WPM
Optimised Line Array

User Guide

WAVEFRONT PRECISION

MARTIN AUDIO
LONDON

Contents

Introduction

Wavefront Precision

Subwoofers

Amplifiers

DISPLAY 2.3

DISPLAY 3 Overview

VU-NET 2

Integrated Rigging

Wiring

Scalable Resolution

Amplifier Configurations

Accessories

Rigging

Essential Maintenance

Specifications

MARTIN AUDIO
LONDON

Introduction

Wavefront Precision

Drawing on the research and technology behind MLA® Series, the Wavefront Precision Series is a new generation of multipurpose line arrays designed to bring Martin Audio's legendary sound, coverage consistency and control to a broader range of touring applications, installations and budgets.

Wavefront Precision line arrays are designed as complete systems with external iKON® multi-channel amplifiers and optimised by automated DISPLAY™ software.

Adopting the principle of scalable resolution, with external, dedicated multi-channel amplifiers, Wavefront Precision line arrays are uniquely flexible, upgradeable and financially accessible.

With exceptional line array performance guaranteed by the acoustic design itself, scalable resolution unlocks the full potential of a Wavefront Precision array and provides an adaptable pathway into the world of advanced optimisation.

The greater the resolution of the array in terms of individually driven enclosures, the more precisely DISPLAY can fine-tune audience coverage and hold the frequency response and SPL throughout the venue within a tight window specified by the user.

For the first time in the marketplace the decision on the level of resolution and control that is right for the install, client, event or budget is yours.

About This Manual

This manual explains in detail the individual components that comprise a complete WPM system.

System wiring and rigging is explained and the three key software packages are covered.

It is not however the intention for this manual to be the sole tutorial medium for those wishing to use the system.

Extensive training media is available via the MA website and training webinars are held on a regular basis in order to help you gain a full understanding of the systems and their operation.

Amplification, DSP, & Networking

Wavefront Precision line arrays are designed as complete systems with dedicated, high performance iKON multi-channel Class D amplifiers.

Important Safety Instructions

Please read these instructions and retrain for future reference. Heed all warnings and follow all instructions.

• No naked flame sources such as lighted candles should be placed on the apparatus. (1) (2)

• Do not block any ventilation openings. (1) (2)

• Install in accordance with the Martin Audio instructions. (1) (2)

• Do not install near any heat sources such as radiators, heat registers, stoves or other such apparatus that produce heat. (1) (2)

• Do not defeat the safety purpose of the grounding-type plug. A grounding plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit your outlet consult an electrician for replacement of the obsolete outlet. (1)

• Protect the power cable from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus. (1)

• This equipment must be earthed. (1)

• Only use attachments / accessories specified by Martin Audio. (1) (2)

• Only use rigging hardware specified by Martin Audio. (2)

• Unplug this apparatus during lightning storms or when unused for long periods of time. (1) (2)

• No user serviceable parts inside, refer 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, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped. (1)

• Do not remove covers

• Do not remove any protective earth or signal cable shield connections. (1)

Notes.

(1)   Applies to Amplifiers and Controllers used with WPM

(2)   Applies to WPM

Unpacking the Units

After unpacking the unit, please check it carefully for any damage. If any is found, immediately notify the carrier concerned – you, the consignee, must instigate any claim. Please retain all packaging in case you need to return the unit.

Please consider the environment. When the product has reached the end of its useful life, please dispose of it responsibly through a recycling centre.

Wavefront Precision

WPM

WPM is a two-way passive ultra-compact line array element consisting of two 6.5" reflex loaded neodymium magnet low frequency drive units, and three 1.4" neodymium magnet high frequency compression drivers loaded by constant directivity waveguides.

In conjunction with automated DISPLAY system design and VU-NET network control software applications, WPM features scalable resolution for advanced array control, resulting in outstanding levels of consistent, high quality audio that can be distributed to every point throughout the audience in a venue.

WPM is incredibly versatile. Its very small footprint and light weight make it the system of choice for smaller venues which require superb fidelity, coverage consistency and control from an ultra-compact line array.

It embodies the very latest acoustic technology in an ultra-compact enclosure and is the ideal system for small-to-medium scale theatres and live music venues, AV events and installations in concert halls, ballrooms and HoW.

Mechanical Design

WPM is designed mechanically to be an easy to handle, quick to rig, safe, rugged and stable touring loudspeaker.

The cabinet is constructed predominantly from high grade multi-laminate birch and poplar plywood, with an integral 3-point rigging system.

Two side pocket handles and two rear grip handles make handling safe and easy, and the cabinet is finished in black textured paint with a fabric-backed protective steel grille.

Acoustic Design

The acoustic design of WPM is uniquely innovative.

The LF drivers are located in the side walls of the HF horn – an arrangement which would introduce acoustic cavities which would degrade the horizontal dispersion if conventional cone drivers were used.

WPM's drivers adopt an elegant solution by having solid moulded diaphragms which match the contours of the horn walls and maintain the continuity of the horn profile.

Each LF driver also features a demodulation ring in the neodymium motor system to minimise distortion and maximise mid-band output.

In the triple-driver HF section, each individual HF wavefront is precisely coupled to the horn throat via a short waveguide for faultless 100° horizontal constant directivity coverage.

The use of multiple small HF drivers instead of traditional large diaphragm CD drivers results in less distortion and extended HF response.

![Martin Audio London logo]

Subwoofers

SXCF115

The **SXCF115** integrates perfectly with WPM flown line arrays and features a 15" (380mm) forward facing driver and a 12" (300mm) rear facing driver, each driven independently by separate amplifier channels and DSP.

Each driver has its own chamber with optimised bass reflex porting. This arrangement produces a cardioid dispersion pattern which maximises the front radiation and reduces unwanted radiation behind the subwoofer.

SXC115

Designed for install and touring applications, the **SXC115** has identical acoustic performance to the **SXCF115**, but without the integrated rigging hardware.

Install rigging accessories are available for the **SXC115** which allow it to be flown separately or within the same array as WPM.

Amplifiers

iK81 Amplifier

The iKON iK81 is an advanced 8-channel controller amplifier which combines very high power density with superb audio performance, state-of-the-art DSP and network control for WPM systems.

The iK81 can deliver a full 1250 watts per channel into 2, 4 or 8 ohms with all channels driven while remaining highly efficient.

Its high efficiency reduces the energy drawn from the mains supply and ensures the power reserves needed to deliver superb sound under arduous live conditions.

Ethernet is used for system remote control and monitoring via Martin Audio's VU-NET software application, while a user-friendly front panel interface allows full local control of all features. Dante digital audio network inputs are also provided for digital audio distribution and control.

Powerful DSP is fully integrated into the iK81 to provide a multitude of features. It also provides up to 1000 FIR filter taps @ 48kHz on each output channel, which is essential to implement DISPLAY's wide bandwidth optimisation process in the WPM line array.

The iK81 employs comprehensive protection functions to maintain safe operating conditions of both the amplifier and the loudspeakers driven — including a sophisticated loudspeaker limiter suite which incorporates peak, RMS and excursion limiting, as well as multi-band limiting for passive 2-way systems.

iK42 Amplifier

The iKON iK42 is an advanced 4-channel controller amplifier which combines very high-power density with superb audio performance, state-of-the-art DSP and network control for WPM systems.

The iK42 can deliver a full 5000 watts per channel into 2 ohms with all channels driven while remaining highly efficient. Its high efficiency reduces the energy drawn from the mains supply and ensures the power reserves needed to deliver superb sound under arduous live conditions.

Ethernet is used for system remote control and monitoring via Martin Audio's VU-NET software application, while a user-friendly front panel interface allows full local control of all features. Dante digital audio network inputs are also provided for digital audio distribution and control.

Powerful DSP is fully integrated into the iK42 to provide a multitude of features that ensure maximum performance and worldwide compatibility. It also provides up to 1000 FIR filter taps @ 48kHz on each output channel, which is essential to implement DISPLAY's wide bandwidth optimisation process in WPM line array systems.

The iK42 employs comprehensive protection functions to maintain safe operating conditions of both the amplifier and the loudspeakers driven — including a sophisticated loudspeaker limiter suite which incorporates peak, RMS and excursion limiting, as well as multi-band limiting for passive 2-way systems.

DISPLAY 2.3

Overview

DISPLAY 2.3 is a software application for Wavefront Precision systems which calculates both inter-cabinet splay angles and the DSP parameters for optimum system performance in any given space.

DISPLAY's approach uses an accurate computer model of the source to analyse the system performance in a venue.

As a system designer you get to determine how the system performs in the space.

DISPLAY opens with a Dashboard at the top of the screen, the initial view prompts you to specify your array which is the first step of the design process.

A rigging report allows you to deploy the array and whilst that is being done the EQ coefficients are calculated.

Finally an SPL report gives detailed information showing exactly how the system will perform.

The computer model is accurate to within +/- 1dB of actual measured results so the spl tab is a reliable overview of how well your system design will cover the space.

Work flow

You next specify how your array will be deployed, flown, ground stacked.

Then specify the number of cabinets and give the array a name.
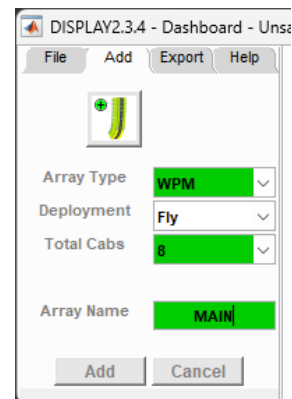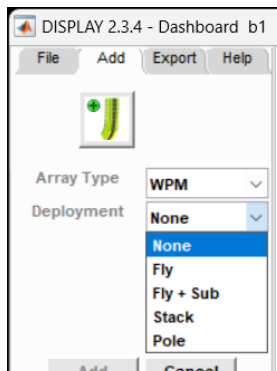
The dashboard changes to show the tabs from left and right in the order in which the design will be completed.
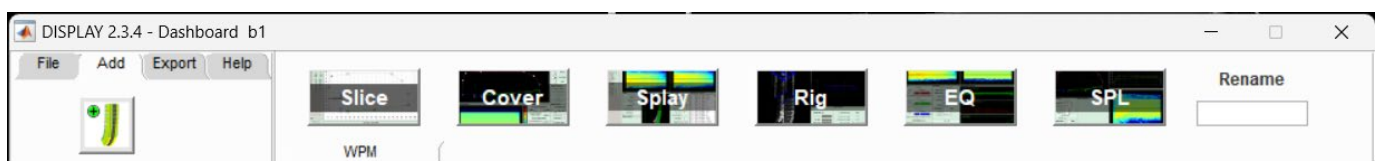
Slice

First a 2D slice of the venue is created, the Coverage within the venue is specified, the splay angles calculated.
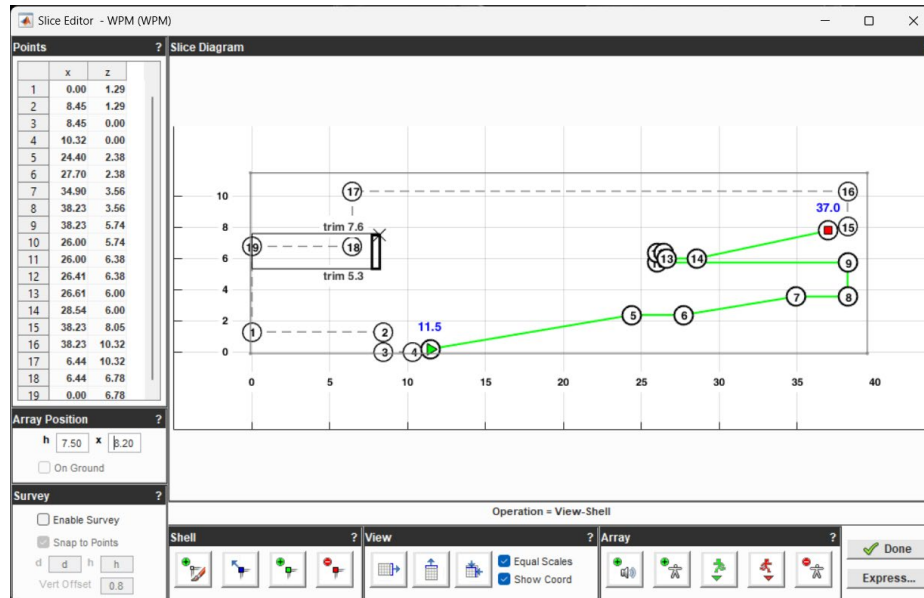
The slice is either drawn from scratch or you can also import a shell drawing from a previous project, if you are working in a venue you have visited previously.

The slice is a side view of the venue. It is drawn anticlockwise starting at the back of the stage, click to define the position of points to create all the surfaces within the venue.

This doesn't have to be done accurately as you can refine the position of the points once the shell is added.

The array is positioned and the audience region specified from start to finish.

Cover

The cover tab shows your 2D model with the surfaces split into three types.

Audience in green.

Non-audience in red.

Hard avoid in blue.

Each dot represents a virtual microphone position at which the software will take response measurements.

The dots in the critical audience region are closer together for greater accuracy and are spaced closer together at the start of the audience region to mirror how each region is covered by sections of the array.

The audience offset can be edited; standing, sitting or a custom offset of your choice and each region can be edited, perhaps changing a section under a balcony from audience to non-audience for example.
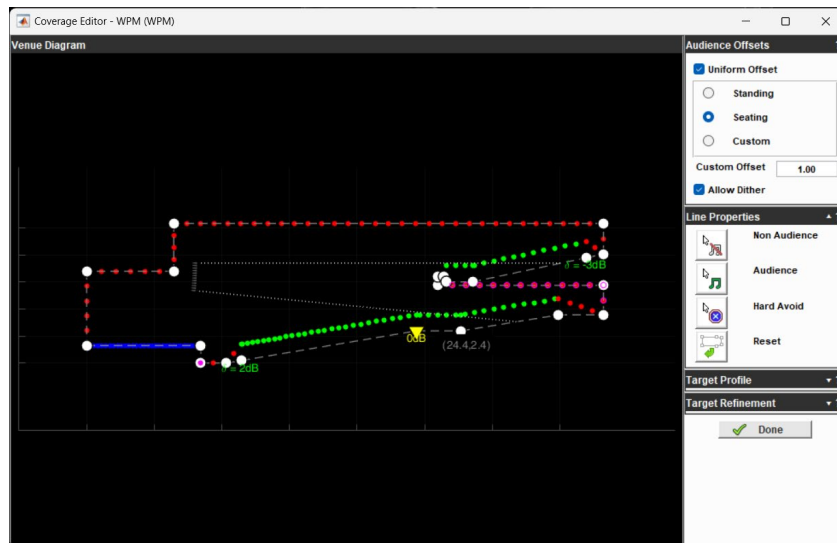
Splay

The splay tab optimises the array mechanically based on the room geometry and coverage area defined.

Further adjustments to the array size and position can be made here before optimising if required.
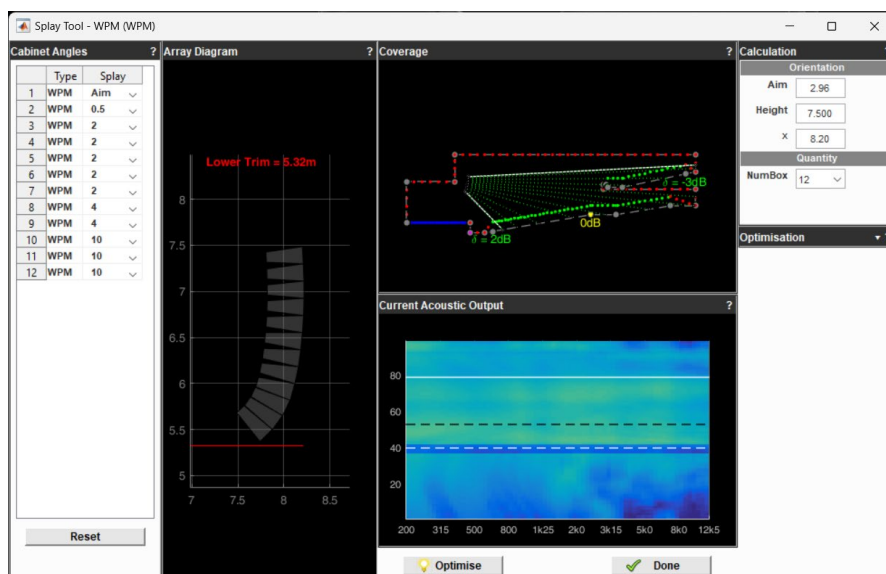
Rigging

Once this is complete you can refine how the array is deployed. Choosing for example between a two point hang and a single point for which the application will display the best position on the flying frame to give the nearest angle to the optimised aim.

The actual physical angle that the hole in the frame will achieve will be displayed with the option to use this angle in the optimisation so that the array EQ is optimised for the actual physical position in which the array is installed.

Finally the load on each flying point is shown and critically the Rig tab shows if the array is safe and meets both BGVC1 and DIN18800 standards.
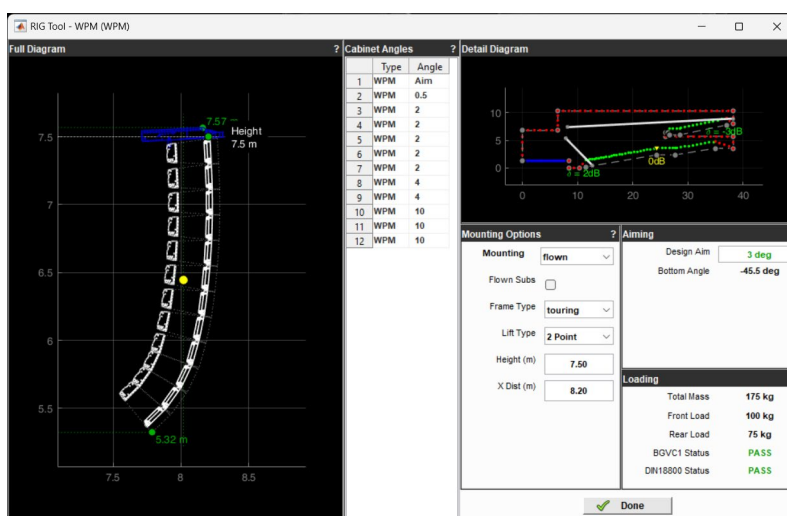
EQ

With the physical deployment done you can progress to optimise the EQ. Again you can enter the environmental conditions and can balance the three goals of response in your audience region, leakage to non-audience and the hard avoid performance.

By default each are given equal importance but if your application demands particular emphasis on any one of these parameters they can be given greater importance.
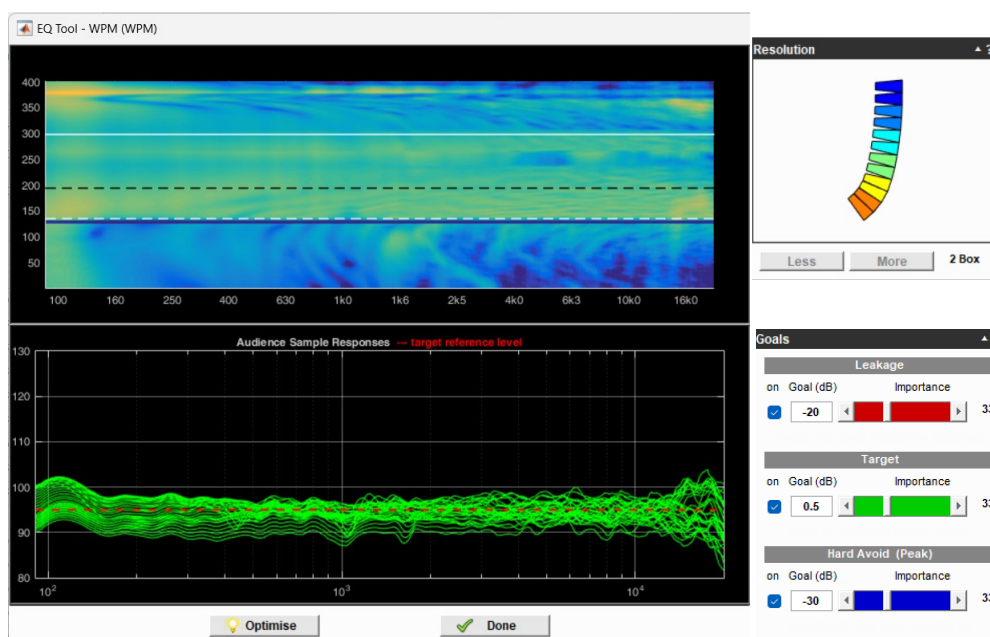
SPL

The SPL tab shows the system performance. The entire venue SPL is displayed on an index plot with frequency along the horizontal axis and position within the venue along the vertical.

SPL is indicated with colour, blue being quietest moving through the colour spectrum to yellow which is the loudest.

You can move the cursor around the Index Plot and the position is shown on the 2D slice of the venue top left whilst showing the frequency response at that position on the graph on the right.

The final stage is to export your design. You can produce a printable rigging report, a wire-frame 3D model of the array, export 3D data for use with EASE and most importantly export the project as a D2P file which can be uploaded directly to an iKON amplifier for powering Wavefront Precision systems.

DISPLAY 2.3 can be downloaded from the Martin audio website here:- https://martin-audio.com/support/software.

