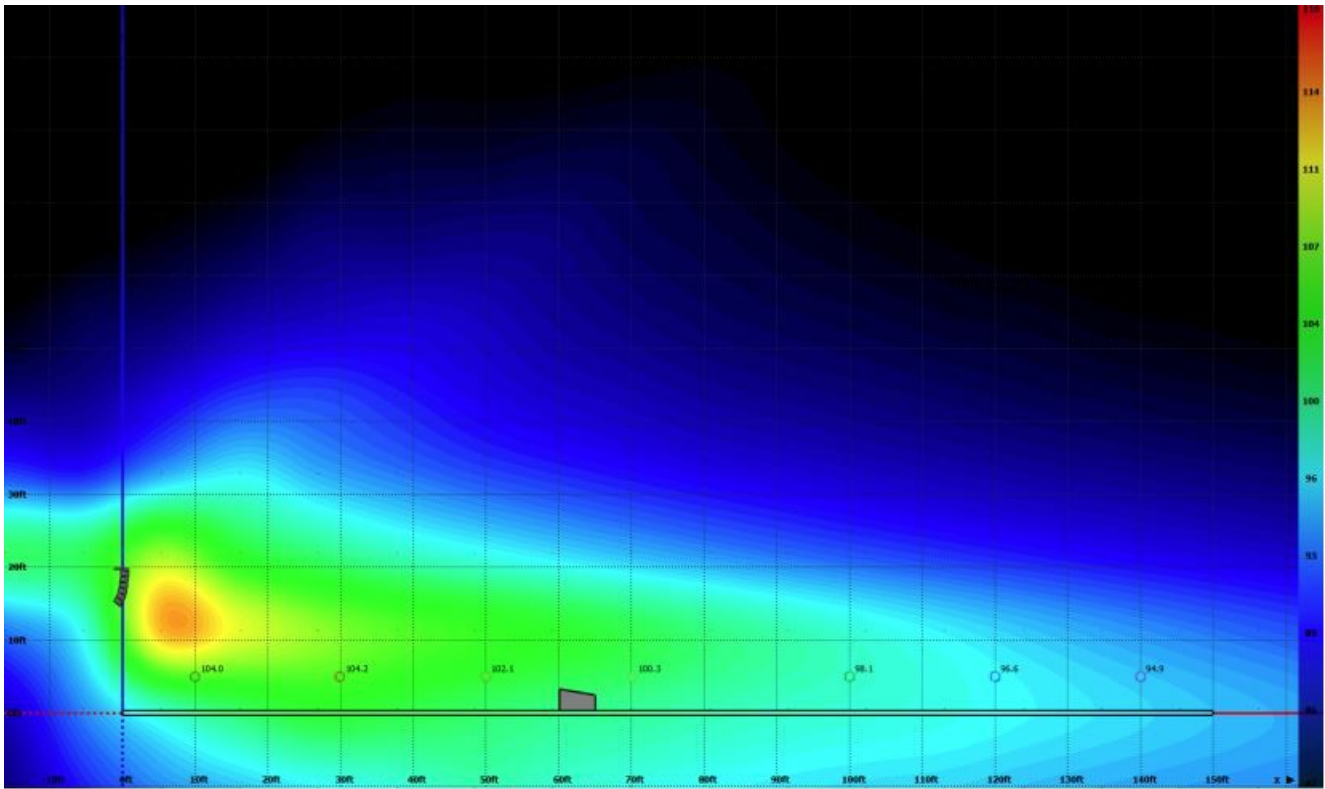
For this configuration, (4) RSX 208L are flown at a height corresponding to a portable stage or crank-up stand. Coverage and SPL is very good to approximately 100ft/15.6m.



- **Equipment:** (1) FBX100
  - (4) RSX208L per cluster
- **Max Audience Distance:** 100 ft/15.6 m
- **Trim Height:** 18 ft/5.5 m
- **Continuous SPL:** 103 – 96 dBA from 10ft/3.1m to 100ft/31m
- **Rigging Configuration:** Flybar: Position 4
  - **Splays:** 0 (RSX208L #1-flybar), 3, 9, 12
- **Total System Weight:** 198 lbs/90 kg

### Flown Array, 150-foot Throw

For this configuration, (6) RSX208L are flown at a height corresponding to a portable stage or crank-up stand. Coverage and SPL is extended, and consistency from front to back is improved due to the larger array's improved pattern control.

