







ArrayIntelligence//










QUICK START MANUAL &
RELEASE NOTES V1.2

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» Contents

Getting Started	5
General	5
Installation	6
System Requirements	6
Connecting the System	7
Supported Switches	7
AES70 Control Data	7
Software	8
START	8
Top Bar	8
File and Settings Menus and Options 	8
Home Page	10
Firmware Update 	11
Firmware Default Presets	12
Clear User Data 	12
BLUEPRINT	13
Reference Axis	14
Stage	15
Surface / Object Group Add	16
Surface Add/Edit	17
2D Calculator Vertex Input Options	18
3D View Selector Bar	19
COMPONENT	21
Speaker Group Add	21
Speaker Add / Edit	22
Speaker Mechanical Edit - Line Source	23
Line Source Optimization 	24
Line Source Optimization - Edit Window	25
Optimization Algorithm 	26
Optimization Results 	28
Line Source Optimization - Result Window	29
Optimization Measurement Results 	30
Speaker Mechanical Edit - Point Source	31
Loudspeaker Mechanical Edit - Subwoofer	32

Loudspeaker Mechanical Edit - Subwoofer Array	33
Subwoofer Array Optimization 	34
Subwoofer Array Optimization - Edit Window	35
Presets 	36
Point Source Presets 	36
Subwoofer Presets 	37
Preset Version Numbering	37
Loudspeaker Assign	38
Detect 	39
Gateway Add	40
Gateway Assign	41
Bridge Add	42
Bridge Assign	43
SIMULATION	44
3D SIMULATION SPL	44
3D Simulation SPL Graph	45
MECHANICAL	46
I/O	47
I/O Gateway Configuration & Input Routing Matrix	47
I/O Gateway Input Priority – Input Fader View	48
I/O Gateway Output Routing Matrix	49
I/O Source Configuration	50
I/O Bridge Configuration	51
I/O AVB Milan™ Patch	52
AVB Milan™ Audio 	53
Streaming AVB Milan™ to a Gateway	54
CONTROL	55
Architecture 	55
Overview	56
EQ	57
Array Shaping 	58
Tilt 	58
METERING	59
Metering - Gateway	59
Metering - Sources	60


STATUS	61
Status - Overview	61
Status - Sync	62
Design Templates	63
How to use the design templates	63
Point Source Mini	64
Point Source Small	65
Point Source Medium	66
Line Source Compact	67
Line Source Short	68
Frequently Asked Questions (FAQ)	69
Release Notes	73
ArrayIntelligence 1.2, Build Date June 12, 2024	73
Updates	73
Resolved Issues	74
Known Issues	76
Included Files	77
Version History	78
ArrayIntelligence 1.1, Build Date September 22, 2023	78
Updates	78
Resolved Issues	78
Included Files	80
ArrayIntelligence 1.0, Build Date June 14, 2023	81
Included Files	81

» Getting Started

General »

Adamson ArrayIntelligence Software upgrades your ability to design, deploy, control, and monitor your system in both mobile and installation environments. The new software is designed with a professional audio workflow in mind: move from design, advanced 3D simulation & optimization, through I/O, control, metering and system status, all in the same software.

The ArrayIntelligence installation package includes the software, design templates ,EQ snapshots and this Quick Start Manual. Please contact software.support@adamsonsystems.com for further support, bug reports and feature requests.

The Quick Start Manual takes you from installation of the software and how to connect devices followed by a walk through the software and it's features. Every page of the software and the available functions are described. If there is additional info on features this is highlighted with a .

Following the Quick Start Manual you find a frequently asked questions section, release notes including updates, resolved issues, known issues and included files.

Installation

The following 3rd party applications are included in the ArrayIntelligence software and will be installed when installing the ArrayIntelligence software for the first time:

- Bosch DNS Server
- Microsoft Visual Basic
- WinPcap

Start ArrayIntelligence software with administrator rights and select the correct network interface.

After installation, when opening ArrayIntelligence software for the first time, make sure to allow network communication through the firewall for all types of network. This can also be activated in: Windows Security -> Firewall & network protection -> Allow an app through firewall -> Change settings button -> Activate for all "Java(TM) Platform SE binary".

System Requirements

- Operating system: Windows 10 / 11 (64-bit)
- Processor: i7 3.0 GHz or faster
- RAM: 8 GB or more
- Storage: 10 GB or more
- Network: Gigabit-Ethernet
- Display resolution: 1920 x 1080 / 1920 x 1200 pixel

Connecting the System

Devices connect to ArrayIntelligence software, using standard Ethernet cabling (minimum Cat5e), either through a Gateway, a switch, an NDS or directly to the cabinets. If the network is used for control only, standard gigabit switches can be used and a **maximum of 12** devices can be connected in "daisy-chain".

Full network connectivity, including Milan™ AVB audio transport and control requires AVNU™ certified switches.

Supported Switches

The following switches are tested and functional with Adamson components.

- Gateway and Bridge network ports
- Luminex Gigacore Series
- Extreme Networks X-Series with active AVB license
- Netgear AV-Line 4250 Series with active AVB license
- Niveo Professional NGSME9AVB

AES70 Control Data


AES70 is a freely-available open standard for control and monitoring of networked audio and video devices. It is based on the specification of OCA (Open Control Architecture) that was first developed by the OCA Alliance.

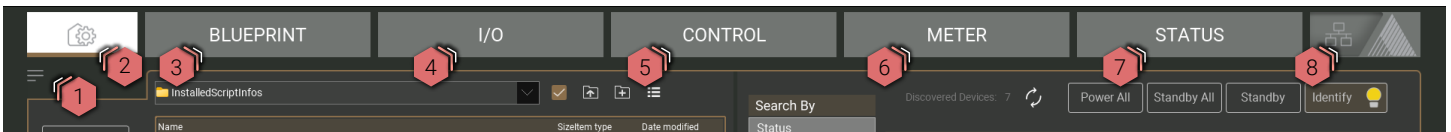
Control data from and to the ArrayIntelligence software is using AES70 protocol. For AES70 to work, devices need to be in the same IP address subnet. If there is no DHCP server in the network, the devices use the Zeroconf protocol, to self assign an IP address in the 169.254.XXX.XXX subnet. If the used network interface is set to obtain an IP address automatically, it will pick a suitable IP-Address.

» Software

START »

Top Bar

1. File and Settings Menus and Options 
2. HOME PAGE - File loading operations, device discovery and identification firmware update, global assign, reset and standby functions
3. BLUEPRINT – Room design, virtual loudspeaker placement, and simulation; in essence, Blueprint AV with an updated look. Additionally, this page has array optimization and device assignment.
4. I/O – Manage all device (CS-Series loudspeakers and rack-mounted equipment) I/O, AVB Milan audio patch, enable optimization and user definable zone assignments.
5. CONTROL – EQ / level / delay / polarity for any layer / zone / group of the system define & assign zones to groups, EQ snapshot storage and recall.
6. METER – Audio metering from a full system overview to individual endpoints
7. STATUS – System diagnostics
8. ArrayIntelligence / Adamson Logo – Shows online / offline status and is a toggle for the user.



File and Settings Menus and Options

Standard File Menu Items

- New File, Open, Save As
 - » Saves a .bpt file including all data associated to design.

Edit

- Undo, Redo
 - » Works only on Blueprint page.

Export to DXF

- Allows to export a DXF file of the design to use in other drawing software.

Export / Import .rm

- All room data is exported or imported.

Options

- Design Version
 - » Activates the developer mode.
- Keyboard
 - » Switches keyboard from US to European. This affects if separators are shown as "." or ",".
- Vertex Input Option

- » Changes from coordinate input to distance and angle from a defined point.
- User Data
 - » Allows the user to enter additional info for the project this will be printed with the print user sheet function.
- Environment
 - » Temperature, relative humidity and atmospheric pressure can be adjusted and air-loss can be toggled for simulation.
- Audience
 - » Height of audience ear level can be changed for sitting and standing.
 - » Default values are 1.1 m and 1.7 m.
 - » Changes will affect all surfaces set to the respective setting.
- Default Hoist Limit
 - » By default all hoists have a capacity of 1000 kg.
- Cabinet Types
 - » The user can activate and deactivate visibility of cabinets to clean up selection drop-downs.
- SPL Calculations
 - » Change between Max Peak and Max Average SPL calculations.
 - » Per default ArrayIntelligence simulates in Max Average.
- Blocked Frequencies
 - » Once Hide blocked frequency points 3D SPL is activated and a bottom frequency is selected, objects will block SPL of speakers, when in the way. This happens for all frequencies above the selected in the 3D SPL simulation.

Tools

- Limit of Deviation
 - » Sets the maximum of deviation for temperature and angle before a warning is shown.
- Network Interface
 - » Selects the used network interface, this needs to be set correctly for firmware update and AVB patch.
- Use Extended Angles
 - » Allows to use different angles on legacy products with additional hardware.
- Continuously Update 3D Simulation
- Print Device Data
- Print User Sheet
- Unit Change Keep Numbers
 - » Changes the units from metric to imperial without changing the values. This is useful if accidentally the wrong units were selected while entering values.

Help Menus

- 3D view Mouse Controls
- Shortcut Keys
- Command Line
- Base Specs
- About

Home Page

1. New File / Open / Save As - Used in conjunction with the folder browser and can also be found in the File Menu which is accessible on all pages
2. Filter devices by Online Status, Device Type, Assignment Status, AVB Milan™ Streaming Status and sort them by switch port and in alphabetical order.
3. Lists the hardware information of a selected Device, including IP address, loaded Preset, default preset and Inclinator angle
4. Resets the device and clears any user defined data 💡
5. Firmware update 💡
6. Global Assign Page
7. Inclinator Calibration
8. Populated list of all devices discovered on current network
 - Right click to rename device
 - Press shift / CMD and click to select multiple, CMD + a to select all devices
9. Refreshes the device discovery list
 - Right click to force refresh the list.
10. Power / Standby all connected or the currently selected devices
11. Blinks the status light of highlighted devices for physical identification
12. Toggles the device between Power On and Standby mode
13. Red background indicates outdated firmware
14. Display of the currently selected network interface

The screenshot shows the ArrayIntelligence software interface with the following components and callouts:

- 1**: File menu buttons (New File, Open, Save As).
- 2**: Search by dropdown menu.
- 3**: Hardware Info section for a selected device.
- 4**: Clear User Data button.
- 5**: Firmware Update button.
- 6**: Global Assign button.
- 7**: Inclinator Calib. button.
- 8**: Device list table with columns for Status, Type, Assign, AVB Streaming, Sort By, and Switch Port.
- 9**: Refresh button (circular arrow icon).
- 10**: Power All button.
- 11**: Standby All button.
- 12**: Standby button.
- 13**: Identify button (lightbulb icon).
- 14**: File Name input field.

The device list table (Callout 8) contains the following data:

Status	Type	Assign	AVB Streaming	Sort By	Switch Port	Firmware	Power
Online	Gateway-00156	CS7p-00343	CS118-01017	CS10-90634	CS118-00052	3.26	⬢
		CS7p-00168	CS118-01015			3.26	⬢
						3.26	⬢
						3.26	⬢
						3.26	⬢
						3.19	⬢

Hardware Info for CS118-00052:

- Device ID: CS7p-967-0005-00343
- IP Address: 172.25.1.193
- Preset: 70x40 FR
- Inclinator: 2.9

Firmware Update

Follow these steps to update the firmware of connected devices using the ArrayIntelligence software:

1. Make sure all devices are connected to a stable mains power supply while updating the firmware.
2. Connect the devices and your computer using ethernet cables and suitable switches. For firmware updates, standard gigabit and AVNU™ certified switches can be used. Up to eight devices can be daisy chained.
3. Make sure ArrayIntelligence is allowed through the firewall (Windows Security -> Firewall & network protection -> Allow an app through firewall -> Change settings button -> Activate for all "Java(TM) Plattform SE binary") and there is no active virus scanner on the used interface to avoid connection problems.
4. Set the interface to obtain an IP address automatically.
5. Open the software, check that all devices are connected properly in the device browser on the right hand side of the menu page.
6. Select the correct network interface used for the firmware update (MENU -> Tools -> Network Interface). After changing the interface the software needs to be restarted for the firmware update to work.
7. In the device browser a readout for the firmware version can be found. If firmware needs to be updated click on "FW update".
8. Select the firmware type you want to update and confirm with "OK". Each type of device is updated separately. E.g. all CS7p, all CS10p, all Gateways, etc.
9. Select the individual devices you want to update or use the "select all" function in the top left corner of the window. Confirm with "OK".
10. Start the firmware update by pressing "GO".
11. After the new firmware data was transferred to the devices a new window opens. Click on "RESET ALL" to reset the devices in the list. After reset they will boot the new firmware.
12. Wait until all devices show completion and finish the firmware update by clicking "Close".
13. Repeat from step 8 for other device types if necessary.

Firmware Default Presets

The firmware files for cabinets, amp upgrade kits and warranty amplifiers include respective default presets that will be loaded when user data is cleared or the device is reset.

After “clear user data” or “reset”, point source cabinets load the firmware default preset until a different pattern preset is exported from the software. After exporting any 70x40 or 100x50 preset, the cabinet will return to the respective default FR preset of the selected pattern. This happens both after “clear user data” and when the cabinet is reset after firmware update. This setting will be kept after firmware update as well.

- VGt includes the VGt Cardioid V1.0 preset.
- CS7, CS7_Amp and CS7_Amp_Warranty include the CS7 V5.0.1 preset.
- CS10, CS10_Amp and CS10_Amp_Warranty include the CS10 V5.0.1 preset.
- CS10n, CS10n_Amp and CS10n_Amp_Warranty include the CS10n V5.0.1 preset.
- CS118, CS118_Amp and CS118_Amp_Warranty include the CS118 V5.0.1 preset.
- CS119, CS119_Amp and CS119_Amp_Warranty include the CS119 V5.0.2 preset.
- CS7p_70x40, CS7p_Amp and CS7p_Amp_Warranty include the CS7p XO 70x40 V5.2.1 preset.
- CS7p_100x50 includes the CS7p XO 100x50 V5.2.1 preset.
- CS10p_70x40, CS10p_Amp and CS10p_Amp_Warranty include the CS10p XO 70x40 V5.2.1 preset.
- CS10p_100x50 includes the CS10p XO 100x50 V5.2.1 preset.

Clear User Data

All devices can be reset to default settings, either through the ArrayIntelligence software on the menu page (allows for multiple cabinets to be cleared at the same time), on the diagnose page or by following the power cycle sequence below. Clear user data will clear all user settings (EQ, gain, delay) as well as control assignment and AVB Milan™ patch. Clear user data will load the standard preset included in the firmware, except for point sources where it loads the XO preset of the last exported dispersion pattern.