There is also a comprehensive User Guide to take you through the design process in detail. We recommend downloading the User Guide to fully understand the application.
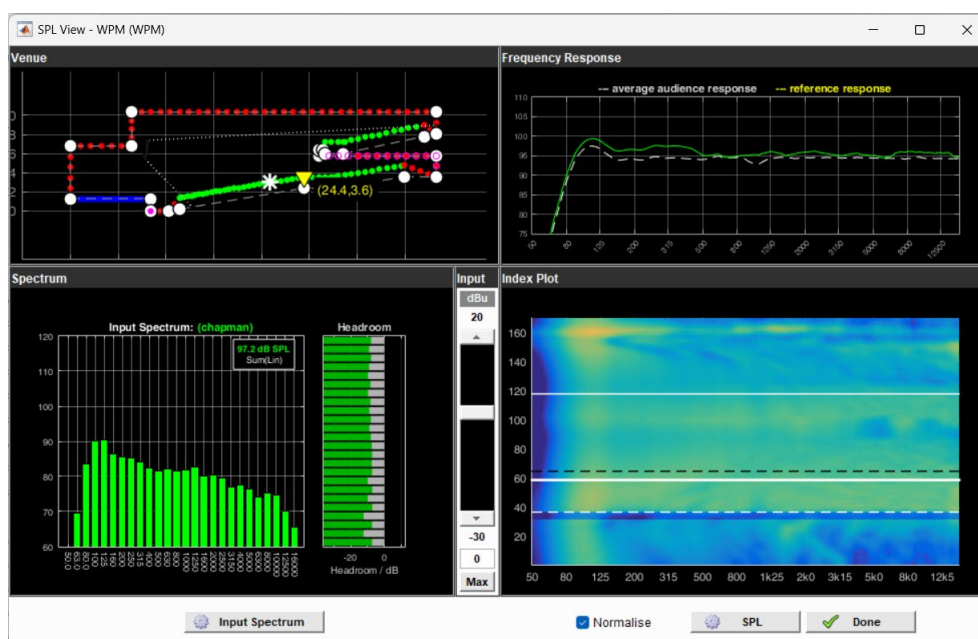
DISPLAY 3 Overview

Venue

DISPLAY 3 is modeling software that predicts coverage and SPL for Martin Audio loudspeakers in a 3D environment.

Optimised Array, Constant curvature, point source and subwoofer solutions can be reviewed, and system designs validated.
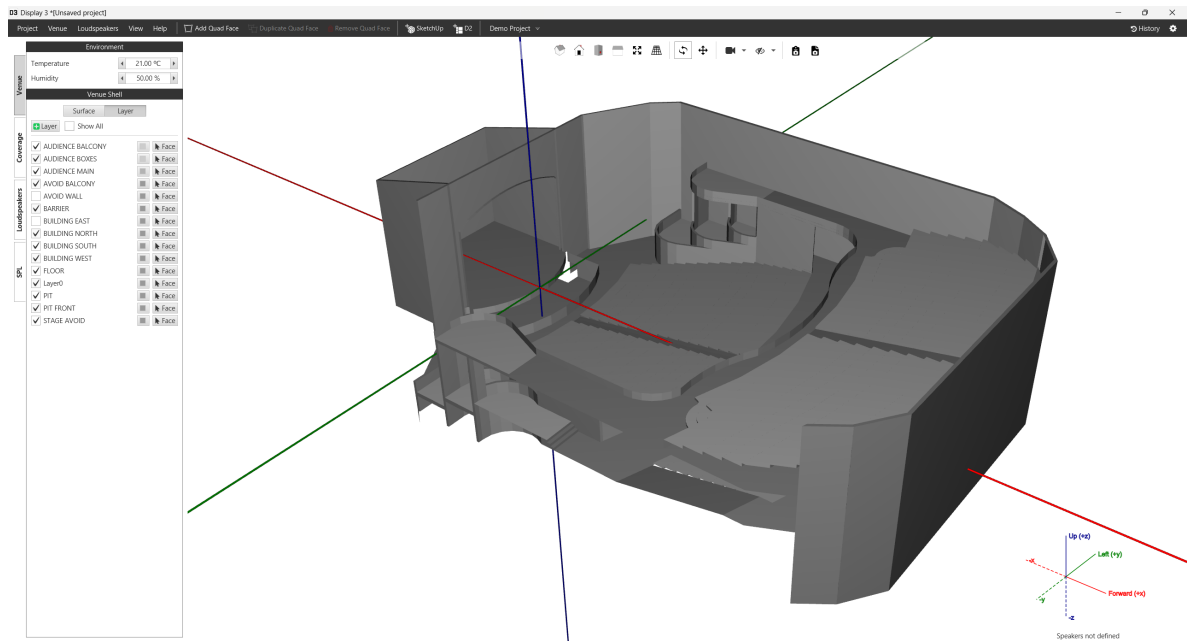
Within the application, venue creation is achieved via an import from SketchUp, native surface creation or by extruding a 2D slice from Display 2 software.
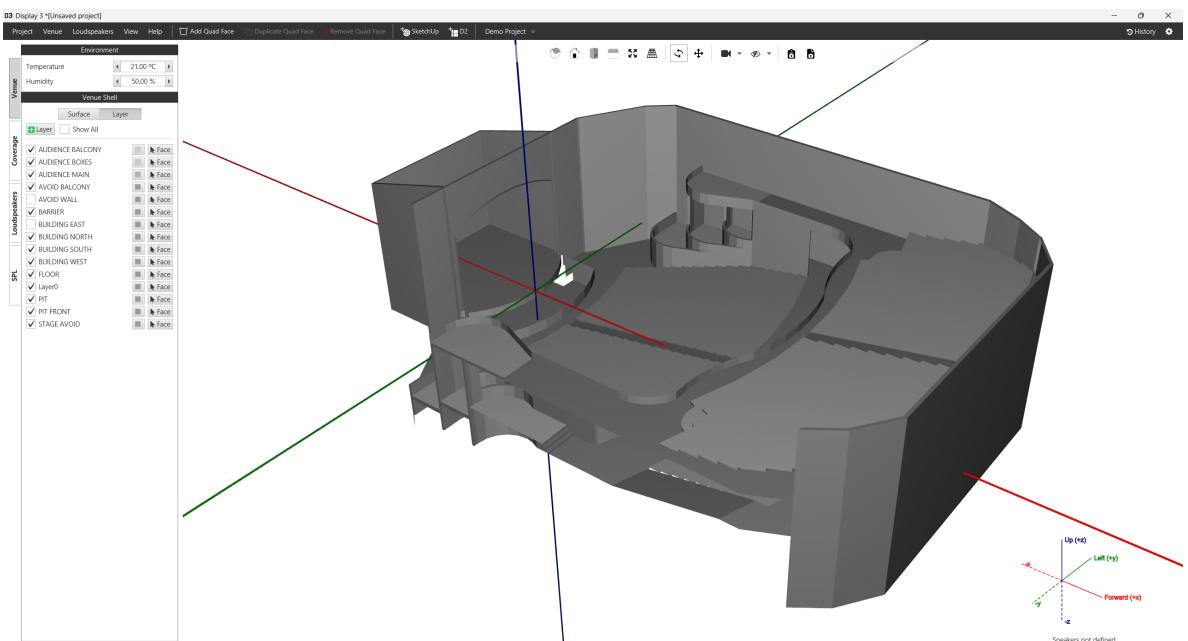
Coverage

Display 3 utilizes tags or layers inherited from SketchUp or created natively if using a Display 2 import.

Layers can be used to define coverage parameters; audience, non-audience or hard avoid.

These surface types define the offset with which SPL is mapped.

The auto-assign button in the coverage tool automates this process.
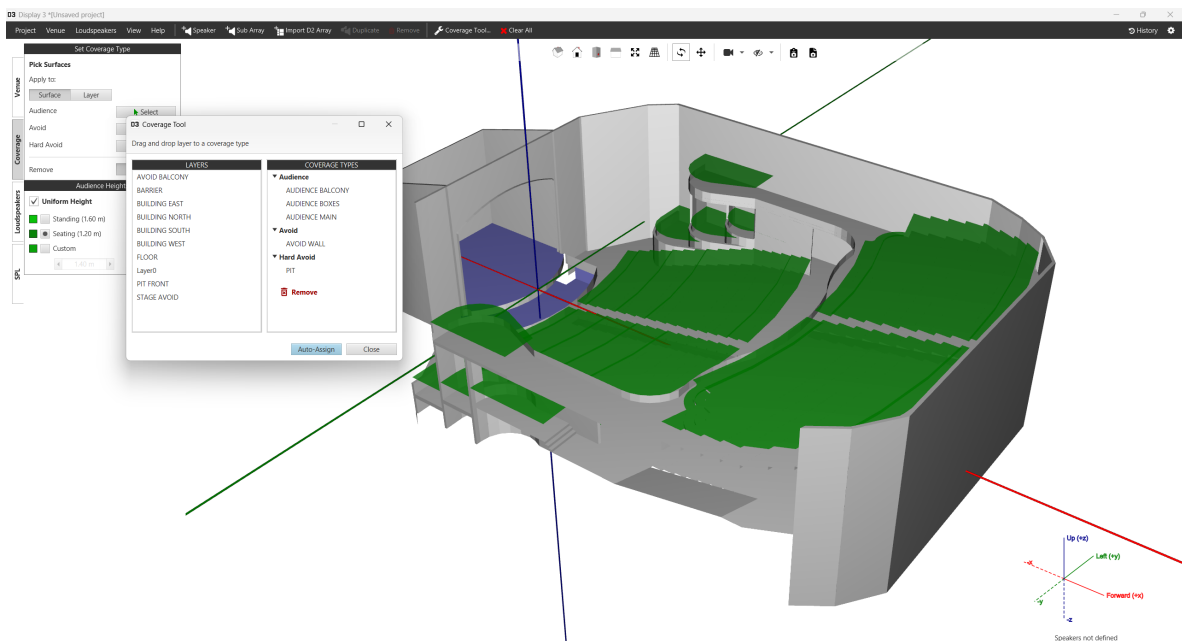
Array optimisation is missing from DISPLAY 3 at present.

In the meantime WPM arrays can be imported from DISPLAY 2 for a complete system design in a 3D environment.
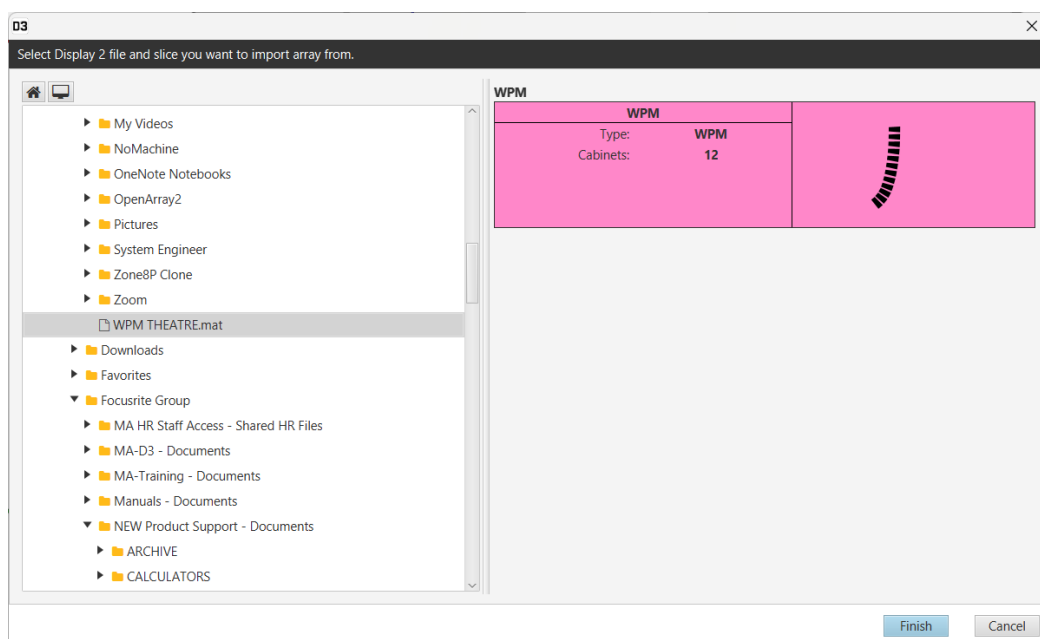
Loudspeakers

Once imported the source can be placed into the D3 environment with other speakers, either by importing from D2 or added in D3 if a non-optimised loudspeaker is required to complete the system design.
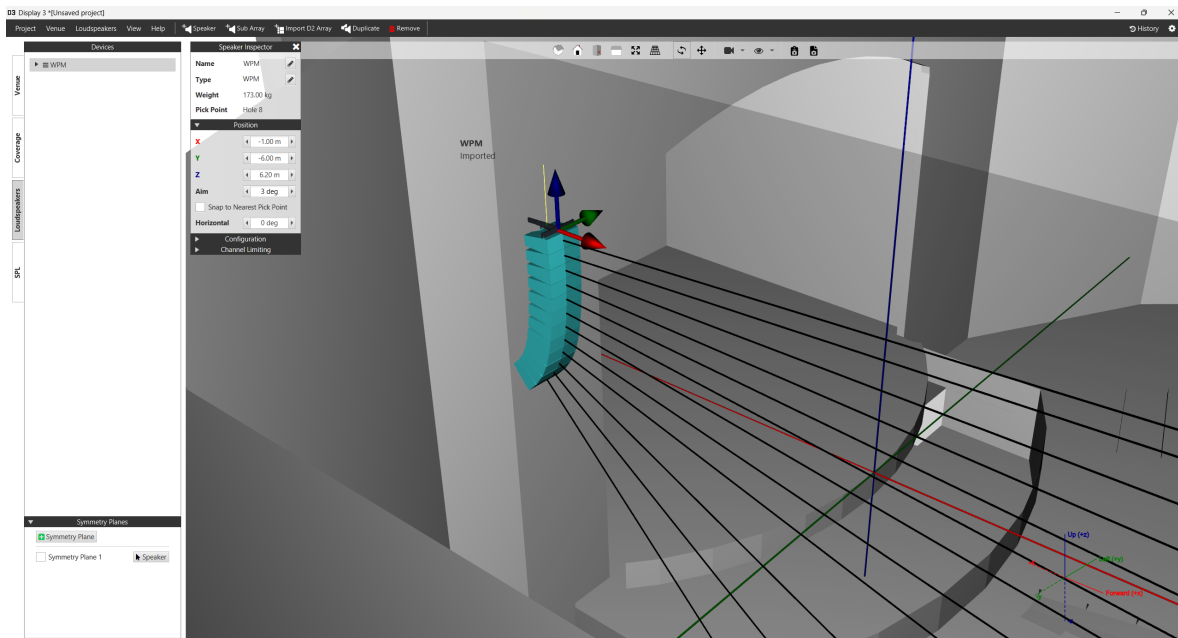
SPL

SPL mapping shows the predicted output of the system with the selected input signal and gain structure.

A number of features are available in DISPLAY 3 to help qualify a system design. However DISPLAY 3 has an ongoing development cycle where tools and features will be added over time.
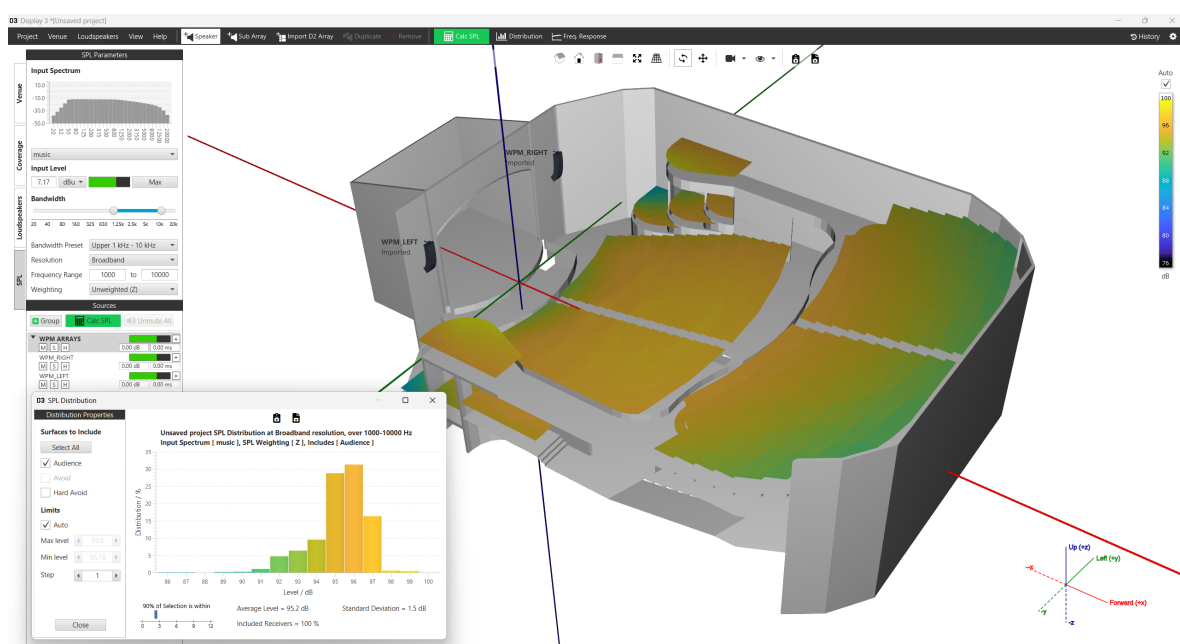
Display 3 can be downloaded from the Martin Audio website; https://martin-audio.com/support/software

VU-NET 2

Overview

VU-NET is control software for iKON, MLA and CDD-LIVE! products.

Load factory presets and optimisations, monitor system performance in real-time and have control over gain, EQ routing and delay via a networked infrastructure.
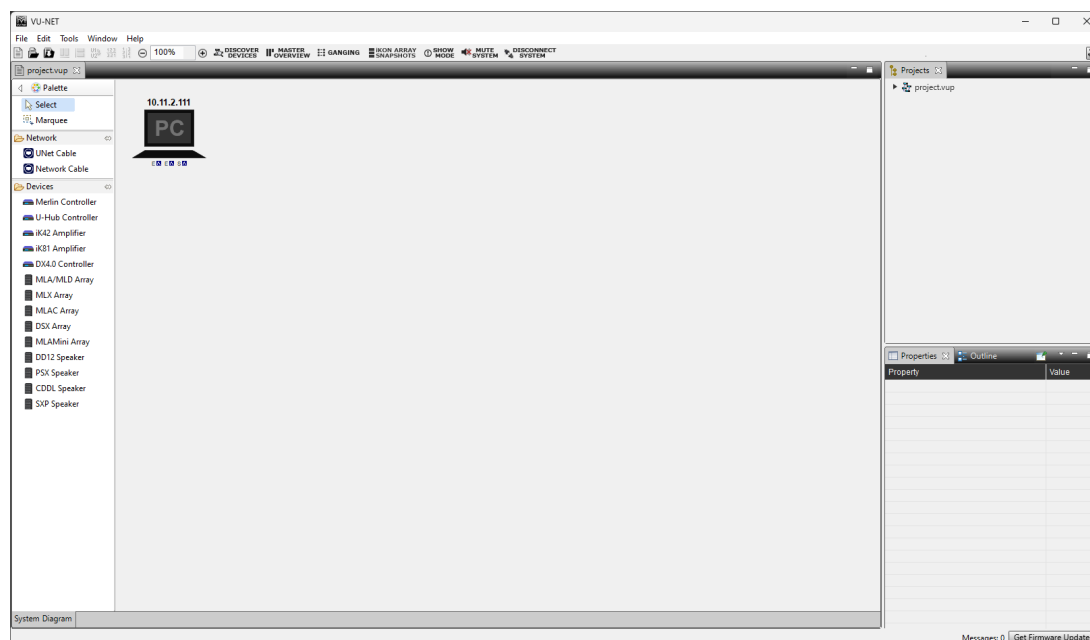
Devices

Devices can be added manually using the Palette on the left, for off-line system design. When connected to network with online devices, discover devices button is used.

When connected the "Preset Manager" allows you to sort devices into amplifier racks and load presets.

Presets

From here the system allows you up upload the D2P file of your system design.
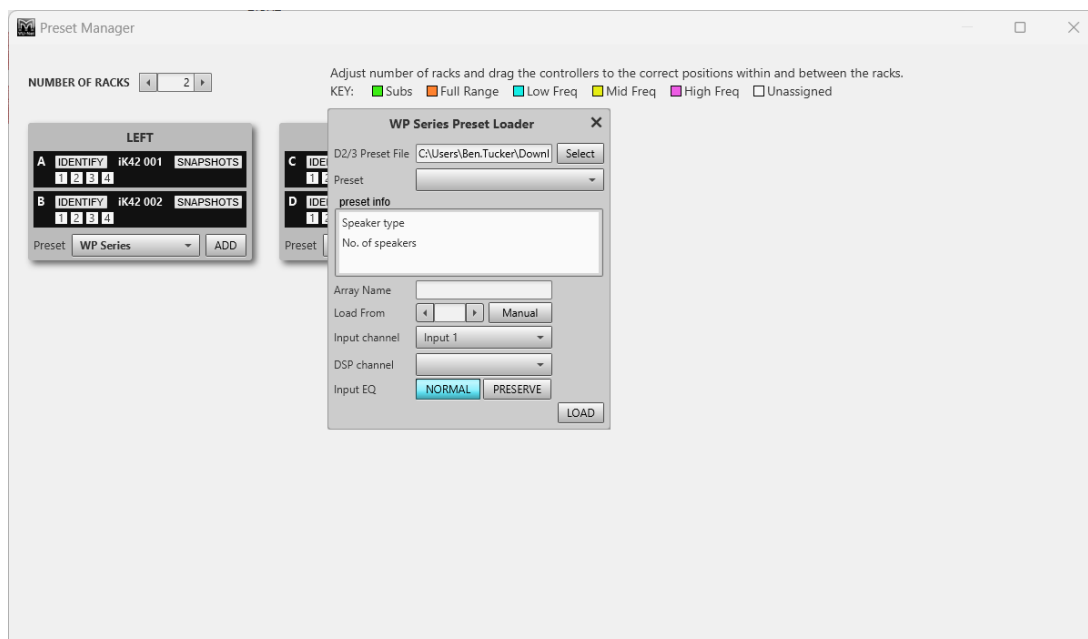
A number of presets for various arrays can be contained in the D2P file.