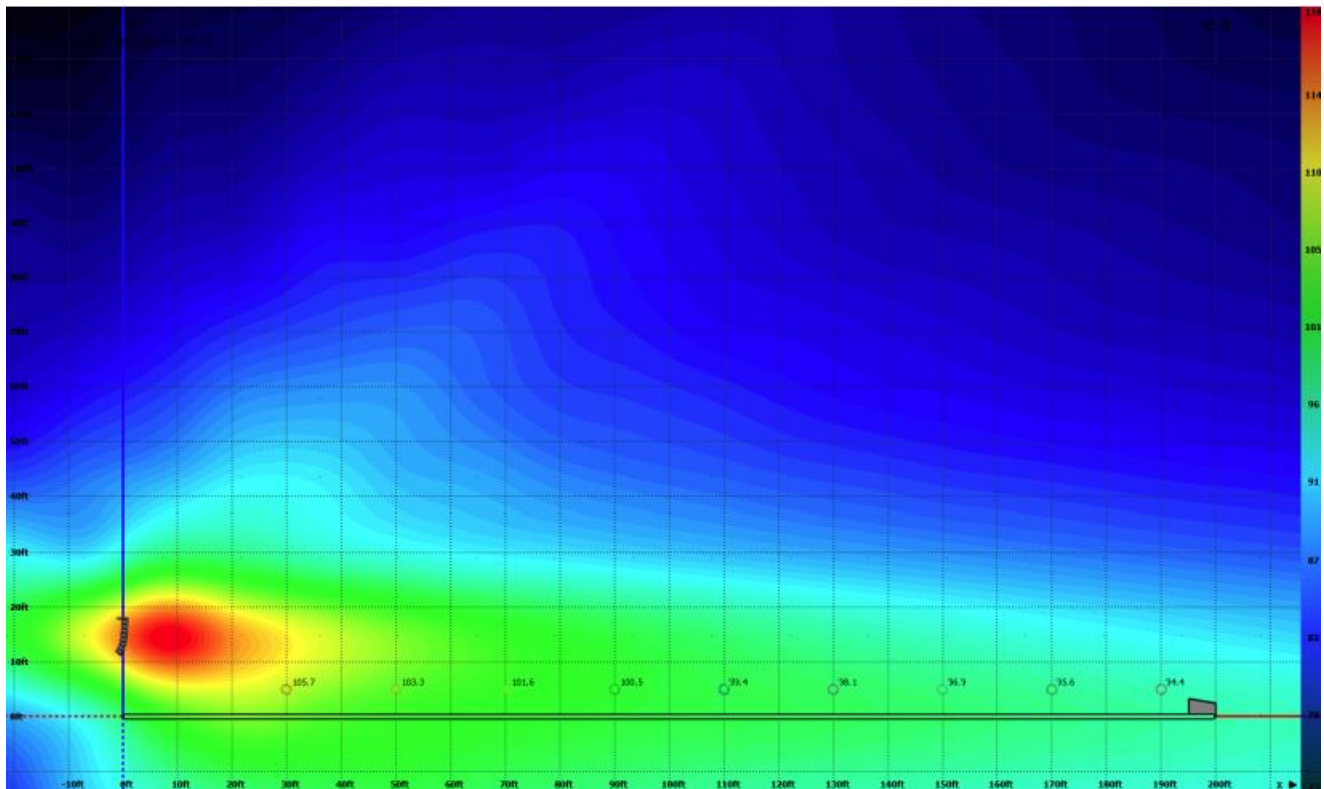


- **Equipment:** (1) FBX100 per cluster
  - (6) RSX208L per cluster
- **Max Audience Distance:** 150ft/46 m
- **Trim Height:** 18 ft/5.5 m
- **Continuous SPL:** 104 – 95 dBA from 10ft/3.1m to 150ft/46m
- **Rigging Configuration:** Flybar: Position 4
  - **Splays:** 0 (RSX208L #1-flybar), 0, 3, 6, 9, 12
- **Total System Weight:** 279 lbs/126 kg

### Flown Array, 200-foot Throw

With this configuration, coverage is extended as far as 200 feet while maintaining a low trim height and weight. For yet greater flow, trim height could be increased, or a delay system could be added. The addition of RSX12 subwoofers into the flown array (combined with increased trim height) will further increase low-mid-frequency consistency.





