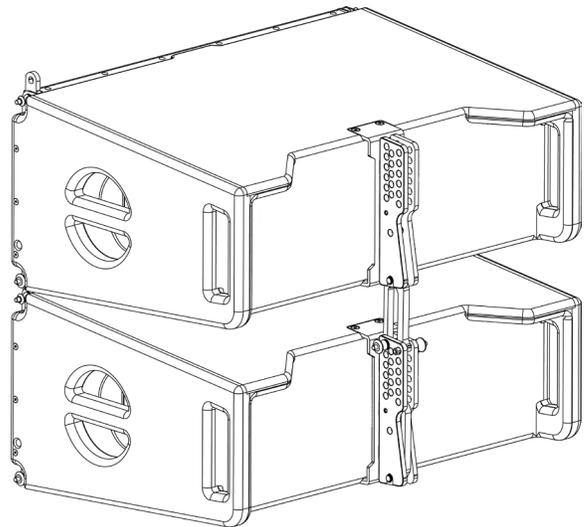


EA EAW[®]

EASTERN ACOUSTIC WORKS



Line Array Application Guide

Line Array Application Guide

Using the Loudspeaker

Users will need to perform the following general tasks to properly put an EAW line source product into use. This manual includes details for each task.

1. Design the system using the Resolution™ 2 Design & Control Software (see the [program Help File for further information about using Resolution](#)).
2. Design and install suspension points to support the array(s)/rigging in intended locations and aimed in the desired directions. If ground-stacked, provide a level surface capable of supporting the total weight of the array(s).
3. Connect the loudspeakers to a supported EAW Processor and/or power amp.
4. Set-up and adjust overall system gain and signal processing, as needed to maximize the array's performance for the application.
5. Provide training to operate the loudspeakers within their limits.
6. Provide regular inspection and maintenance to maintain the integrity of the installation and the performance of the loudspeakers.

Array Design

See [Resolution Help File](#) for assistance in properly designing line array systems.

Software

EAW Resolution 2 software is designed to assist in SPL predictions, determine splay angles, and calculate rigging limits for all line array items.

Always ensure that your EAW Resolution software is up-to-date.

For a complete list of recommended system requirements, please refer to the [Resolution 2 help file](#).

Using EAW Resolution™

EAW Resolution is the key to determining the optimal array configuration for any application. Rooted in EAW's proprietary FChart modeling and calculation engine, Resolution allows users to easily model any venue and visualize a wide variety of array designs to determine what particular array configuration is best suited to the venue.

Users simply need to define the array position, allowable trim, minimum clearance, and quantity of modules available and use the Array Assistant to determine the optimal array configuration for a given venue. In many situations no further prediction work will be necessary for optimal results. Users can also adjust the results after running the Array Assistant by manually adding/removing modules or adjusting coverage and observing changes in predicted results. In this way Adaptive arrays can be optimized for any application.

Additionally, Resolution interfaces directly with Adaptive Systems via the Dante protocol, allowing users to easily upload the processing parameters for their system directly from their model to the physical array, adjust equalization and coverage, and monitor all Adaptive components in real time. No additional software is necessary to use Adaptive systems.

No additional software is necessary to use Adaptive systems.

Please visit www.eaw.com to download the latest version of Resolution. Instructional videos can be viewed on education.eaw.com.

Line Array Application Guide

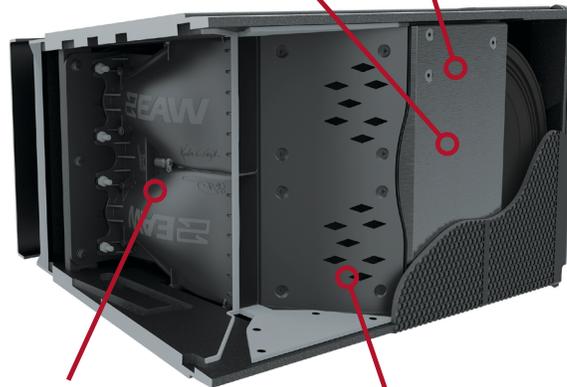
EAW Passive Line Array Products - KF810P



Phase Aligned LF Tuned
spacing of LF components to extend pattern control without the need for enormous horns.



Symmetry of Sources
Symmetrical arrangement of acoustic sources along a common axis for utmost consistency throughout the coverage pattern.



Isophasic Waveguide
Transforms the acoustic input source to a true isophasic output.



Concentric Summation Array (CSA)
A method of seamlessly integrating MF and HF components within a single horn. With CSA, multiple subsystems sum coherently, without interruption to either HF or MF wavefronts.

PERFORMANCE

Max SPL¹	145dB	
Operating Range²	50 Hz to 20 kHz	
Nominal Beamwidth³	KF810 80 = 80° Horizontal x 10° Vertical KF810 110 = 110° Horizontal x 10° Vertical	
RMS Power Handling⁴	LF: 1000w	HF: 500w
Input Impedance⁵	LF: 8 Ω	MF/HF: 8 Ω

CONFIGURATION

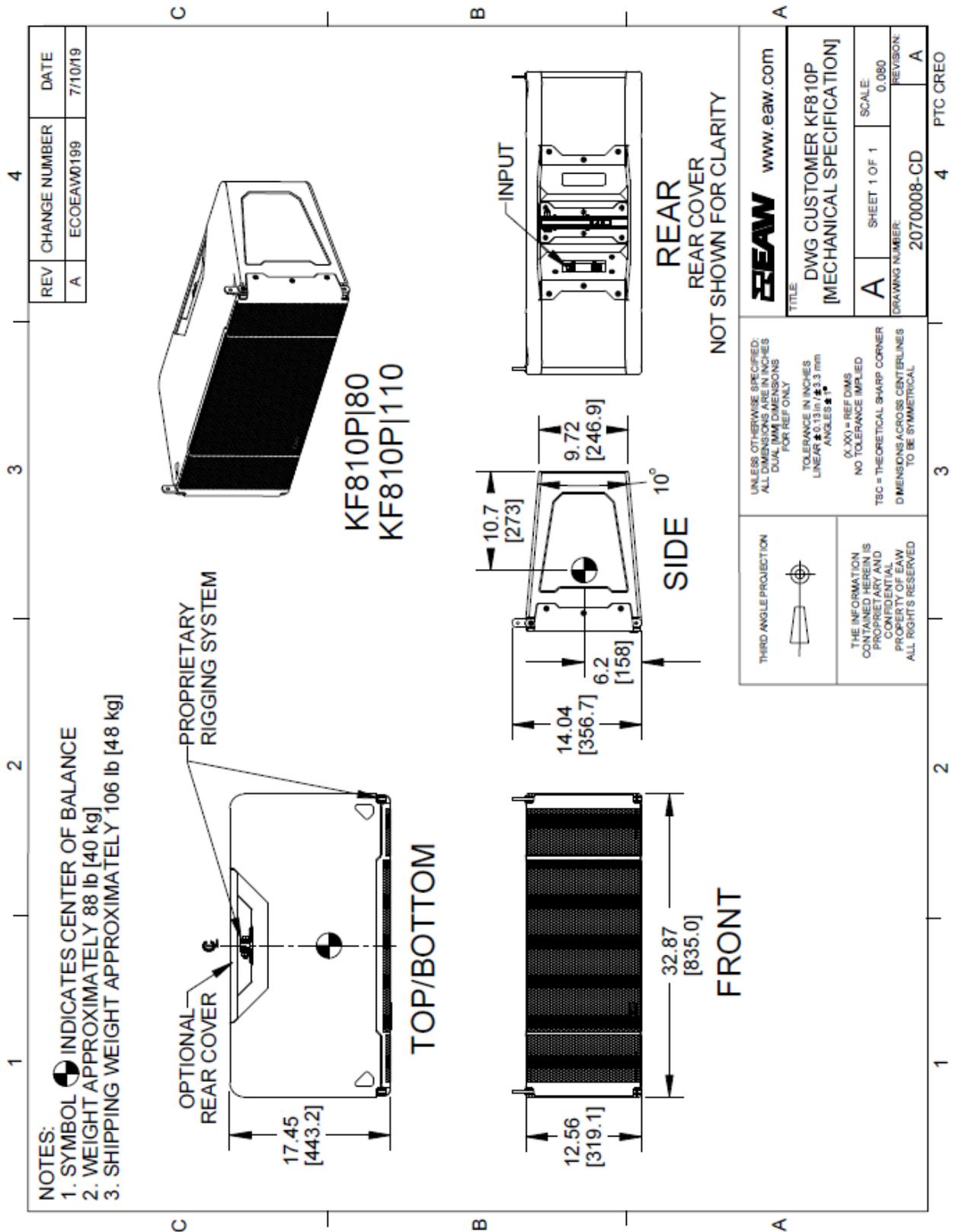
Subsystem	Transducer	Loading
LF	2X 10in, 3.0in Voice Coil	Ported, Phase Aligned
MF	4X 5in, 1.7in Voice Coil	Horn-loaded w/CSA™ Aperture
HF	2X 1.4in exit, 3in Voice Coil	Isophasic Waveguide
Operating Mode	Amplifier Channels	External Signal Processing
Bi-amp	LF, MF / HF	DSP w/EAW Focusing

NOTES

- 1 Calculated max SPL at 1m with 4:1 (12dB) crest factor pink noise. Specified as whole space (free field) for full range loudspeakers, half space for subwoofers.
- 2 Operating Range: Range where the processed Frequency Response stays within -10 dB SPL of the power averaged SPL within this range; measured on the geometric axis. Narrow band dips are excepted.
- 3 Nominal Beamwidth: Design angle for the -6 dB SPL points, referenced to 0 dB SPL as the highest level.
- 4 Accelerated Life Test: Maximum test input voltage applied with an EIA-426B defined spectrum; measured with recommended signal processing and Recommended Protection Filter.
- 5 Nominal Impedance: Selected 4, 8, or 16 ohm resistance such that the minimum impedance point is no more than 20% below this resistance over the Operating Range.

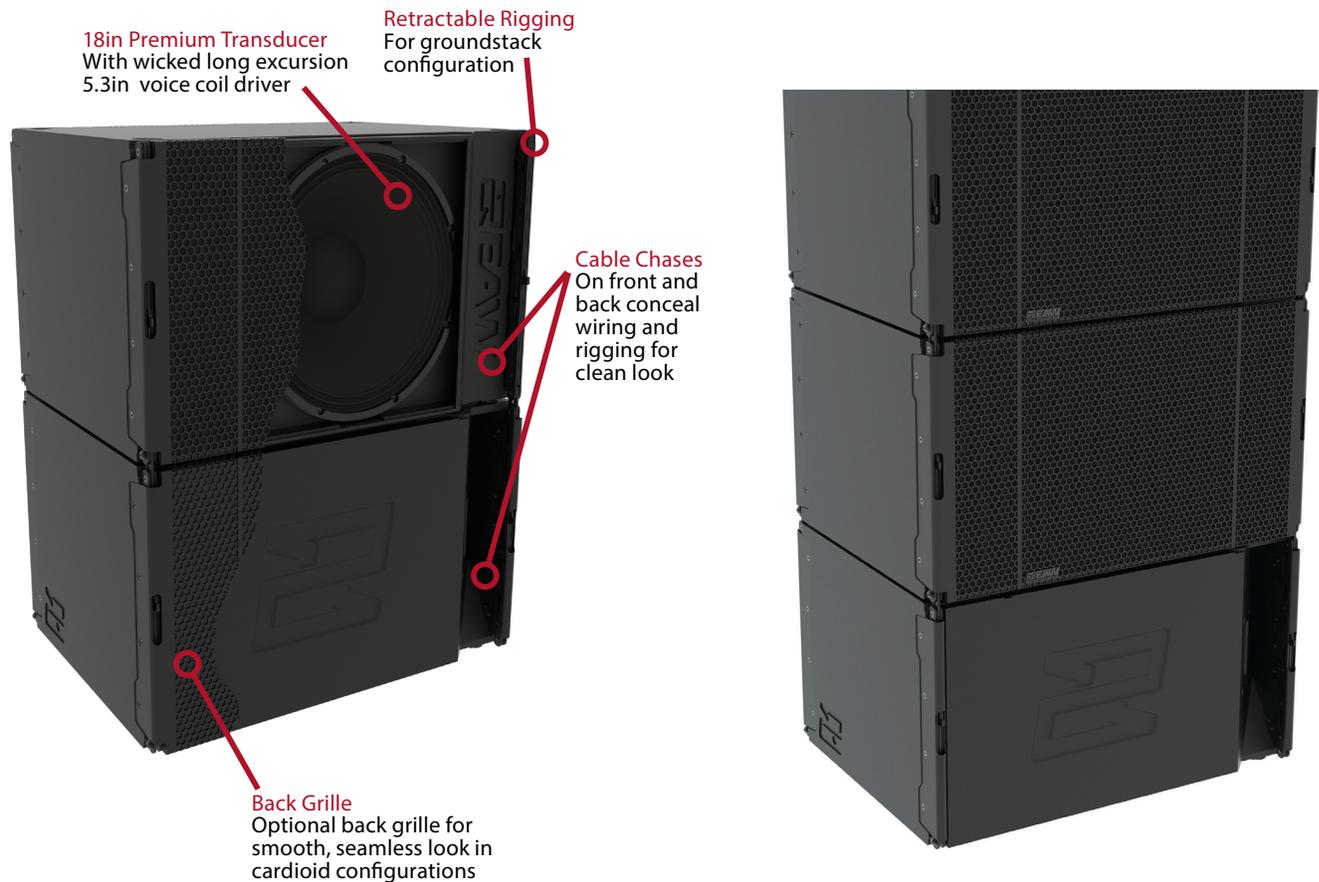
Line Array Application Guide

EAW Passive Line Array Products - KF810P



Line Array Application Guide

EAW Passive Line Array Products - SB818P|F



PERFORMANCE	
Max SPL ¹	137dB
Operating Range ²	32Hz-124Hz
Nominal Beamwidth ³	Horizontal 360° Vertical 360°
RMS Power Handling ⁴	1800W
Input Impedance LF ⁵	8Ω

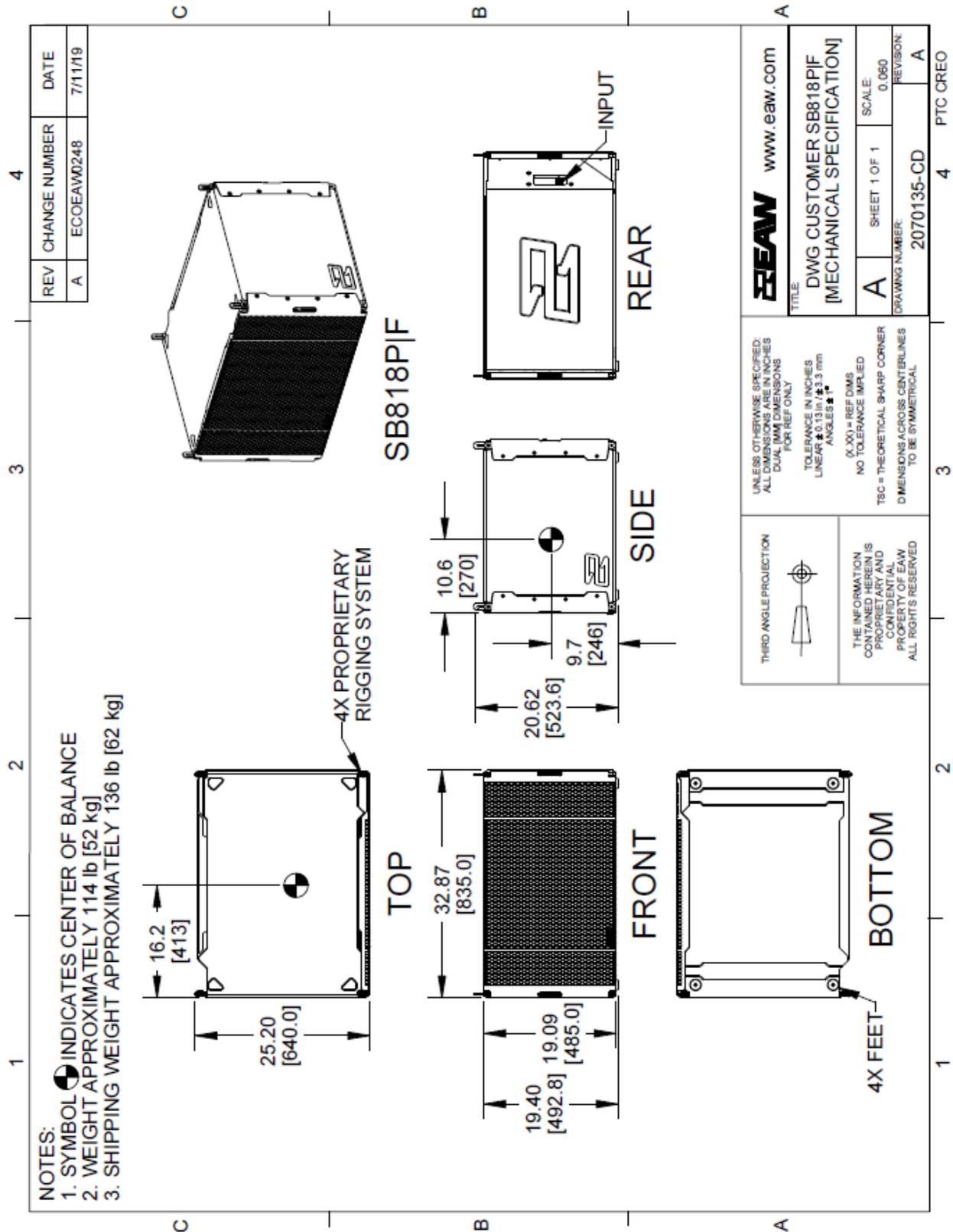
CONFIGURATION		
Subsystem LF	Transducer	Loading
	1x18in, 5.3in Voice Coil	Vented
Operating Mode	Amplifier Channels	External Signal Processing
	Single-amp 1	EAW DSP