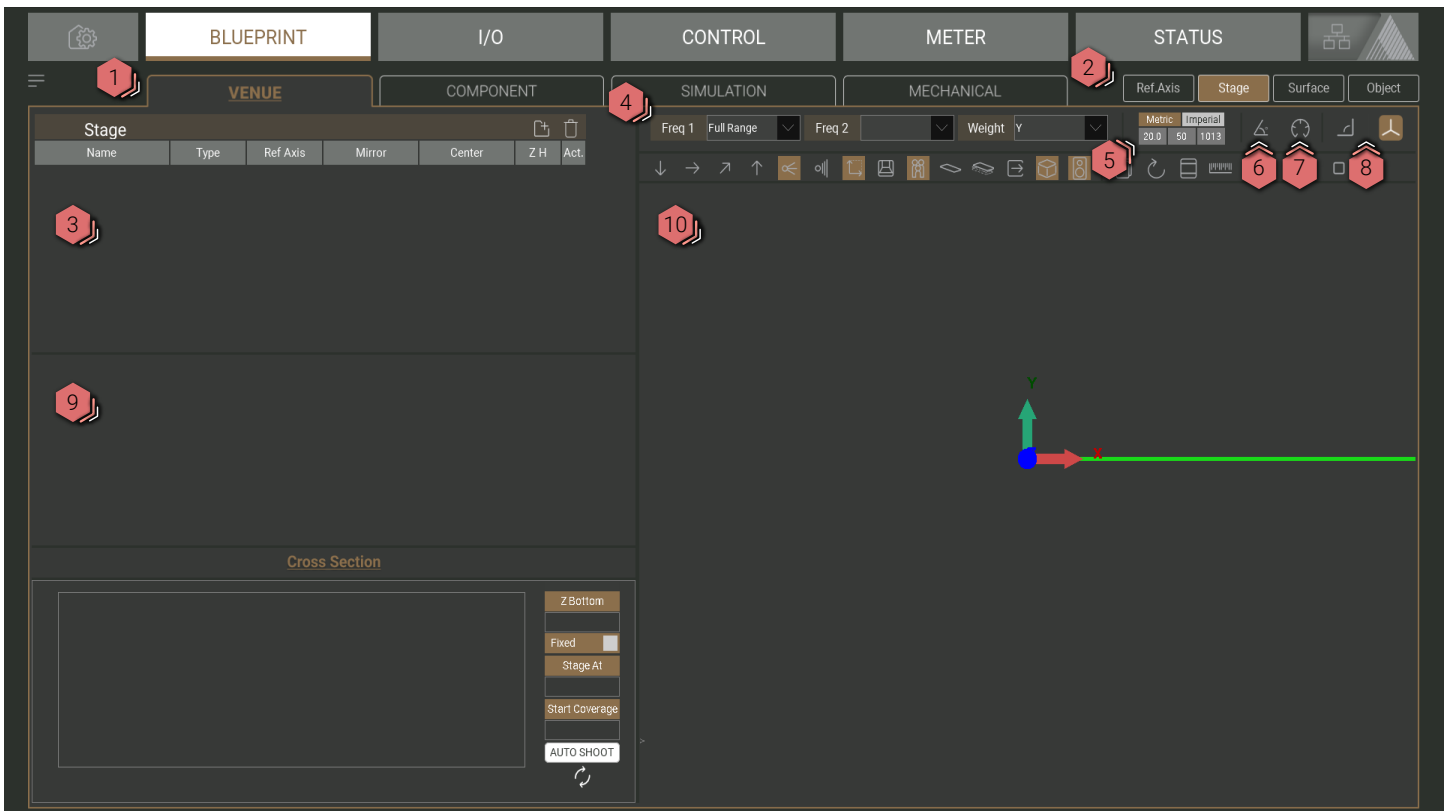
1. Power up the device. The fan shortly runs on full speed before going to idle.
2. When the status LED flashes once, disconnect power.
3. Power up the device. The fan shortly runs on full speed before going to idle.
4. When the status LED flashes twice, disconnect power.
5. Power up the device. The fan shortly runs on full speed before going to idle.
6. When the status LED flashes three times, disconnect power.
7. Power up the device. The fan runs at full speed longer than the three times before, afterwards the status LED flashes orange.
8. The factory reset is successful when the status LED continuously lights green.

BLUEPRINT

Page Overview

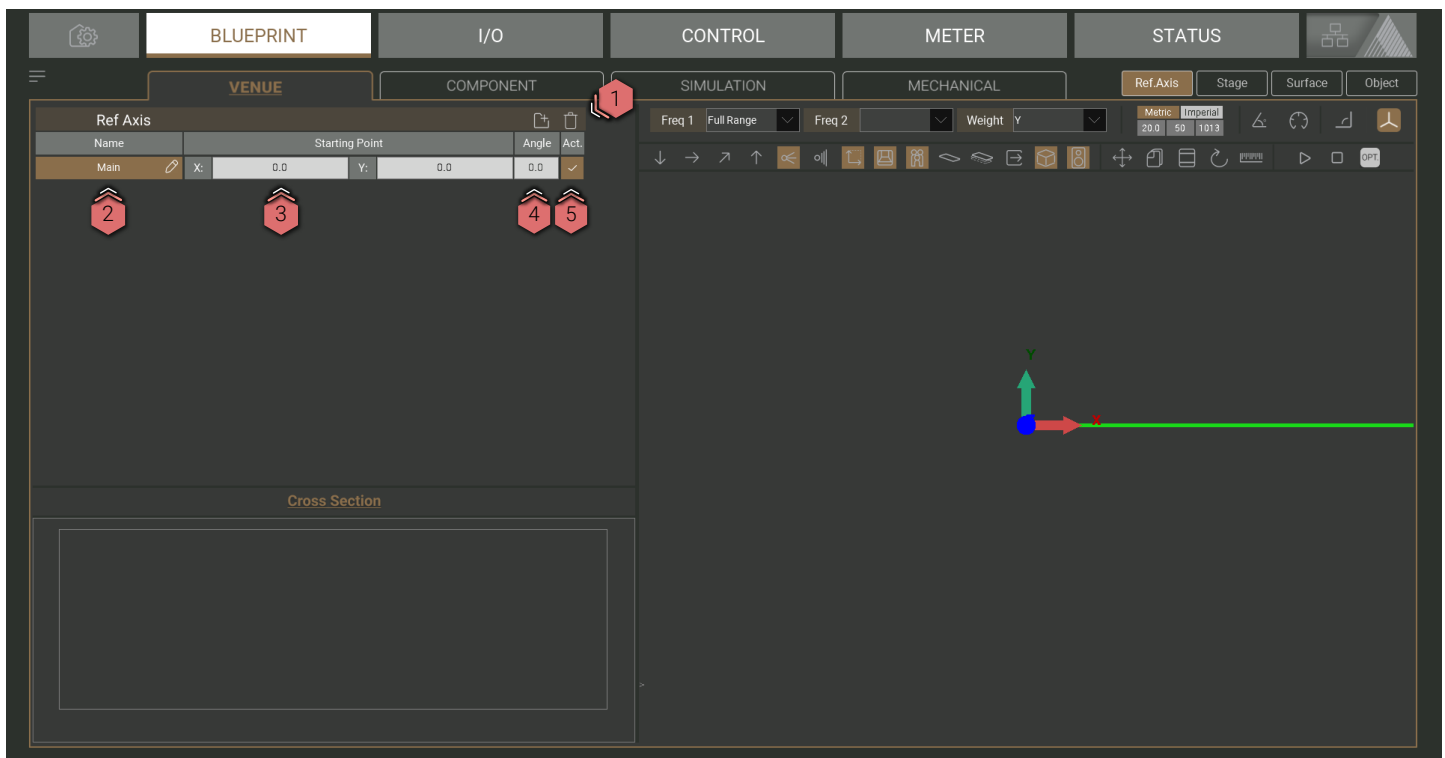
Upon starting a new design, Adamson AI defaults to 2D Mode on the Blueprint page.

1. Design Tabs
 - Venue – Create room designs by adding Stages, Surfaces, and Objects
 - Component – Place virtual Adamson loudspeakers, Bridges and Gateways into your design
 - Simulation – Run precise simulations to check your design before you deploy a system
 - Mechanical – View important rigging information for correct and safe deployment
2. Venue designer options
 - Reference Axis; Stage (default); Surface; Object
3. Edit window
4. Frequency and Simulation weighting options
 - Drop-down selectable
5. Environment settings
 - Switch between metric / imperial
 - Click bottom row for editable pop-up window
6. Vertex Input Options (Click the icon for the editable pop-up window)
7. 3D simulation information (Click the icon for the editable pop-up window)
8. 2D / 3D view selector (Select or use CTRL-F to switch)
9. Cross Section view
10. 2D / 3D view window



Reference Axis

1. Add / Remove
2. Reference Axis Name
3. Starting point (distance from linked Reference Axis)
4. Angle (rotation in relation to linked Reference Axis)
5. Activate Reference Axis



Stage

1. Add / Remove
2. Stage Name
3. Geometry of Stage (Arc Quad /Circle)
4. Ref Axis
5. Mirror Stage on the X or Y axis
6. Center Stage on X or Y axis
7. Height of Stage
8. Make Stage Active
9. Vertex Input for X and Y axis dimensions
10. Radius of front or back arc of Stage

The screenshot displays the ADAMSON software interface with the 'VENUE' component selected. The 'Stage' configuration panel is visible, showing a table of stage properties and a vertex input section. Red callout boxes 1 through 10 highlight specific UI elements corresponding to the numbered list above.

Name	Type	Ref Axis	Mirror	Center	Z H	Act.		
stg_1	Arc Quad	Main	X	Y	X	Y	1.5	✓

Vertex Input:

Vertex	1	2	3	4
X	0.0	0.0	-5.0	-5.0
Y	3.75	-3.75	-3.75	-3.75
R	0	0	0	0

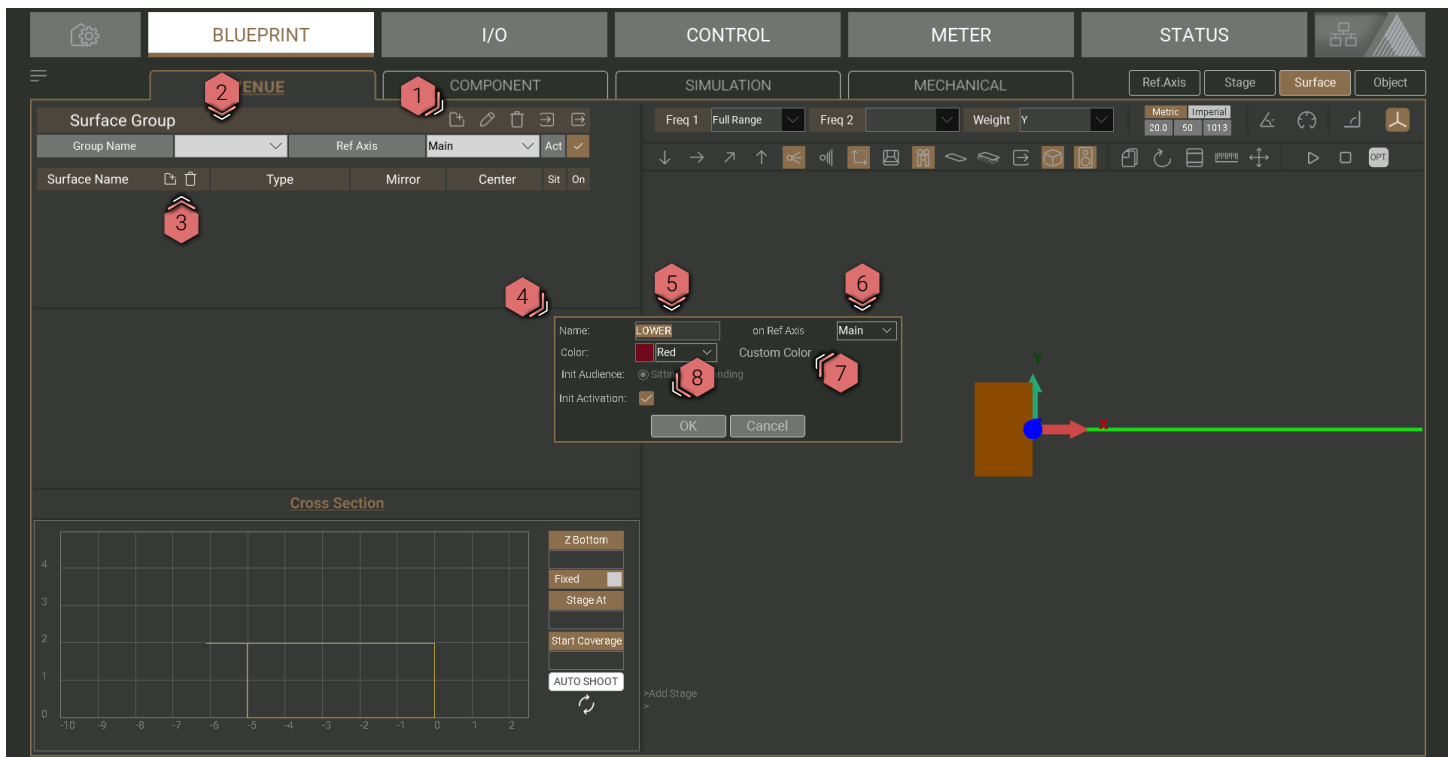
Cross Section Graph:

The graph shows a cross-section of the stage with a grid. The x-axis ranges from -10 to 2, and the y-axis ranges from 0 to 4. A yellow line represents the stage profile, showing a rectangular base and a curved top.