- **Equipment:** (8) RSX208L per cluster
- **Max Audience Distance:** 200 feet/60 meters
- **Trim Height:** 18 feet/5.5 meters
- **Continuous SPL:** 105 – 94 dBA from 30ft/9m to 200ft/62.5m
- **Rigging Configuration:** Flybar @ position 5
  - **Splays:** 0 (RSX208L # 1-flybar), 0, 0, 3, 3, 6, 9, 12
- **Total System Weight:** 360 lbs/163 kg

## Troubleshooting

In the unlikely event of any issues with your RADIUS system, refer to the below symptoms and potential resolutions. If none of these apply, please contact EAW's Application Engineering and Support for assistance (contact information).

Symptom	Possible Cause	Potential Resolution
After updating firmware from Mosai c, cannot connect to loudspeakers on network and/or rear panel display does not return to normal operating mode.	Loudspeaker has not rebooted after firmware update.	Reboot loudspeaker (via AC power cycle).

Cannot connect to one or more loudspeakers on network from Mosaic.	Faulty network connection(s) within system.	Examine the rear-panel Ethernet link indicator on the loudspeakers in question. Verify Ethernet connectivity by selectively disconnecting Ethernet cables (if network loop-through is being used) to verify that all connections are being made.
Cannot connect to <i>any</i> loudspeakers on network from Mosaic.	Faulty or non-existent connection between iPad and wireless router, or between router and loudspeakers.	Verify that iPad is logged into wireless router.  Connect to router via laptop running Audinate Dante Controller and verify that loudspeakers appear. If they do not, verify IP address settings and DHCP status on router.
Network loudspeaker discovery is sluggish or unreliable.	Wireless router is saturated with network audio traffic.	Ensure that wireless router is connected to a filtered port (labeled "COMM") on one of the loudspeaker enclosures (or a Mackie DL32R). This will reduce the amount of additional traffic sent to the router, improving Mosaic performance.
	Network is handling significant unrelated traffic.	Ensure that the RADIUS network is isolated from corporate or office networks, or those handling internet traffic.
RADIUS loudspeaker does not sound 'correct'.	User-defined processing parameters remain in system, degrading performance from factory standards.	Perform Factory Reset via loudspeaker rear panel. NOTE: This will not affect Dante audio assignments or names.

## Service, Inspection & Maintenance

### General Service

All components in the RADIUS system are designed to withstand the most rigorous and demanding environments. Through regular operation it may still be necessary to replace acoustical, electronic and mechanical components.

### Contacting EAW

We have attempted to make this manual and the as thorough as possible. However, feel free to contact us with any further questions or comments for topics not covered.

## Operating Questions

- EAW Applications Engineering & Support
- **Tel:** 508-234-6158
- **Tel:** 800-992-5013 (USA only)
- **E-mail:** [Design@EAW.com](mailto:Design@EAW.com)

## Service Information

- EAW Service Department
- One Main Street Building 13 Whitinsville, MA 01588 USA
- **Tel:** 508-234-6158
- **Tel:** 800-992-5013 (USA only)
- **E-mail:** [Parts@EAW.com](mailto:Parts@EAW.com)

## Eastern Acoustic Works

- One Main Street | Whitinsville, MA 01588 | USA
- **tel:** 800 992 5013 / +1 508 234 6158
- [www.eaw.com](http://www.eaw.com)

## Scan



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## Documents / Resources



[EAW RSX212L Series 2 Way Self Powered Line Array Loudspeakers](#) [pdf] Owner's Manual  
RSX212L Series 2 Way Self Powered Line Array Loudspeakers, RSX212L Series, 2 Way Self P  
owered Line Array Loudspeakers, Self Powered Line Array Loudspeakers, Line Array  
Loudspeakers, Array Loudspeakers, Loudspeakers

## References

- [EAW: Eastern Acoustic Works | High-performance, professional loudspeaker system design and manufacturer](#)
- [User Manual](#)

Manuals+.