NOTES

- 1 Calculated max SPL at 1m with 4:1 (12dB) crest factor pink noise. Specified as whole space (free field) for full range loudspeakers, half space for subwoofers.
- 2 Operating Range: Range where the processed Frequency Response stays within -10 dB SPL of the power averaged SPL within this range; measured on the geometric axis. Narrow band dips are excepted.
- 3 Nominal Beamwidth: Design angle for the -6 dB SPL points, referenced to 0 dB SPL as the highest level.
- 4 Accelerated Life Test: Maximum test input voltage applied with an EIA-426B defined spectrum; measured with recommended signal processing and Recommended Protection Filter.
- 5 Nominal Impedance: Selected 4, 8, or 16 ohm resistance such that the minimum impedance point is no more than 20% below this resistance over the Operating Range.

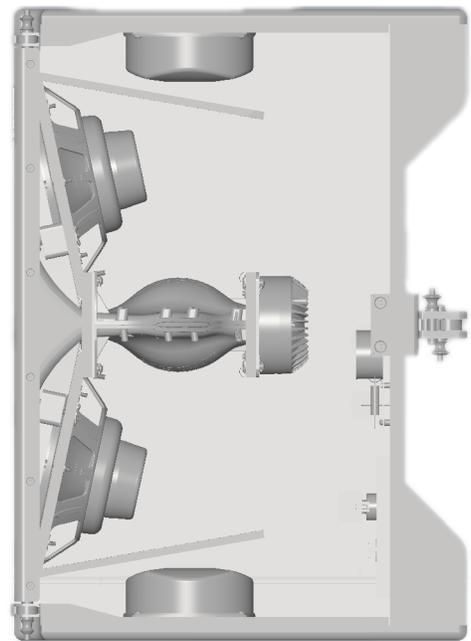
Line Array Application Guide

EAW Passive Line Array Products - SB818P|F



Line Array Application Guide

EAW Passive Line Array Products - KF210



CONFIGURATION		
Subsystem	Transducer	Loading
LF	2x10" cone, 2.5" VC	Vented
HF	1x1.4" exit, 3" VC compression drivers	Isophasic Wave Guide
Operating Mode	Amplifier Channels	External Signal Processing
Single-amp	LF/HF	DSP w/EAW Focusing™ & DynO™
Bi-amp	LF, HF	DSP w/EAW Focusing™ & DynO™

PERFORMANCE		
Operating Range		55Hz–18kHz
Nominal Beamwidth		Horz: 90° Vert: 12°
Accelerated Life Test		
LF/HF	63V	500 W @ 8 ohm
LF	69V	600 W @ 8 ohm
HF	35V	150 W @ 8 ohm

Line Array Application Guide

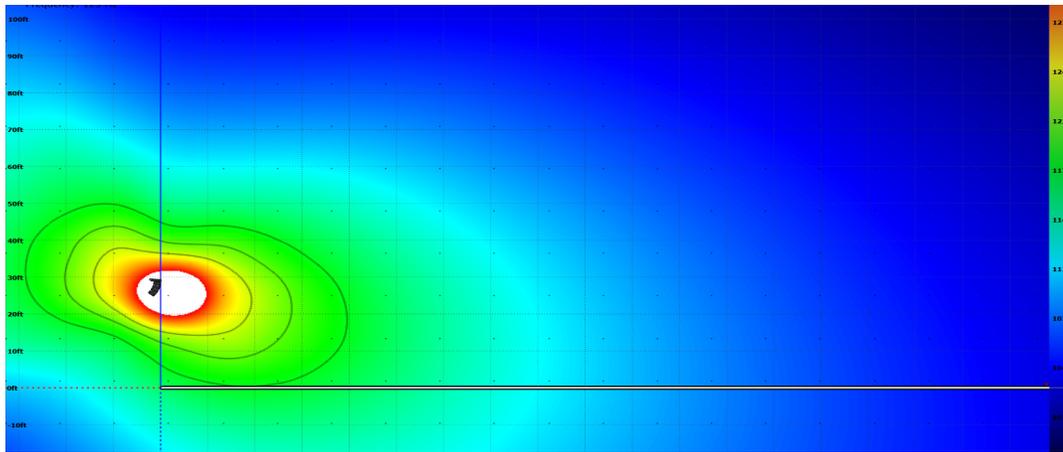
How Array Length Affects Directivity

It would be beyond the scope of this guide to go into the physics of how line arrays behave.

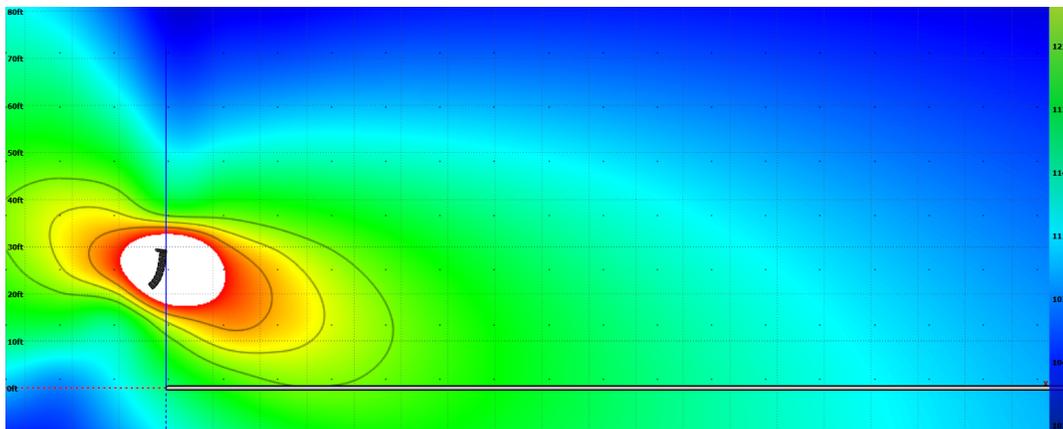
The key to directivity is array length. This should not be confused with the number of drivers. A properly designed line array system will exhibit the same directivity from the same physical length regardless of whether this length is made up of 8", 10", 12" or 15" components.

The determining factor is the length of the array itself and how that length affects the wavelength being produced.

The samples below show three array types in the same venue. The first array is very short with only 4x KF810P-80 modules being deployed. The contour line feature in Resolution has been used to clearly show the definition of the vertical contour at 125Hz. It is clear that with this array length, the 125Hz frequency is seeing only slight directivity control.

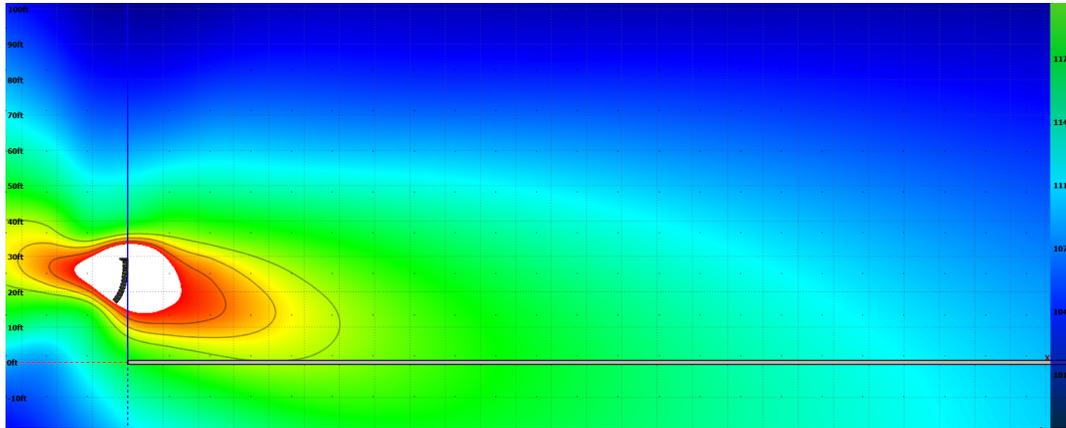


The second image demonstrates what would happen with the same frequency in the same venue but with 8x KF810P-80 line items. It is quite clear how much more directive the vertical has become in this image and if we continue to add modules to the array, the effect will become more pronounced.



Line Array Application Guide

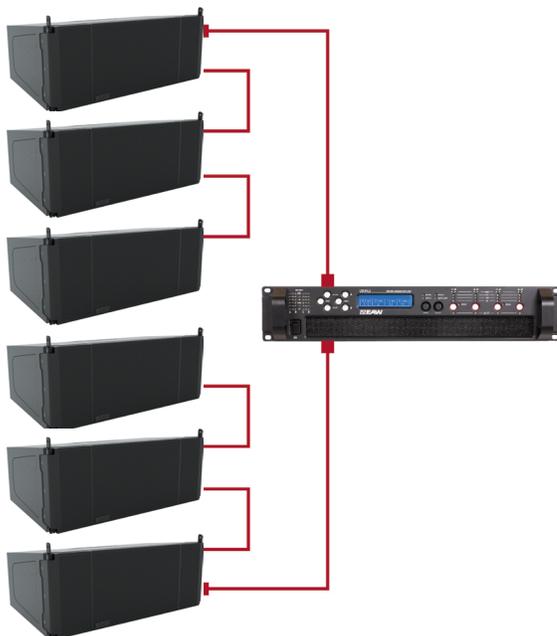
Finally, we see the result when 12x KF810P-80 is deployed. This array produces an extremely tight vertical pattern at 125Hz across this listening area. If directivity at lower frequencies is required for the application, array length must be considered.



Pairing with EAW UXA4410 Power Amplifier

Below are the recommended configurations when using UXA4410 with line array products

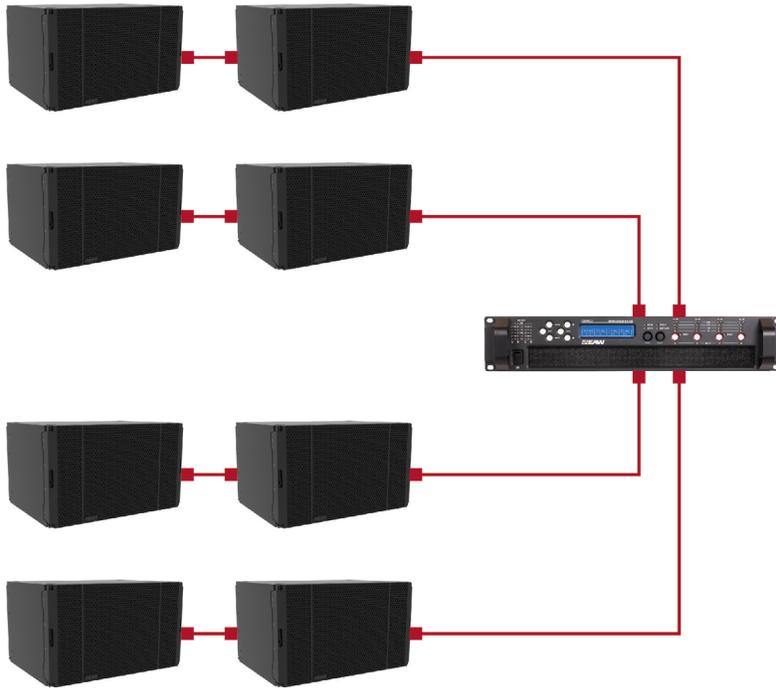
KF810P



MODEL	PER CHANNEL	PER AMPLIFIER
UXA4410	3	6

Line Array Application Guide

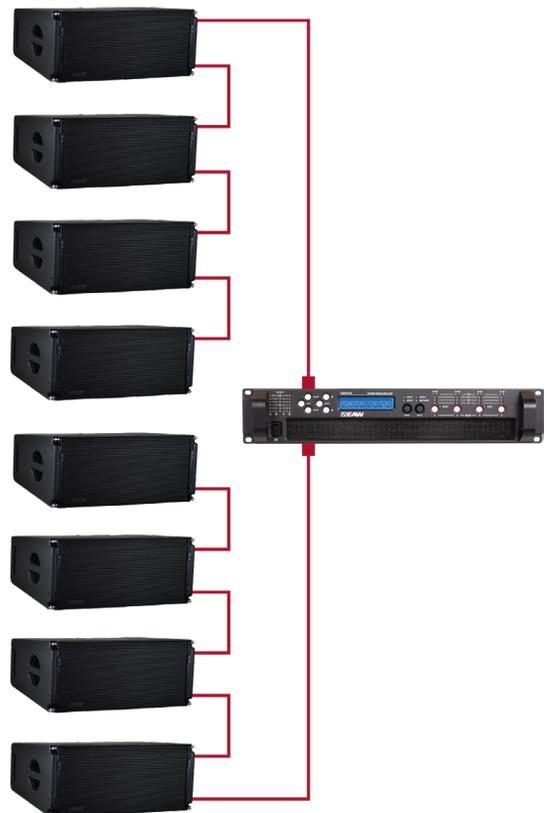
SB818P|F



MODEL	PER CHANNEL	PER AMPLIFIER
UXA4410	2	8

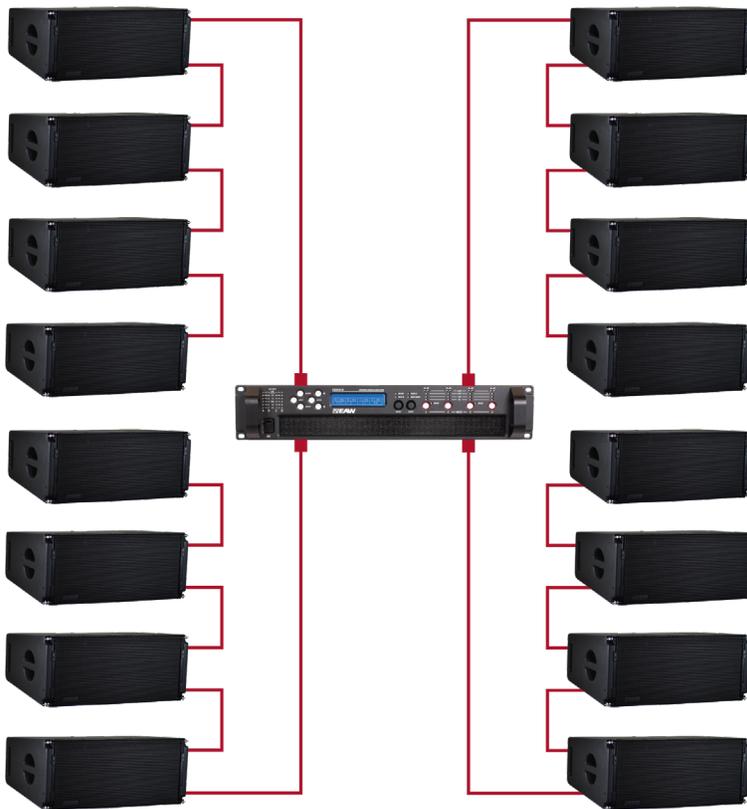
KF210 - Bi Amped

MODEL	PER CHANNEL	PER AMPLIFIER
UXA4410	4	8



Line Array Application Guide

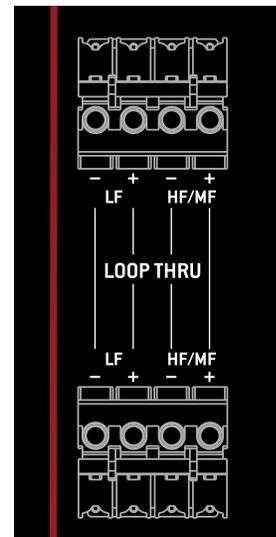
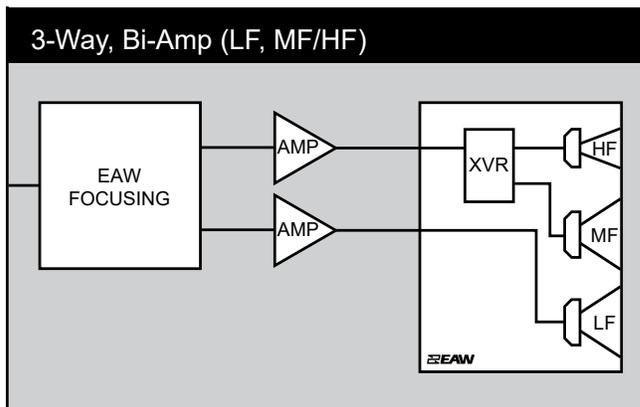
KF210 Single Amp