Each file can be loaded separately into the correct amplifier channels if needed.
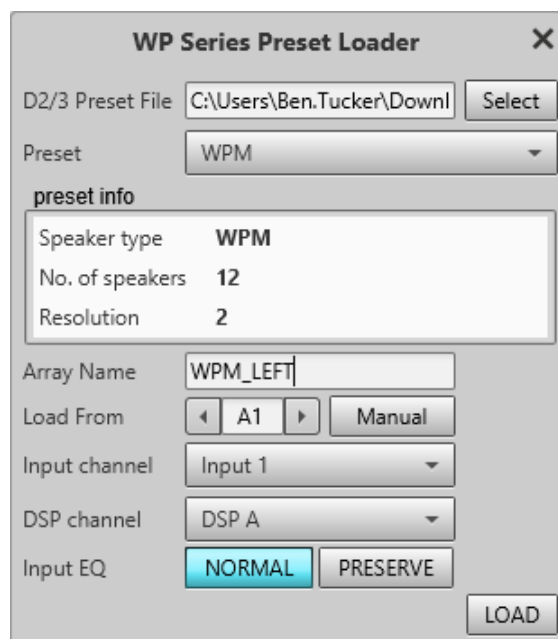
Signal & Routing

Once all the presets are loaded you can return to the softwares control tabs for each amplifier and adjust settings accordingly.
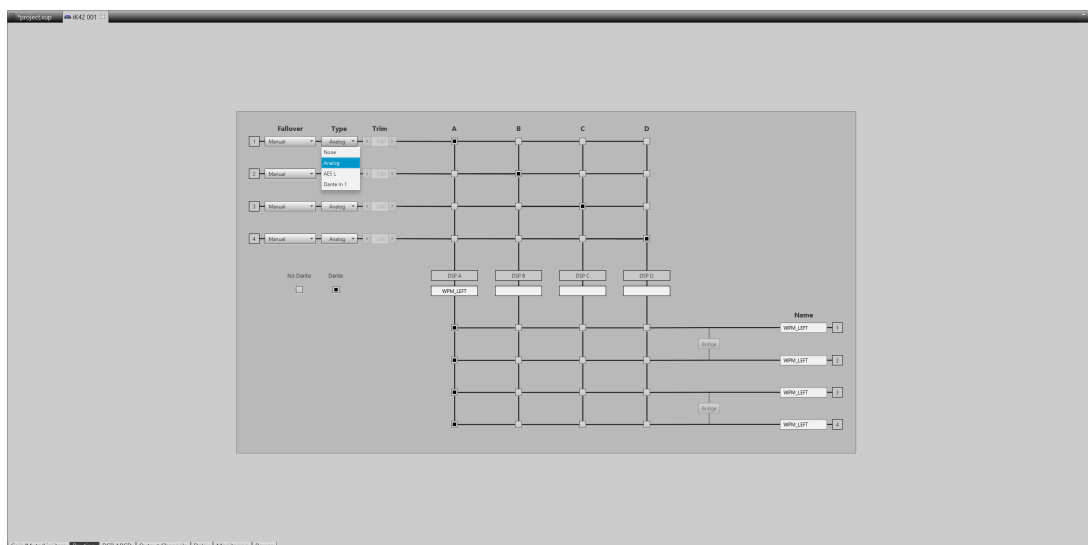
Input EQ

Input EQ can be adjusted to change the tonal balance and/or compensate for room acoustics.
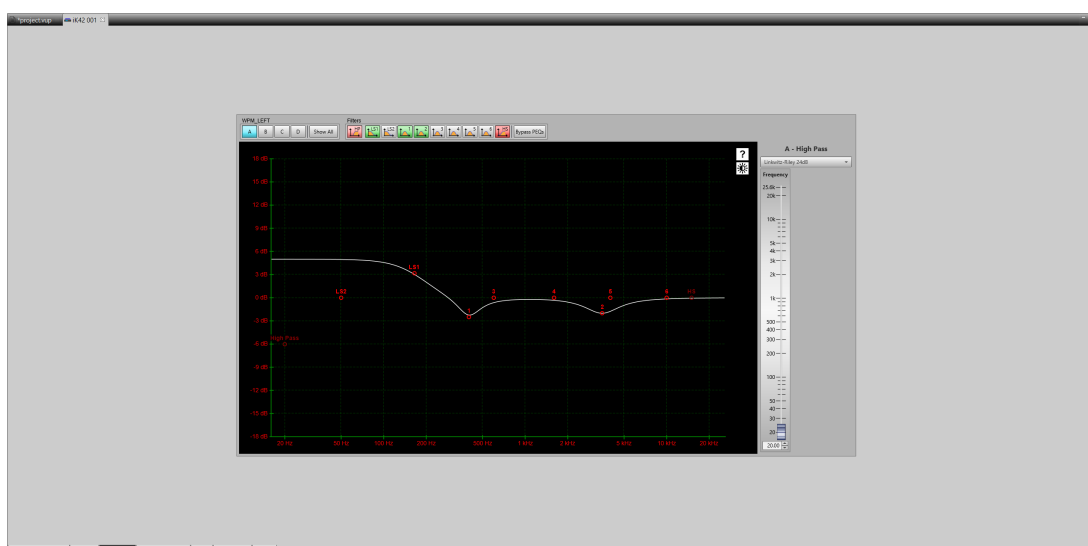
Output

The Output EQ is grayed locked out as it is used for to apply coefficients created by the optimisation.

The high-pass filter is accessible and can be adjusted to set a crossover filter between the WPM arrays and subwoofers.
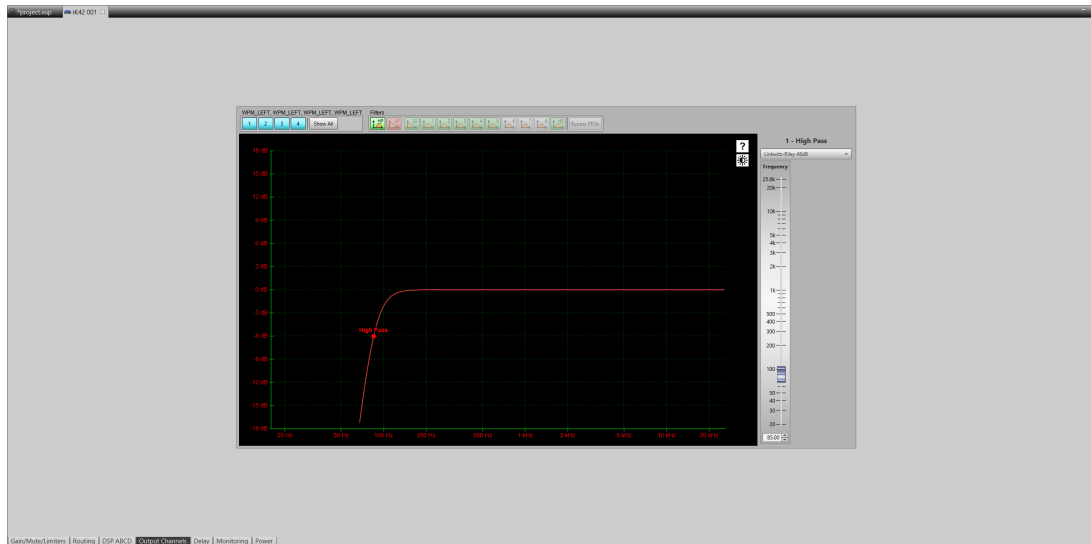
Ganging

Ganging is available to ensure that arrays can be controlled globally.
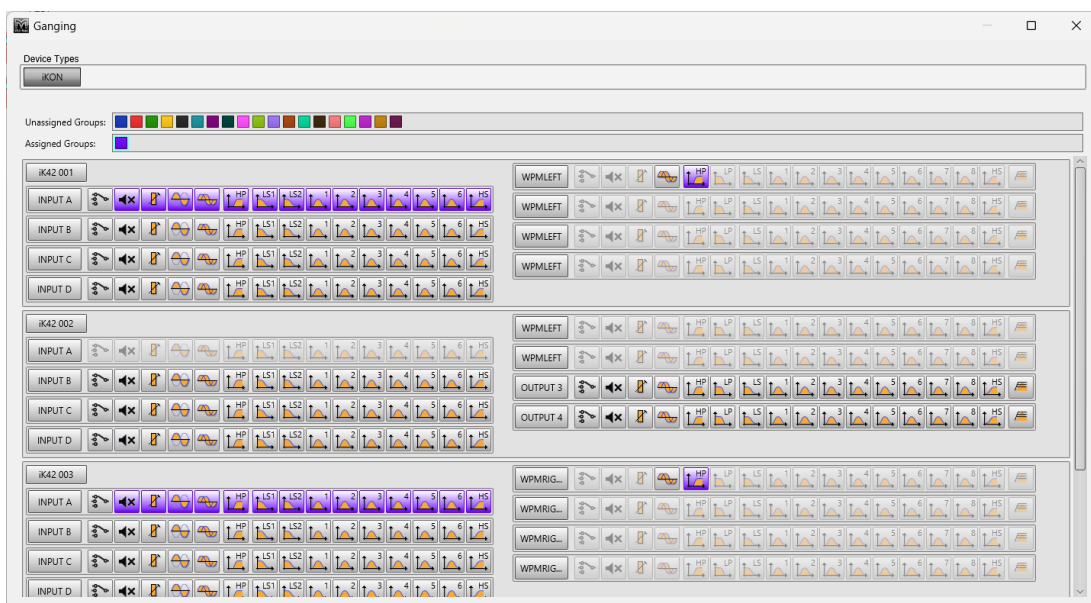
VU-NET is a comprehensive application with a host of functions to enable control and monitoring of almost every parameter of a system.

For full details we would strongly recommend downloading the VU-NET user guide which can be found on the same page as the application download.

VU-NET is a free download from the software page of the Martin Audio website at www.martin-audio.com/support/software

Integrated Rigging

WPM
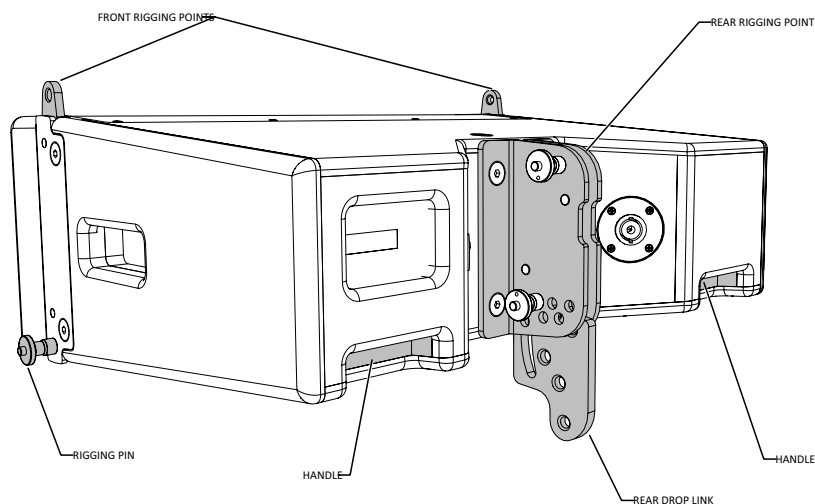
WPM's three-point rigging system consists of two rigging points at the front and a single rigging point at the rear of the cabinet.

The rear drop down link is equipped with a single hole at the top for linking to cabinets above it.

Five rigging holes labeled for 0.5°, 2°, 4°, 6.5° and 10° inter-cabinet angles, as well as a rigging hole for use when assembling ground stacked arrays.

SXCF115

The SXCF115 has a 4 point rigging system that allows you to:

- Fly up to 16 SXCF115 using a WPMSXGRIDT.

- Ground stack up to six WPM on up to two SXCF115 using a WPMSXGRIDT and a WPMOUTRIG.

- Fly up to three SXCF115 with up to 12 WPM below (this requires two WPMSXGRIDT, one below the SXCF115 and one between the SXCF115 and the WPM).

WPM
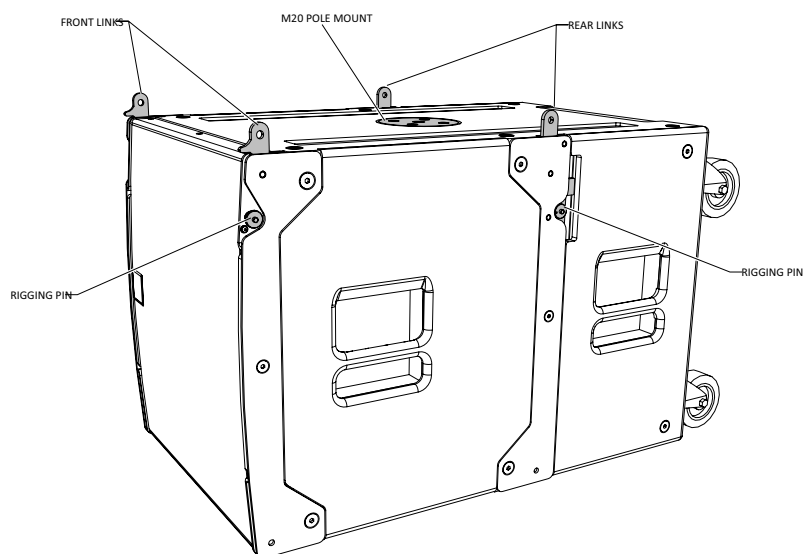
Wiring

WPM

The WPM has two parallel-wired Neutrik® NL4 connectors on angled panels at the rear of the cabinet, recessed to avoid damage.

SPEAKON CONNECTORS INPUT/LINK
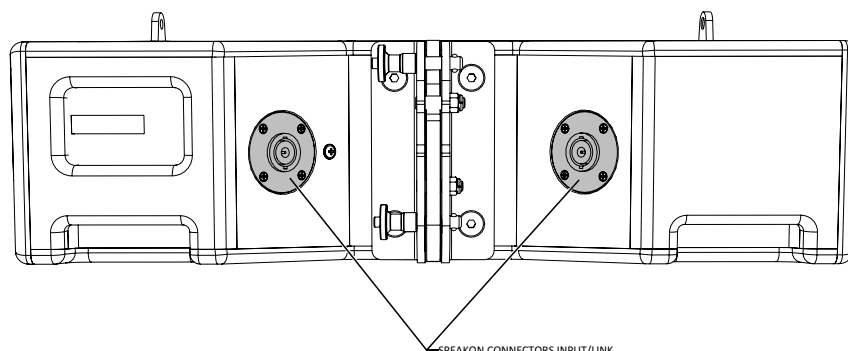
SXC(F)115

Connection is made via two NL4 connectors which are wired in parallel.

Although these are nominally labeled 'INPUT' and 'LINK', either connector can be used to connect to the sub or to link out to a second speaker.

The Front 15" driver is connected to pins 1+/-, the rear 12" driver to pins 2+/-. A 4-core NL4 cable must be used.

INPUT

LINK

SX SERIES

Made in England by
MARTIN AUDIO LIMITED
CENTURY POINT, HALIFAX ROAD, CRESSEX
BUSINESS PARK, HIGH WYCOMBE, BUCKS, HP12 3SL
TEL +44(0)1494 535312 FAX +44(0)1494 438669
www.martin-audio.com

INPUT
PIN 1+. 1-
PIN 2+. 2-
LINK

Serial No.

FOR FURTHER INFORMATION REFER TO PRODUCT USER GUIDE

MARTIN AUDIO
LONDON
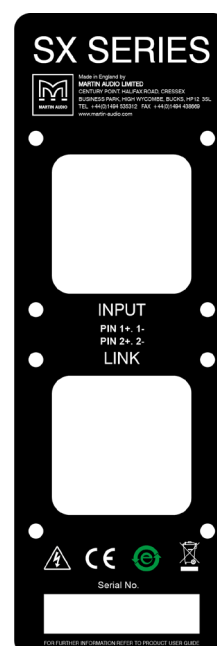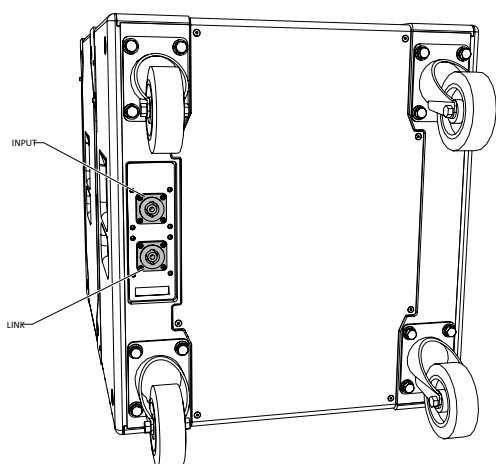
Scalable Resolution

System Configuration

The two NL4s are wired in parallel so either can be used as a nominal 'input' or 'link' output.

When the system is configured for a single box resolution system each cabinet is connected to a single amplifier channel.

In 2 box or lower resolution, the connection is made from an amplifier channel to the 'input' of one cabinet, and the second 'link' NL4 is used to make a parallel connection to an adjacent cabinet.

The maximum is 4 box resolution with four cabinets connected to a single amplifier channel.

Connection goes to one cabinet with links between the three cabinets below in daisy-chain fashion going from link out to input on the next cabinet.

System Config
Scalable Resolution

Resolution is decided by number of boxes to amp channels.