Surface / Object Group Add

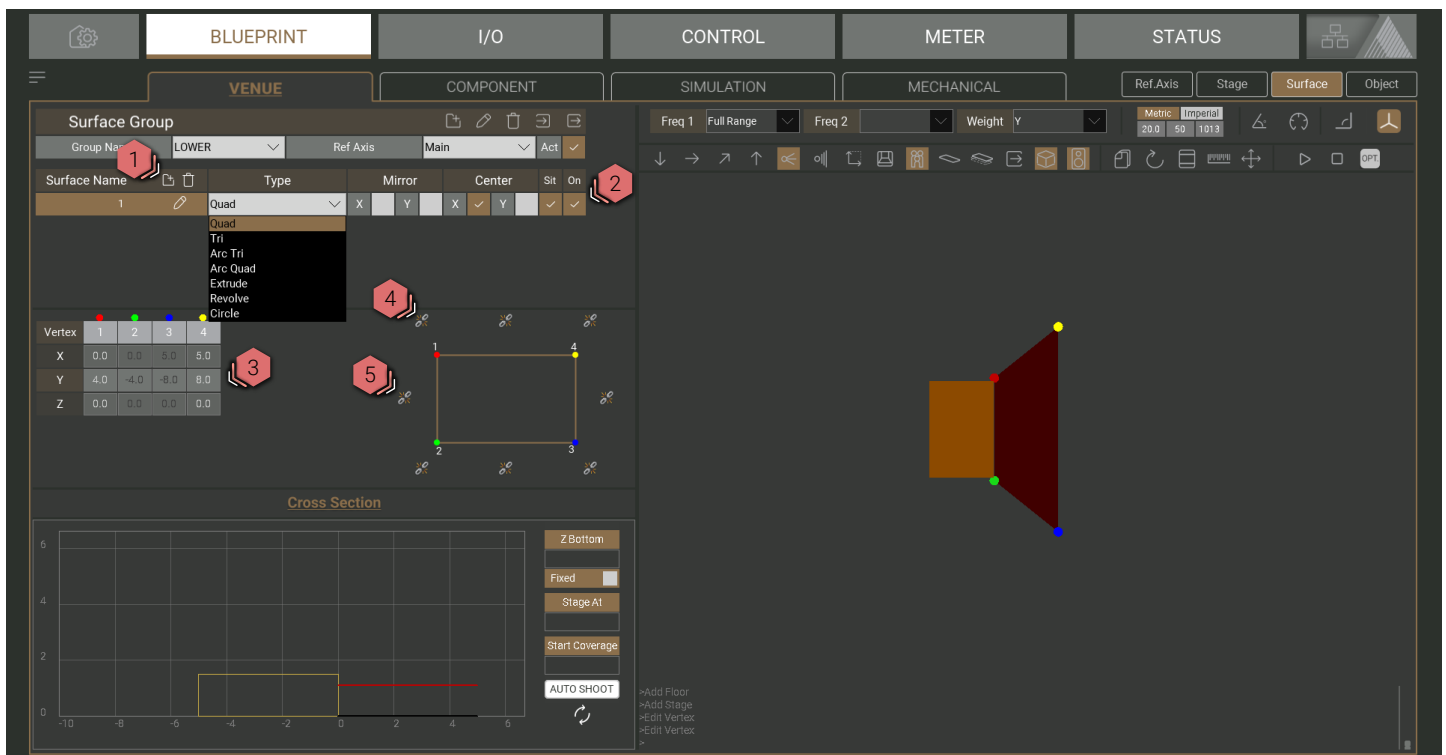
The following example is labeled for Surface. Object Group Add works in the same way

1. Surface Group Add / Edit / Remove / Import / Export
2. Surface Group drop-down select
3. Surface Add / Edit / Remove
4. Add Surface Group pop-up window
5. Surface Group Name
6. Surface Group Reference Axis selection
7. Surface Group Color
8. Initial Floor Group Audience options
 - Sitting or Standing (audience listening height)
 - Active or Non-active



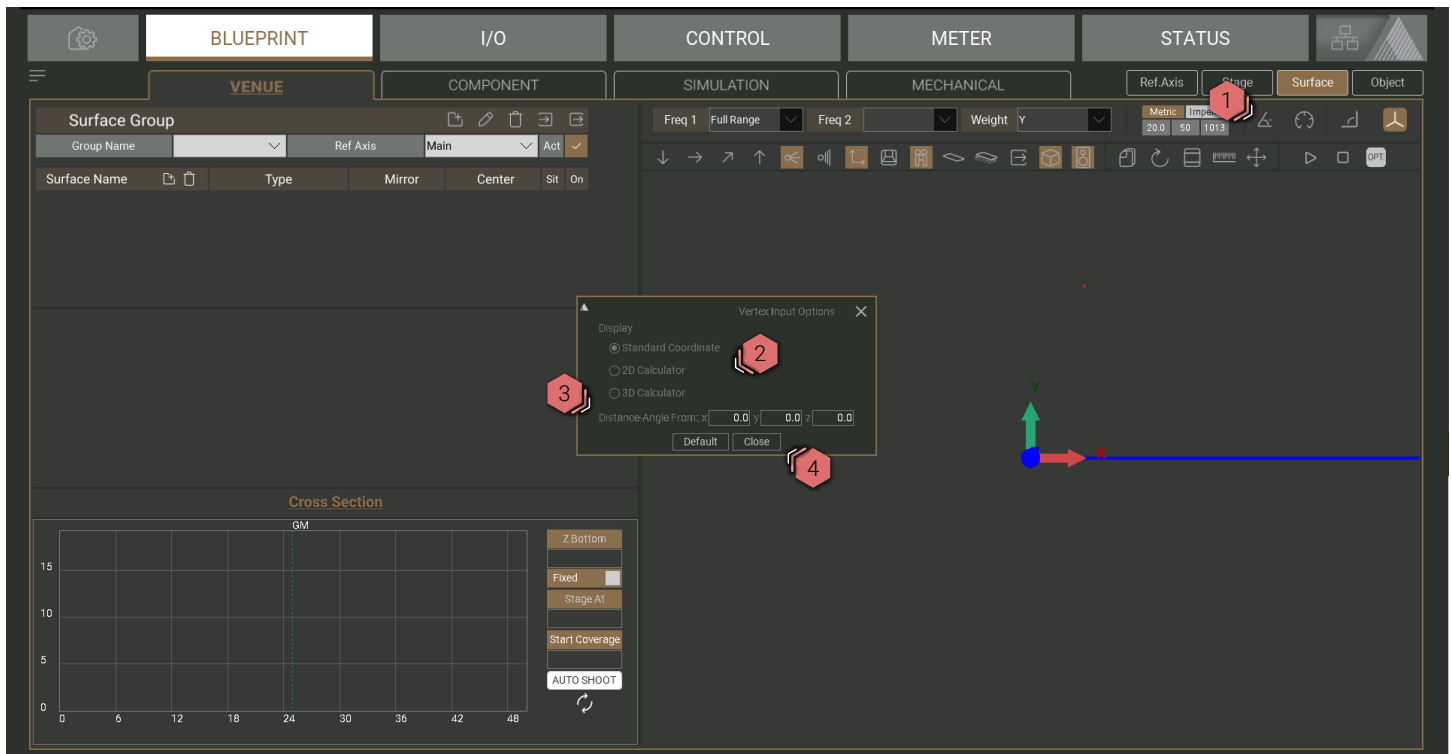
Surface Add/Edit

1. Surface Add / Edit
2. Surface options
 - Surface Name (click to edit)
 - Surface Type drop-down (Quadrangle, Triangle, Arc Triangle, Arc Quadrangle, Extrude, Revolve, Circle)
 - Surface Mirror
 - Center Surface on X or Y axis
 - Sit (default listening / simulation height 1.1 m above the entered values) / Standing (default listening / simulation height 1.7 m above the entered values)
 - On (active for simulation)
3. Surface Vertex Co-ordinates (X, Y, Z)
4. Vertex Link
5. Edge Link



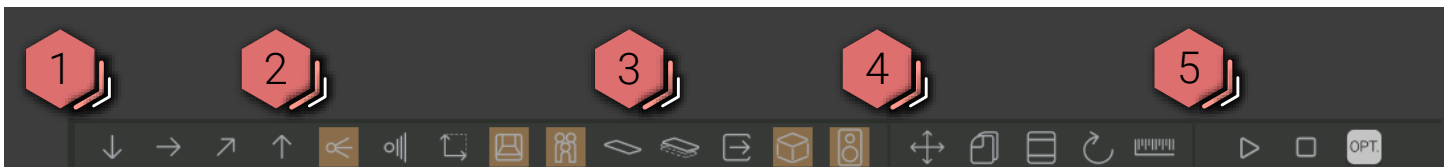
2D Calculator | Vertex Input Options

1. Vertex Input Options – click here to change Vertex Input modes
2. Choose the Vertex Input method
 - 2D calculator to enter distance and angle on x-axis, instead of x and z coordinates. Y coordinates are still entered as values if working in 3D.
 - 3D calculator to enter distance and two angles instead of coordinates.
3. Distance-Angle From – distance from Reference Axis to the location of the measurement tool
4. Select Close to confirm Vertex Input method, Default to Cancel and set values to default

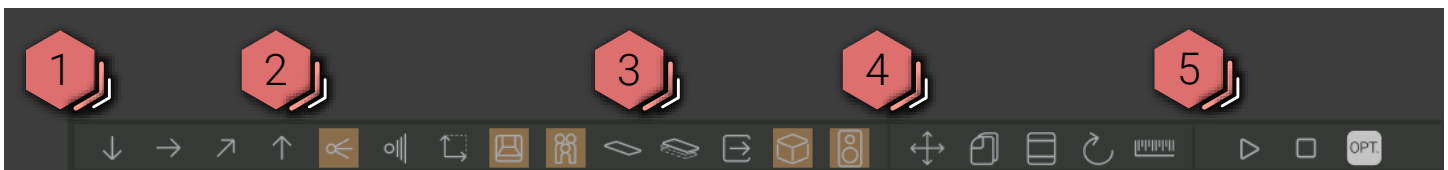


3D View Selector Bar

1. Standard 3D views (click multiple times to rotate)
 - Top Down
 - Side view
 - Isometric view
 - Front view
2. Show / Hide design elements
 - Vertical rays
 - Horizontal rays
 - Reference Axis
 - Stage
 - Audience (color layer)
 - Surface (ground below audience - corresponds to entered values)
3. Advanced design elements
 - Activate / Deactivate parallel projection
 - Export design to a .dxf file
 - Show / Hide objects
 - Show / Hide cabinets
4. Measurement and command bar functions
 - Move by function
 - » Select one or multiple elements either in 3D view or from the list in the edit window. Confirm by pressing enter.
 - » Select the first point (default is origin). Coordinates can be selected in 3D view or entered as: "X.X,Y.Y,Z.Z". Confirm by pressing enter.
 - » Select the second point. Coordinates can be selected in 3D view or entered as: "X.X,Y.Y,Z.Z". Confirm by pressing enter.
 - » The objects are moved by the distance of the first to the second point.
 - Copy function
 - » Select one or multiple elements either in 3D view or from the list in the edit window. Confirm by pressing enter.
 - » Select the first point (default is origin). Coordinates can be selected in 3D view or entered as: "X.X,Y.Y,Z.Z". Confirm by pressing enter.
 - » Select the second point. Coordinates can be selected in 3D view or entered as: "X.X,Y.Y,Z.Z". Confirm by pressing enter.
 - » A second element is created and moved by the distance of the first to the second point.



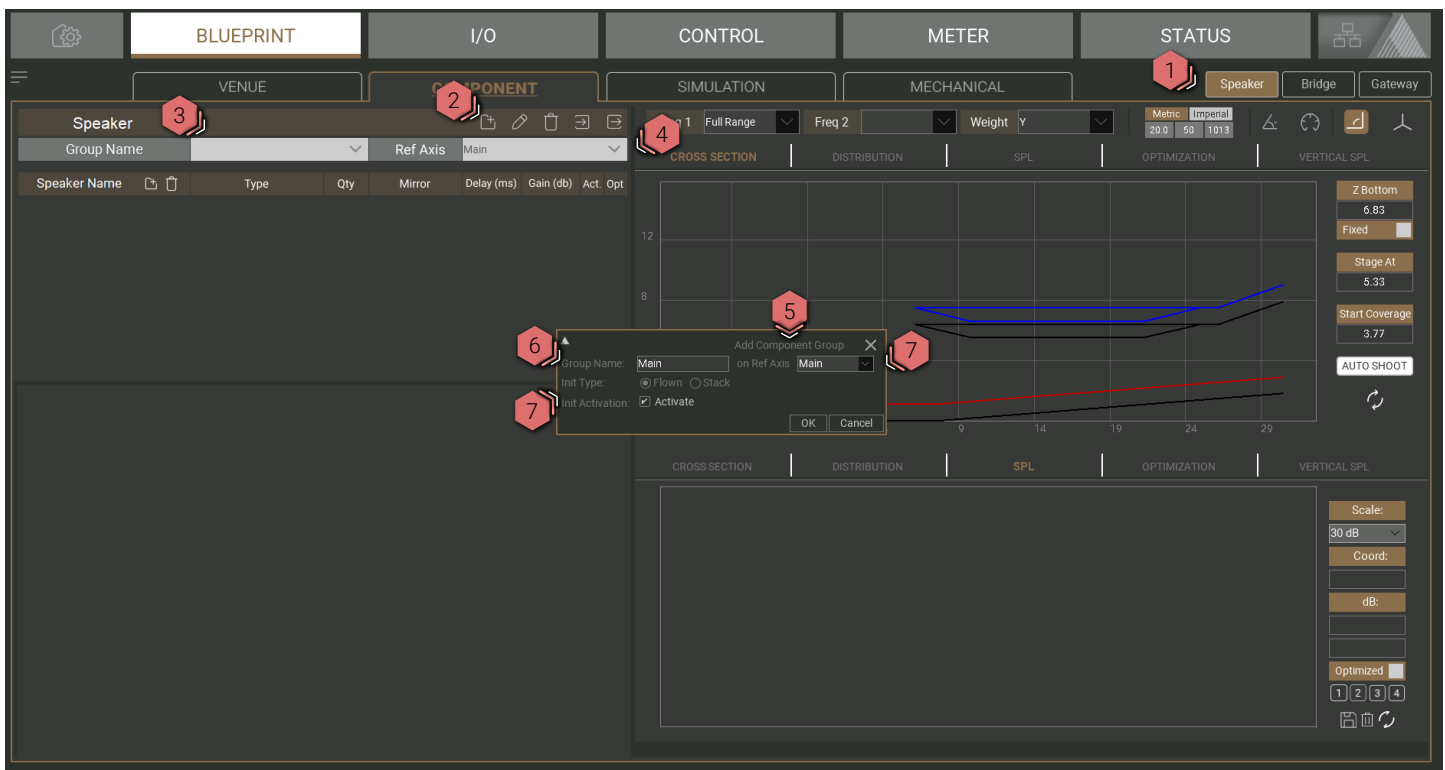
- Array feature
 - » Select one or multiple elements either in 3D view or from the list in the edit window. Confirm by pressing enter
 - » Select direction (default is x). Type x, -x, y, -y, z or -z to select the direction of the array
 - » # in array. Type the no. of elements in your array. This includes the original element.
 - » Space between the components. Enter the desired spacing. This is measured from outside boarder to outside boarder of the components selected
- Rotate function
 - » Select one or multiple elements either in 3D view or from the list in the edit window. Confirm by pressing enter.
 - » Select the rotation point (default is origin of the reference axis). Coordinates can be selected in 3D view or entered as: "X.X,Y.Y,Z.Z". Confirm by pressing enter.
 - » Select the rotation axis x,y, or z (default is z). Type x, y or z and confirm by pressing enter.
 - » Angle. Enter the desired rotation angle in degree.
 - » Keep original (y or n)? To create a second object type y and confirm by pressing enter.
- Measurement function
 - » select two points in 3D view for measurement of distance and time
- 5. Simulation control
 - Play simulation to show results in 3D view
 - Stop simulation calculation and view
 - Enable optimization in 3D view