MODEL	PER CHANNEL	PER AMPLIFIER
UXA4410	4	16

KF810P Input Connection

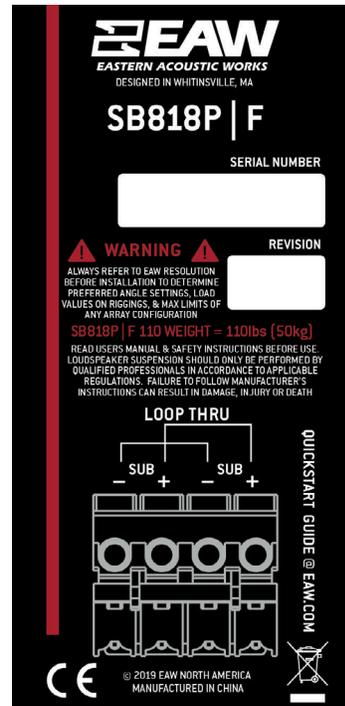
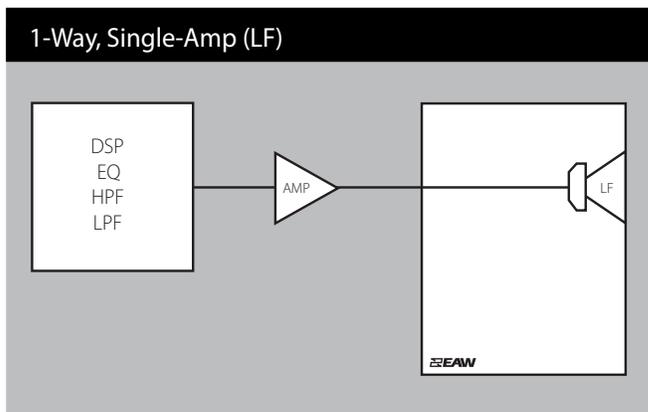
KF810P is a 3-way line array product, utilizing a passive crossover between the MF/HF. When wiring to UXA4410, utilize NL4 in outputs 1 & 3. Connect 2 pins +/- to LF, then the other 2 pins +/- to MF/HF into a Phoenix connector (which can then plug into the KF810P input). It's possible to loop 2 more cabinets in the same manner using Loop Thru.



Line Array Application Guide

SB818P|F Input Connection

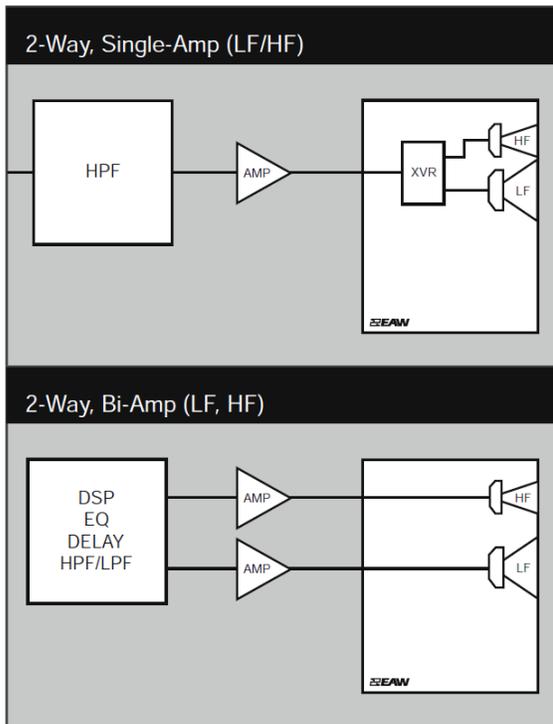
SB818P|F utilizes a 2 pin +/- Phoenix connector. Using UXA4410, use NL4 with pins 1 +/- wired, then connect the bare wire pins 1 +/- to the connector (which can then plug into the sub). If multiple subs are being used, use the same NL4 connector and wire the pins 2 +/- and connect pins 2 +/- to another Phoenix connector to then plug into additional subs. When using this type of configuration, plug NL4 connectors into outputs 1 & 3 of UXA4410. It's possible to loop 1x more cabinet using Loop Thru.



KF210 Input Connection

KF210 utilizes an NL4 connection with a switch for single or bi amp mode. When the switch is in single amp mode, pin 1 only is utilized. When in bi amp mode, pin 1 +/- is LF, and pin 2 +/- is HF. When wiring to use with UXA4410 in single amp mode, plug NL4 into any output on the amp, then directly into the cabinet (NOTE: Pin 2 +/- will be unused). When using bi amp, plug into UXA4410 outputs 1 & 3, then directly into the cabinet. It's possible to loop 3x more cabinets in either mode.

Line Array Application Guide



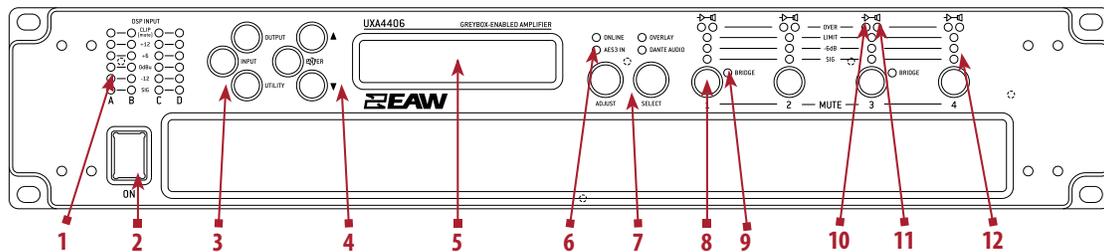
Using UX4410 Power Amplifier

It is required to use an EAW amplifier with any EAW line array products. Important processing such as limiting, FIR filters, and DYNO (Dynamic EQ) is prudent to the loudspeakers performance.



Line Array Application Guide

Panel Layout



1. Input Signal Indicators– A set of five indicators show “Sig”, “-12”, “0dBu”, “+6” and “+12” and “Clip (mute)” for each of the DSP inputs “A” “B” “C” “D”. The signal present Indicators operate at approximately –40 dBu. The Clip/mute Indicators warn the user of input overload and operate at 1dB before clip. This indicator also shows a muted input.

2. Power Switch– Applies mains power to the device. If the device has entered Sleep mode, it may be woken up again either from the EAW Resolution software application, or by switching this switch off, then on again.

3. Menu Buttons– There are three buttons to determine which section of the device to view or edit. The <OUTPUT> button displays pages of parameters associated with a particular output channel. The <INPUT> button displays pages of parameters associated with a particular input socket or input DSP channel. Pressing <INPUT> or <OUTPUT> buttons repeatedly will scroll through the inputs/outputs of the device. After the last channel, navigation returns to the Home screen. The <UTILITY> button displays pages of miscellaneous parameters not associated with any particular channel. Whilst in Edit mode, one of these three buttons will be illuminated. They are mutually exclusive – pressing one of the buttons will deselect any others that are active. Pressing Utils will escape back to the Home screen.

4. Page Selection Buttons– When one of the buttons <INPUT>, <OUTPUT> or <UTILITY> is illuminated, the up <P> and down <Q> arrows will also illuminate, informing the user that these buttons may be used to scroll through the various pages of parameters that may be viewed and edited. The <ENTER> button is used to confirm an operation. It will illuminate when the user is being invited to press it. It will flash when warning the user that pressing this button will activate an important function.

5. Graphical Display– This will show the Home screen; a useful overview of channel allocation. On most pages the currently selected channel and parameter information is displayed on the upper part of the screen and the parameter value on the lower part of the screen; this can also optimise the viewing angle.

6. Status Indicators– The “OVERLAY” indicator is not currently used. The <DANTE AUDIO> indicator illuminates when one or more of the inputs is using a dante source. The “ONLINE” indicator has three states: Off– the unit is offline and not connected to a computer or network. Flashing– the unit is searching for an IP address; if the unit does not find an IP address the unit will assign itself an IP address automatically and the indicator will stop flashing. On– the unit is online and connected with software. IP settings can be viewed or changed within the

Line Array Application Guide

<UTILITY> pages. The “AES3 IN” indicator illuminates when one or more of the inputs is using an AES3 source.

7. **Parameter Encoders**– Two velocity sensitive parameter encoders are used to adjust parameters shown on the display. Up to three parameters at a time are displayed on the screen. The parameter name is shown above the parameter value in each of the three screen sections. Use SELECT to highlight the parameter, then ADJUST to change it.

8. **Bridge Indicator**– This will illuminate when the channel pair is in Bridge mode. The controls for the left channel of the pair will determine the settings. See Bridge Mode

9. **Mute Buttons**– DSP output mute status is indicated and controlled by an illuminated button for each channel. These flash when the entire unit is muted from the AUXA port or from EAW Resolution software Mute-All, or if this channel has been muted by the protection systems.

10. **Amplifier Indicator**– This indicates when the amplifier protection systems are reducing the gain to keep the parameters of the amplifier within specification, or when that the channel is clipping.

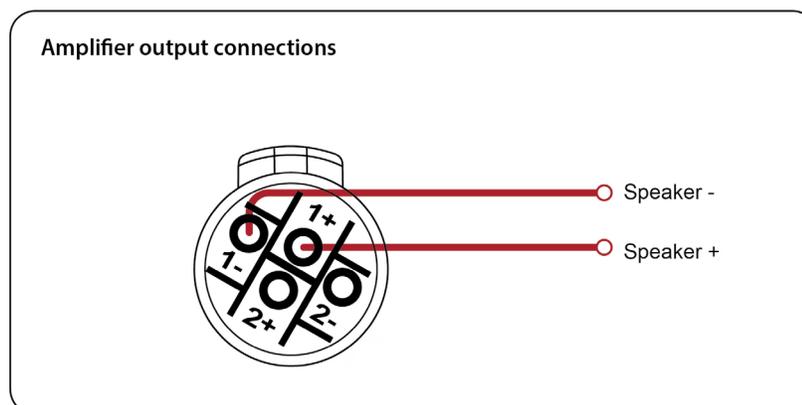
11. **Driver Indicator**– This indicates the output limiter is engaged.

12. **Limiter Indicators**– The output indicators shows the status of the limiter and output level. The level indicated is that before the limiter, referenced to the limiter threshold. The <SIG> indicator shows when a signal is present on the output. The second indicator <-6dB> shows that the signal has reached 6dB below the limiter threshold. The third <LIMIT> indicator indicates that the threshold of that output channel has been reached.

Amplifier Output Connections

Note : The UXA4410 amplifier can produce high voltages at their outputs. Always use genuine Neutrik NL4 connectors. Un-bridged outputs must use Class 2 or class 3 wiring. Bridged channel pairs must use Class 3 wiring. Custom wiring must only be performed by qualified personnel.

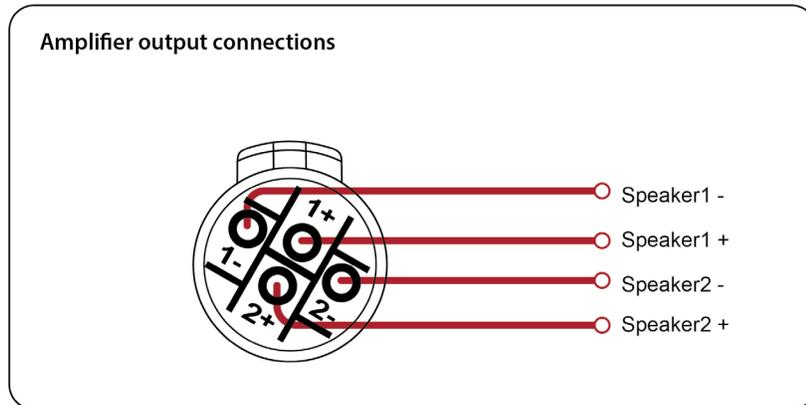
The UXA4410 amplifier is fitted with one NL4 connector per amplifier channel.. The appropriate conductor terminations are shown below and on the rear panel of the unit.



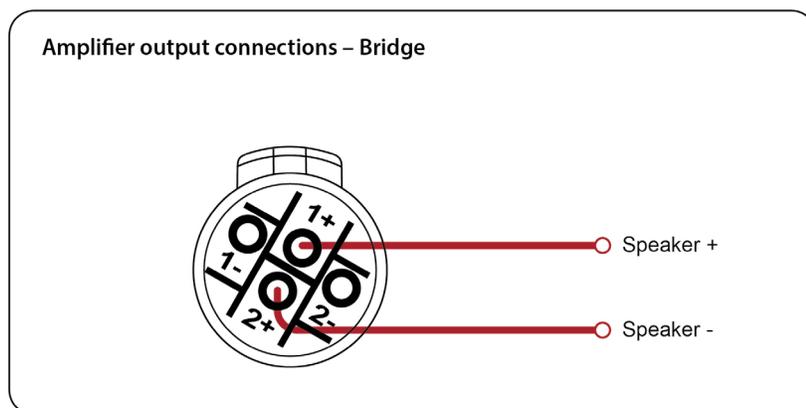
Line Array Application Guide

Additionally, the channel 2 output is duplicated on the NL4 connector for amplifier channel 1 for Bi-Amp wiring. Similarly, the channel 4 output is duplicated on the NL4 connector for amplifier channel 3. This can be useful for making a connection to two loudspeakers with one 4-core cable (i.e. Bi-Amp).

On the UX4810 model, all outputs are Bi-Amp; each NL4 connector carries two amplifier outputs – Channels 1&2, Channels 3&4, Channels 5&6 and Channels 7&8.



In addition, the channel 1 or channel 3 connector (all the NL4 connectors on the UX4810 model) can also be used if the pair of amplifier channels is being operated in bridged mode.



More than one speaker can be connected to each channel provided the total impedance per channel is not less than 2 ohms. In bridged mode the minimum total impedance should not be less than 4 ohms.