Four Box Resolution
4 WPM to 1 Amp Channel

Two Box Resolution
2 WPM to 1 Amp Channel

One Box Resolution
1 WPM to 1 Amp Channel

Increasing Resolution
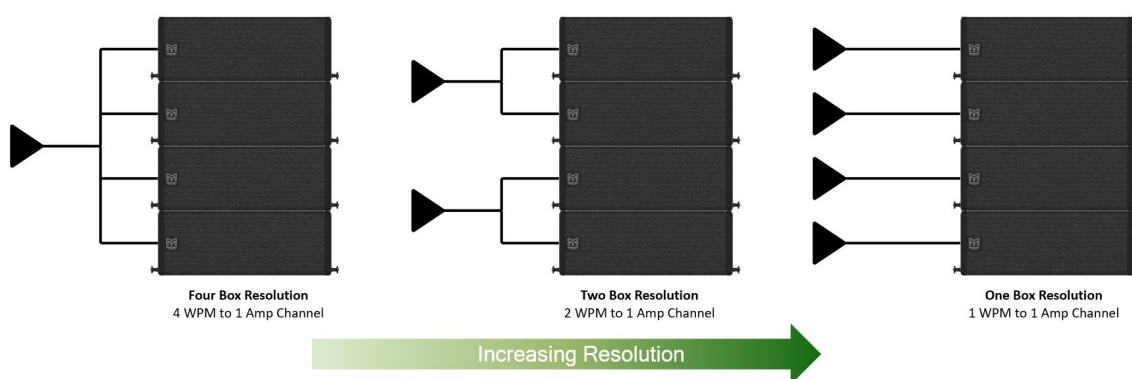
Amplifier Configurations

iK81

iK81 - 1 Box Resolution 8 cabinets
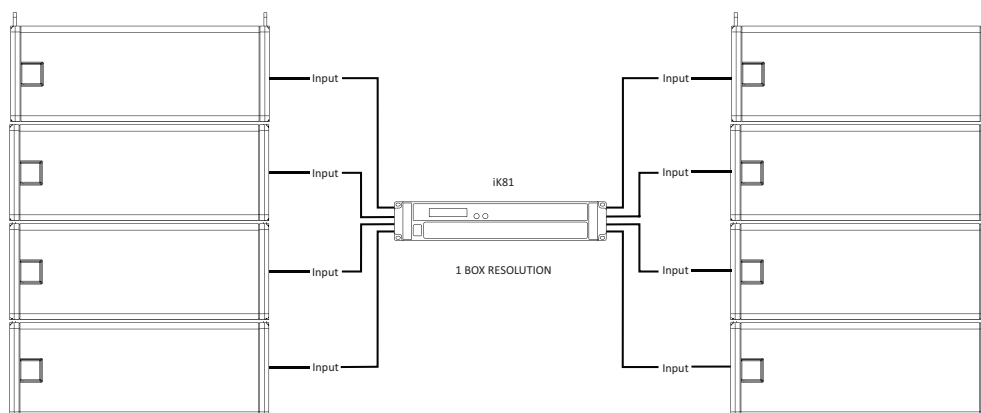
iK81 - 2 Box Resolution 16 cabinets
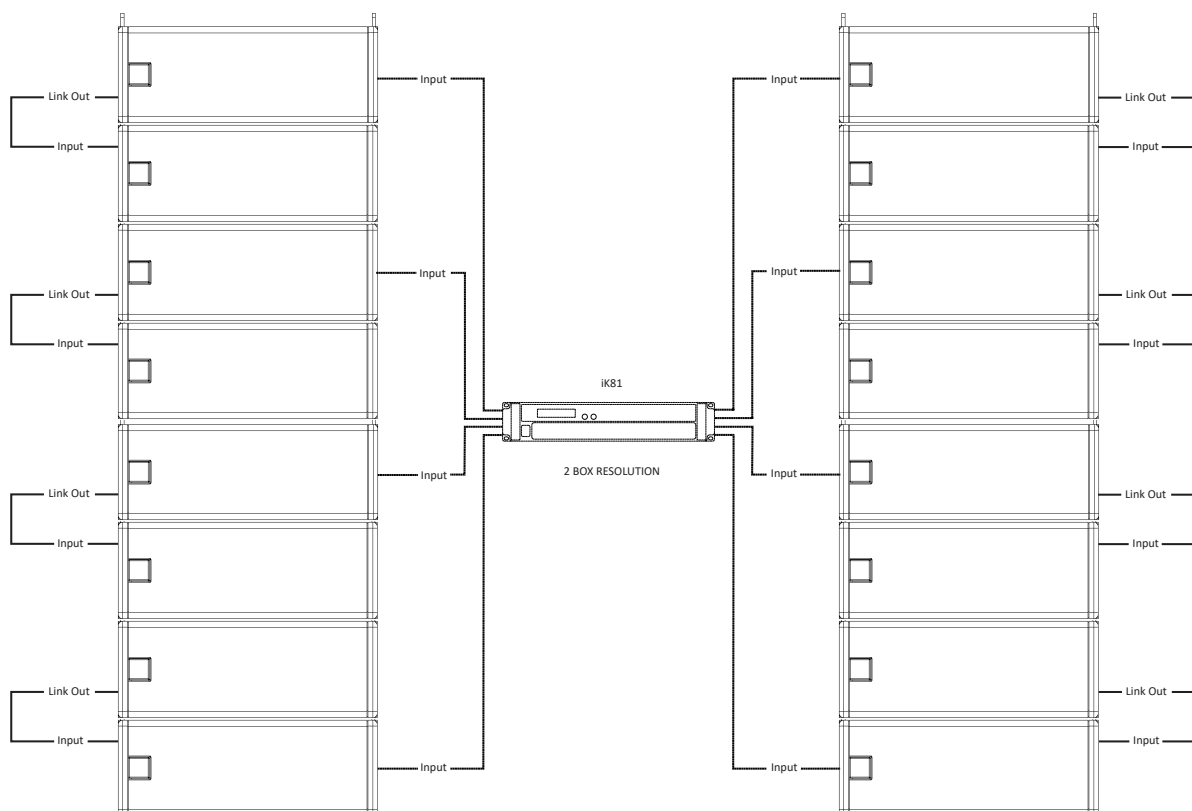
iK81 - 3 Box Resolution 24 cabinets
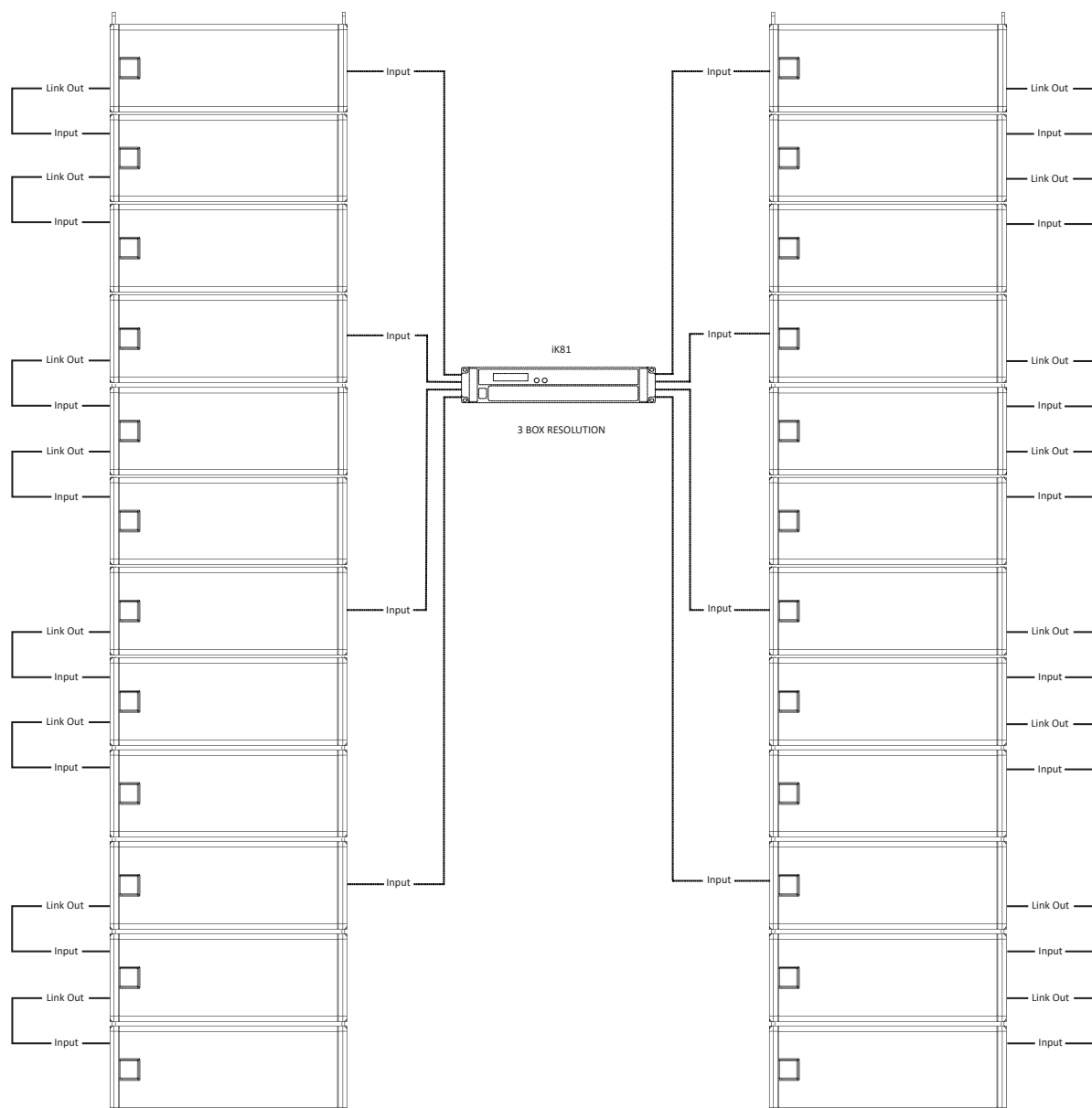
iK81 - 4 Box Resolution 32 cabinets
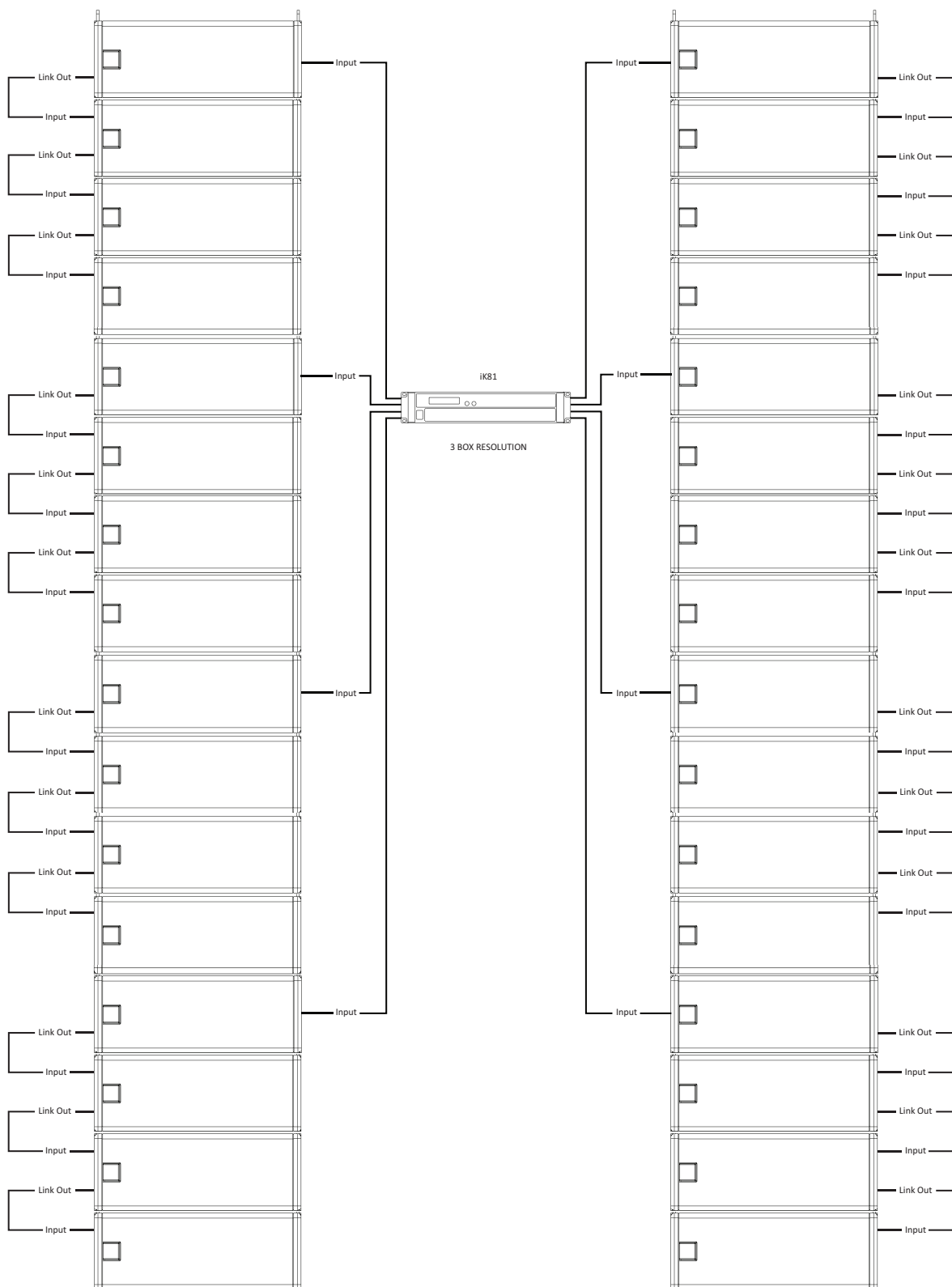
iK42

iK42 - 1 Box Resolution 4 cabinets
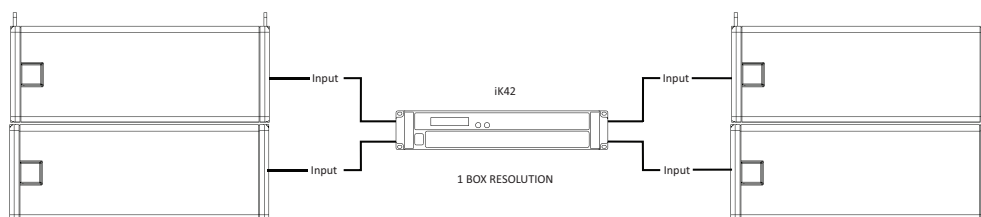
iK42 - 2 Box Resolution 8 cabinets
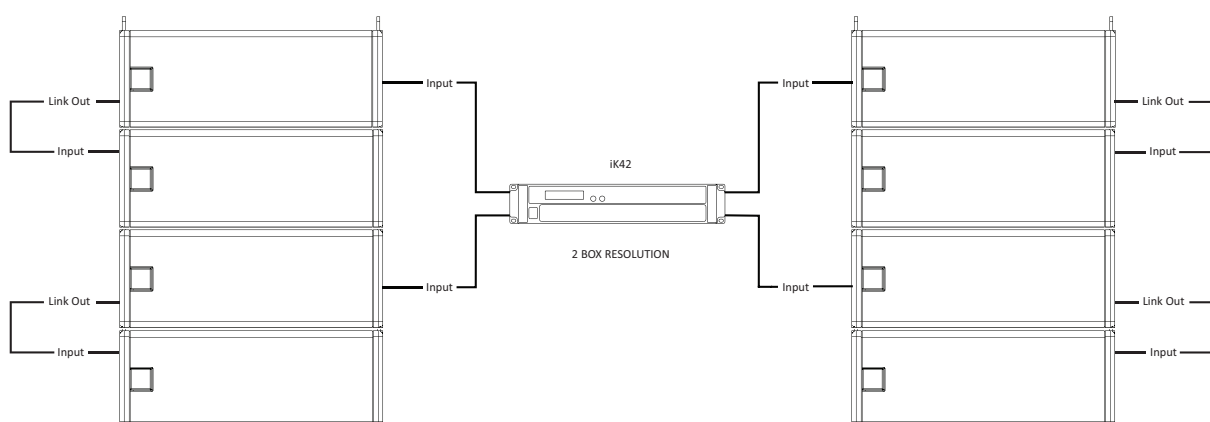
iK42 - 2 Box Resolution 12 cabinets
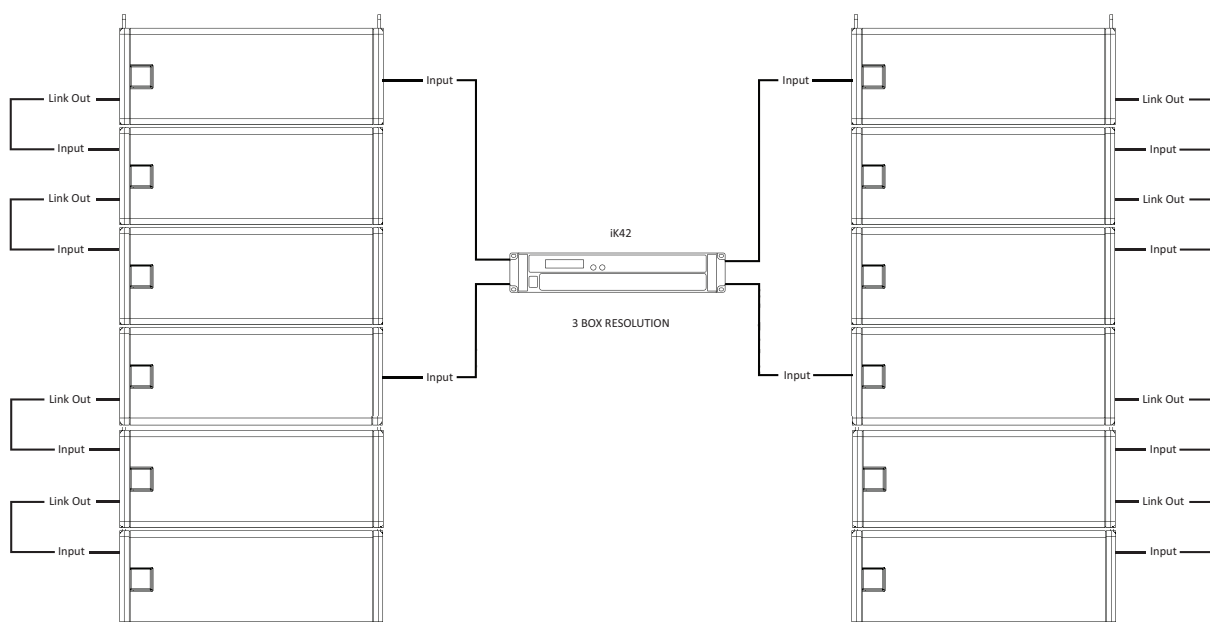
iK42 - 1 Box Resolution 4 cabinets
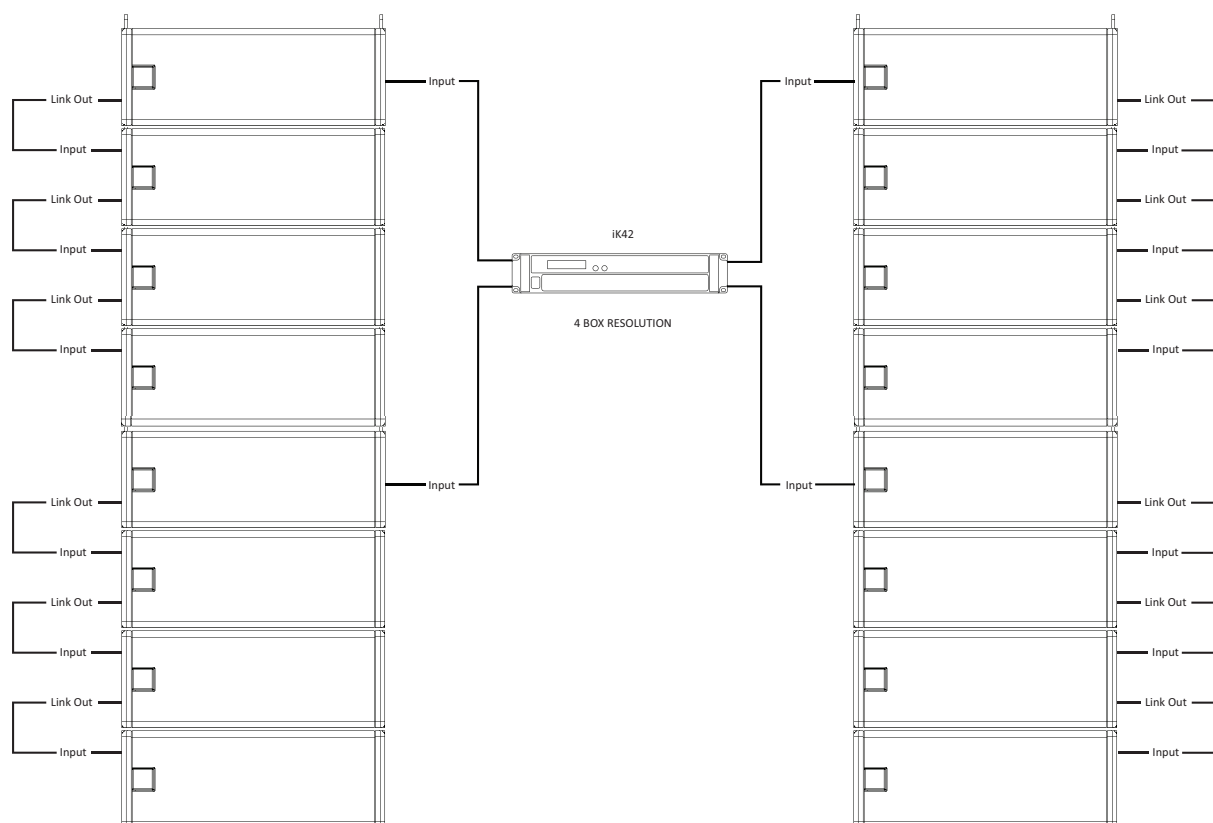
Accessories

WPMSXGRIDT Touring Frame
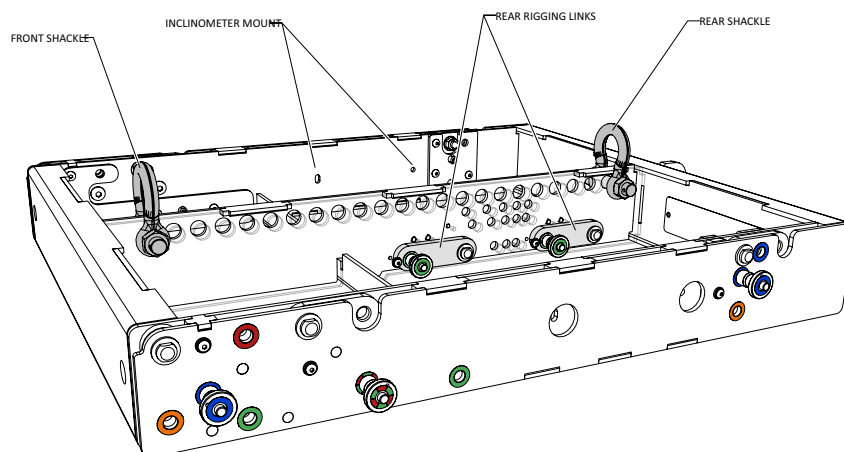
The Touring Flying Frame is designed to meet BGVC1 and DIN18800 standards, and capable of lifting up to a maximum of 16 WPM cabinets using either one or two lift points.

The frame also allows both positive and negative array site angles.

An inclinometer is available for use with the Touring Flying Frame which checks the angle at which the WPM array is flown at (relative to the horizontal).

It consists of a sensor (mounted within the Flying Frame, one required per grid) and a remote display. Interconnection is via a standard XLR mic cable.