COMPONENT ➤

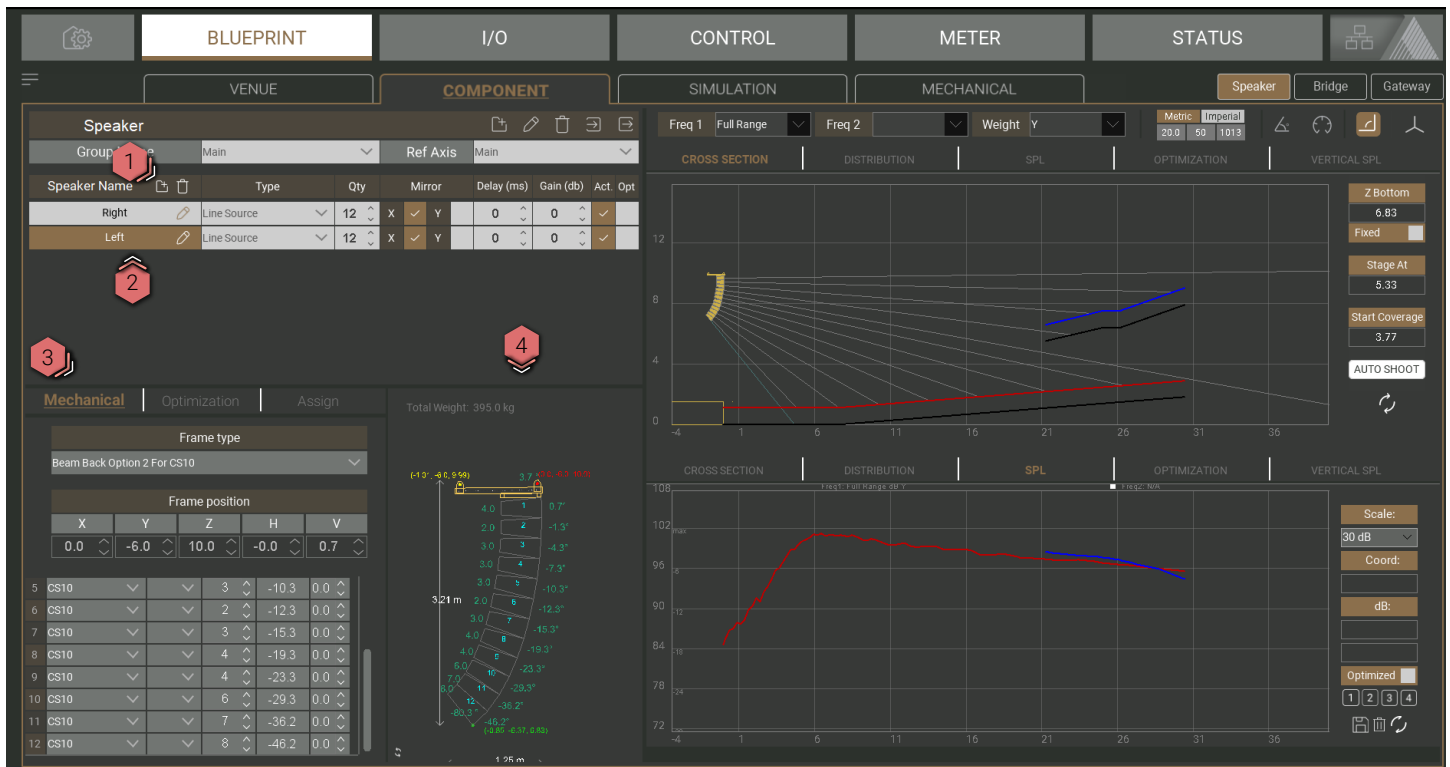
Speaker Group Add

1. Component Selector
 - Speaker, Bridge, Gateway
2. Source Group Add / Edit / Remove / Import / Export
3. Source Group drop-down
4. Source Group Ref Axis selection
5. Add Source Group popup window
6. Source Group Name
 - This will be populated as a Group in the Control Page
7. Source Group Reference Axis
8. Initial Source Group options
 - Flown or Stack configuration
 - Active or Non-Active (for simulation)



Speaker Add / Edit

1. Source Add / Remove
2. Source Options
 - Source Name (This will be populated as a Zone in Control, assigned to the Group it is in)
 - Source Type Selection (Line Source, Sub, Sub Array, Point Source)
 - Source Quantity
 - Mirror Source on X or Y axis
 - Delay, Gain, and Polarity (Doesn't reflect in control page)
 - Optimization toggle for Simulation
3. Speaker Edit Window Tabs
 - Mechanical, Optimization, Assign
4. Mechanical View Cross Section



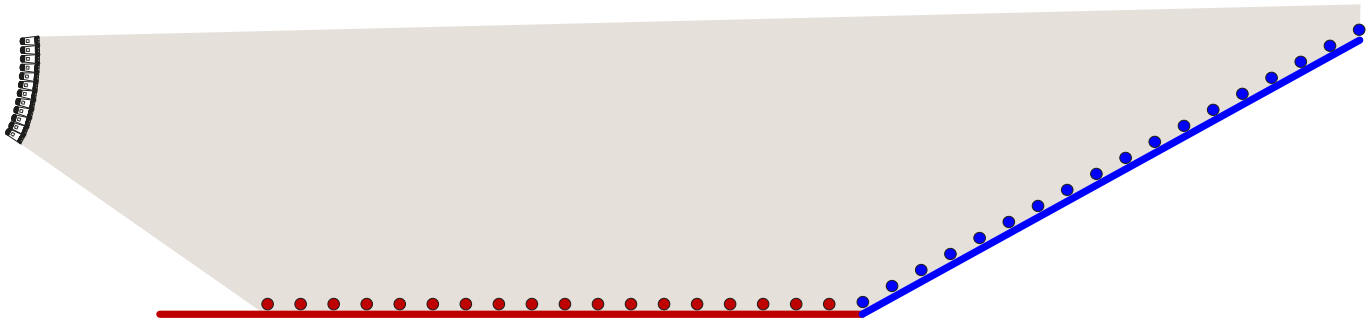
Speaker Mechanical Edit - Line Source

1. Frame Type
2. Frame Position
 - X, Y, Z coordinates
 - Horizontal and Vertical Angle
3. Cabinet Type
4. Pattern Preset
5. Inter Cabinet Pin Position
6. Cabinet Angle
7. Simulation Gain Shading (not reflected on control page)



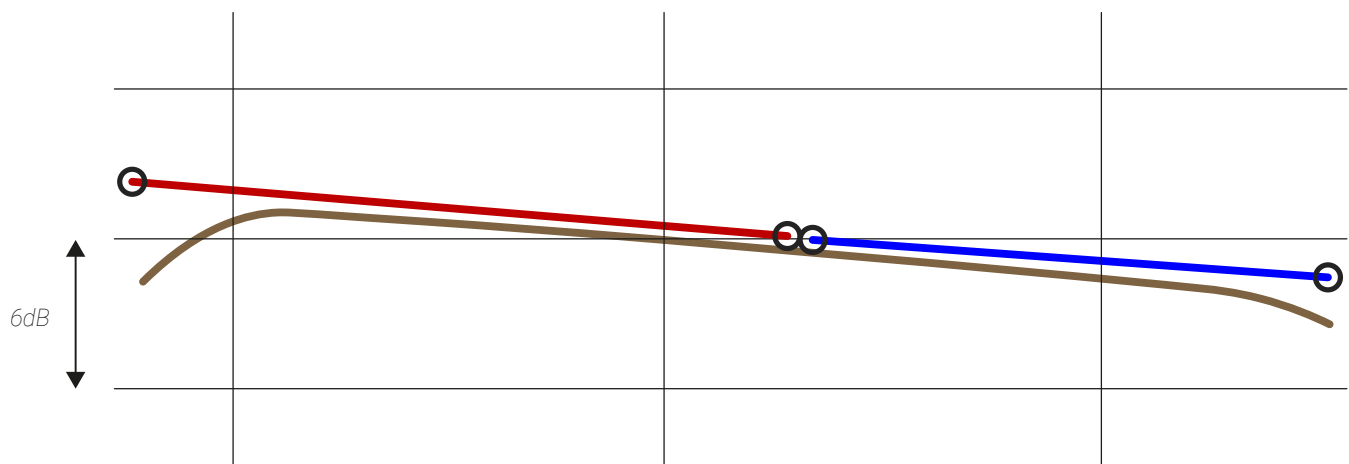
Line Source Optimization 💡

Adamson CS-Series and Vergence Group intelligent line sources offer electronic optimization capabilities elevating the coverage and tonality beyond what traditional mechanical designs can achieve. Developed by Adamson, the optimization algorithm calculates custom FIR filters per cabinet based on the mechanical array properties, room geometry and user parameters. For the calculation virtual microphones are placed on the audience area covered by the array.



Line source and audience area with virtual microphones

Each individual surface results in a target curve. This allows to adjust the target SPL drop over distance. For reference the SPL over distance without optimization is visible as well.



Target curves and SPL of the line source without optimization

As additional input parameters the maximum headroom loss can be limited and the frequency range affected by optimization can be defined. Once all parameters are set, the optimization calculation can be started and results inspected.

Line Source Optimization - Edit Window

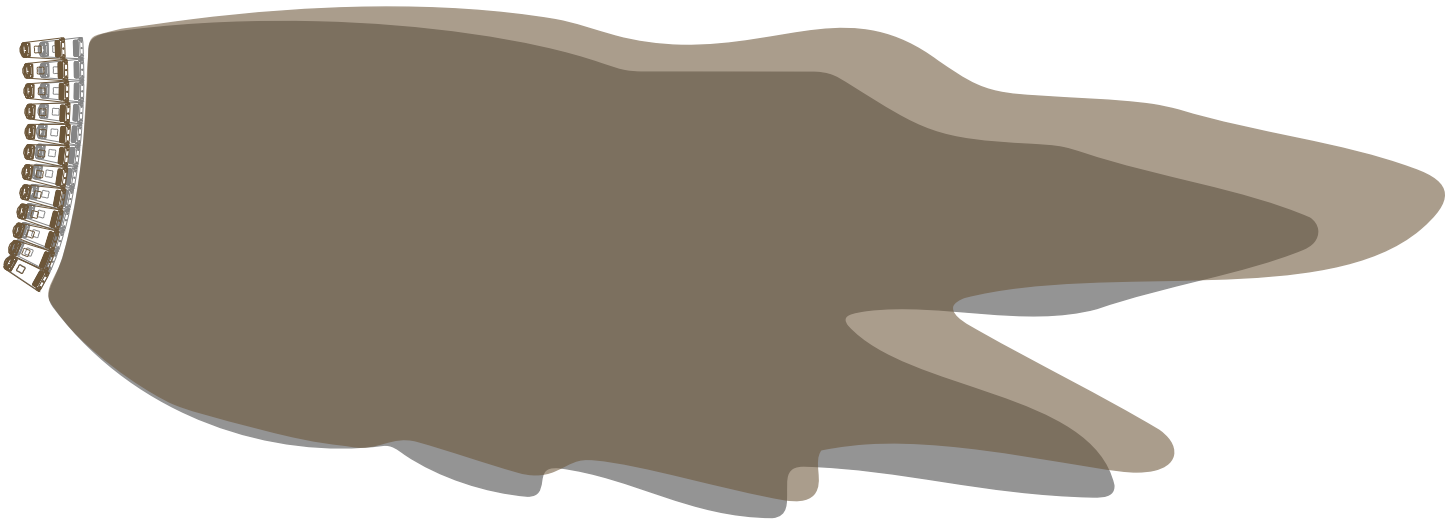
- Resolution (of virtual microphones on audience area cross section)
 - Normal (virtual microphone every 1 m)
 - High (virtual microphone every 0.5 m)
- Headroom
 - Maximum headroom loss caused by optimization
- Frequency Constraint
 - High Pass
 - Low Pass
- Optimization Process Selections
 - Start
 - Clear
 - Accept
- Optimization Cross Section
 - Dots show virtual microphone positions
 - Clicking on a virtual microphone position after optimization highlights the audience SPL result for that particular position.
- Optimization Target SPL Graph
 - To modify optimization target curve, the user can click on the curve, move the mouse towards the end to edit the point. This makes editing points easier when multiple surfaces share the same x-coordinates.



Optimization Algorithm 💡

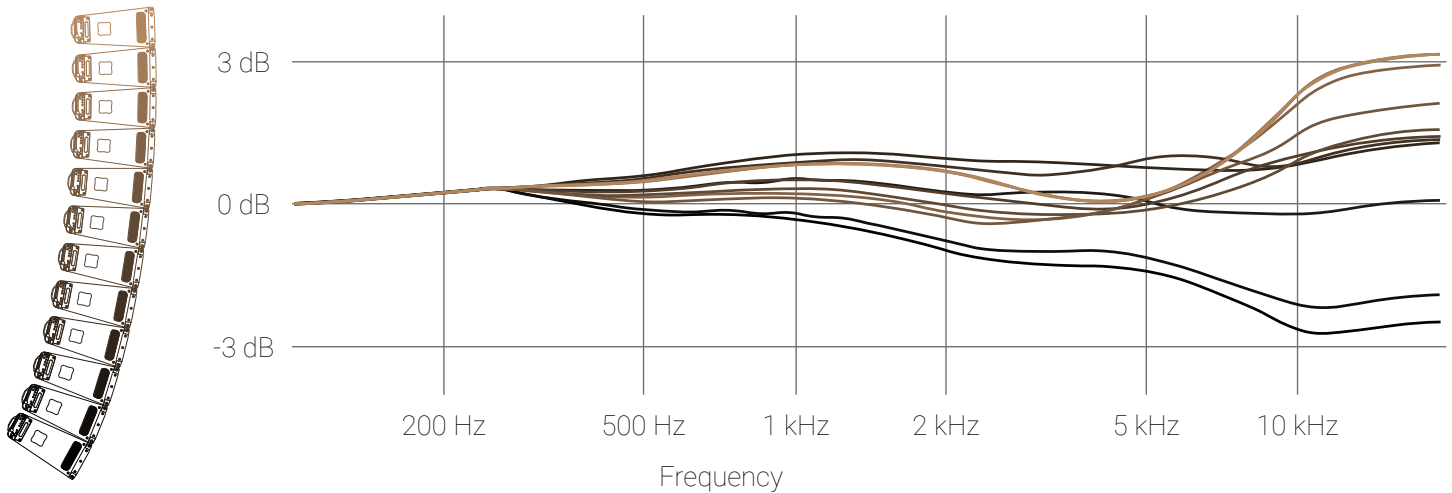
The algorithm calculates an FIR filter per cabinet in the array. The filter changes magnitude and phase in specific frequency ranges per cabinet. Based on array type, length and inter-cabinet-angle, the algorithm intelligently determines these frequency ranges.