Line Array Application Guide

Load Matching

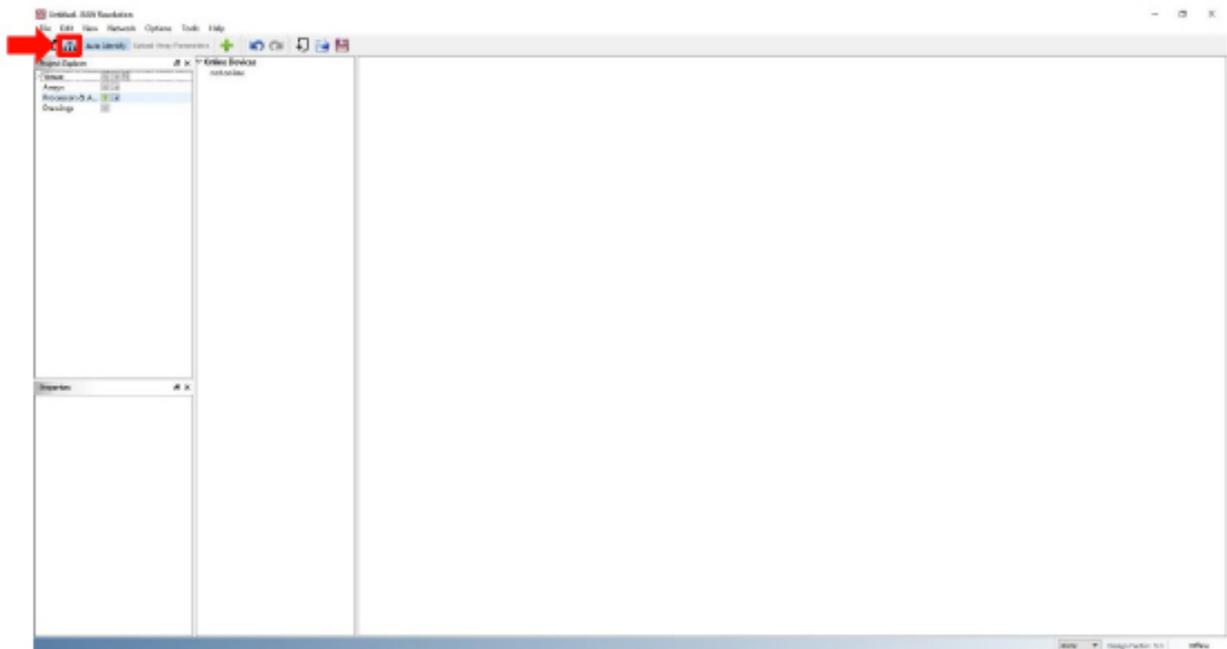
Each output of the device can be optimised to drive either a low impedance load (e.g. 2, 4 or 8 Ohms), or a Constant Voltage (C.V.) using the Load parameter in the Output menu. There are several C.V. settings (25V, 70V and 100V Line) which determine the maximum RMS voltage that the amplifier will produce. Select the one which is appropriate for the installation. A number of low impedance settings (depending on the model) are also available. Although it is not critical that this setting matches the impedance of the connected load, this will maximise the power that is available for the load.

Going Online with UXA4410

Before going online, assure the computer being used is connected to the same Ethernet network as the UX/UXA units. Two network cables will need to be connected to the processors/amplifiers for Control and DSP (one to the ETHNET port, the other to one of the DANTE ports).

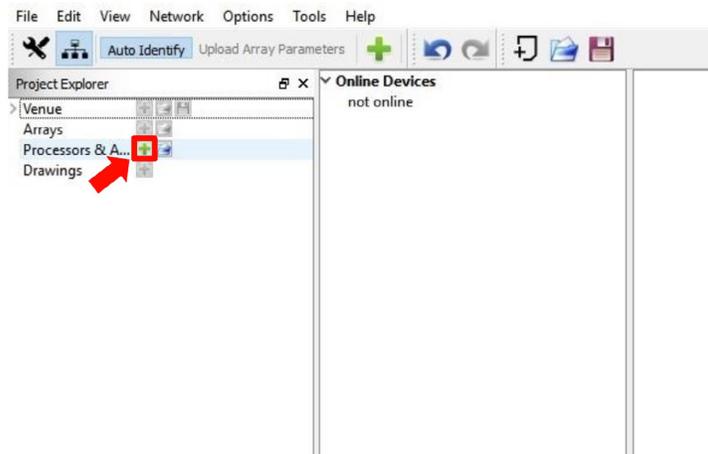
NOTE: If processors/amplifiers are on a DANTE Network consisting of more than 2 multicast flows, communication issues may occur. As such, the UX/UXA products are only supported on DANTE networks with 2 or less multicast flows. Also important, is though these products may receive DANTE input signal, they do not support DANTE output (i.e. cannot be used as an onramp).

When first opening Resolution, start by switching to **Network Configuration View**.

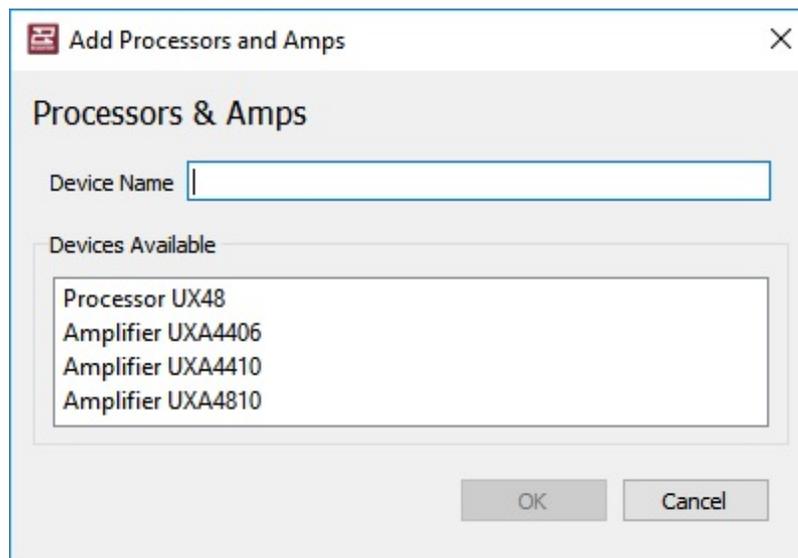


Line Array Application Guide

To add a processor or amplifier to the system, click on the “+” symbol next to Processors & Amplifiers in the Project Explorer window.

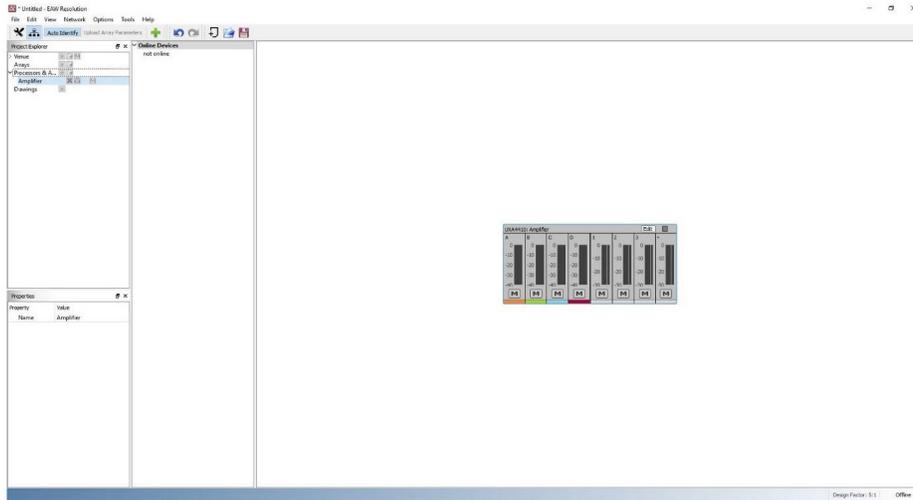


Upon being prompted, choose a name and a product from the devices available. Click “OK” once complete.

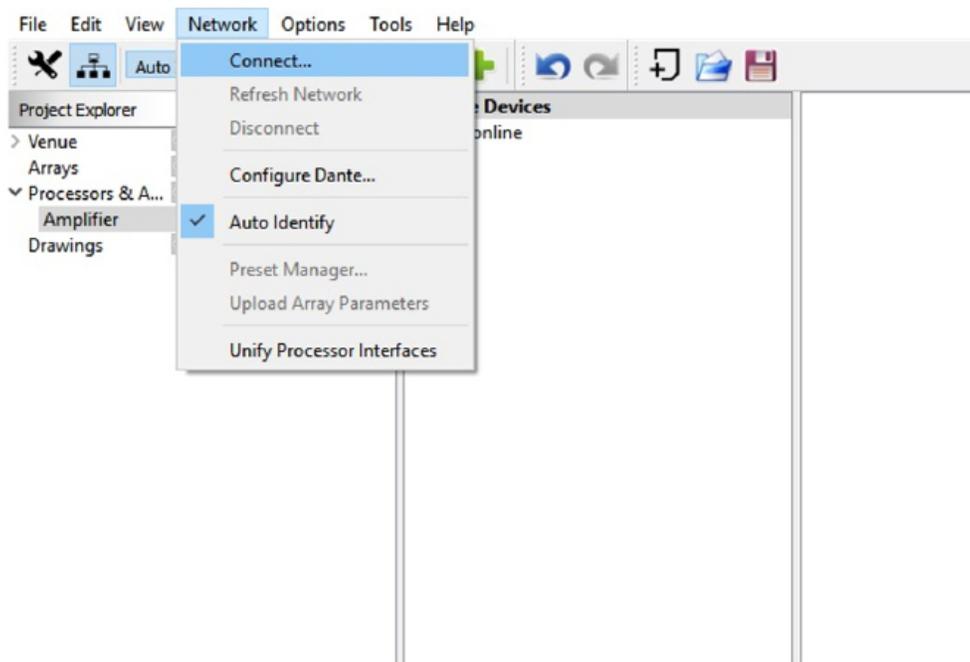


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The selected device will now be loaded into the system. In this case, as offline.

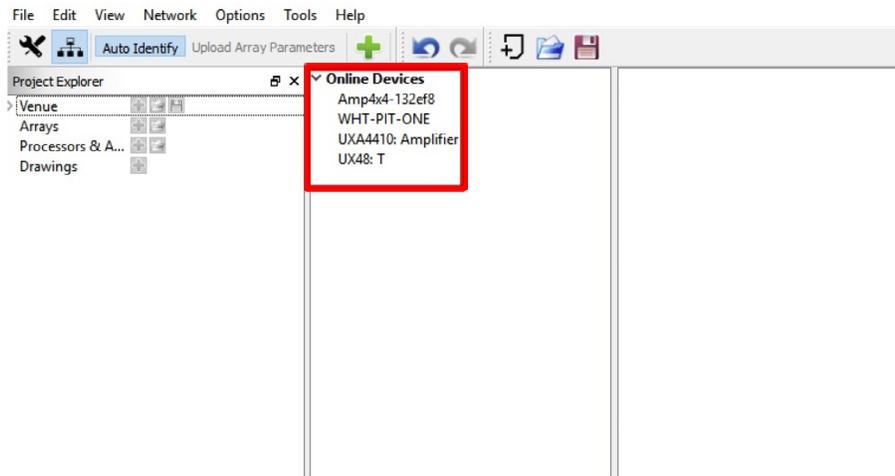


To connect the processor or amplifier to the system, start by clicking **Network > Connect**.

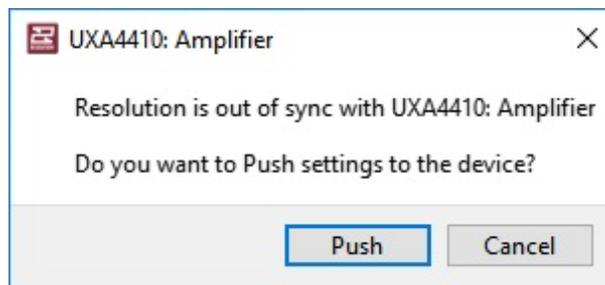


Line Array Application Guide

After a quick scan, all available products will now appear listed under **Online Devices**. Click and drag each detected device, and drop it over the top of previously set up offline devices.

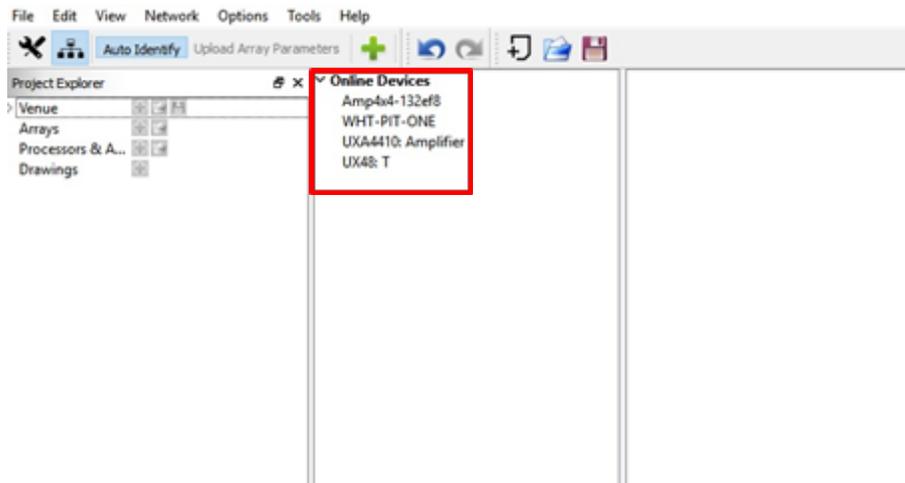


A prompt may appear if Resolution is not in sync with the device. Choose whether to push the Resolution settings to the device, or cancel to use the last known settings.

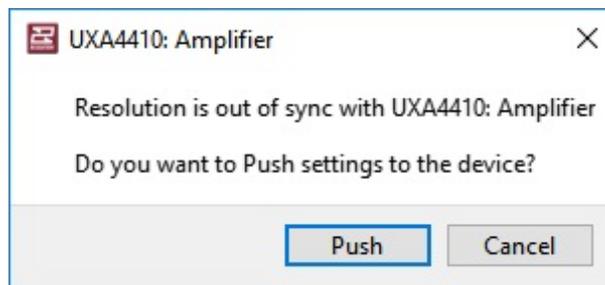


Line Array Application Guide

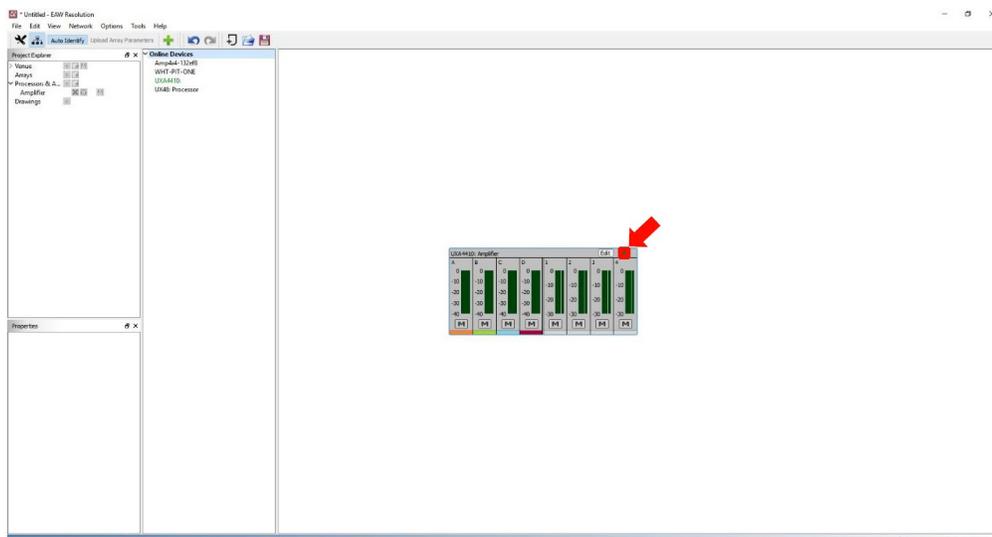
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A prompt may appear if Resolution is not in sync with the device. Choose whether to push the Resolution settings to the device, or cancel to use the last known settings.