MARTIN AUDIO
LONDON
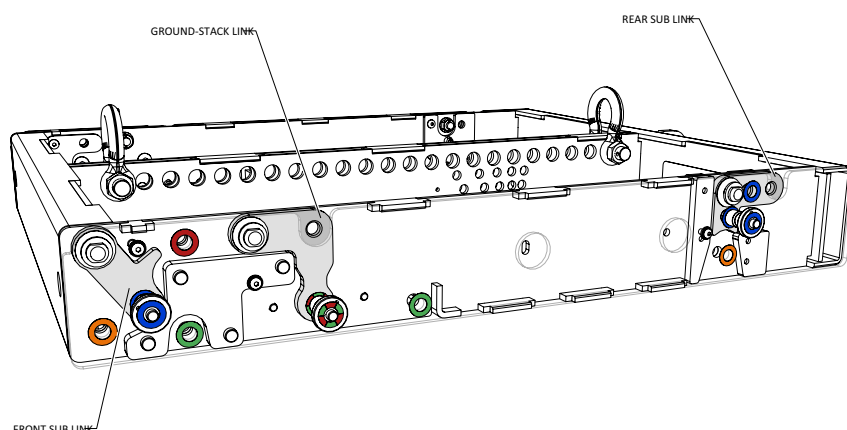
WPMGRIDI Install Frame

The Install Flying Frame provides a cost effective rigging solution and simplicity of operation for permanently flown installations.

It is designed to meet BGVC1 and DIN18800 standards, and will lift a maximum of 16 WPM cabinets using either two lift points or a single lift point, determined by the Martin Audio DISPLAY software.
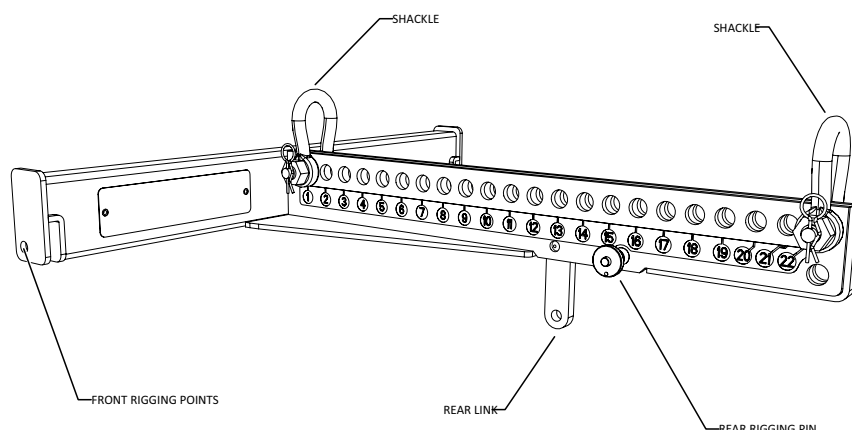
WPMUNIV

A four-cabinet WPM array can be flown from a truss with a scaffold clamp using the WPMUNIV.

It can also be inverted and used in conjunction with the pole mount adapter (ASF20045) to pole mount on any SX subwoofers that have an integrated M20 Pole mount.
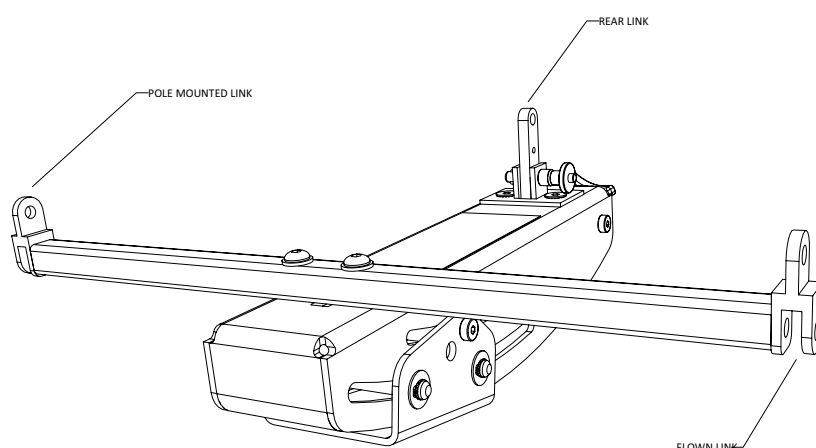
WPMOUTRIG

WPMOUTRIG is a ground stack kit for WPM.

The kit includes:
- A bar for angling the WPM array when deployed on the ground or on top of SXCF115 subs (replacement part WPMGSBAR).
- Two outriggers for frame stabilisation (replacement part OUTRIG250).
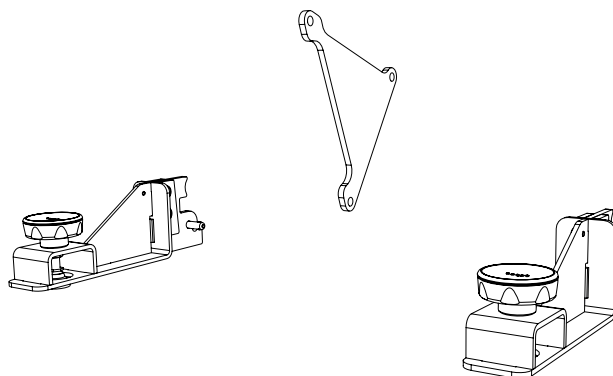
ASF20045

Pole mount adapter used in conjunction with the WPMUNIV for pole mounting.
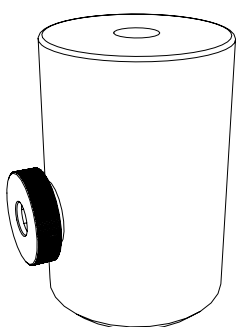
ASF20071

Wind-up pole used for pole mounting WPM.
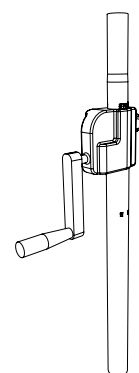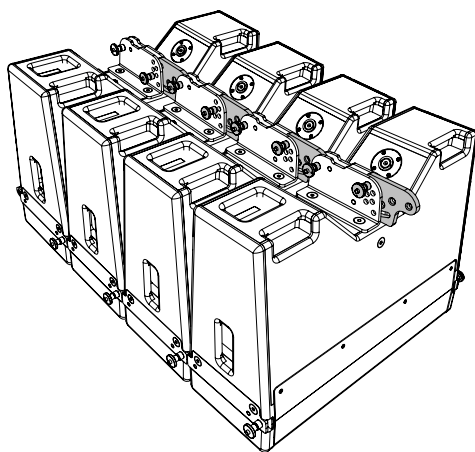
Rigging

Flown System - WPMSXGRIDT

Pre-select the inter-cabinet angles while in the case, release the drop links from the cabinets by removing the rigging pins from the LINK and ANGLE positions.

Slide the drop links down into the cabinets below. Lining them up with the angles predicted by the DISPLAY software.
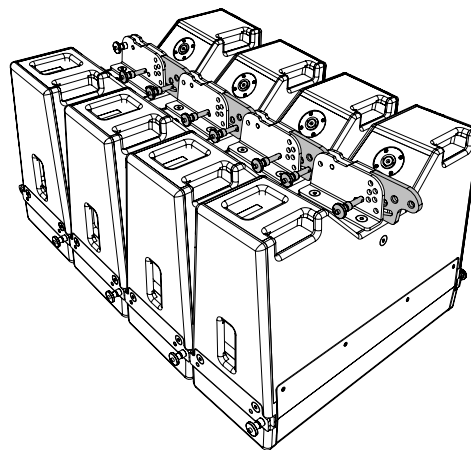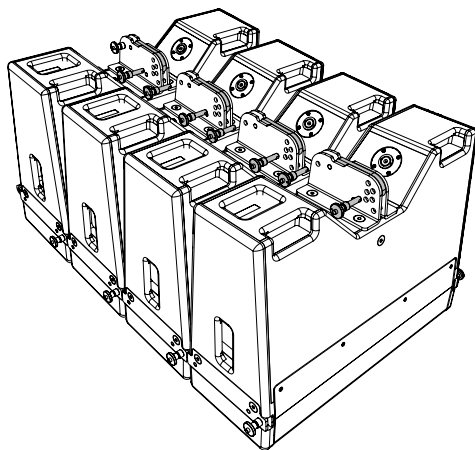

Connect the cabinets together at the rear with the link and angle rigging pins.

Remove front and rear rigging pins from the stow positions on the WPMSXGRIDT .
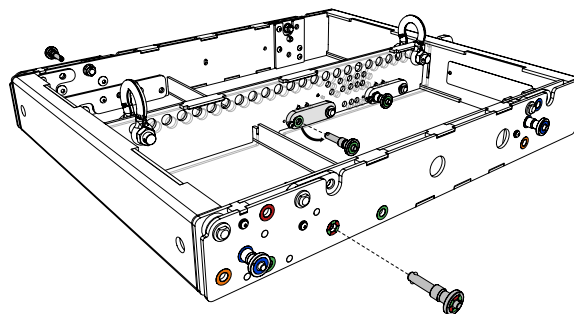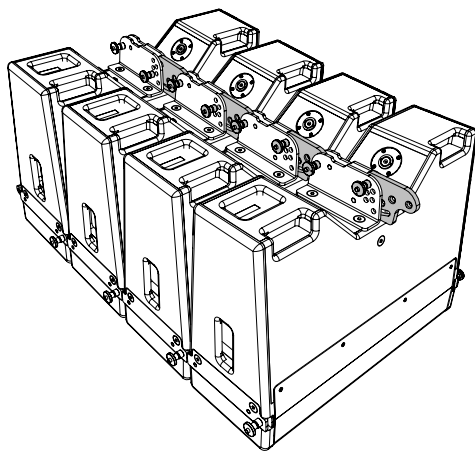
Grid position for negative site angle

Place the rigging pins in the green holes forward of the stow position, to secure the front of the array.
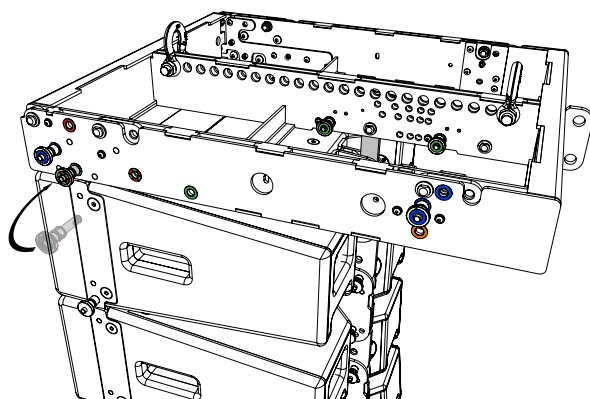
Link the WPMSXGRIDT to the array by securing the droplink to the rear rigging hardware on the WPM.
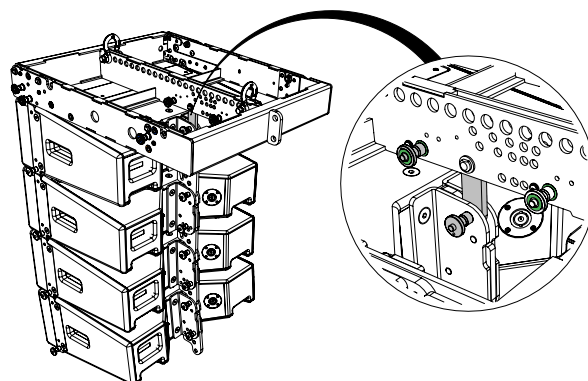
Grid position for positive site angle

Place the rigging pins in the green holes to the rear of the stow position, to secure the front of the array.
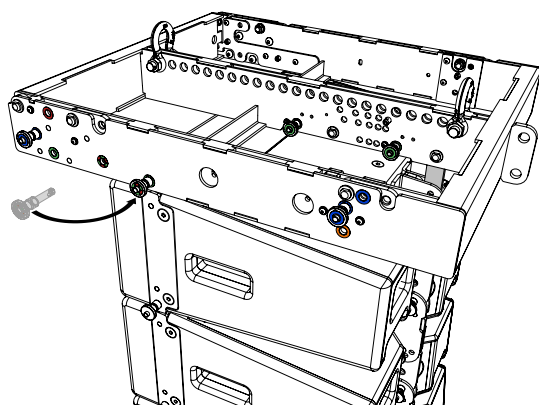
Link the WPMSXGRIDT to the array by securing the droplink to the rear rigging hardware on the WPM.
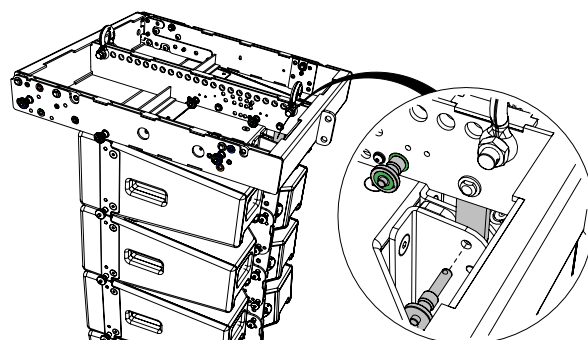
Lower the array on to the four cabinets below. Align the front rigging points and replace the pins to lock into place.
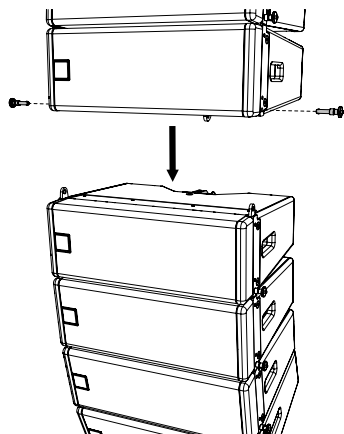
Preselect the angle required on the cabinet above. Insert the rigging pin to secure the rear link
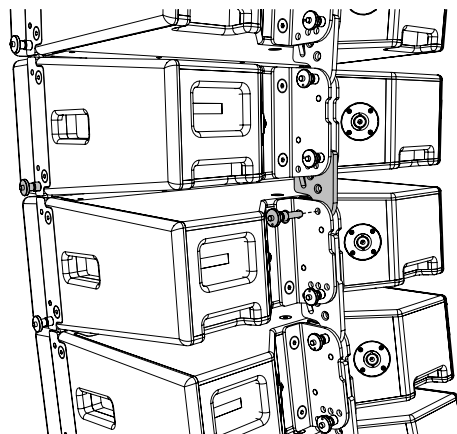
A maximum of 16 cabinets can be flown from the WPMSXGRIDT.
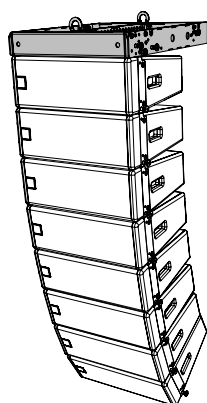
Please refer to the DISPLAY software to determine site angles that can be achieved.

MARTIN AUDIO
LONDON
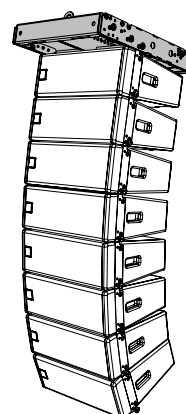
Flown System - WPM below SXCF115

This requires two WPMSXGRIDT. Place one WPMSXGRIDT on top of the SXCF115 and remove the rigging pins from the SXCF115. Rotate the front links and lift the rear links.

Replace the rigging pins into the orange holes on the WPMSXGRIDT.
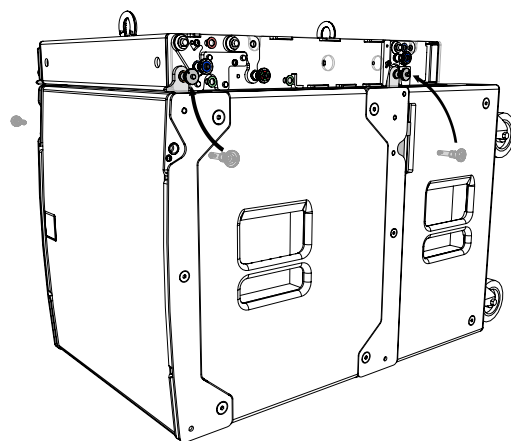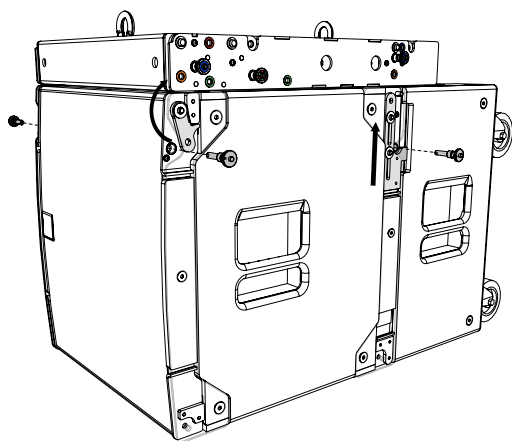
The WPMSXGRIDT is now secured to the first cabinet in the array.