For low frequencies all cabinets in an array combine and define the dispersion pattern. The optimization filter applies individual phase correction to each cabinet, to adjust the dispersion pattern without sacrificing energy in the array.



Beamsteering with optimization for one frequency (800 Hz) with optimization (gold) and without optimization (grey). Both the virtually steered array (gold) and the original (grey) are visualized.

For higher frequencies individual cabinets are perceived from certain audience areas only. This allows the optimization to apply level filtering for individual cabinets.



Filters calculated and applied to the individual cabinets in the array.

The headroom limit only applies if the calculated filters exceed the user defined value. For the example here, the slider would need to be set below ± 3 dB for changes to appear. If any filter exceeds the setting all filters are scaled accordingly to retain the tonal balance.

While the optimization equalizes tonality differences from front to back, the overall tonal balance and level is maintained. The time alignment towards subwoofers is stable no matter if optimization is activated or not.

The optimization feature is designed to maximize the performance of mechanically well-designed arrays, while avoiding destructive behavior. It optimizes the sound only for areas already covered by the array and ensures that extreme changes in adjacent cabinets are avoided. The result is a smooth coverage with even tonality and a direct sound that preserves the impulse response.

Optimization Results

Users can examine audience and non-audience SPL curves for the virtual microphone positions, analyze frequency-dependent variance between virtual microphones, and review a bar chart displaying the discrete average level distribution. These results are available for both optimized and unoptimized and comparing both provides valuable insights. If the result is sufficient, optimization can be accepted, afterwards it is available for further SPL simulation, to export to speakers and to be stored in the .bpt file.

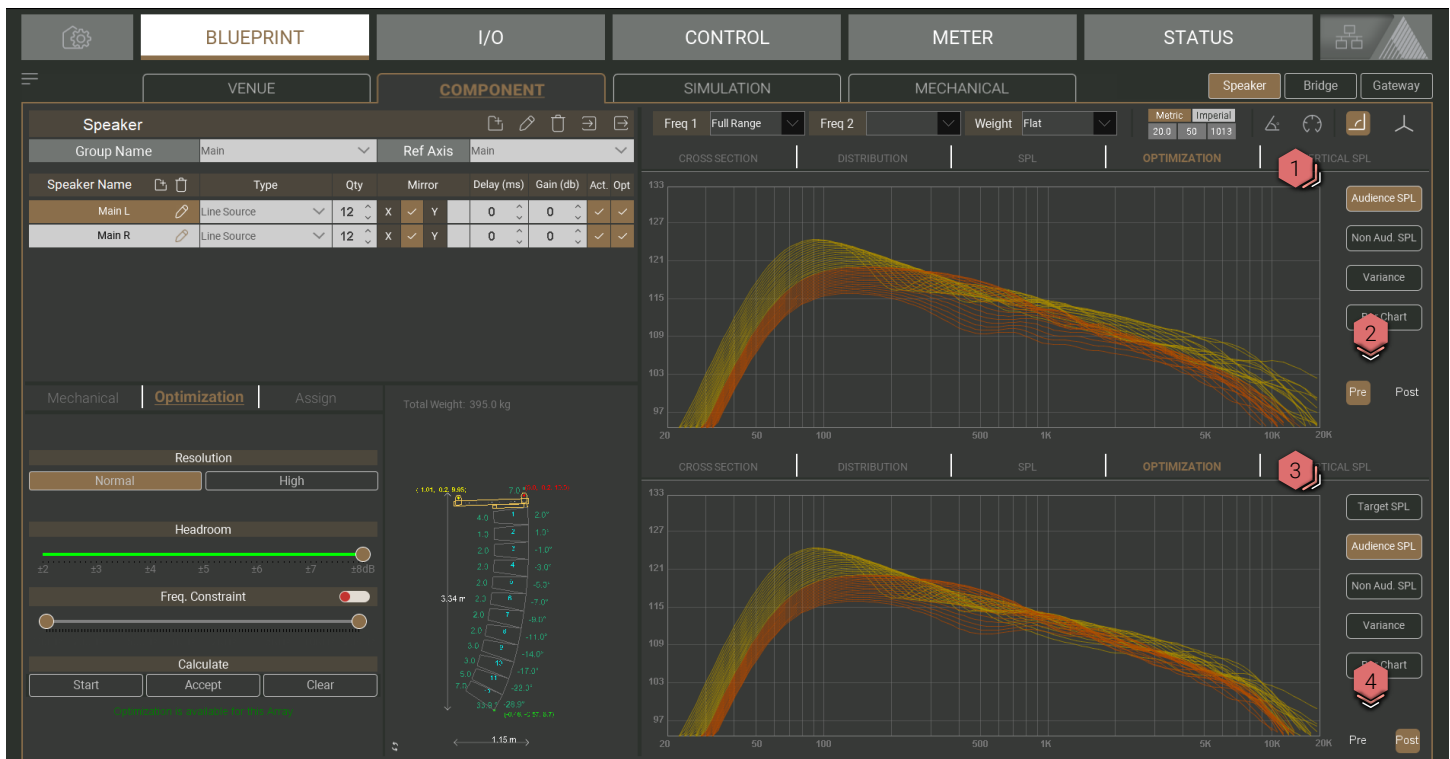
For standard 2D and 3D SPL simulation optimization can be switched on and off per array and globally. Users can use the store functions to compare 2D and 3D SPL with and without optimization.

Once the optimization is accepted, and speakers are assigned, the data can be exported. As the algorithm's FIR filter is combined with the output FIR it causes zero additional latency.

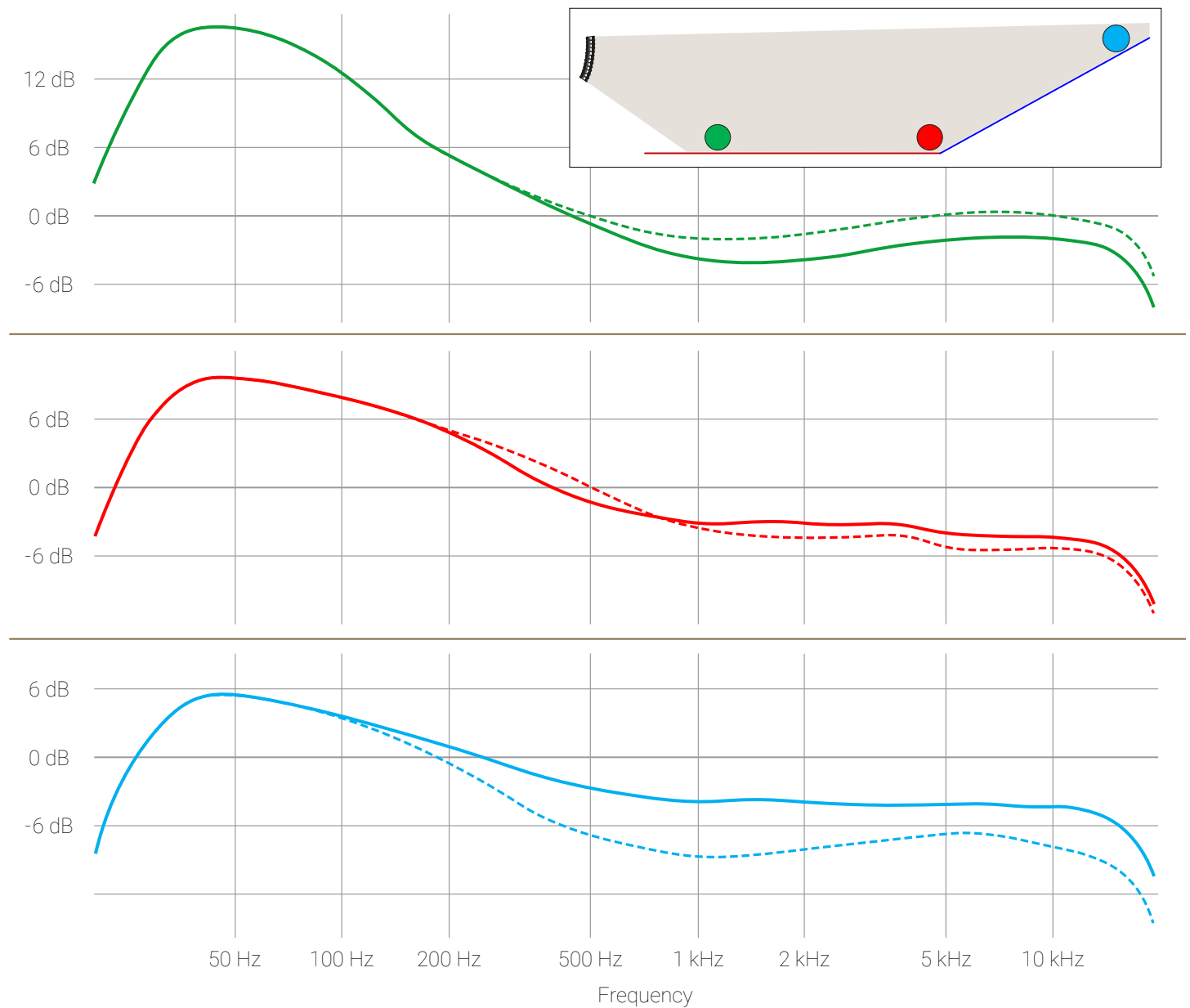
On the I/O page, users can activate the optimization for each array. In case of mirrored arrays, the same optimization settings are applied, and activation or deactivation occurs in tandem.

Line Source Optimization - Result Window

- Optimization window 1 options
 - Audience SPL
 - Non Audience SPL
 - Variance
 - Bar Chart
- Pre / Post Optimization slider for window 1
- Optimization window 2 options
 - Target SPL
 - Audience SPL
 - Non Audience SPL
 - Variance
 - Bar Chart
- Pre / Post Optimization slider for window 2



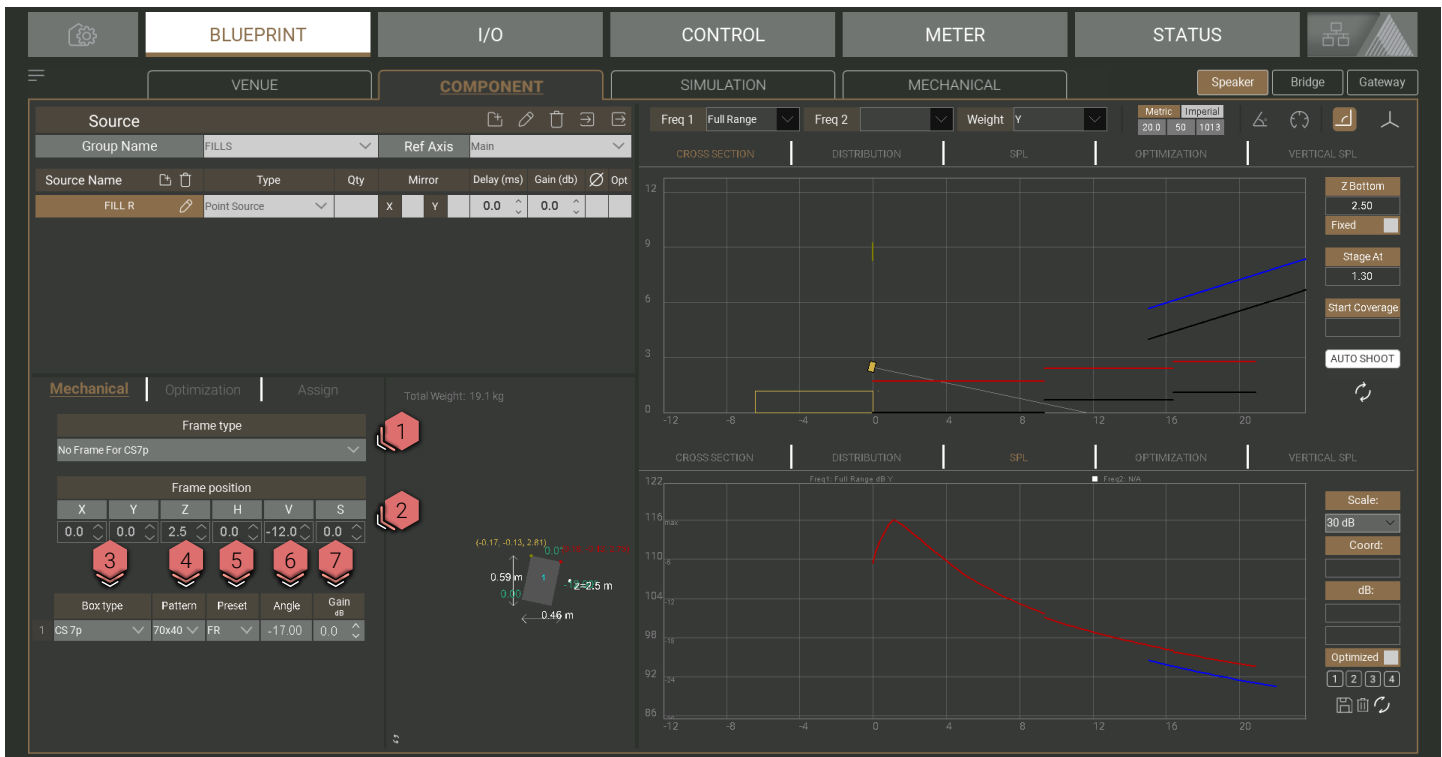
Optimization Measurement Results 💡





Magnitude Response for 3 positions, front, middle and back with optimization (solid line) and without optimization (dotted line)