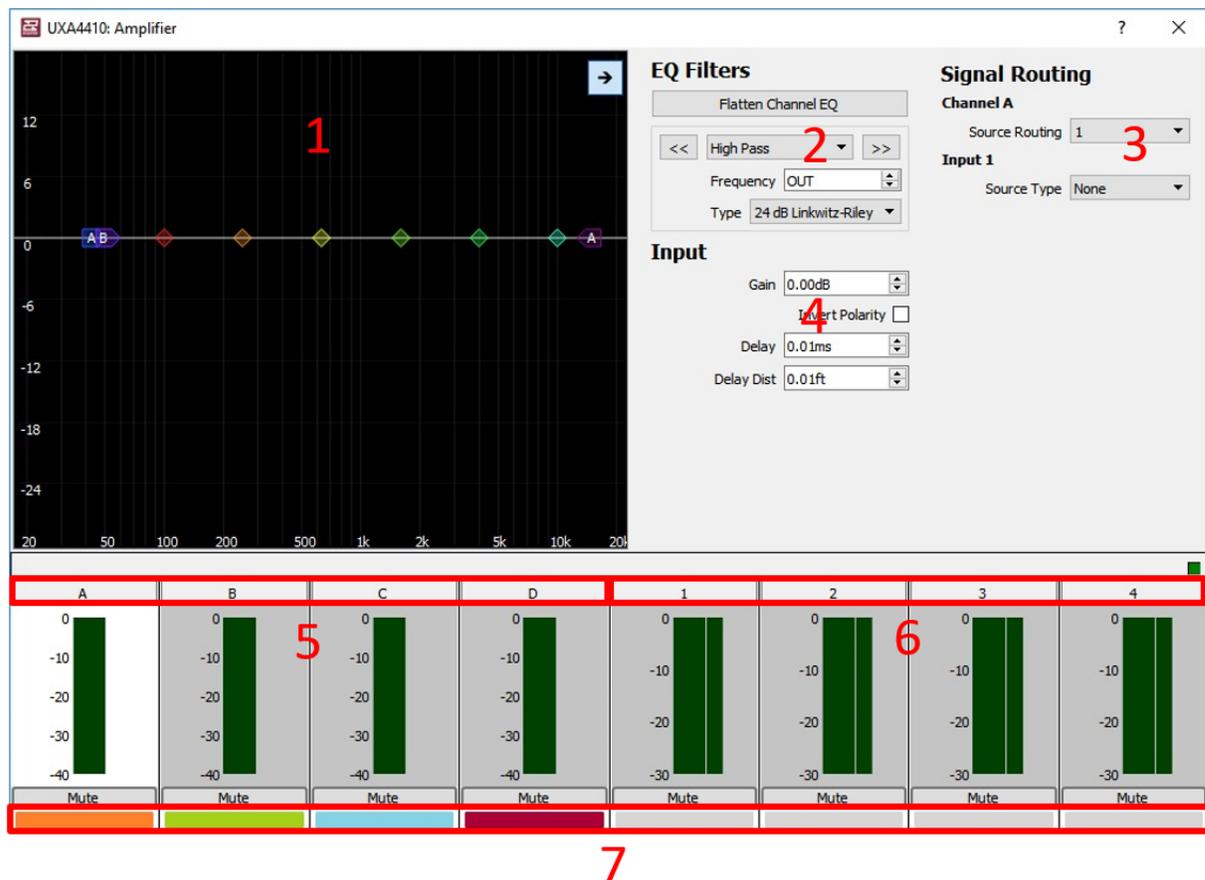


At this point, the device is online and ready to use in the system (as indicated by the green light).



Line Array Application Guide

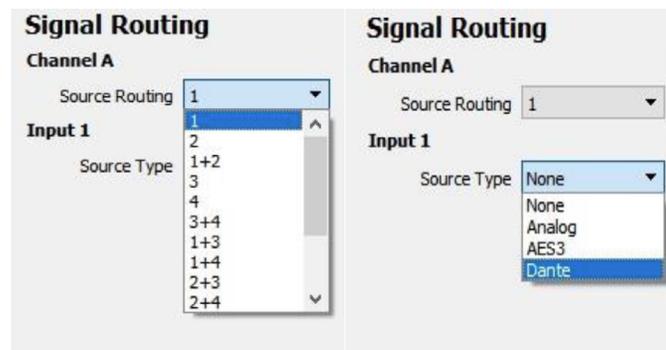
UXA Input Section



1. EQ/Filter Graphic Window: Click and drag functionality to control Low Shelf Filters, (5) PEQ Filters, and an FIR Hi Shelf Filter. Clicking the right facing arrow at the top corner expands and hides the detail pane.

2. EQ/Filters Section: Manually adjust settings for all Filters. Use << >> buttons to navigate from one band to the next. There is an additional pull-down menu to choose type of filter, with an option to disable the FIR High Shelf to reduce latency (this filter is disabled by default).

3. Signal Routing: Assign input sources to input channels, or combine input sources to a single input channel. Select an input source type between Analog, AES3, and Dante (See both pull-down menus below).



Line Array Application Guide

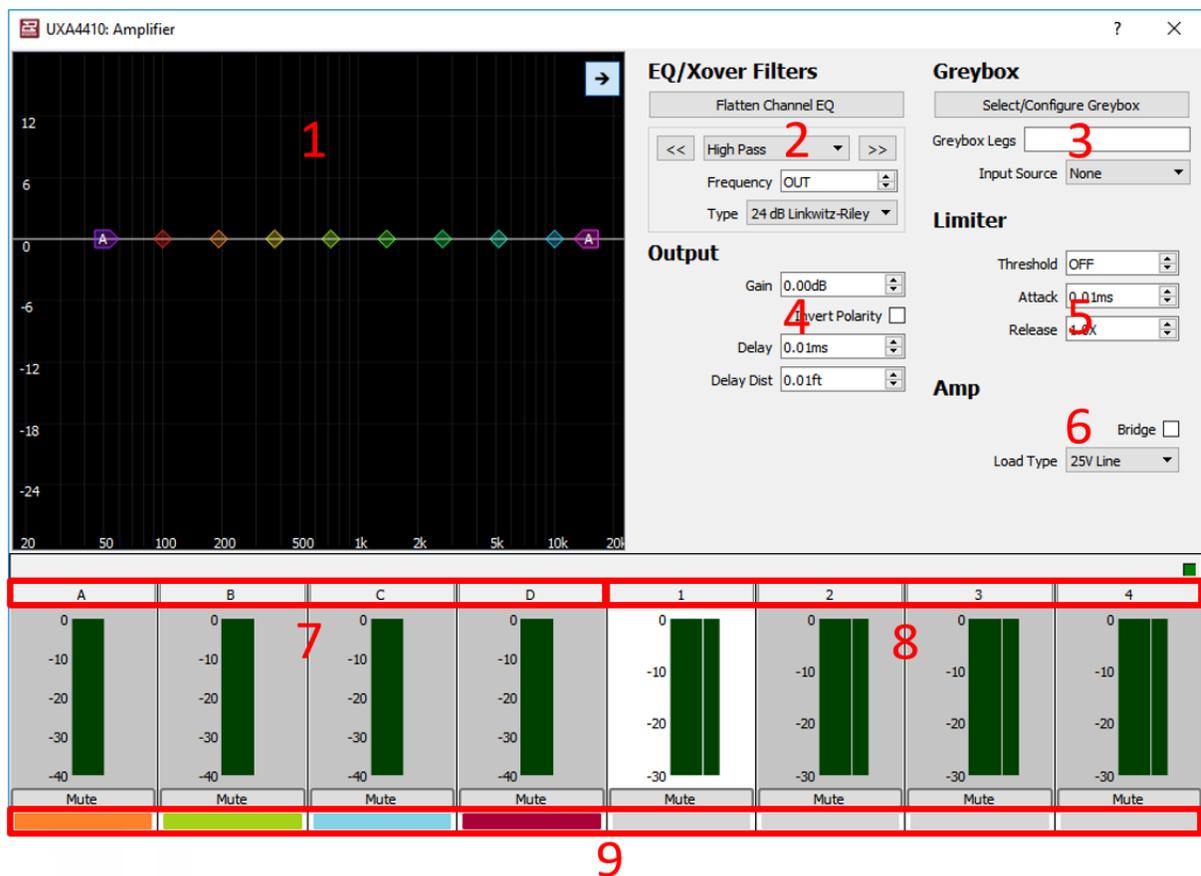
4. Input Section: Adjust gain, invert polarity, and set delay or delay distance.

5. Input Channels: Signal meters and channel labels. To change a channel label, double click on the default letter/number and type in a friendly name.

6. Output Channels: Signal meters and channel labels. To change a channel label, double click on the default letter/number and type in a friendly name.

7. Input/Output Color Indicators: An easy method to distinguish which outputs are utilizing which input source (Assigned output channels will match the color of input channels).

UXA Output Section

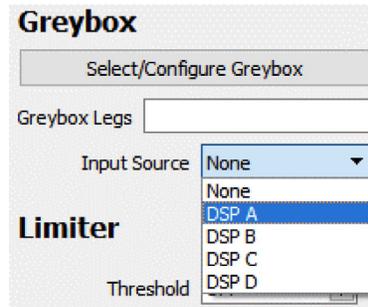


1. EQ/Filter Graphic Window: Click and drag functionality to control a Low/High Pass Filters, Low/High Shelf EQs, and (6) PEQ Filters. Clicking the right facing arrow at the top corner expands and hides the detail pane. Once a Greybox is loaded, only the HPF may be modified.

2. EQ/Filters Section: Manually adjust settings for all EQ/Filter bands. Use << >> buttons to navigate from one band to the next. There is an additional pull-down menu to choose type of filter. Once a Greybox is loaded, only the HPF may be modified.

Line Array Application Guide

3. Greybox: Load EAW Greyboxes and set Input source (See pull down menu below).



4. Output Section: Adjust gain, invert polarity, and set delay or delay distance. Unity Gain and Invert Polarity is disabled once a Greybox is loaded.

5. Limiter: Set Voltage Threshold, as well as Attack and Release times.

6. Amp: Bridge amplifier output channels and select the load type in either voltage or ohms (an auto option is also available).

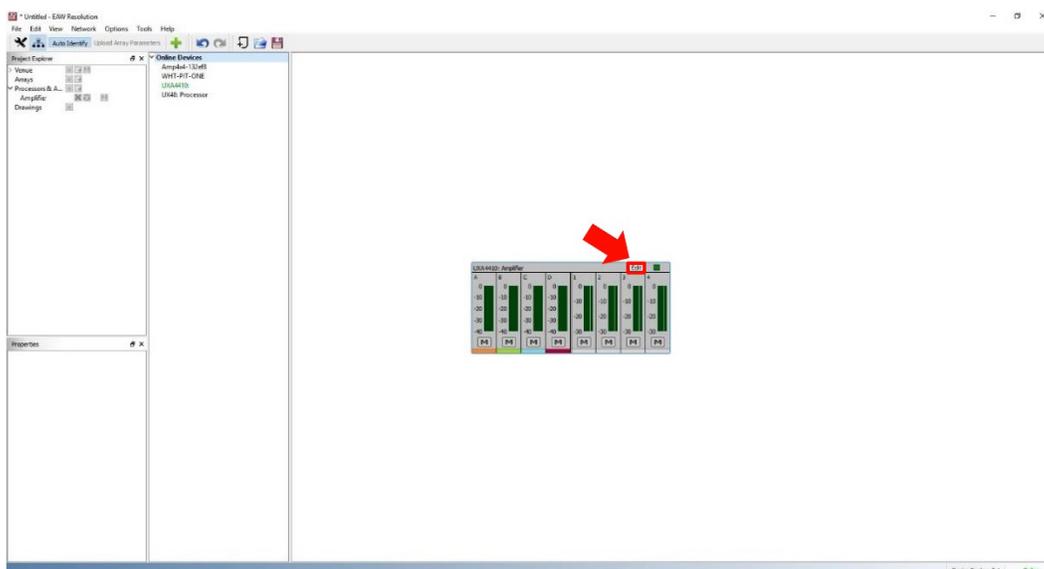
7. Input Channels: Signal meters and channel labels. To change a channel label, double click on the default letter/number and type in a friendly name.

8. Output Channels: Signal meters and channel labels. To change a channel label, double click on the default letter/number and type in a friendly name.

9. Input/Output Color Indicators: An easy method to distinguish which outputs are utilizing which input source (Assigned output channels will match the color of input channels).

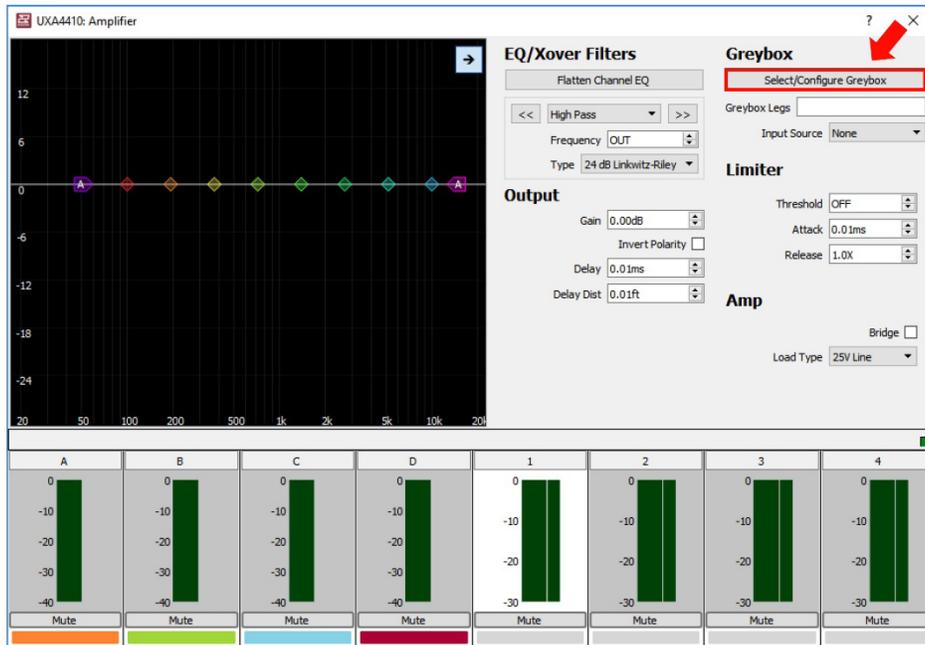
Loading Greyboxes (EAW Speaker Preset Files)

To load a Greybox onto one of the UXA devices, click the **Edit** button to open the edit **window**.