Lift the array and place a second SXCF115 (if required) underneath. Remove the rigging pins, rotate and lift the links.
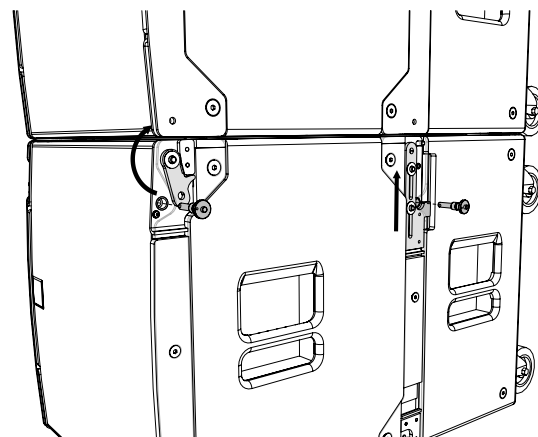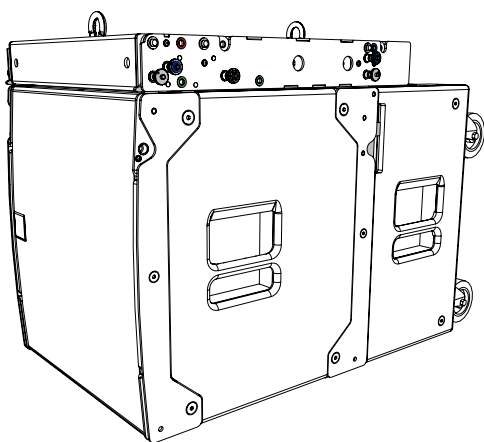
Replace the pins from the cabinet below into the bottom of the cabinet above.
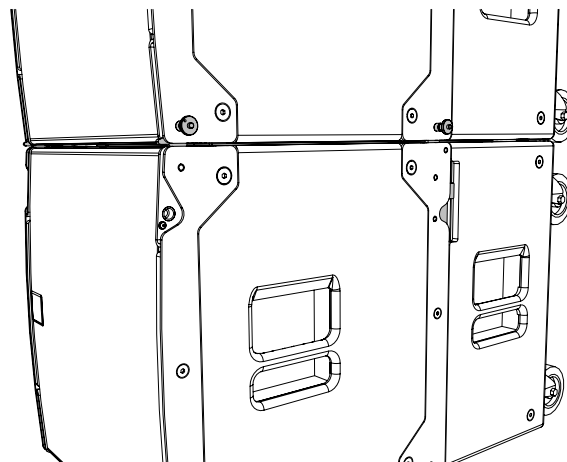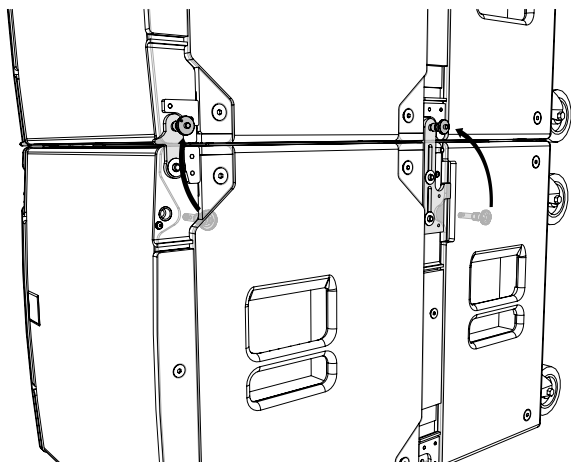
Take the second WPMSXGRIDT and remove the pins from the green and red stow positions.
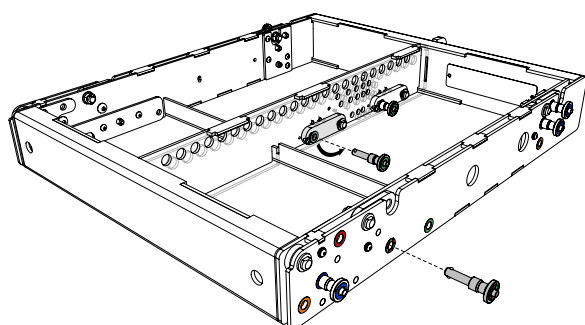
Let the rear drop link rotate down and replace the rigging pin.
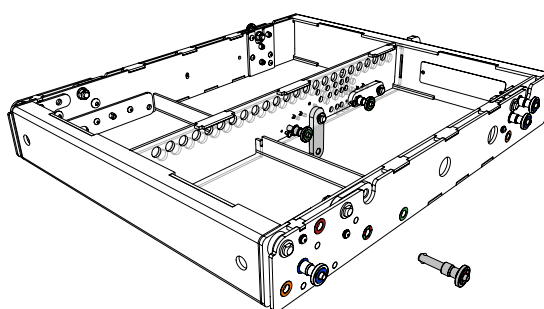
Place the grid onto the first four cabinets. Remove the rigging pins from the front of the first WPM, lock the grid to the array by replacing the pins in the green holes on the grid.
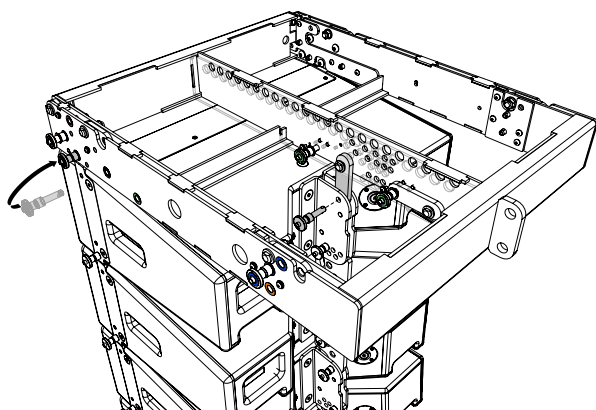
Remove the rear rigging pin from the first WPM and secure the rear of the grid by linking the drop link to the top cabinet.
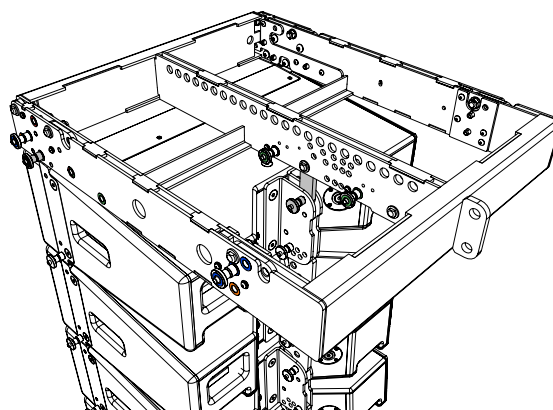
Remove blue stow pins from the WPMSXGRIDT and rotate the front links.
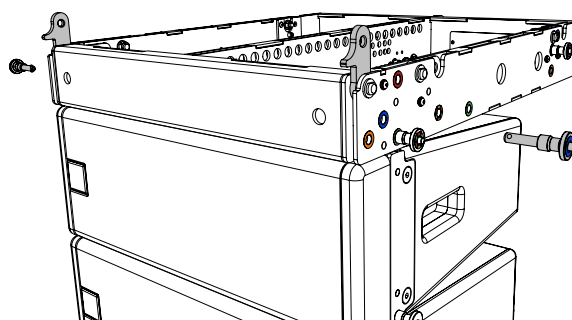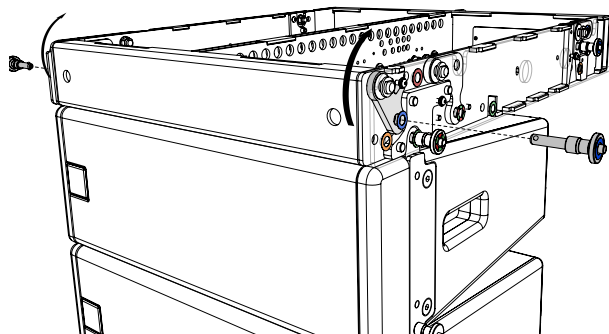
Replace the blue rigging pins into the bottom of the SXCF115 riffing hardware.
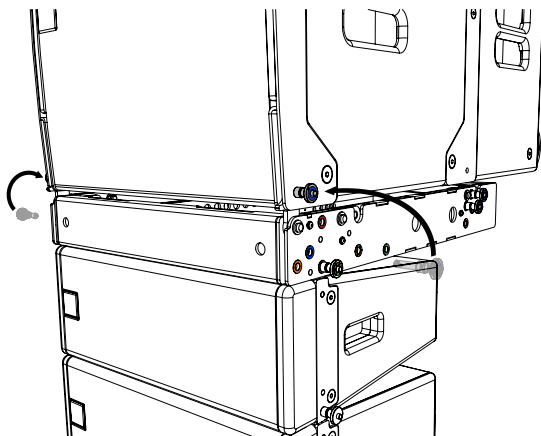
Lift the array from the ground. The WPM cabinets will swing forward, but that is expected.
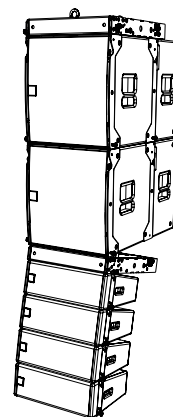
Remove the rear blue pins from the stow and lock positions on WPMSXGRIDT and rotate the links.
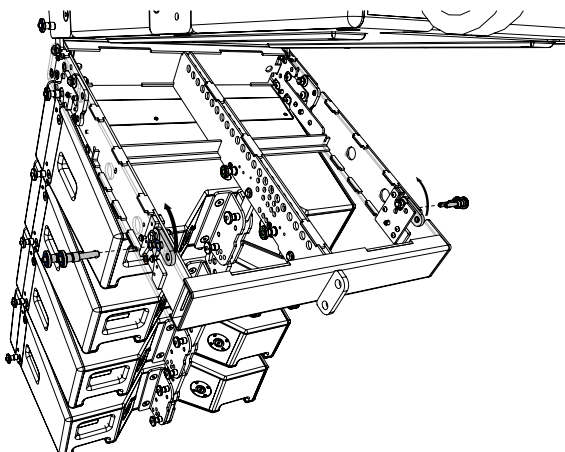
Replace two of the blue pins into the lock position to secure the rear links in place.
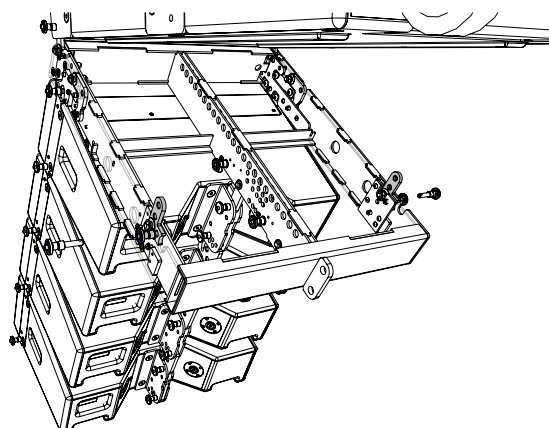
Take the remaining two blue rigging pins and secure to the rear of the SXCF115.
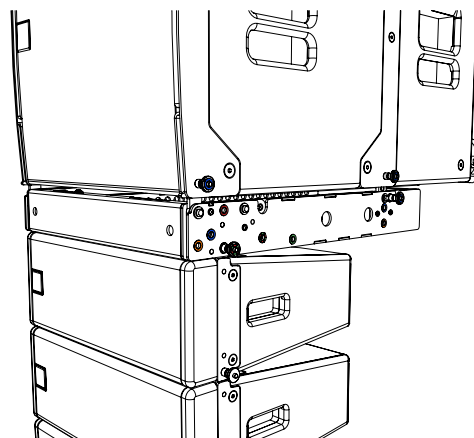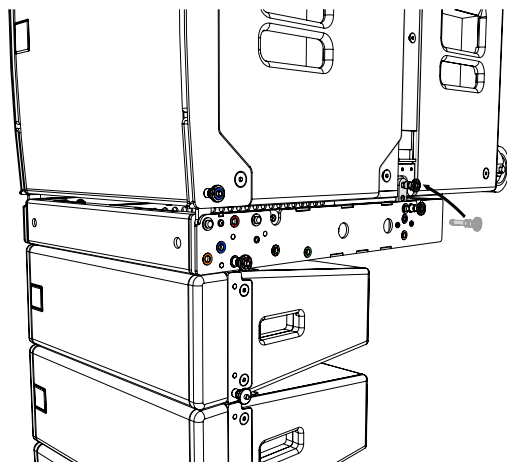
Pre-select the inter-cabinet angles while in the case, release the drop links from the cabinets by removing the rigging pins from the LINK and ANGLE positions.

Slide the drop links down into the cabinets below. Lining them up with the angles predicted by the DISPLAY software.
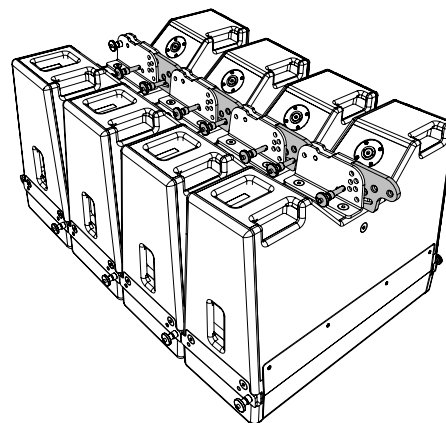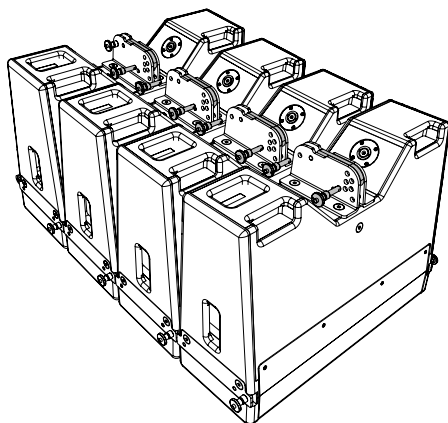
Connect the cabinets together at the rear with the link and angle rigging pins

Preselect the angle required on the cabinet above. Insert the rigging pin to secure the rear link
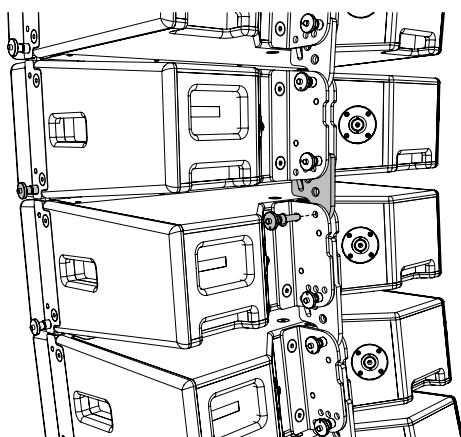
Lower the array on to the four cabinets below. Align the front rigging points and replace the pins to lock into place.
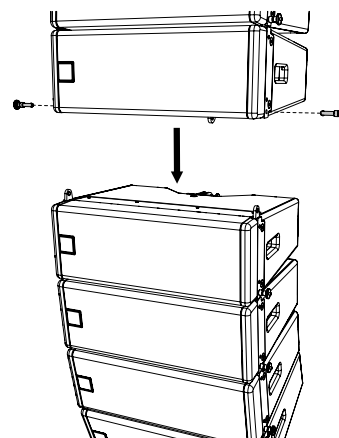
In this configuration, you can fly up to 3 SXCF115 with up to 12 WPM below.
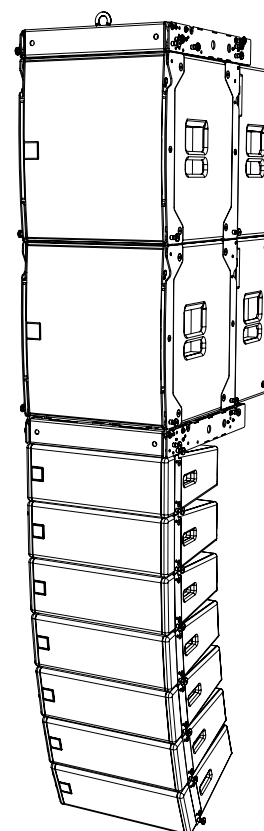
Ground Stacking - WPM

Remove the rigging pins from the WPMOUTRIG outriggers and slot them into front of the WPMSXGRIDT.
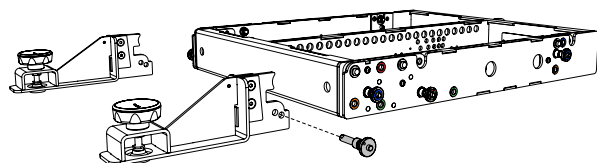
Lock the rigging pin into the hole marked in orange to secure the outriggers.
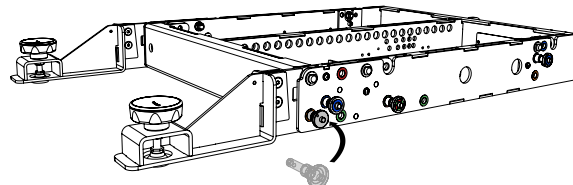
Remove the pin from the stow position marked in green and red. Rotate the ground stack links through 180 degrees.
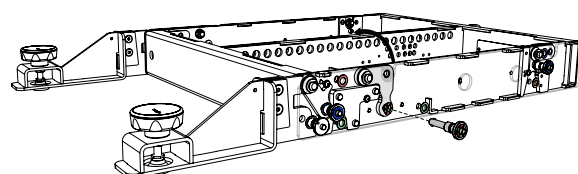
Lock the rigging pin in hole marked in red to secure the ground stack links in the upright position.
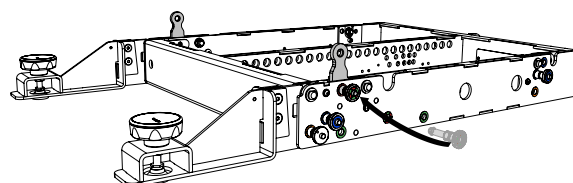
Fit the WPMOUTRIG ground stack bar into the appropriate hole into the central spine. The orientation of the bar and the correct hole in the frame will be determined by the angle of the first WPM cabinet in the array.
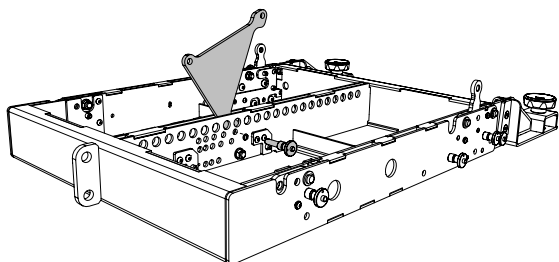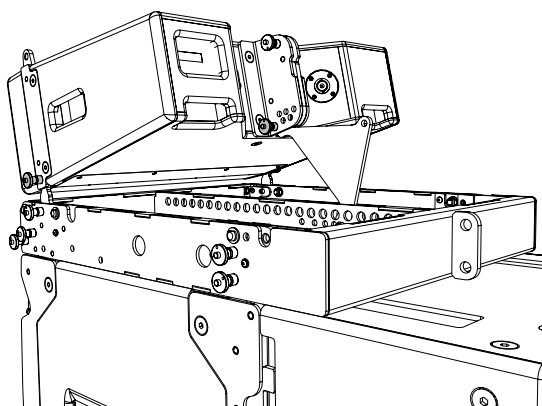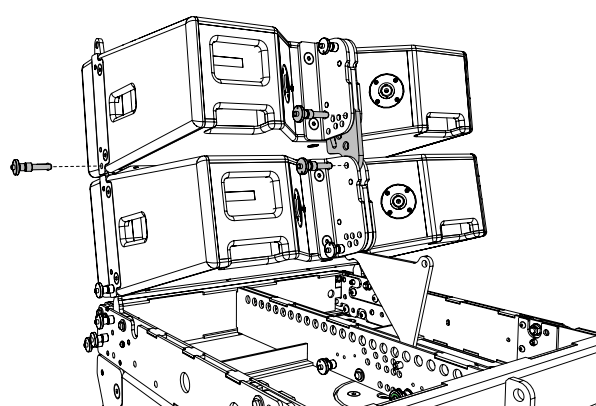
Remove the link pins and lower the WPM onto the WPMSXGRIDT until the links locate into the front rigging assembly.
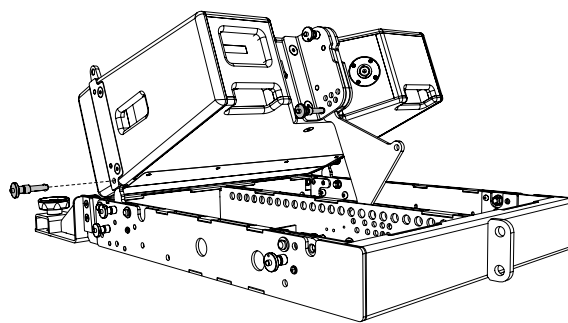
Insert the rigging pins front and back to secure the WPM to the WPMSXGRIDT.
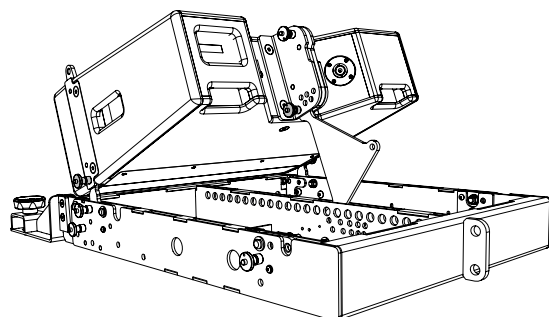
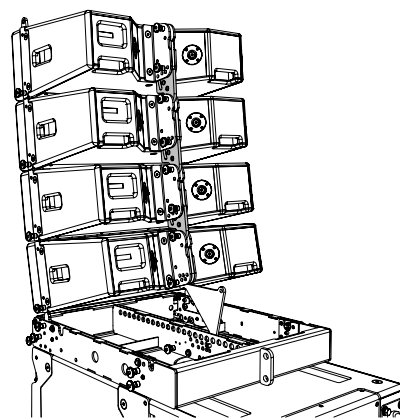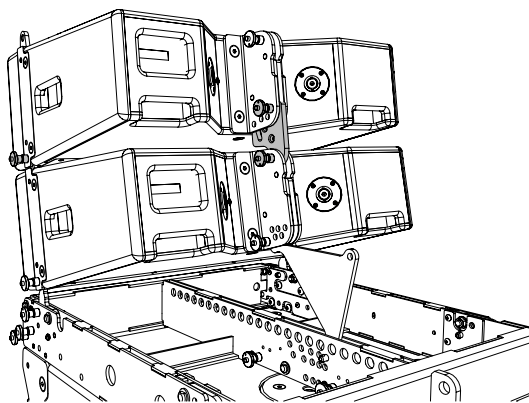Remove the pins front and back to place the next cabinet onto the ground stack array.
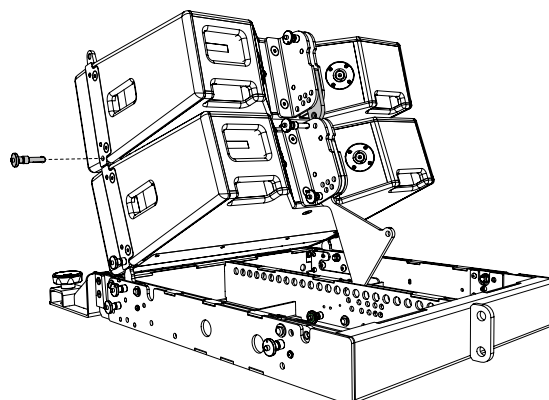
Remove the rigging pins on the second WPM place the cabinet on top. Replace the links to secure the front of the array. Insert the rigging pin in the hole required for the rear link to set angle between the cabinets.

Repeat the process until the array is complete.
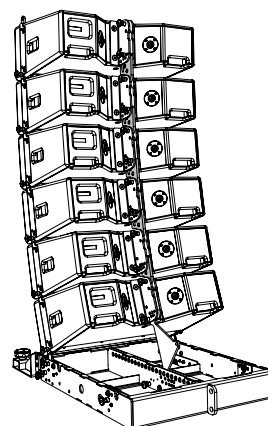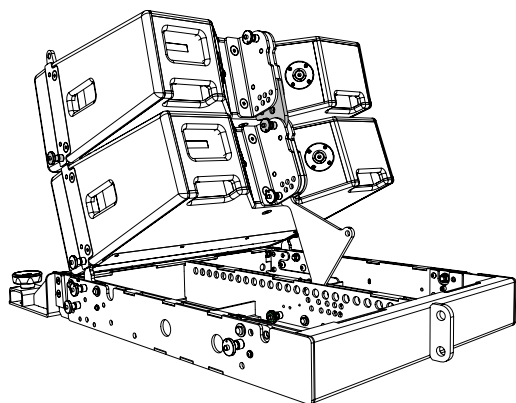
You can ground stack a maximum of eight cabinets, or fewer depending on the angles.
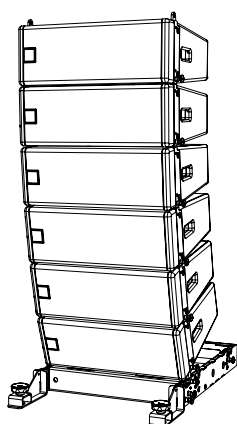
Ground Stacking - WPM on SXCF115

Slot the WPMOUTRIG outriggers into the bottom of the SXCF115 rigging hardware.