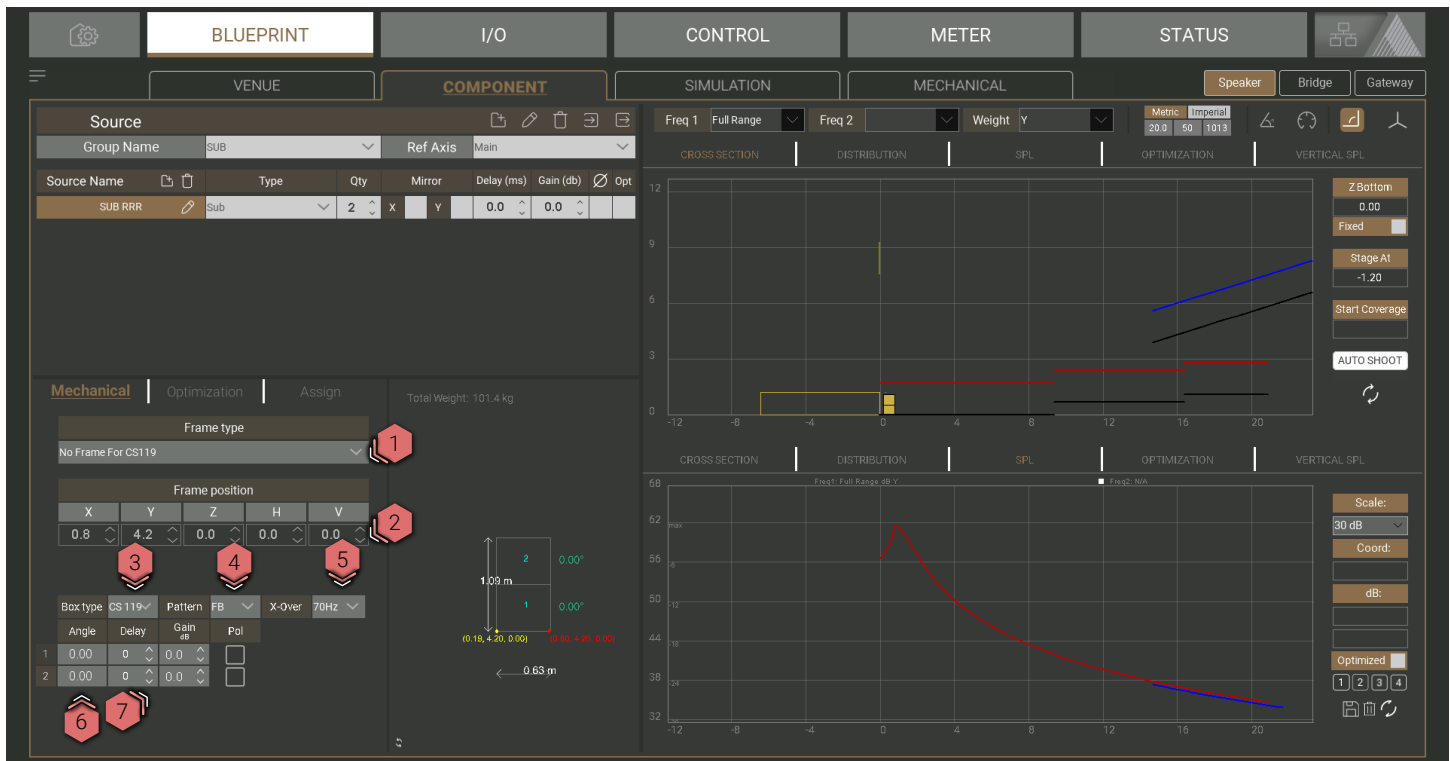
Speaker Mechanical Edit - Point Source

1. Frame Type drop-down
2. Cabinet Position (referenced at front, bottom, center)
 - X, Y, Z coordinates
 - Horizontal and Vertical Angle
 - Cabinet Rotation Angle
3. Cabinet Type
4. Waveguide Pattern Preset Dropdown💡
5. Crossover Preset Dropdown💡
6. Cabinet Angle
7. Simulation Gain Shading (not reflected on control page)



Loudspeaker Mechanical Edit - Subwoofer

1. Frame Type
2. Frame Position
 - X, Y, Z Coordinates
 - Horizontal and Vertical Angle
3. Cabinet Type
4. Pattern Preset Dropdown 
- End-Fire, Front-Back, Front-Back-Front
5. Crossover Preset Dropdown 
6. Cabinet Angle
7. Simulation Gain Delay, and Polarity (not reflected on Control Page)



Loudspeaker Mechanical Edit - Subwoofer Array

1. Cabinet Type
2. Frame Type
3. Number of Columns in the Array
4. Pattern Preset Dropdown
- End-Fire, Front-Back, Front-Back-Front
5. Crossover Preset Dropdown
6. Array Width
 - Span (total Width of the Array - outside Edge to outside Edge)
 - Space (Distance in between Cabinets - Center to Center)
7. Array Offset
 - Center (Centers the Array on the X-Axis)
 - Position offset for all Columns on X, Y, Z Axis
8. Column Position (Select Column below to offset individual Positions)
 - X, Y, Z Coordinates
 - Horizontal and Vertical Angle
9. Column Selector
10. Simulation Gain (not reflected on Control Page)
11. Simulation Delay (set by User or optimization - active in DSP once enabled on I/O page)

Speaker | Group Name: Subs | Ref Axis: Main

Speaker Name	Type	Qty	Mirror	Delay (ms)	Gain (db)	Act.	Opt.
Sub Array	Sub Array	2	X	0	0		

Mechanical | Optimization | Assign

Cabinet type: CS119 | Frame type: No Frame For CS119

No. of Col.: 12 | Preset: X-Over 70Hz

Array Width: Span: 18.34 | Space: 1.6

Array Offset: X: 0.0 | Y: 0.0 | Z: 0.0

Column Position: X: -0.5 | Y: 8.8 | H: 0.0 | V: 0.0

Column	Gain	Delay
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0

Total Weight: 1216.8 kg

3D Visualization: 1.03 m, 0.0", 0.0", 0.03 m

Log messages: <Clear successful, <Clearing..., <Clear successful, <Source Number of Boxes Change

Subwoofer Array Optimization💡

An array of multiple subwoofers arranged in a line exhibits directive behavior, depending on the size and position of the individual cabinets. By applying electronic curving (delay) to the array it is possible to adjust and match the directivity to the given audience area.

Adamson developed an algorithm that calculates delay times for the individual columns in a subwoofer array to provide even coverage on the audience area for the entire subwoofer spectrum. While traditionally the array behavior for a desired opening angle is calculated in the far field, Adamson's implementation allows the user to define a reference distance used for the calculation. The opening angle and opening width in this distance is defined with a slider. The opening of the array is defined as the area where the level drops by an average of 6dB over the operating frequency range.

Distributing the energy of the array to a wider area, leads to a reduction of the SPL on the main axis of radiation. This reduction is calculated by the algorithm and the maximum reduction can be limited by the user.

The algorithm calculates delay times based on two different shapes. The circular shape leads to a more even coverage over the whole audience area compared to the ellipsoidal shape that uses comparably shorter delays in the middle of the array and provides more level and a better transient response on the main radiation axis.

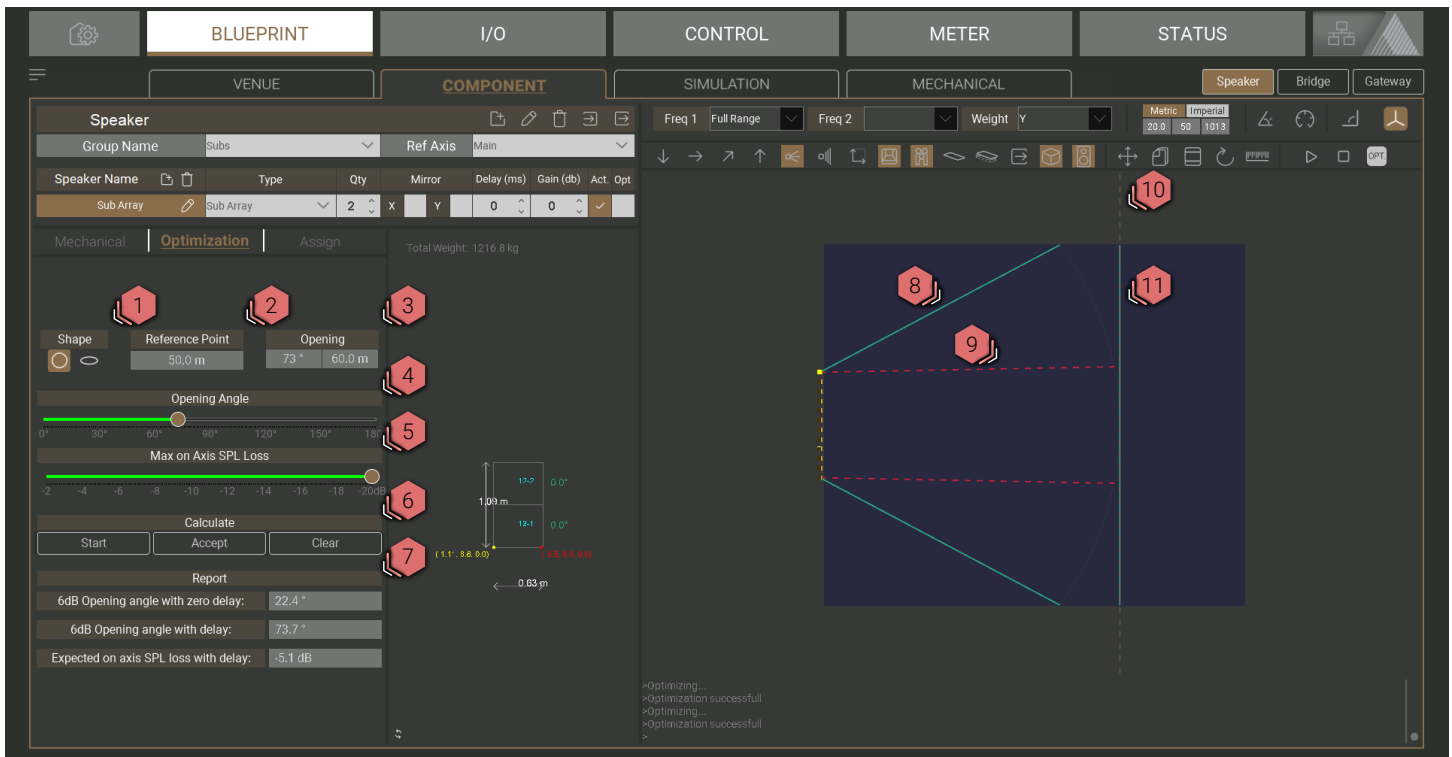
Without electronic curving a longer array will lead to a more narrow opening angle in the far field than a shorter array. A shorter array will exhibit less reduction on axis for the same opening angle, because a longer array needs longer delay to provide the same opening angle.

To avoid destructive interference in the audience area in front of the array, the center to center distance between two sources in the array shall be less than half the wavelength at their highest operating frequency. For all E-Series and Vergence Group subwoofers (with **60 Hz low pass filter**) this distance should be less than **~ 2.8 m / ~ 9.3 ft** and for all other cabinets (with **80 Hz low pass filter**) it should be less than **~ 2.1 m / ~ 6.9 ft**.

For the 3D simulation of subwoofer arrays users should activate interference and either use full range flat weighted to inspect the complete bandwidth or individual frequency's for a more detailed insight.

Subwoofer Array Optimization - Edit Window

1. Shape
 - Circular Shape
 - Ellipsoidal Shape
2. Reference Distance
3. Opening Angle and Width Text Field (based on the Reference Distance)
4. Opening Angle Slider
5. Maximum on Axis SPL Loss
6. Calculate
 - Start (Calculates new Delay Times)
 - Accept (Writes previously calculated Delay Times into the Columns on the Mechanical Page)
 - Clear (Clears previously written Delay Times from the Columns on the Mechanical Page)
7. Report
 - 6dB Opening Angle with zero Delay
 - 6dB Opening Angle with Delay
 - Expected On-Axis SPL Loss with Delay
8. 6dB Opening Angle with Delay Line (green - calculated, dotted green - target)
9. 6dB Opening Angle with zero Delay Line
10. Reference Distance Line (dotted yellow)
11. Opening Width Line (green)



Presets

All CS-Series presets are matched in magnitude and phase response to the respective settings for Lake processing. They provide equal latency when using analog inputs.

As there is only one preset for CS-Series line sources there is no need and possibility to adjust. If the array length differs from the standard (8 cabinets), Array Shaping can be loaded on the control page.

Presets for point source and subwoofer cabinets are selected and stored per loudspeaker and loaded to connected loudspeakers when assigning, going online and exporting data. After going online the used preset can be read in the device browser on the menu page.

Point Source Presets

Four different presets are available for each CS-Series point source cabinet:

- **High Pass** (Xo), HPF @ 80 Hz, linear phase crossover between LF and HF, suitable for combined setups with additional subwoofer and line array cabinets. This is the default preset in the software and the firmware.
- **Full Range** (FR), full range response, linear phase crossover between LF and HF, providing a phase response similar to line array cabinets.
- **High Pass Conventional Crossover** (Xo CC), HPF @ 80 Hz, conventional crossover between LF and HF, 5 ms less latency compared to the standard preset. For combinations with subwoofers add 5 ms of delay when positioned in the same distance to the listener.
- **Full Range Conventional Crossover** (FR CC), full range response, conventional crossover between LF and HF, 5 ms less latency compared to the standard preset.

Subwoofer Presets

A default omnidirectional preset and three different cardioid presets are available for both CS118 and CS119. Subwoofer presets are available low-passed at 70 Hz (CS119) or 80 Hz (CS118) for combinations with line arrays and 10" / 7" point source cabinets (use Xo mode). These combinations are time aligned when positioned in the same distance to the listener. Additionally the user is able to select presets low-passed at 100 Hz.

Each cardioid preset consists of two individual settings - one for the front or forward facing subwoofer (F) and one for the back or backward facing subwoofer (B). When selecting the desired pattern these presets are selected automatically.

All cardioid presets use all-pass filtering for maximum forward efficiency and broadband rearward rejection. All cardioid setups shall have at least 70 cm distance from walls, further speakers, stages or other obstacles for optimal operation.



- **CS119 EF66** and **CS118 EF40** - End fire setup with 66" (1.67 m) from screen to screen for CS119 and 40" (1 m) from screen to screen for CS118. Compared to a setup with the same amount of subwoofers in a standard omnidirectional configuration the end fire setup is the most efficient.
- **CS119 FBF** and **CS118 FBF** - Front-Back-Front setup with the bottom and top subwoofer facing forward and the middle subwoofer facing backward. This setup is designed for a vertical stack, but can also be deployed horizontally. Compared to a setup with the same amount of subwoofers in standard omnidirectional configuration the maximum headroom is reduced by approximately 1 dB.
- **CS119 FB** and **CS118 FB** - Front-Back setup with the bottom subwoofer facing forward and the top subwoofer facing backward. This setup is designed for a vertical stack, but can also be deployed horizontally. Compared to a setup with the same amount of subwoofers in standard omnidirectional configuration the maximum headroom is reduced by approximately 2 dB.