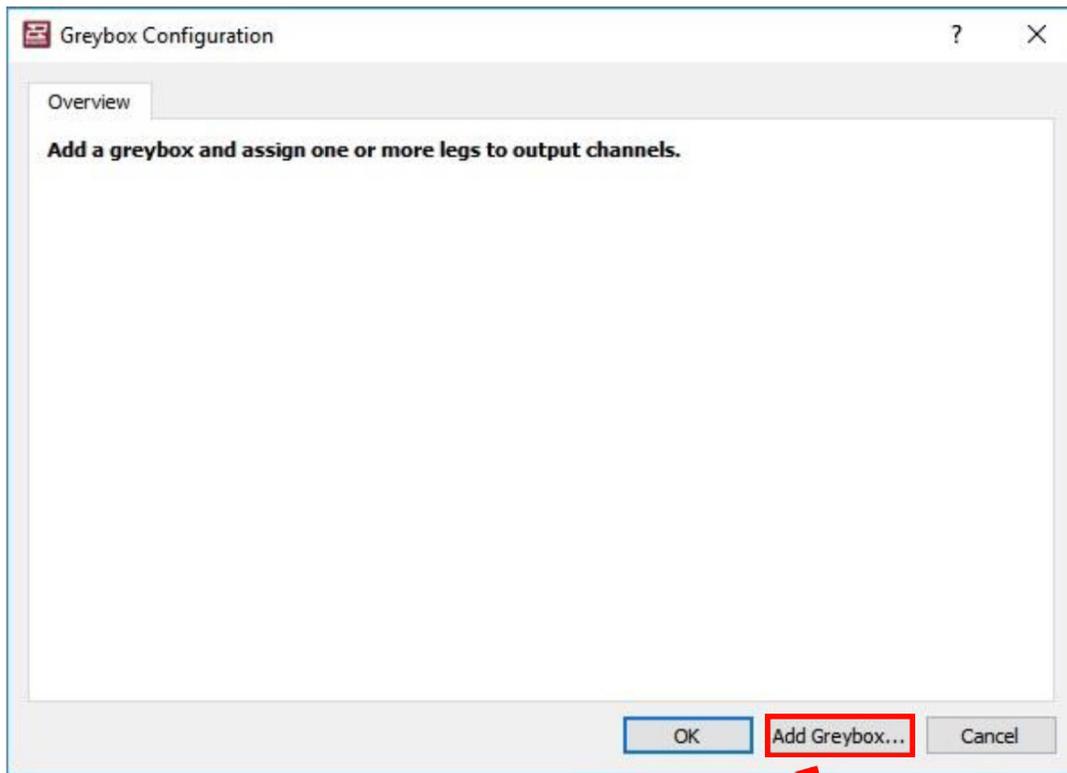


Line Array Application Guide

Click any output channel, then click on **Select/Configure Greybox**.

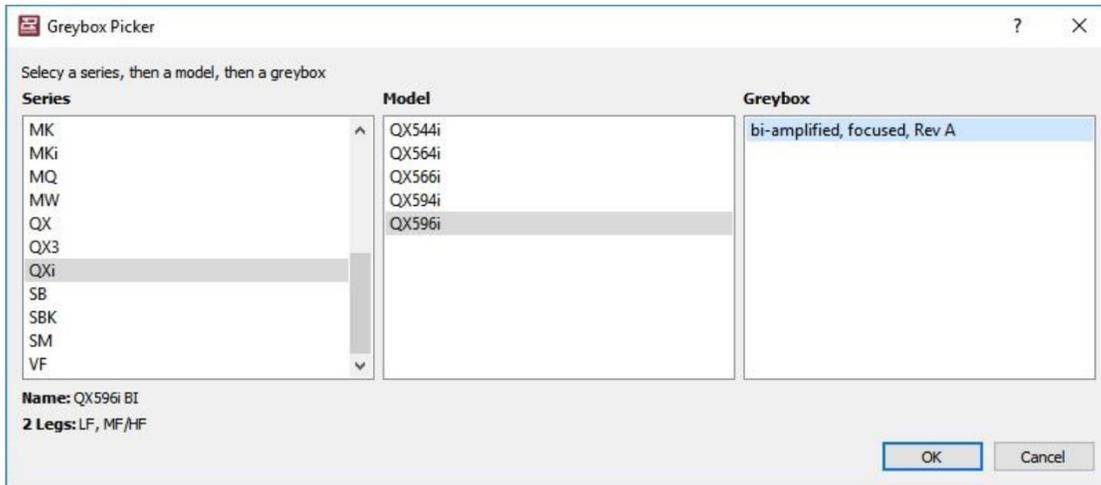


On the main Greybox Configuration window, click **Add Greybox...**



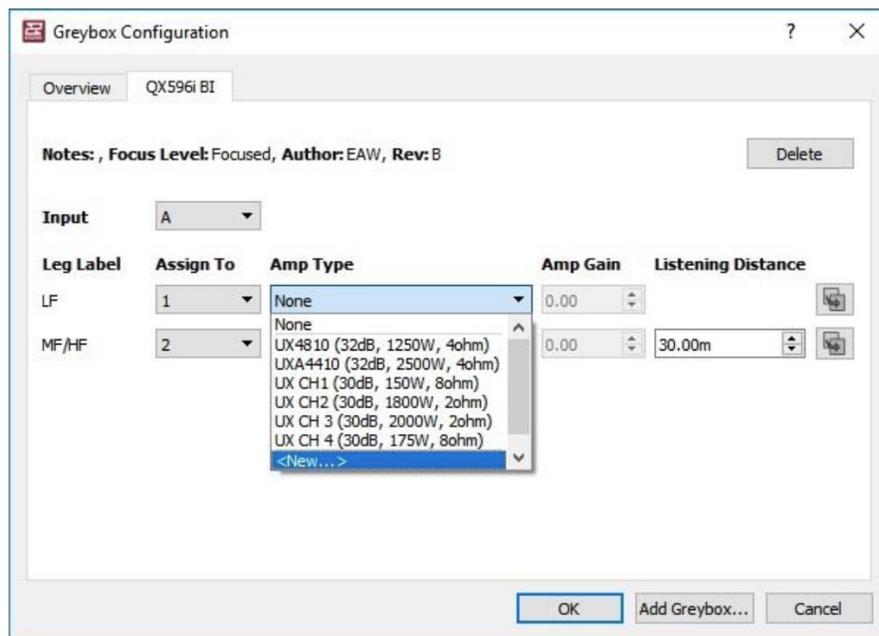
Line Array Application Guide

In the Greybox Picker window, choose the Series, Model, and exact Greybox configuration of the Loudspeaker. Click "OK" to proceed.



The Greybox Configuration window should now be populated with set up options. Here, assign an input, an output channel for each Leg, Amp Type, Amp Gain, and Listener Distance.

Either choose an available Amp Type or create one new by clicking on <New...> under the pull-down menu.



Line Array Application Guide

When the Add an Amplifier window appears, fill in each setting as specified by the Amplifier spec/cut sheet. Entry Method may either be by Voltage or Power.

The 'Add an Amplifier' dialog box contains the following fields and controls:

- Entry Method:** Radio buttons for 'Voltage' and 'Power' (selected).
- Name:** Text input field containing 'UX4410'.
- Max Gain:** Spin box set to '32.00 dB'.
- Power:** Spin box set to '2500W'.
- Impedance:** Dropdown menu set to '2 ohm'.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom.

Back to the Greybox configuration window, the newly created amplifier will now be available on all channels under Amp Type. Click "OK" once complete.

The 'Greybox Configuration' window shows the following configuration:

- Notes:** Focus Level: Focused, Author: EAW, Rev: B
- Input:** A
- Table:**

Leg Label	Assign To	Amp Type	Amp Gain	Listening Distance
LF	1	UX4410 (32dB, 2500W, 2ohm)	32.00	
MF/HF	2	None	0.00	30.00m

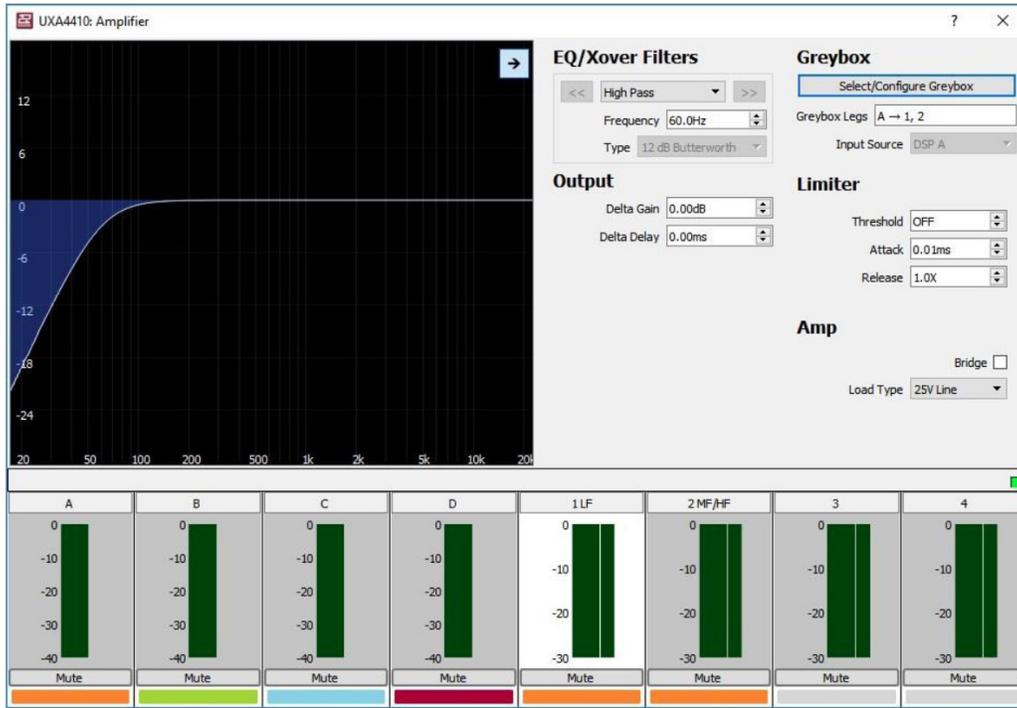
The 'Amp Type' dropdown for MF/HF is open, showing the following list of options:

- None
- UX4410 (32dB, 2500W, 2ohm)
- UX4810 (32dB, 1250W, 4ohm)
- UXA4410 (32dB, 2500W, 4ohm)
- UX CH1 (30dB, 150W, 8ohm)
- UX CH2 (30dB, 1800W, 2ohm)
- UX CH 3 (30dB, 2000W, 2ohm)
- UX CH 4 (30dB, 175W, 8ohm)

Buttons at the bottom: 'OK', 'Add Greybox...', 'Cancel'.

Line Array Application Guide

The Greybox is now loaded, as shown below in the Edit Window. NOTE: The output channels should be color coded to match the assigned input channel (i.e. orange in this example).



Unify Processor Interfaces

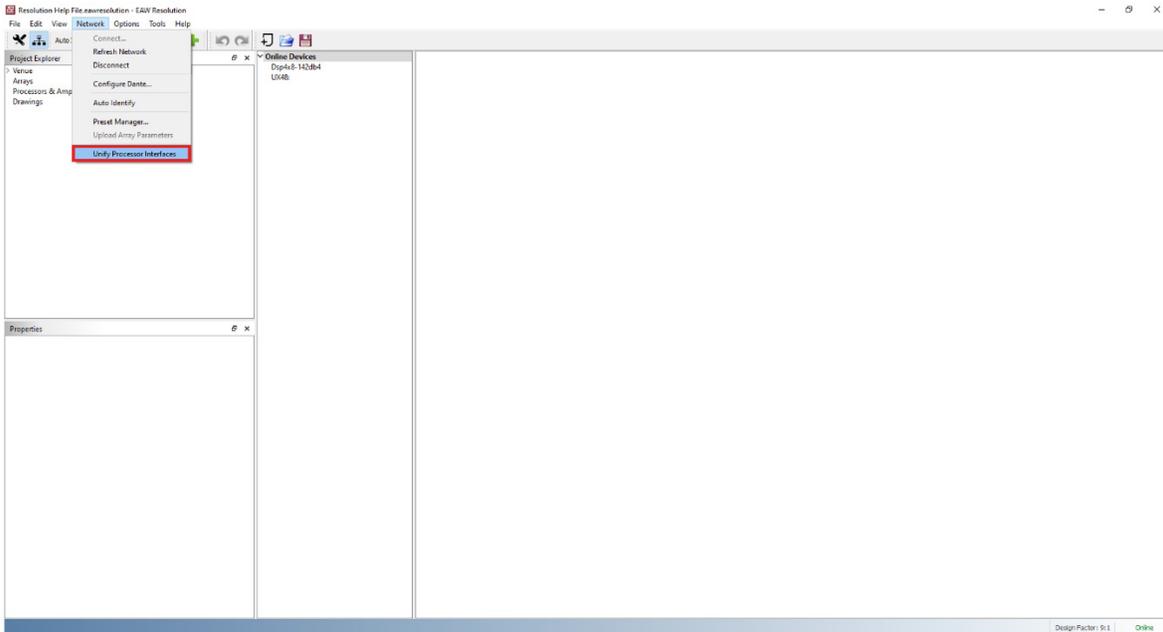
CRITICAL SETUP NOTE:

It is necessary to “teach” each amplifier which Dante card is installed internally. If more than one Processor and Dante Interface is seen in the list, it is suggested to turn off all amplifiers except one. Refresh the network, then Unify the processor to the Dante card. Repeat this for each amplifier. This will ensure that you are connecting the correct Amplifier Processor to the Correct Dante Card in that amplifier.

This will not be necessary in a future firmware build, but for now it is highly suggest doing this step to ensure network control stability.

This function is to assist in determining the network address of the primary and secondary Dante card when Resolution is connected to the Ethernet port of a UX processor or UX4 amplifier. The IP address of the Dante card is stored in the internal memory. This is only required once unless the internal Dante card is replaced.

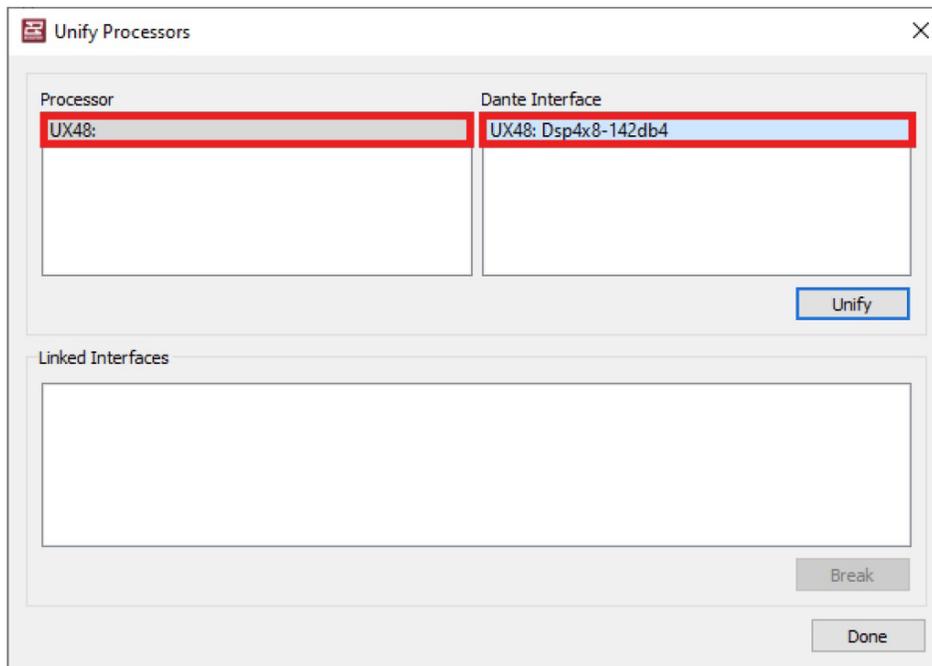
Line Array Application Guide



Resolution needs to know the Dante address so routing can be done between devices in Resolution.

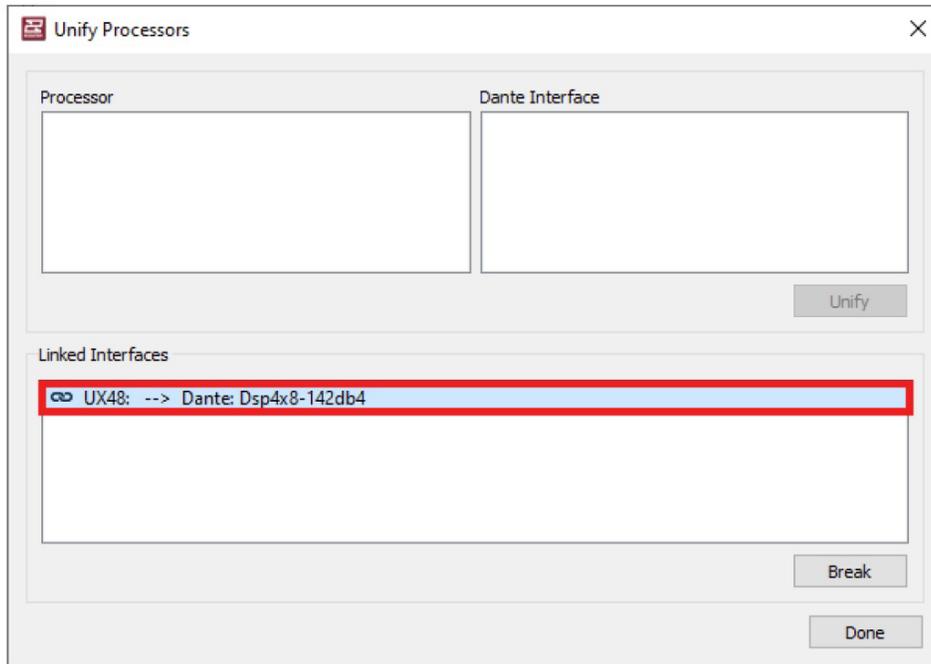
NOTE: Processor or Amplifier control will work fine without a unified Dante port.