Secure to the SXCF115 with the rigging pin provided.
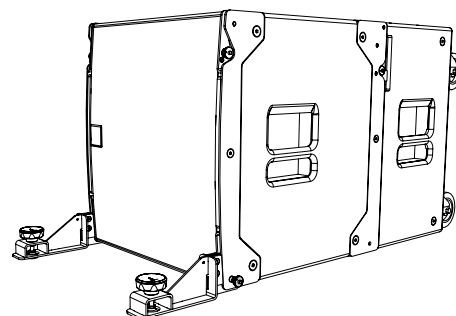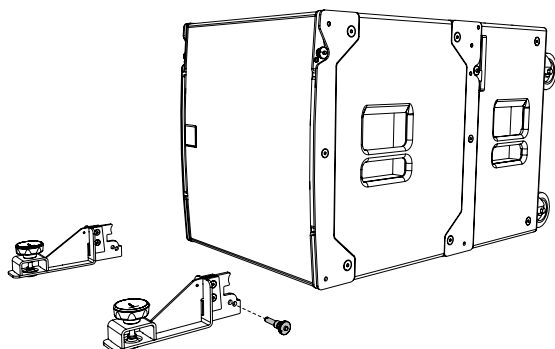
If required, place a second SXCF115 on top and remove the rigging pins from the cabinet bellow. Rotate the front links and slide up the rear, aligning them to the holes on the cabinet above cabinet above.

Replace the pins into the lock position on the cabinet above, making sure all four links are secured.
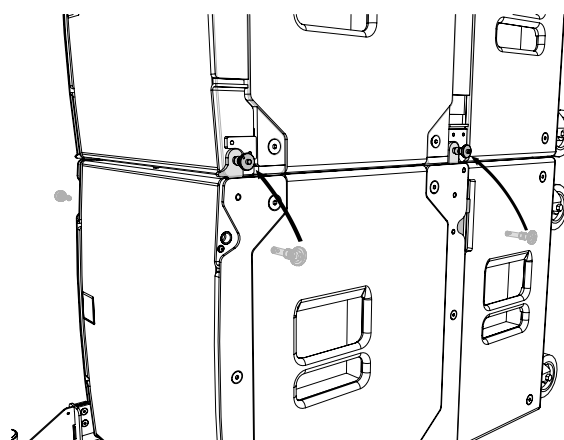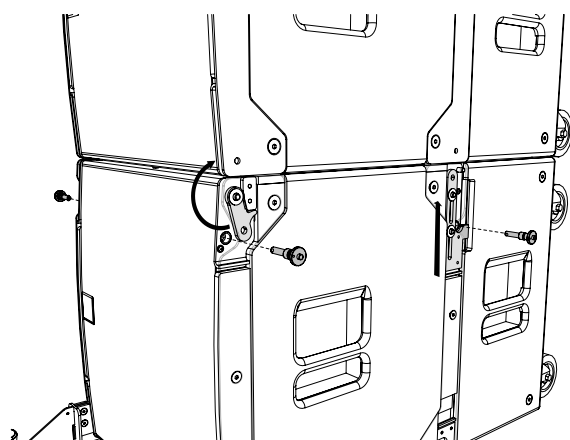
Place the WPMSXGRIDT on to the SXCF115. Remove the pins from the stow position. Rotate the front links and slide up the rear, aligning them with the orange holes on the WPMSXGRIDT.

Secure the links to the WPMSXGRIDT with the rigging pins from the cabinet below.
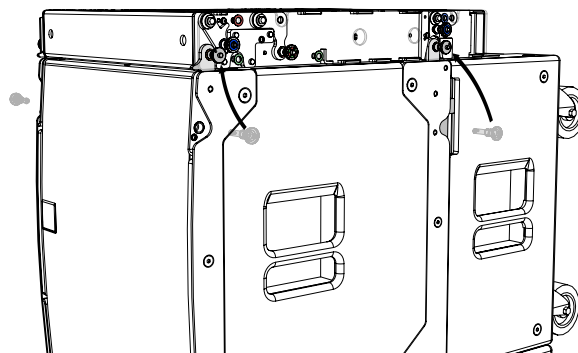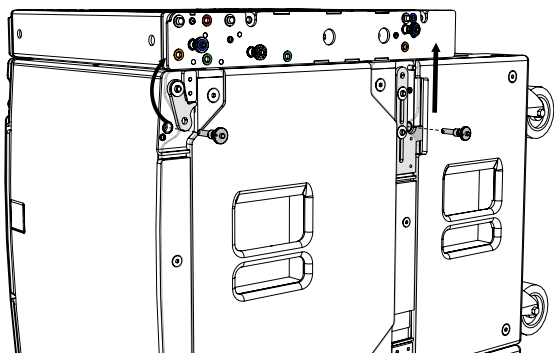
Remove the rigging pin from the stow position marked red & green.

Replace the rigging pins into the green holes to secure the link in place.

WPM
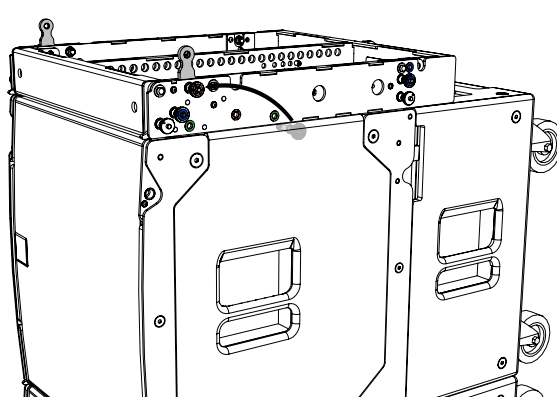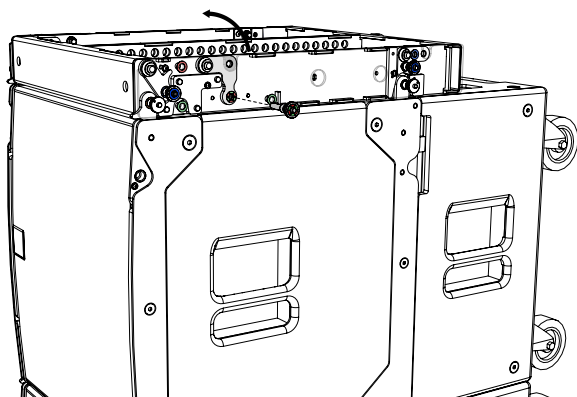
Fit the WPMOUTRIG ground stack bar into the appropriate hole in the central spine. The orientation of the bar and the correct hole in the frame will be determined by the angle of the first WPM cabinet in the array.

Remove the link pins and lower the WPM onto the WPMSXGRIDT until the links locate into the front rigging assembly.

Insert the rigging pins front and back to secure the WPM to the WPMSXGRIDT.

Remove the rigging pins on the second WPM place the cabinet on top.

MARTIN AUDIO
LONDON

Replace the links to secure the front of the array. Insert the rigging pin in the hole required for the rear link to set angle between the cabinets.

Repeat the process until the array is complete.

You can ground stack up to six WPM on up to two SXCF115.

![Martin Audio London logo]
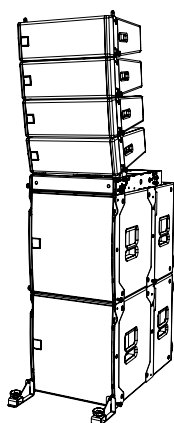
Pole Mount - WPMUNIV

Fit the crossbar to the front for pole mount rigging.
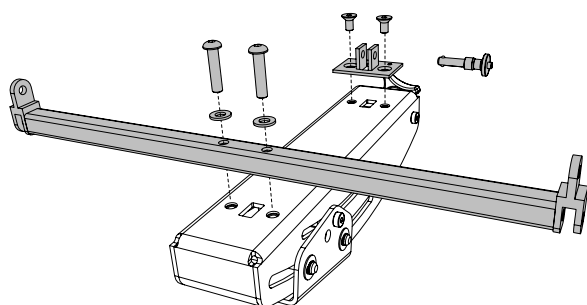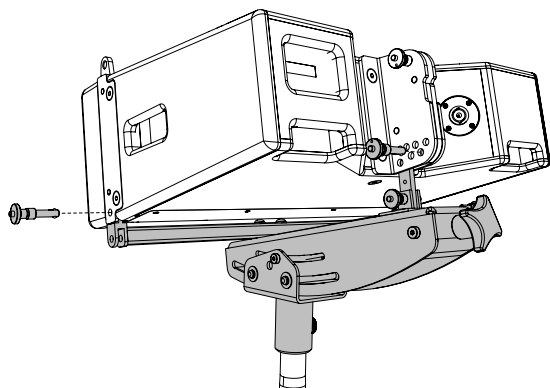
Fit the crossbar to the rear for flown applications.
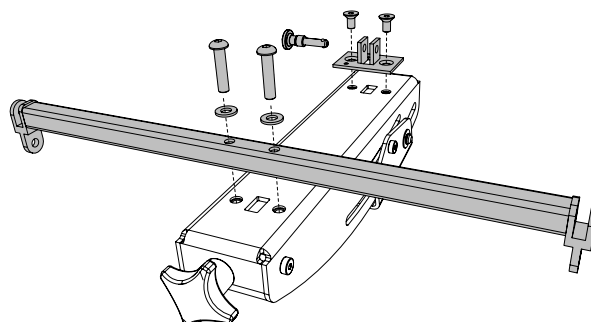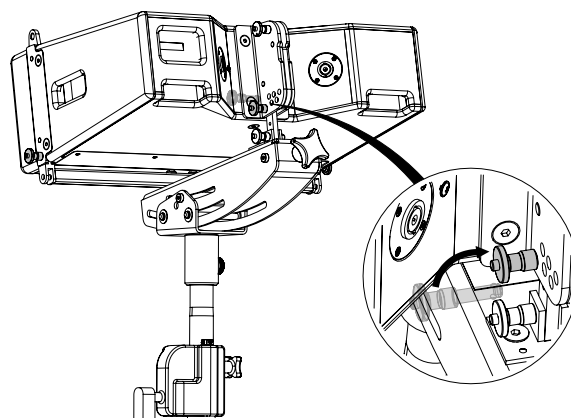
Place the universal bracket on the adjustable pole before mounting the WPM.
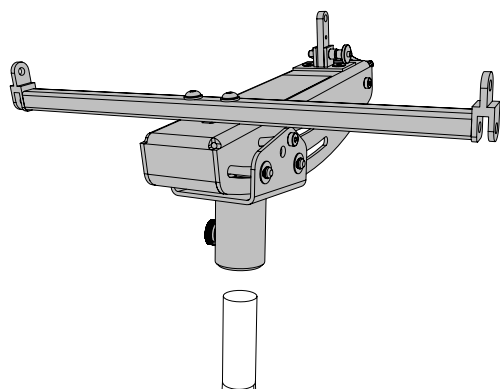
Secure the bracket to the pole by tightening the thumb wheel.
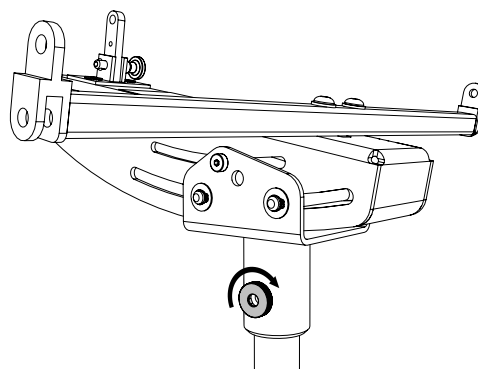
Remove the rigging pins and place the first cabinet onto the universal bracket.

Replace the pins at the front to secure and place the rear pin into the ground- stack hole position.

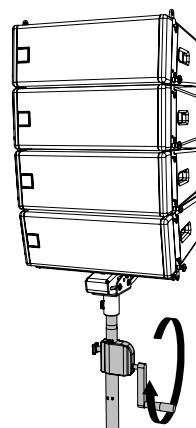Remove the rigging pins from the next cabinet and place on top of the first WPM.
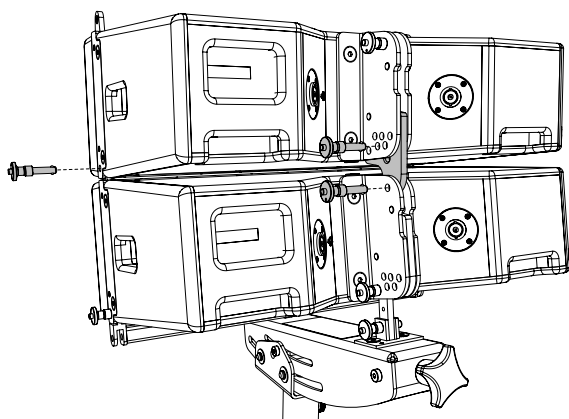
Replace the rigging pins to secure the cabinet. Make sure the correct angle is selected and the lock pin is replaced.
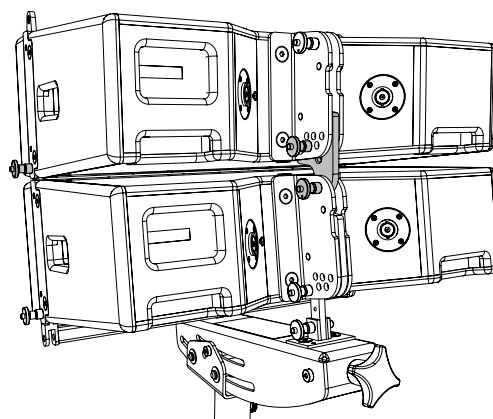
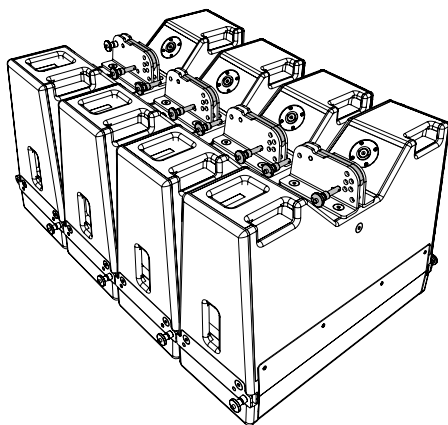Repeat the process until the desired amount of WPM have been used. A Maximum of 4 cabinets can be deployed.
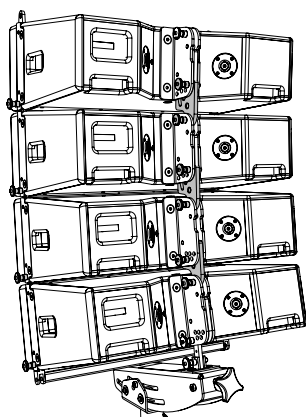
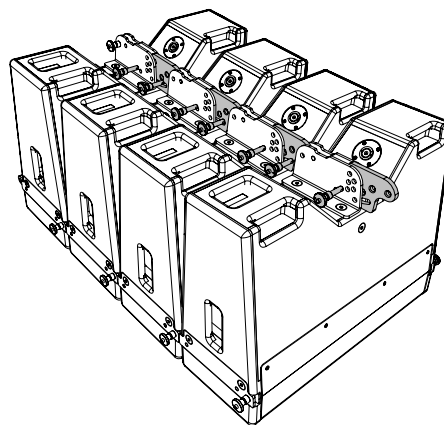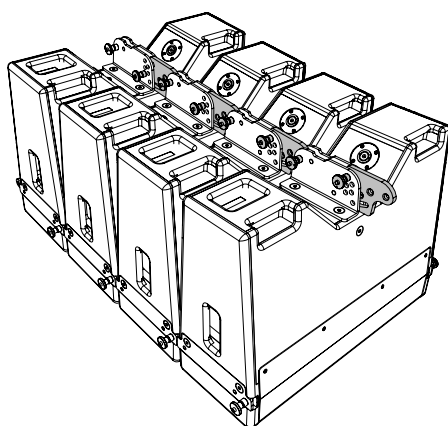Raise the adjustable pole until the optimum height is reached.

Flown - WPMUNIV

Pre-select the inter-cabinet angles while in the case, release the drop links from the cabinets by removing the rigging pins from the LINK and ANGLE positions. .
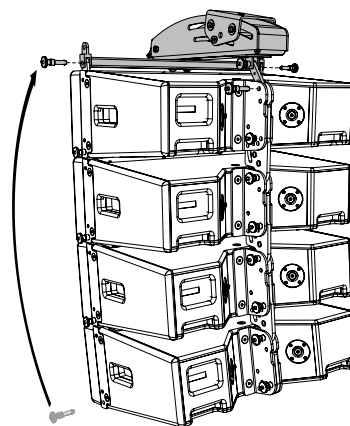
Slide the drop links down into the cabinets below. Lining them up with the angles predicted by the DISPLAY software.

Connect the cabinets together at the rear with the link and angle rigging pins.
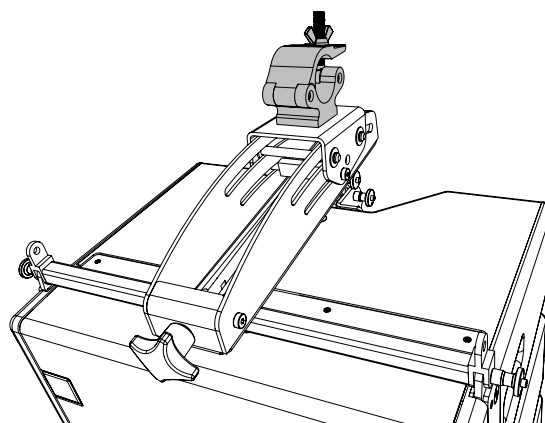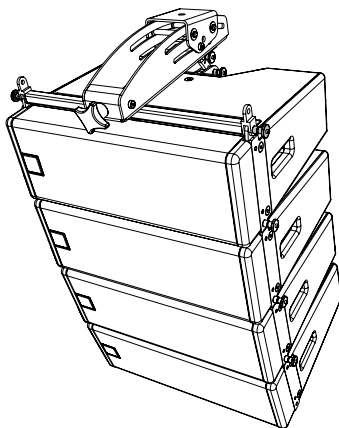
Place the universal bracket on top of the array. Secure at the front by removing the rigging pins from the bottom cabinet to link the bracket to the array.
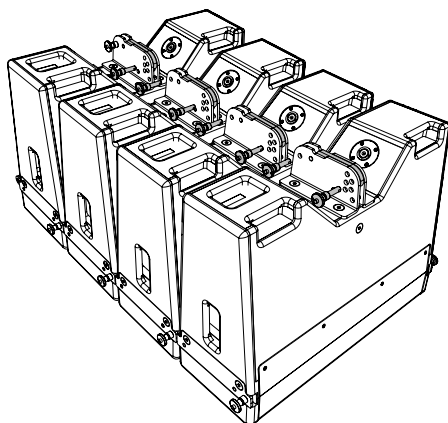
A maximum of 4 cabinets can be flown from the universal bracket.

Fit a half coupler or trigger clamp to the top plate with an M12 nut and bolt.
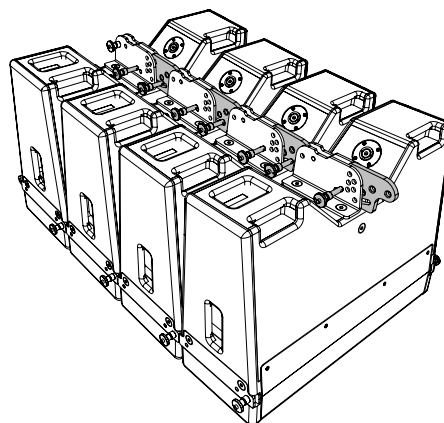
Install - WPMGRIDI

Pre-select the inter-cabinet angles while in the case, release the drop links from the cabinets by removing the rigging pins from the LOCK and LINK positions.
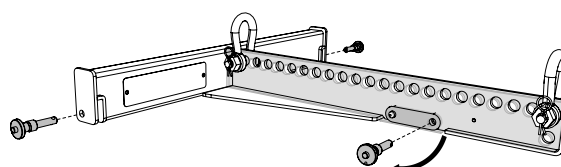
Slide the drop links down into the cabinets below. Lining them up with the angles predicted by the DISPLAY software.
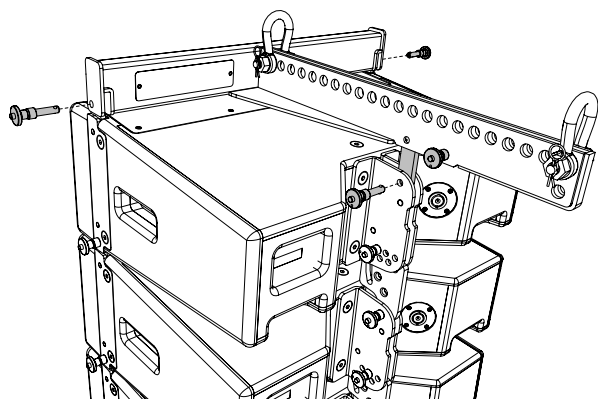

Connect the cabinets together at the rear with the link and angle rigging pins.
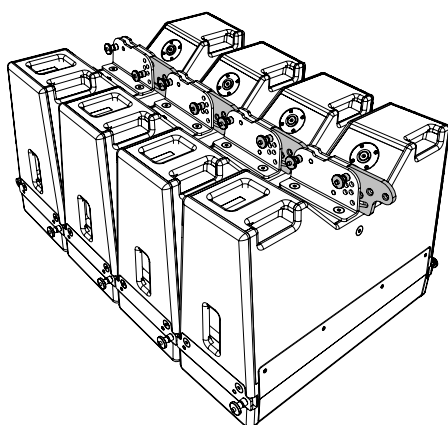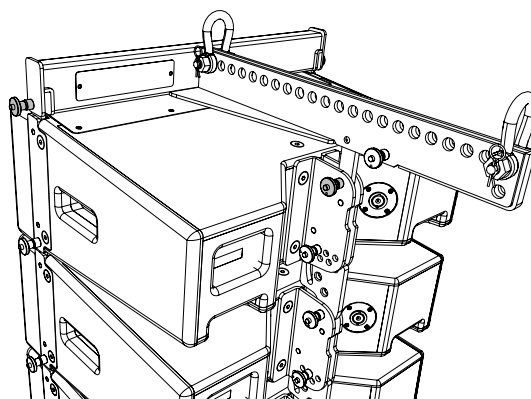
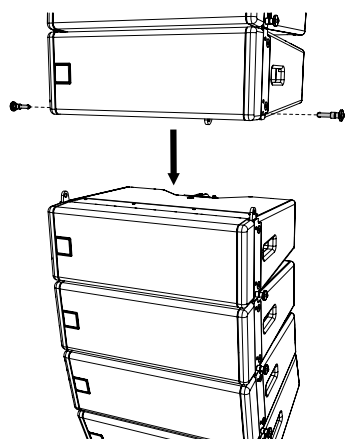Remove the front and rear rigging pins from the WPMGRIDI.
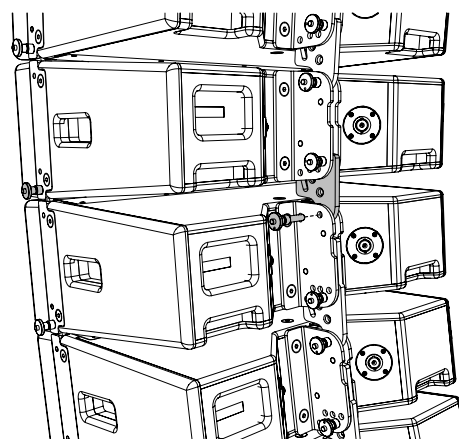
Place WPMGRIDI on the top cabinet.