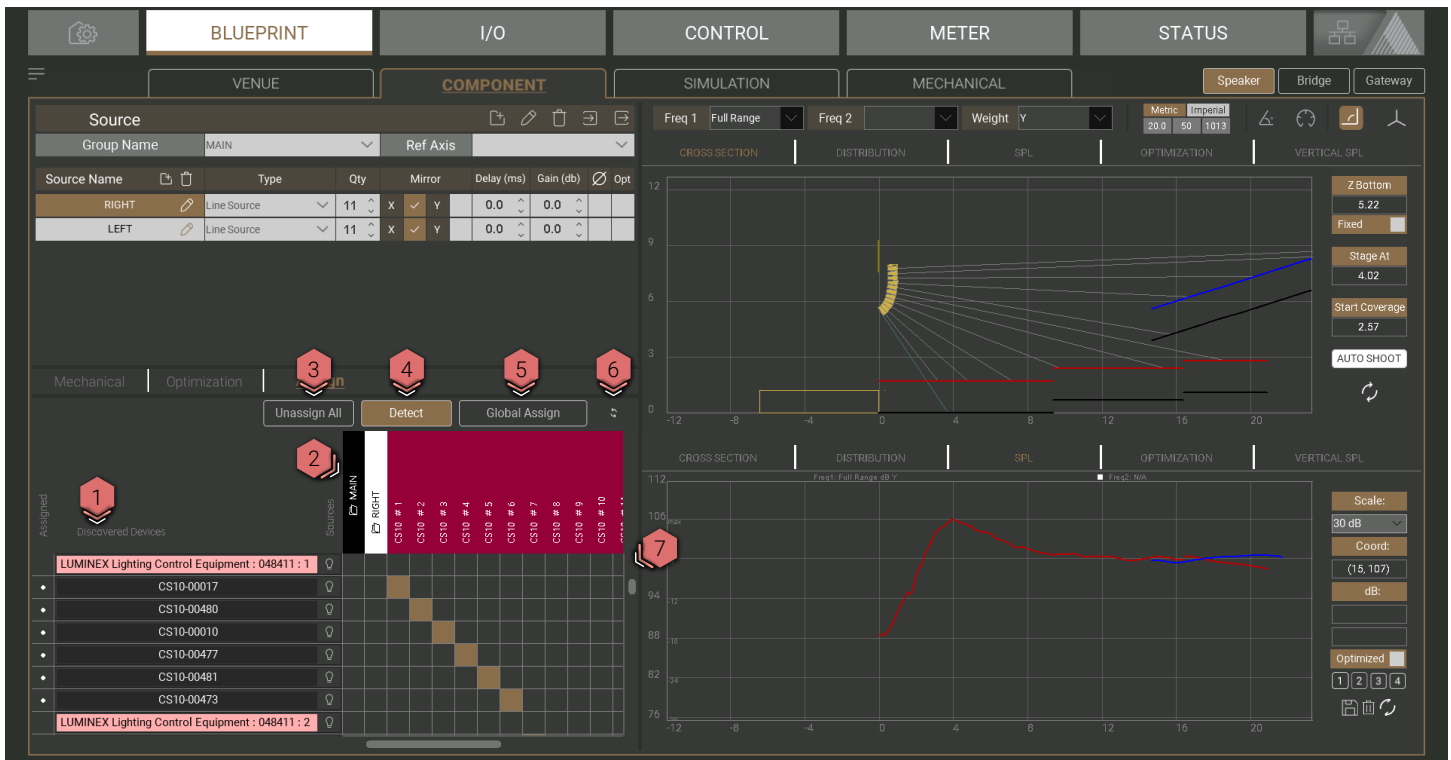
Preset Version Numbering

All CS-Series preset version numbers match the respective S-Series presets for Lake processing. Changes that only affect CS-Series are indicated by a patch version number. E.g. CS118 V5.0.1. These changes do not affect the tonal response of the CS-Series presets. Please refer to the Adamson Load Library release notes for additional preset information.

As VGt is only available with Adamson Electronics, VGt presets are tied to the software version used.

Loudspeaker Assign

1. List of Online Devices
 - Right Click - Rename
 - » Names can be given to online devices, these are stored per .bpt file and will also be stored on the device once going online and selecting export data to device.
 - » Switch ports can be renamed, these names are stored per .bpt file.
2. List of Virtual Components (Sorted by Detect  function)
3. Unassign All
4. Detect  (Enabled by default)
5. Global Assign Page
6. Refresh List
7. Assignment Matrix
8. Identify

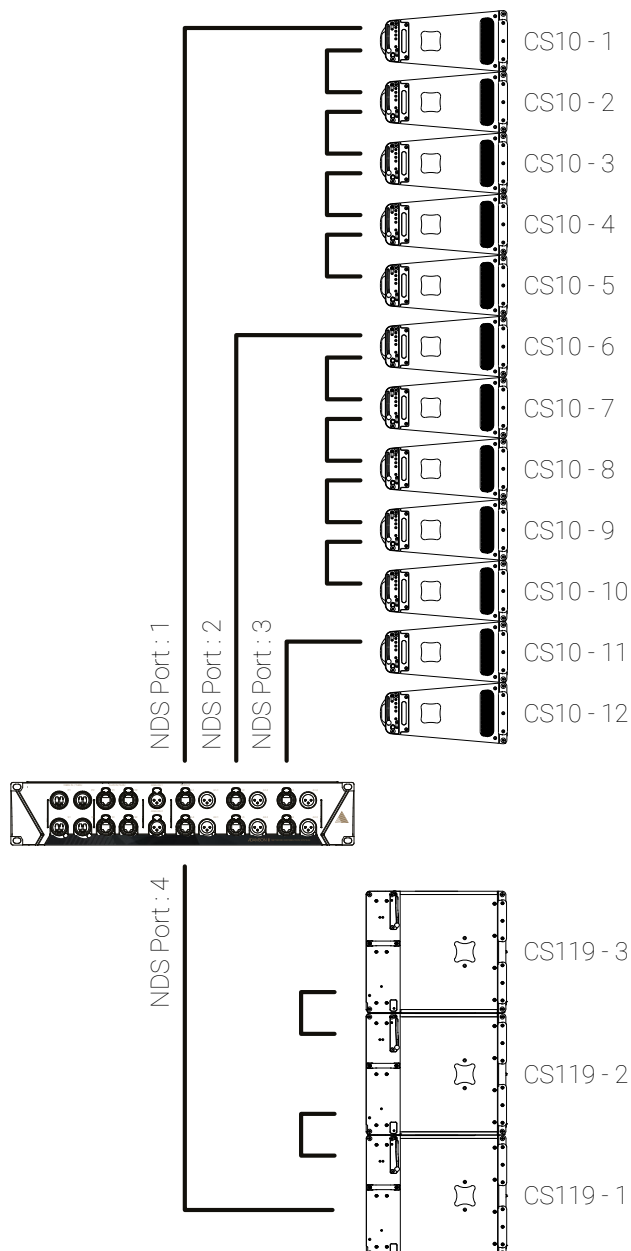


Detect

To simplify the assign process, the Detect function lists all cabinets in the order they are connected, sorted by switch port they are connected to. Flown arrays should be cabled from top to bottom and stacked arrays bottom to top for 1:1 assignment.

To confirm the assignment, the identify button can be used to flash the cabinets LED.

For detect to work, the network cabling has to be consecutive. From the switch or NDS the loudspeakers need to be cabled using the same network port as input.



NDS Port : 1

CS10 - 1
CS10 - 2
CS10 - 3
CS10 - 4
CS10 - 5

NDS Port : 2

CS10 - 6
CS10 - 7
CS10 - 8
CS10 - 9
CS10 - 10

NDS Port : 3

CS10 - 11
CS10 - 12

NDS Port : 4

CS119 - 1
CS119 - 2
CS119 - 3

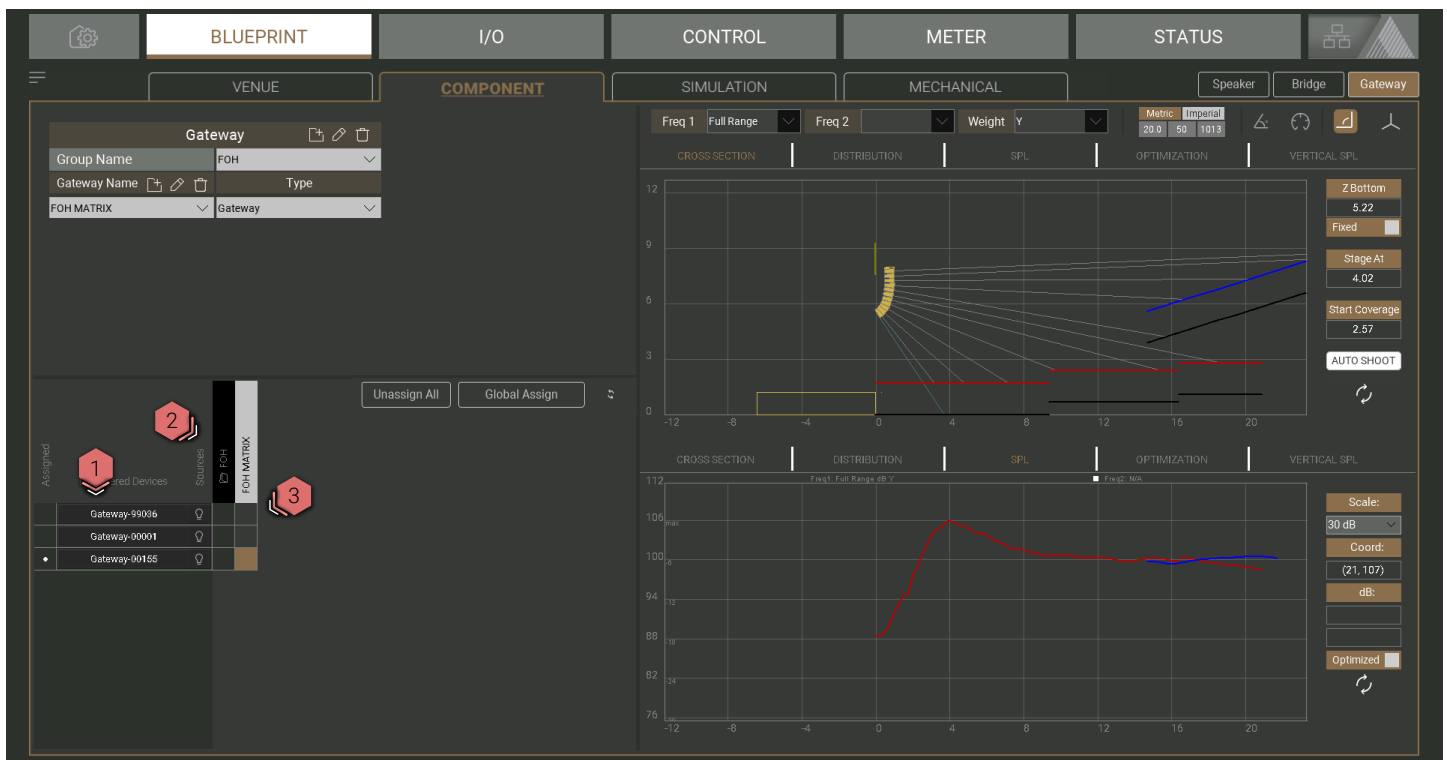
Gateway Add

1. Select Gateway
2. Gateway Group Add / Edit / Remove
3. Gateway Group drop-down Select
4. Gateway Add / Edit / Remove
5. Add Gateway Group pop-up window
6. Gateway Group Name



Gateway Assign

1. List of Online Gateways
2. List of Virtual Gateways
3. Assignment Matrix

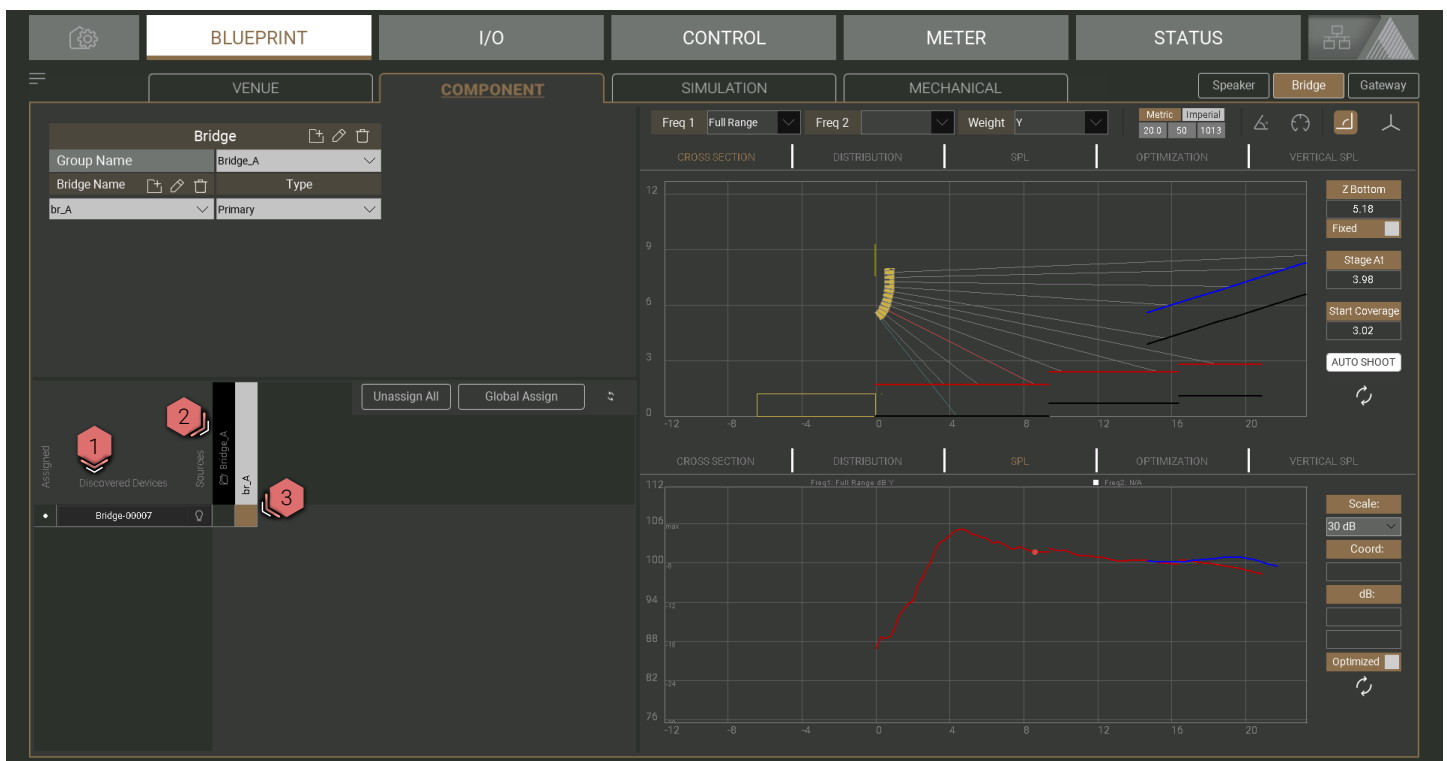


Bridge Add

1. Select Bridge
2. Bridge Group Add / Edit / Remove
3. Bridge Group drop-down select
4. Bridge Add / Edit / Remove
5. Add Bridge Group pop-up window
6. Bridge Group Name