With the Unify Processors window open, select the processor and Dante interface that needs to connect. Click Unify to complete.

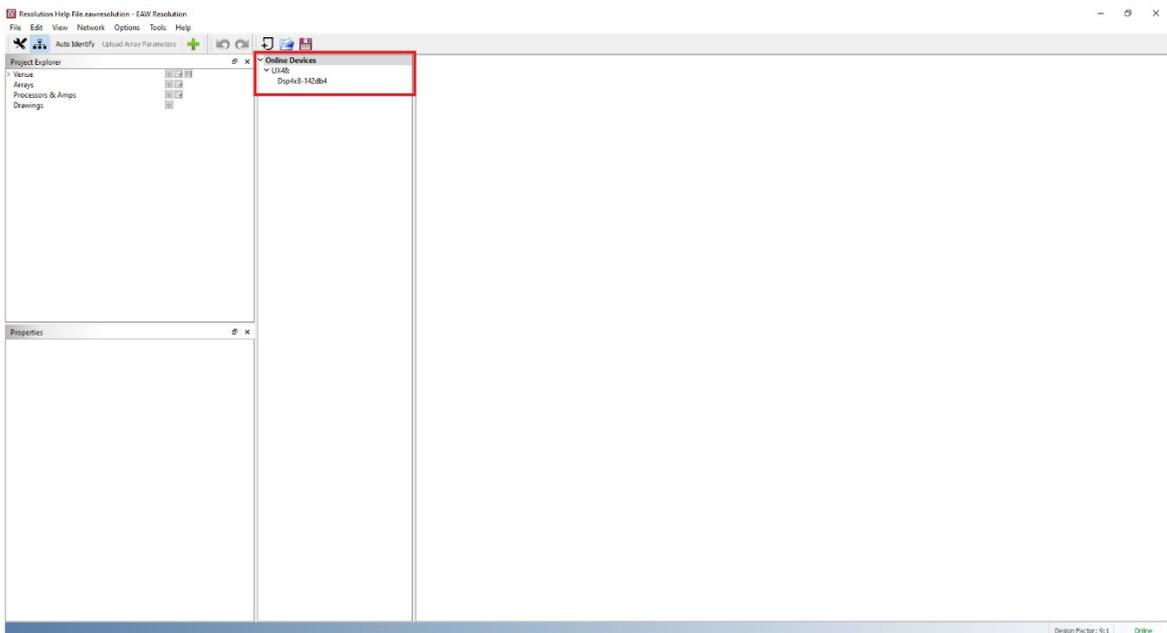


Line Array Application Guide

After the function is complete, the linked interface may be viewed in the bottom pane as illustrated below. Click Done to accept or Break to undo and reverse the action.



Under Online Devices, Resolution now associates the Dante card with the processor or amplifier.



Line Array **Application Guide**

Rigging: Mounting/Suspension

DANGER: Mounting or overhead suspension of any heavy load can result in serious injury and equipment damage. This work should be done by qualified persons following safe rigging practices in accordance with all applicable safety and construction standards. Such persons must determine the required load ratings and design factors. They must determine the mounting or suspension method that meets static, dynamic, shock, and any other load requirements. All such work must be done in accordance with and in compliance with all federal, state, and local regulations governing such work.

CAUTION: The user assumes all responsibility and liability for the proper design, installation, and use of any rigging and mounting systems for EAW loudspeakers.

CAUTION: Accessory items are available from EAW and from aftermarket suppliers to facilitate suspension, wall, ceiling, or other rigging. When using these items, review all enclosed documentation and carefully follow all instructions and safety precautions.

Rigging Design Practices

Rigging a loudspeaker requires determining:

1. The rigging methods and hardware that meet static, shock, dynamic, and any other load requirements for supporting the loudspeaker.
2. The design factor for and the required WLL (Working Load Limit) for this support.

EAW strongly recommends the following rigging practices:

1. Documentation: Thoroughly document the design with detailed drawings and parts lists.
2. Analysis: Have a qualified professional, such as a licensed Professional Engineer, review and approve the design before its implementation.
3. Installation: Have a qualified professional rigger install and inspect the system.
4. Safety: Use adequate safety precautions and back-up systems.
5. Consider applying threadlocker to hardware per qualified professionals recommendation.

Rigging Hardware and Accessories

Rigging EAW loudspeakers will invariably require hardware not supplied by EAW. Various types of load-rated hardware are available from a variety of third-party sources. There are a number of companies specializing in manufacturing hardware for, designing, and installing rigging systems. Because of the hazardous nature of rigging work and the potential liability, engage companies that specialize in these disciplines to do the work required.

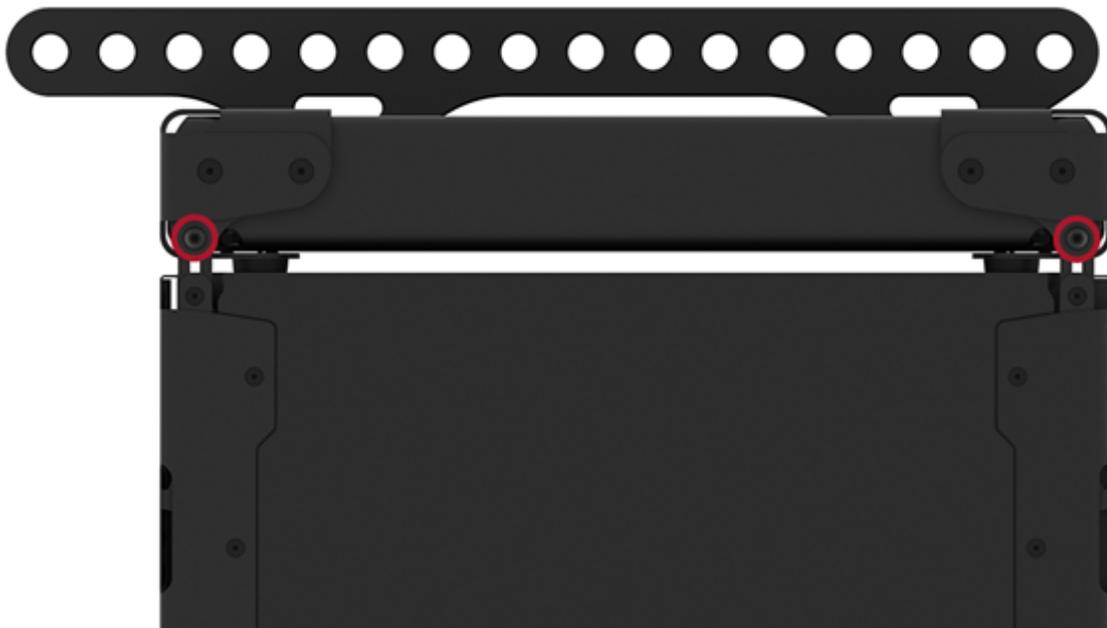
Line Array Application Guide

KF810P Flown Arrays with SB818P|F

- Attach stinger to the frame using 2x M10 bolts w/flat washers and lock nut. *NOTE: The stinger is reversible. Position per Resolution 2 software.*



- Place flybar assembly on top of SB818P|F and use M8 X 30 bolts w/flat and lock washer to rig front and rear positions.



Line Array **Application Guide**

- Attach shackle ($\frac{3}{4}$ ") to desired stinger position and raise array. Use Resolution for optimal position.
- Place second SB818P|F on surface underneath array and lower to attach using M8 X 22 threaded bolts w/flat and lock washer to front and rear rigging.



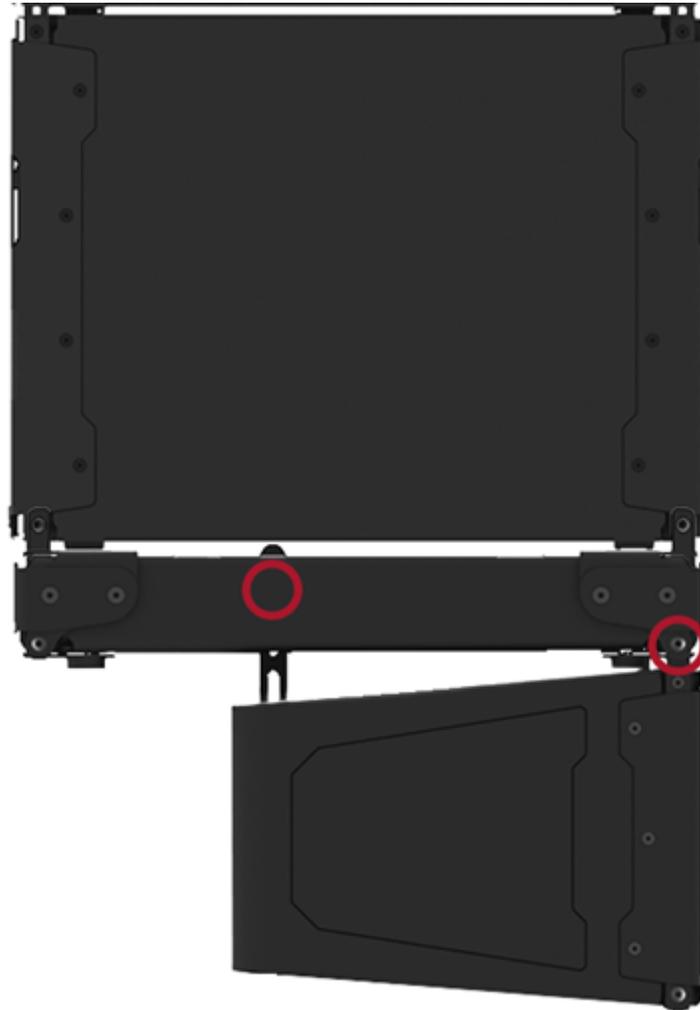
- Repeat to use desired SB818P|F amount in array (See Resolution for array limitations).
- To attach a KF810P, start by attaching frame to bottom of SB818P|F array.
- Do so by laying the frame on a surface, then lowering SB818P|F array and attach using M8 X 22 bolts w/flat and lock washer to rig front and rear positions.

NOTE: Orientation of KF810P adapter "Z" hole needs to be located to the rear of the array.



Line Array **Application Guide**

- Raise array and place first KF810P array item underneath, then lower array to KF.
- Using M8 x 30 bolt w/flat and lock washers to secure front rigging, then M10 bolt w/flat washers and lock nut to secure rear rigging using hole "Z".



- To connect a second KF810P, repeat the same process but with M8 X 22 threaded bolt w/ flat and lock washers on front rigging. Repeat this process to use desired KF810P amount in array (see Resolution for array limitations).

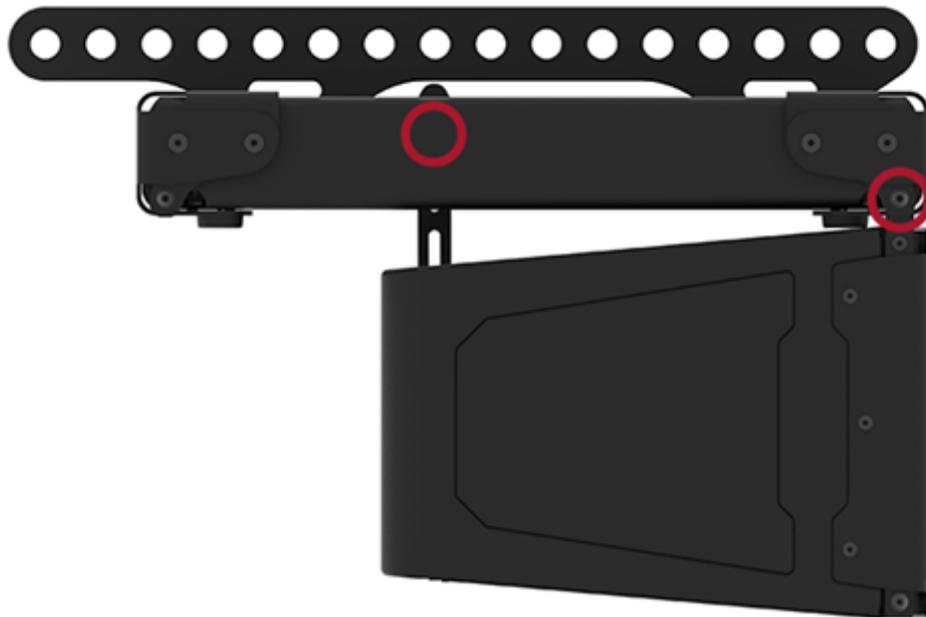
Line Array Application Guide

KF810P Flown Arrays without SB818P|F

- Attach stinger to the frame using 2x M10 bolts w/flat washers and lock nut. *NOTE: The stinger is reversible. Position per Resolution 2 software.*



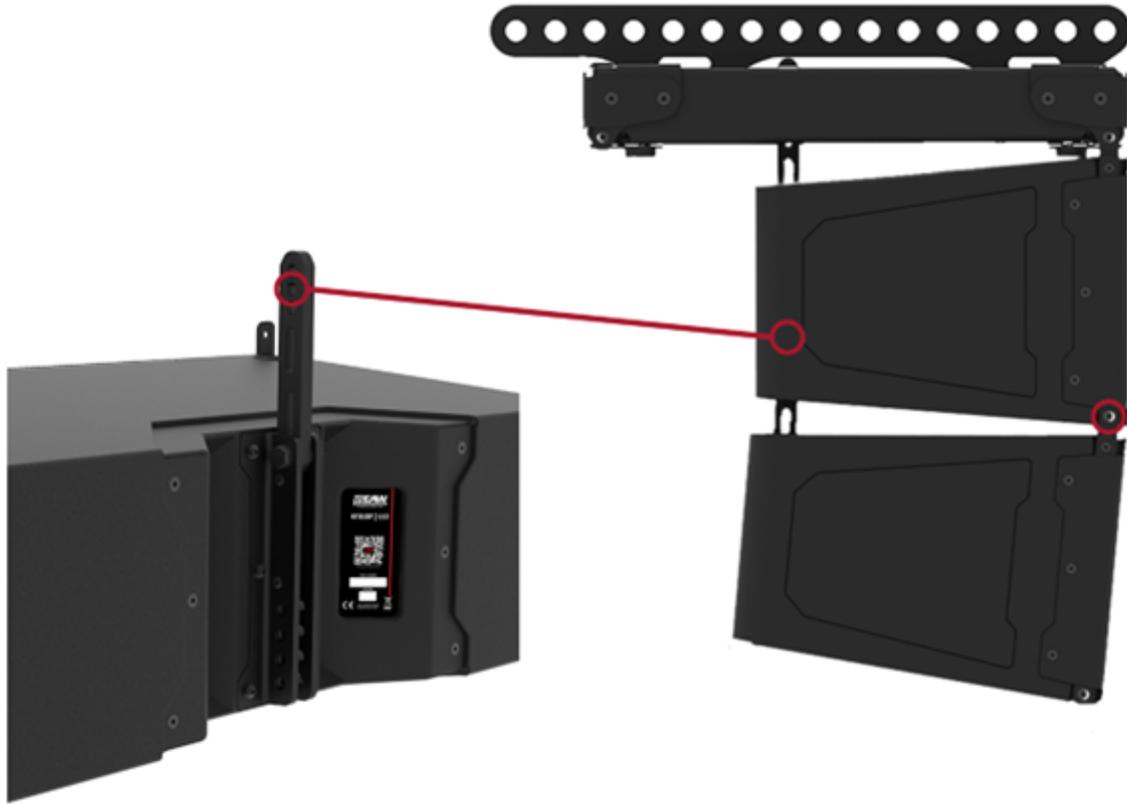
- Place flybar assembly on top of KF810P and use M8 X 30 bolts w/flat and lock washers to rig front position.
- Select 0 deg ("Z") position on rear rigging and use M10 bolt w/flat washers and lock nut to secure.