Replace the front and back pins to secure the grid in place.
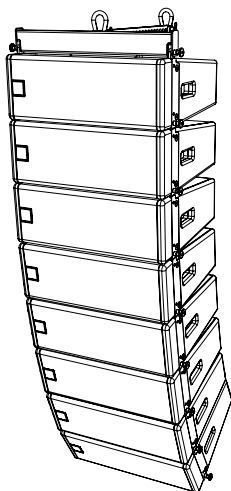

Lower the array on to the next four cabinets below (if required). Align the front rigging pins to lock into place.

Preselect the angle required on the cabinet above. Insert the rigging pin to secure the rear rigging point.

A maximum of 16 cabinets can be flown from the WPMGRIDI. Please refer to the DISPLAY software to determine site angles that can be achieved.
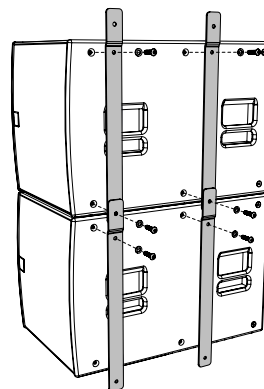
Install - WPM & SXC115

Remove all four M10 bolts from each side of the cabinet.

These will not be used to secure the FK550's to the SXC115.

When flown with WPM the front and middle position of the SXC115 should be used for the flying strips.

A maximum of 3 x SXC115 subs can be used in a mixed array.

Attach the FK550's (two on each side) using the M10 bolts provided with the kit.

Position the SXGRIDI15 on top of the SXC115 sub woofer array.

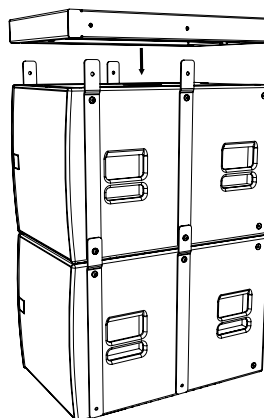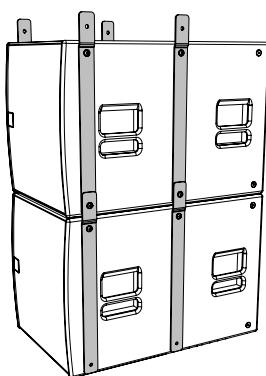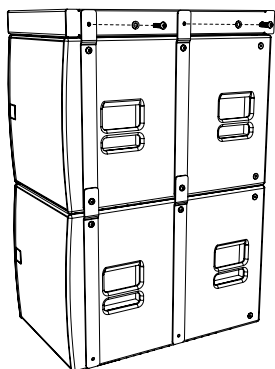Align the FK550 to the SXGRIDI15 and secure using the M10 bolts provided on both sides of the grid.
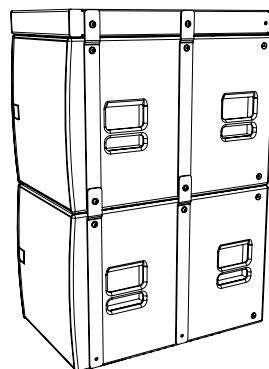
Lift the array from the ground and secure the WPMTRIGI to the bottom of the SXC115 array using the M10 bolts provided.
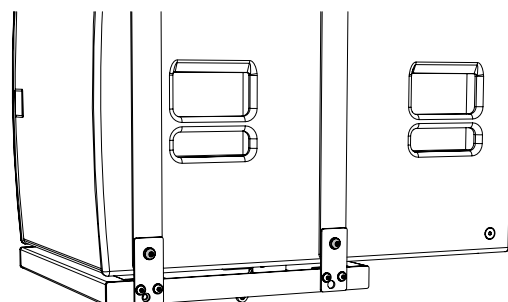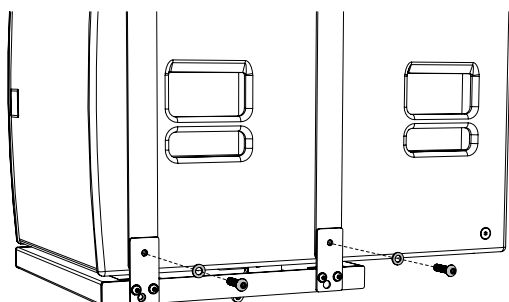
Pre-select the inter-cabinet angles while in the case, release the drop links from the cabinets by removing the rigging pins from the LOCK and LINK positions.
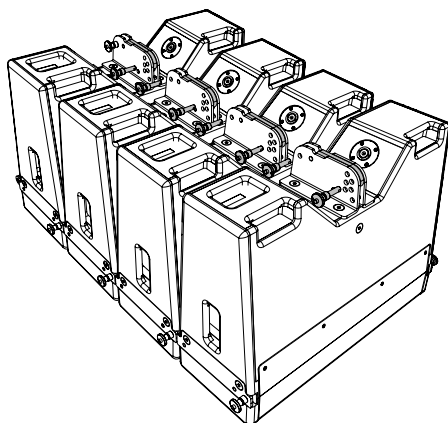
Slide the drop links down into the cabinets below. Lining them up with the angles predicted by the DISPLAY software.
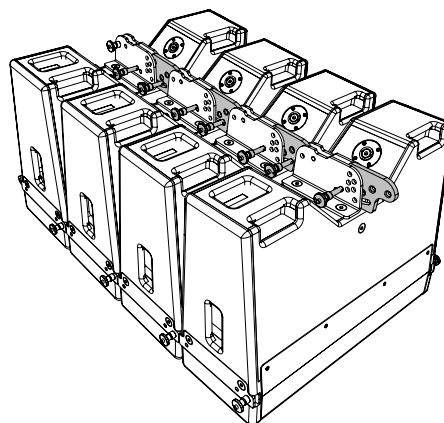
Connect the cabinets together at the rear with the link and angle rigging pins.
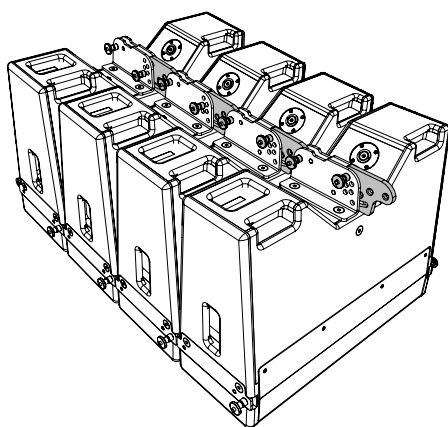
Position the array under the WPMTRIGI. Replace the two pins at the front and one at the rear to secure the WPM to the conversion frame.

MARTIN AUDIO
LONDON
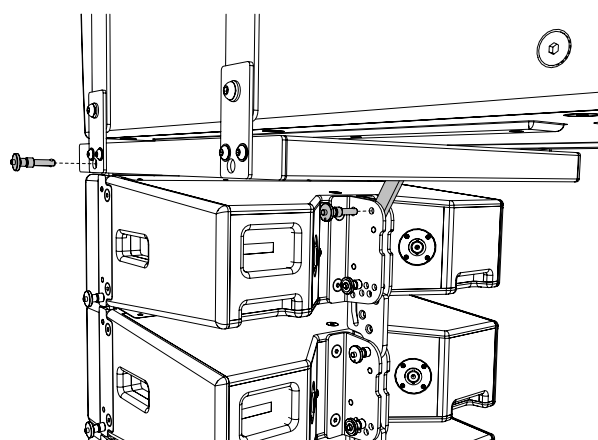
If more WPM are required, repeat the process on page 59.

Lift the existing array above the next set of WPM.
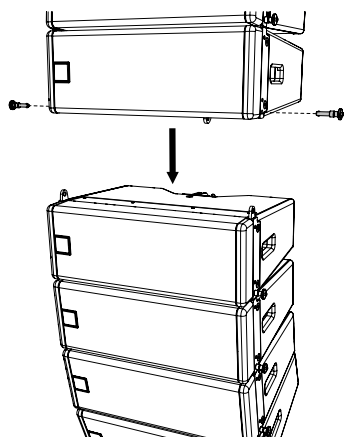
Preselect the angle required on the cabinet above. Insert the rigging pin to secure the rear rigging point.

A maximum of 3 x SXC115's & 12 WPM can be flown in a mixed install array.

Essential Maintenance

You must regularly inspect all rigging hardware for possible faults.

If you find any issues, repair the enclosures. Don't deploy them until deemed safe by a qualified expert.

The fixings that connect the rigging to the enclosures use internal Binx and Aerotight nuts. These nuts are designed to offer resistance to prevent the bolts from loosening, but they can become loose if the bolt has been adjusted or removed for service. Check that these fixings are tight and if not, do the following;
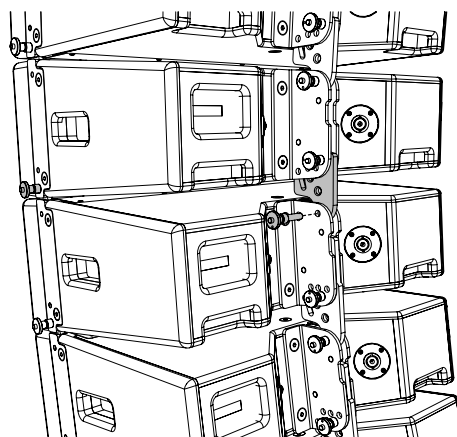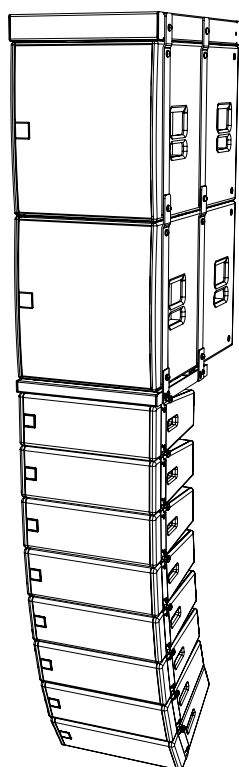
1. Remove the fixing bolt.
2. Clean the bolt using Loctite SF 7070 and dry.
3. Apply Loctite 243 to the bolt.
4. Fit the bolt.
5. Allow to dry for 24 hours before deploying the enclosure.

Torque setting

The following torque setting is for the bolts that connect the rigging to the enclosures only. Don't use this for any other bolts.

Bolt size	Bracket thickness (mm)	Torque (Nm)
M8	4 at front, 5 at rear	12.5 - 15.0

WPM

To access the WPM drivers first unscrew the 8 x M3 CSK screws securing the grille.
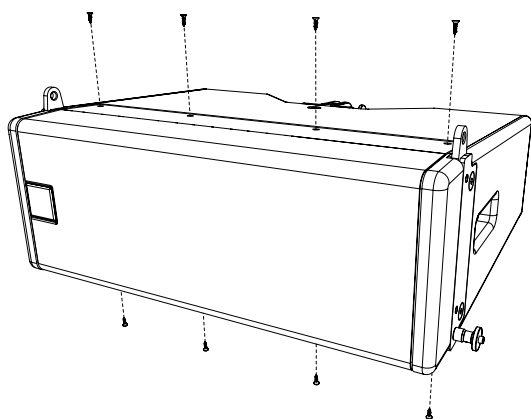
Remove the grille and set aside.
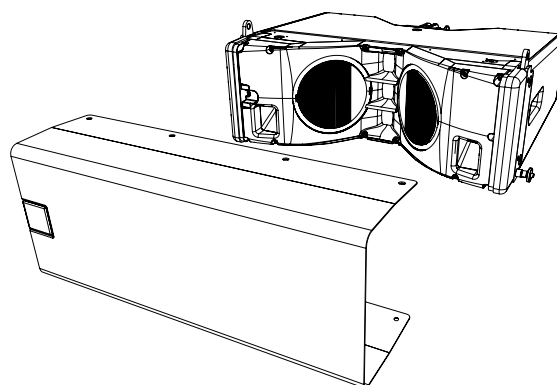
Remove the 14 x No. 8 screws the secure the baffle in place.
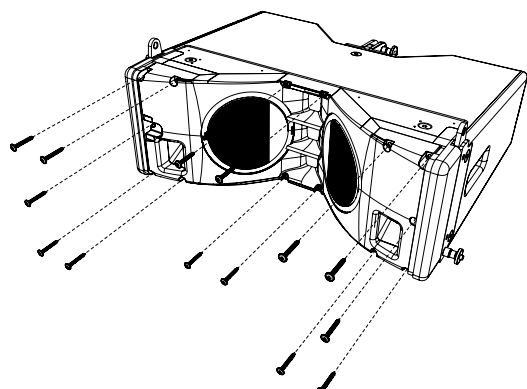
Remove the baffle and driver assembly from the cabinet.

Remove the 4 x No. 8 screws securing the LF unit (DLS7007).

To replace the HF section (DCD10006). Remove the 4 x No.8 screws holding the HF assembly in place.

To replace an HF diaphragm (part number DLZ10006). Remove the 4 x M4 screws securing the back cover.

Specifications

WPM

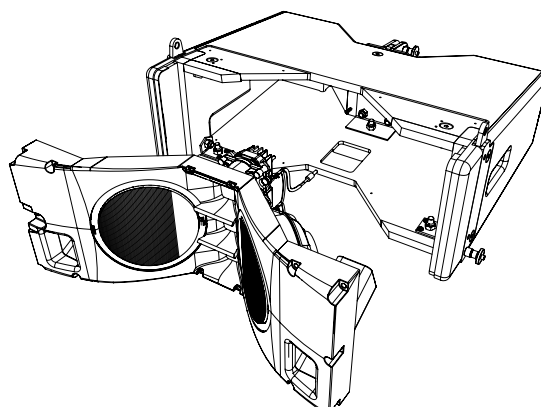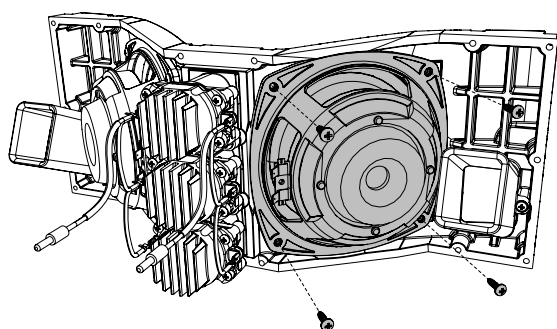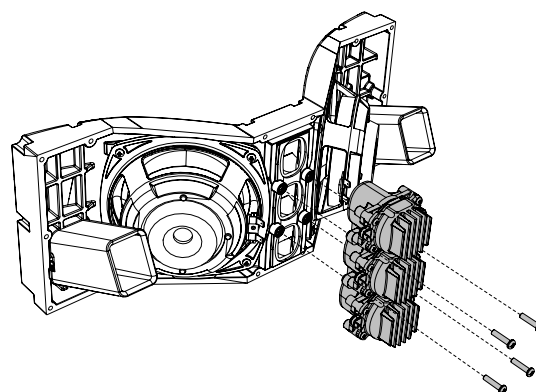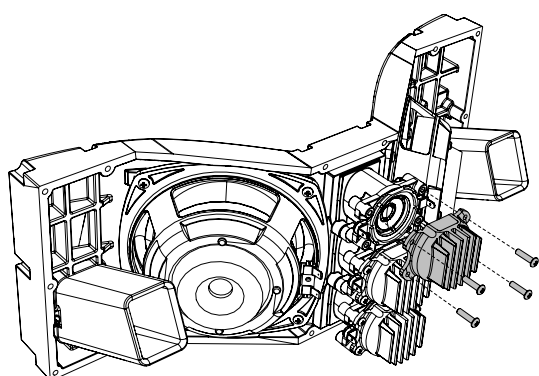|	
TYPE	Two-way, passive line array element
FREQUENCY RESPONSE	76Hz - 18kHz ±3dB
MAX SPL @1M	130dB (1 cabinet)
DRIVERS	
LF	2 x 6.5" (165mm) contoured-diaphragm / 2" (50mm) edge-wound CCAW voice coil, neodymium magnet drivers, reflex loaded
HF	3 x 1.4" (35mm) aluminium dome / 1.4" (35mm) voice coil, neodymium magnet compression drivers on constant-directivity waveguide
SYSTEM AMPLIFIER	iKON iK42, iK81
SYSTEM RESOLUTION	1 to 4 enclosures per amplifier channel
NOMINAL IMPEDANCE	16 ohms
DISPERSION	100° horizontal (-6dB), 125° horizontal (-10dB)
CROSSOVER	1.2kHz passive
ENCLOSURE	Vertical trapezoid with 5° wall angle Multi-laminate birch and poplar ply construction
FINISH	Black textured paint
PROTECTIVE GRILLE	Black HEX perforated steel
INPUTS	2 x NL4
PIN CONNECTIONS (INPUT)	1+/1-
FITTINGS	Integral 3-point rigging system 2 x side pocket handles 2 x rear grip handles
FLOWN MAXIMUM ARRAY	16 enclosures in single array
DIMENSIONS	(W) 500mm x (H) 185mm x (D) 377mm (W) 19.7in x (H) 7.3in x (D)14.8in
WEIGHT	14kg (26.4lbs)
ACCESSORIES	WPMSXGRIDT Touring Frame WPMGRIDI Install Frame Rigging Pins

SXCF115

TYPE	Compact, cardioid subwoofer
FREQUENCY RESPONSE	44Hz - 150Hz ±3dB, -10dB @ 36Hz
MAX SPL @1M	137dB
DRIVERS	
LF FRONT	15" (380mm)/4" (100mm) voice coil, long excursion, ferrite magnet, waterproof cone
HF REAR	12" (300mm)/4" (100mm) voice coil, long excursion, neodymium magnet, waterproof cone
SYSTEM AMPLIFIER	iKON iK42, iK81
NOMINAL IMPEDANCE	15" 8 ohms - 12" 8 ohms
DISPERSION	Cardioid
ENCLOSURE	Multi-laminate birch and poplar ply construction
FINISH	Black textured paint
PROTECTIVE GRILLE	Black HEX perforated steel
INPUTS	2 x NL4
PIN CONNECTIONS (INPUT)	15" 1+/1- 12" 2+/2-
DIMENSIONS	(W) 500mm x (H) 552mm x (D) 810mm (938mm incl castors)
	(W) 19.69in x (H) 21.71in x (D) 31.90in (36.94in incl castors)
WEIGHT	61.5Kg (136lbs), 65Kg (143lbs) incl castors

SXC115

TYPE	Compact, cardioid subwoofer
FREQUENCY RESPONSE	44Hz - 150Hz ±3dB, -10dB @ 36Hz
MAX SPL @1M	137dB
DRIVERS	
LF FRONT	15" (380mm)/4" (100mm) voice coil, long excursion, ferrite magnet, waterproof cone
HF REAR	12" (300mm)/4" (100mm) voice coil, long excursion, neodymium magnet, waterproof cone
SYSTEM AMPLIFIER	iKON iK42, iK81
NOMINAL IMPEDANCE	15" 8 ohms - 12" 8 ohms
DISPERSION	Cardioid
ENCLOSURE	Multi-laminate birch and poplar ply construction
FINISH	Black textured paint
PROTECTIVE GRILLE	Black HEX perforated steel
INPUTS	2 x NL4
PIN CONNECTIONS (INPUT)	15" 1+/1- 12" 2+/2-
DIMENSIONS	(W) 500mm x (H) 550mm x (D) 811mm (939mm incl castors) (W) 19.69in x (H) 21.67in x (D) 31.92in (36.96in incl castors)
WEIGHT	53kg (117lbs), 56kg (124 lbs) incl castors

MARTIN AUDIO
L O N D O N