- Attach shackle ($\frac{3}{4}$ ") to desired stinger position and raise array (Use Resolution for optimal position).
- Place second KF810P on surface underneath array and lower.

Line Array Application Guide

- Using M8 x 22 bolt w/flat and lock washers to secure front rigging, then M10 bolt w/ flat washers and lock nut to secure rear rigging angle (See Resolution for angle).



- Repeat to use desired KF810P amount in array (See Resolution for array limitations).

Ground Stacking Procedures

WARNING: Ground-stacked arrays, especially the maximum recommended arrays, requires assembly by personnel qualified to ensure adequate stability from tip over for the particular application. See Section 6 for correct array assembly. Mechanical assistance will be required to lift and position enclosures for arrays taller than approximately 5 feet.

NOTE: Low Frequency performance is often highly program or venue-dependent, as well as subjective as to quantity and quality. For this reason, the type, quantity, and disposition of subwoofers may vary considerably with the application. The quantity recommendations below are for general purposes, providing a balanced system for most music applications. Quantities may need to be adjusted up or down for specific situations.

Line Array Application Guide

KF810P Ground Stack with SB818P|F

- Place your SB818P|F on the ground.
- To attach additional SB818P|F, lift on top of SB818P|F beneath and use M8 x 22 bolts w/ flat and lock washers to secure front and rear rigging (See Resolution for ground-stack limitations).



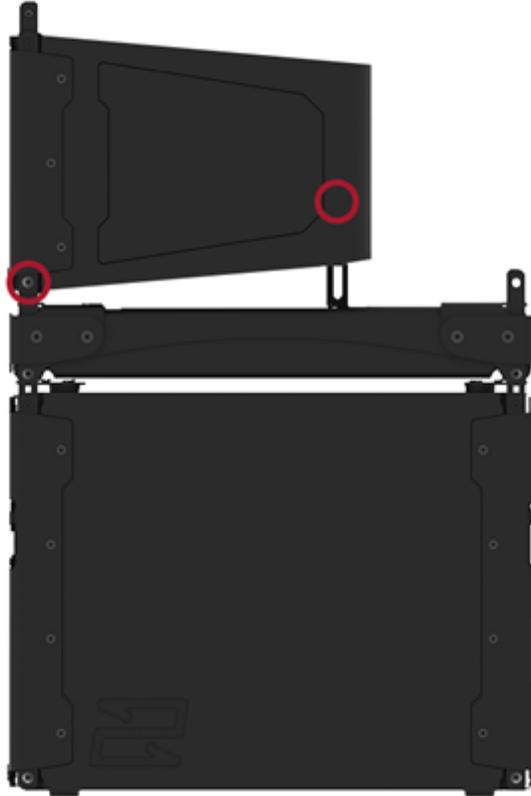
- To add KF810P, start by placing frame on top of SB818P|F array, and securing front and rear rigging with M8 x 30 bolts w/flat and lock washers. "Z" hole needs to be orientated towards the front of intended array.



- Place the first KF810P on top of frame, and secure front rigging with M8 x 22 bolts w/flat and lock washers (See Resolution for ground-stack limitations).

Line Array **Application Guide**

- Using the rigging arm on the frame, choose splay angle between frame and KF810P (refer to ground-stack chart on adapter frame or review in Resolution), and secure rigging with M10 bolt w/flat washers and lock nut.



- Repeat this process to add additional KF810Ps, with rigging arm on KF810P beneath (See Resolution for ground-stack limitations).

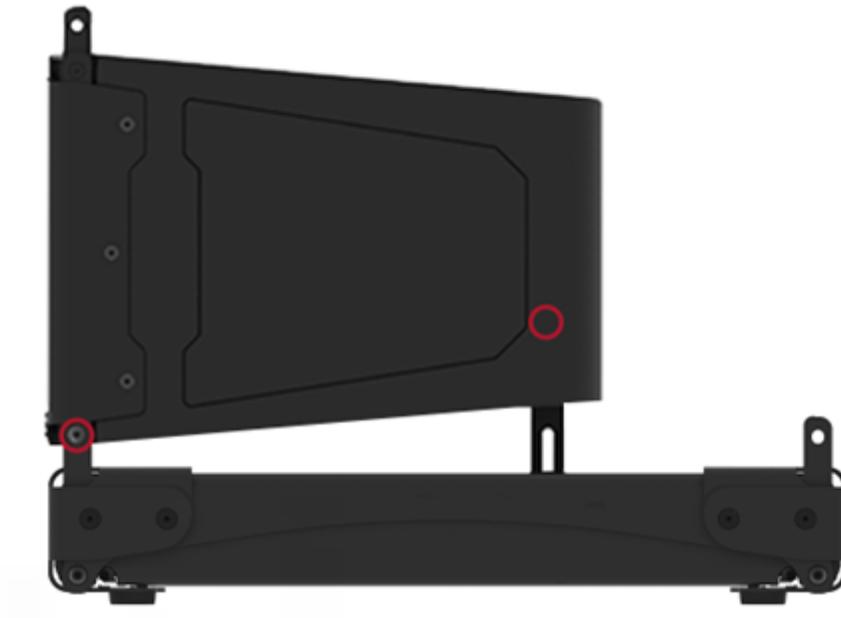
NOTE: Refer to chart on KF810P rigging or Resolution for KF810P to KF810P rigging angles.

KF810P Ground Stack without SB818P|F

- Place frame on the ground. "Z" hole needs to be orientated towards the front of intended array.
- Place the first KF810P on top of frame, and secure front rigging with M8x22 bolts w/flat and lock washers.

Line Array **Application Guide**

- Using the rigging arm on the frame, choose splay angle between KF810p and frame (refer to ground-stack chart on adapter frame or review in Resolution), and secure rigging with M10 bolt w/flat washer and lock nut.



- Repeat this process to add additional KF810Ps, with rigging arm on KF810P beneath (See Resolution for ground-stack limitations).

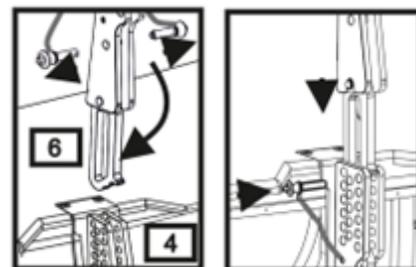
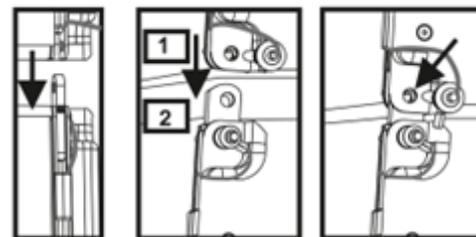
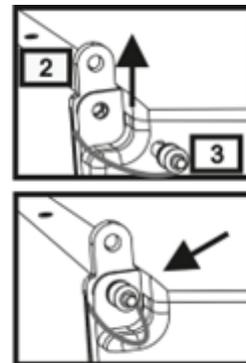
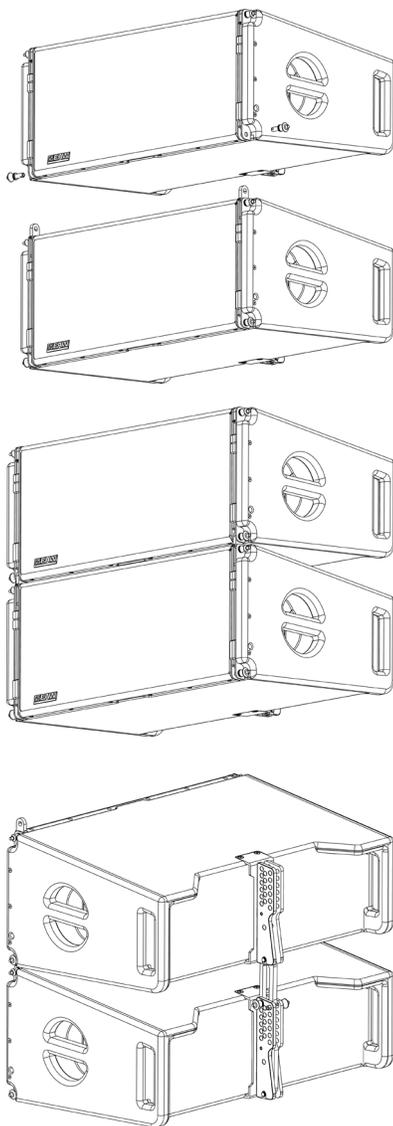
NOTE: Refer to chart on KF810P rigging or Resolution for KF810P to KF810P rigging angles.

Line Array Application Guide

Rigging KF210

The assembly of two KF210 modules can be done following the steps below:

- On the first module, remove the pins [3], raise the retractable brackets [2] and fasten them to the new position using the pins [3].
- Remove the pins [1] from the second module, place it on top of the first module, inserting the brackets [2] as shown. Then fasten the front side of the two modules using the pins [1] of the second module.
- On the back, remove the pins [5] from the rear brackets [4]. Then insert the movable arm [6] of the second module into the bracket [4] of the first module. The next page shows in detail the fastening of the angle on the rear between the two modules.



Line Array Application Guide

The below example explains two cases in which you want to set a specified angle between two modules using the rear rigging. Before carrying out any other operation, make sure that once the movable arm is inserted [6], the hole of the chosen angle is contained inside the loop as shown.

- **FLOWN CASE:** insert only one pin in the hole on the chosen angle. The second pin can be housed in the "PIN HOLDER" hole. Note that this type of configuration during the assembly allows changing the chosen angle simply by moving the respective pin (with the movable arm inserted).
- **STACKED CASE:** once the pin [5] is inserted into the hole of the chosen angle, lift module B as far as the movable arm [6] allows. At this point, insert the second pin into the "ANGLE LOCK" position and release module B. This way, module B is completely blocked by the two pins on the rear.

After assembly is completed, always make sure that all the pins have been completely inserted and are locked.



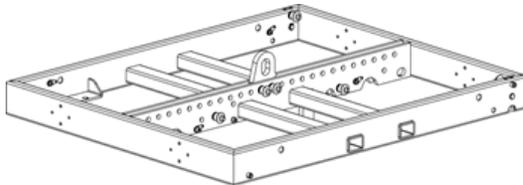
Rear Rigging Assembly Plate

Line Array **Application Guide**

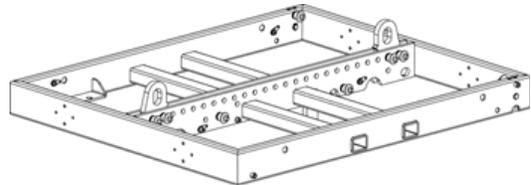
For quick installation, the following optional accessories can be purchased:

- Fly-bar for the flown and stacked use for line arrays of KF210 modules.
- A cart to transport up to 4x KF210 modules.

KF210 Flybar



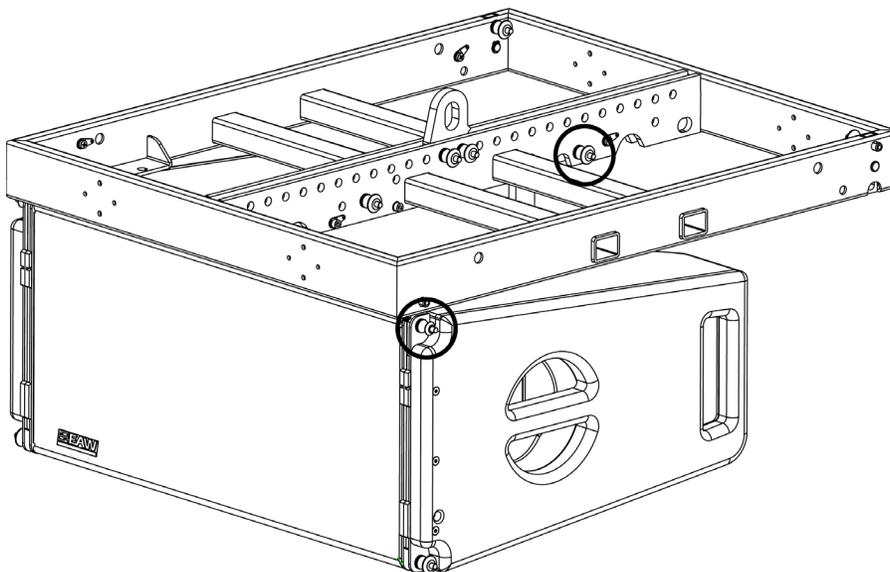
KF210 Flybar using one shackle or pick points



KF210 Flybar using two shackles or pick points

The assembly of an KF210 module to an KF210 Flybar can be done following the steps below:

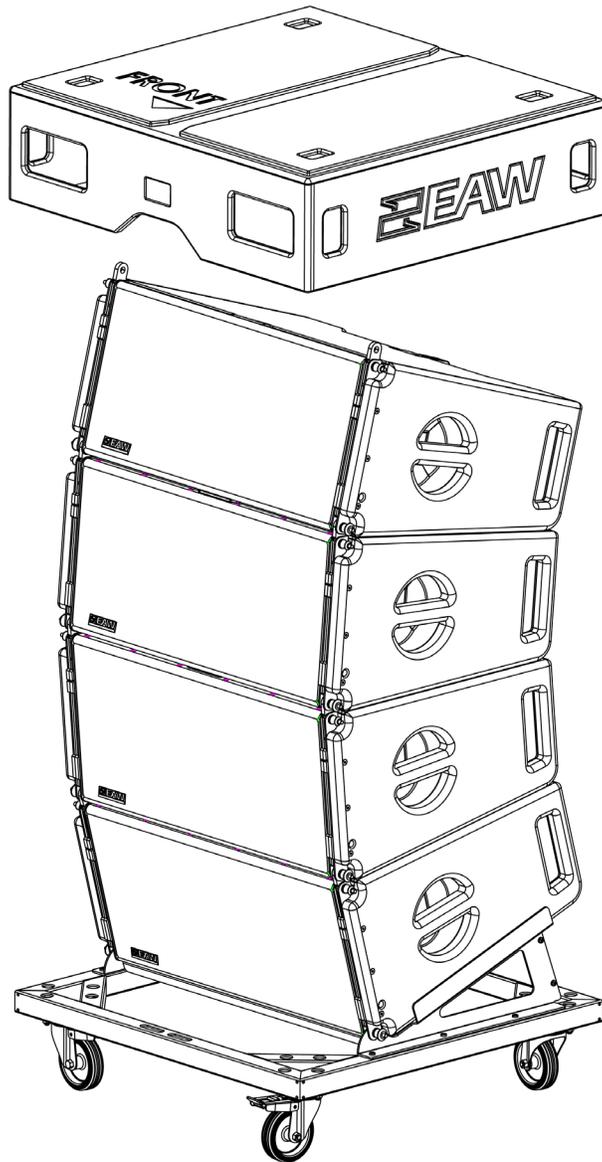
- Connect to single or dual shackles and raise shackle enough to fit KF210 module underneath comfortably.
- Raise rigging ears on KF210 and align to flybar holes.
- Insert front rigging pins on both sides.
- Align and lock into place rigging plates on flybar to rear rigging assembly on KF210 module.



Line Array Application Guide

KF210 Carts

- The KF210 Cart can transport up to 4x KF210 line array items.



EAW Warranty

These EAW products were designed and engineered at our headquarters in Whitinsville, MA USA and go through multiple quality checks during manufacturing. We guarantee our loudspeakers against defects in workmanship, materials and against malfunctions for a period of 6 years from date of delivery. Terms and conditions apply. Download the complete warranty policy at

www.eaw.com/warranty



Product Damaged in Transport? Contact the freight carrier immediately and note concealed shipping damage. Then contact EAW for replacement.

Scan code to contact EAW



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