Bridge Assign

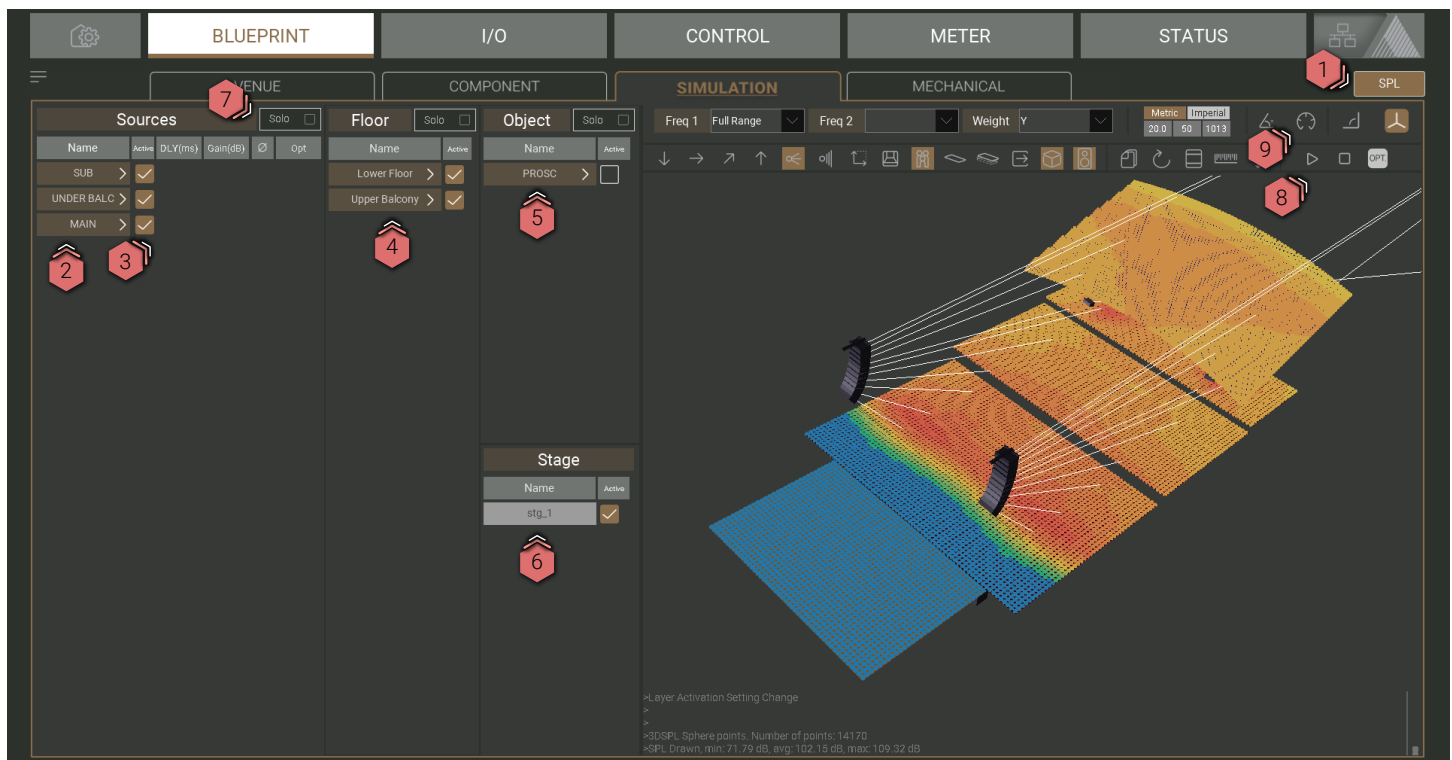
1. List of Online Devices
2. List of Virtual Components
3. Assignment Matrix



SIMULATION ➤

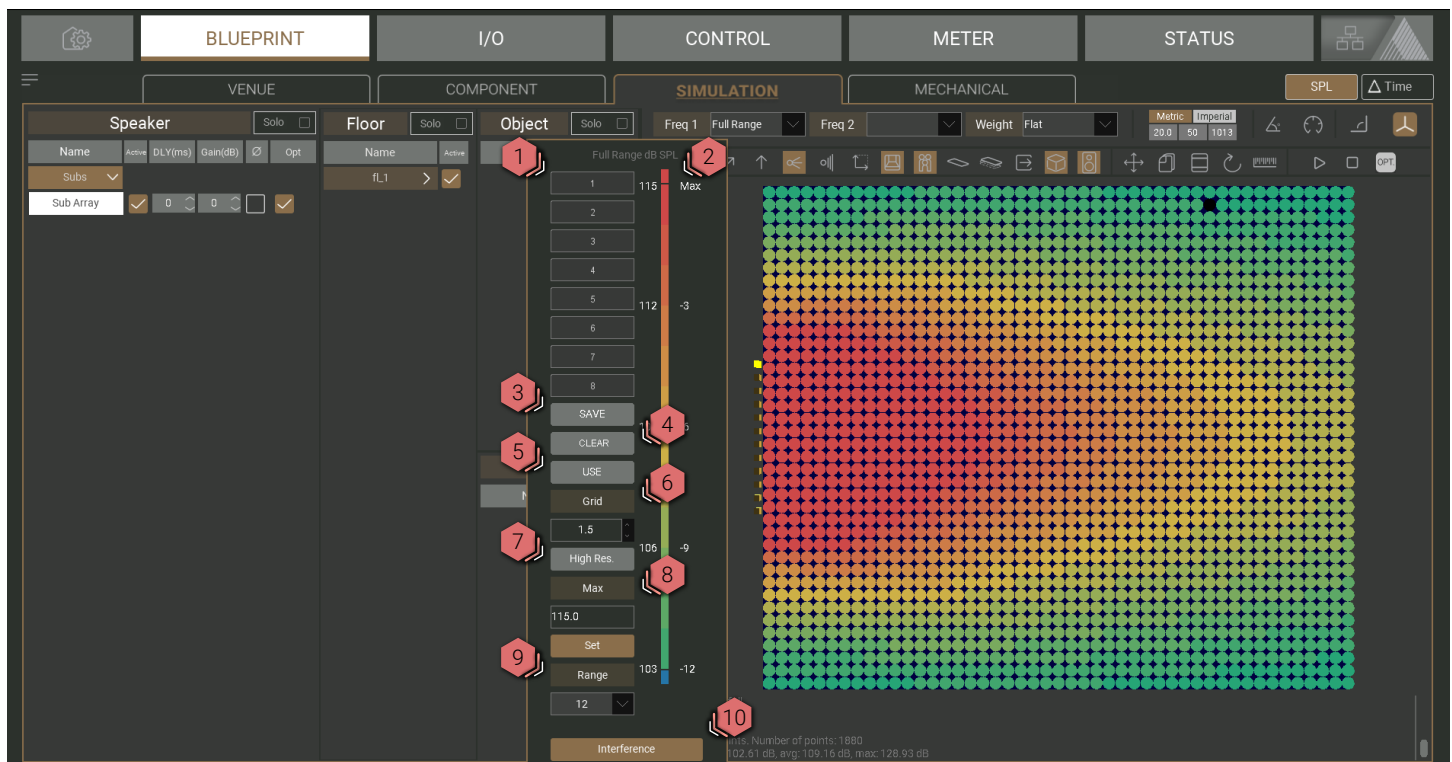
3D SIMULATION | SPL

1. SPL, First Arrival, Delta Time page selection
2. List of active Sources in Simulation
3. Source Simulation Options
 - Activate Source
 - Simulation Delay
 - Simulation Gain
 - Invert Polarity
 - Activate / Deactivate Optimization for Source simulation
4. List of active Floor Groups / Surfaces in Simulation
5. List of active Objects Groups / Surfaces in Simulation
6. List of active Stages in Simulation
7. Enable Solo (Selecting a Source, Floor, or Object solos the selection)
8. Simulation Start, Stop, and enable Optimized Simulation
9. 3D Simulation SPL Graph



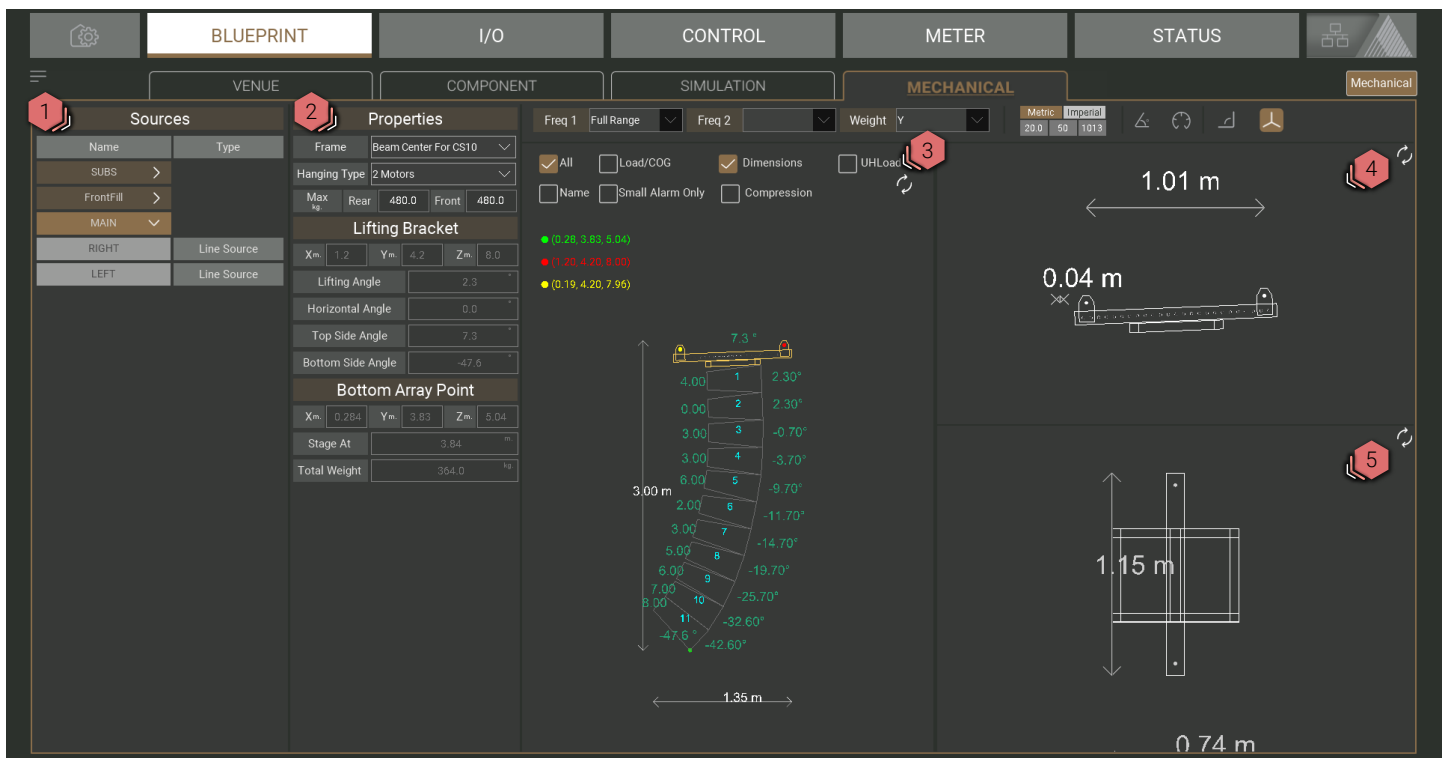
3D Simulation | SPL Graph

1. 3D Simulation Snapshot Banks
2. Meter Bar
3. Save to Snapshot Bank (Click on Bank first)
4. Clear from Snapshot Bank (Click on Bank first)
5. Use Settings from selected Snapshot Bank
6. Grid size (in meters)
7. Set view to high resolution
8. Max simulated SPL (Sets maximum of the desired range)
9. Simulated SPL Range
10. Enable Interference



MECHANICAL

1. Source Selector
2. Selected Source - Mechanical Properties
3. Mechanical view – Cross Section
 - All - Shows all dimensions available
 - Load / COG - Shows the weight per pick point and the center of gravity of the array.
 - Dimensions - Shows the selected angles and position
 - UHLoad - Shows the weight of the under hang cabinets
 - Name - Shows the name of the cabinet type
 - Small Alarm Only - Deactivates the alarm overlay
 - Compression - Shows the load on the front and back rigging of the array.
 - » For negative values in the back of the array, use the stacking pin on Sub Compact Line Source cabinets, E12 and E15 to prevent the array from collapsing.
 - » For negative values in the front of an E15 array use the Rigging Spacer.
4. Rigging Frame Cross Section view
5. Rigging Frame Top Down view



I/O

I/O | Gateway Configuration & Input Routing Matrix

1. Group and device selection, as well as Gateway role assignment
2. Gateway Zone creation and selection
3. Assign DSPs to the currently selected Gateway Zone
 - » Right click to rename a DSP
4. XLR Configuration - Select XLR Input / Output to toggle
5. XLR configuration sheet
6. Matrix / Fader view
7. Input / Output Matrix view
8. DSP Input Mix - Matrix view (Currently active input reads on the left)
 - » Press "ctrl" to select multiple.
9. Level and Mute for currently selected routing assignment
10. Routing snapshots - Save and recall routing assignments to snapshots. This function recalls input and output assignments, as well as toggled XLR status, and input priorities.
11. DSP assigned to zones.

The screenshot displays the I/O Gateway Configuration & Input Routing Matrix interface. The top navigation bar includes tabs for BLUEPRINT, I/O (selected), CONTROL, METER, and STATUS. The I/O tab is further divided into SOURCES and GATEWAY. The GATEWAY section shows the configuration for Gateway_A, including a list of Gateway Zones (LEFT, RIGHT, SUBS, FILLS) and their assigned DSPs. The XLR Config section shows a diagram of XLR inputs and outputs. The Input Routing Matrix is a large grid showing the routing of various inputs (ANALOG 1-4, NONE, AES 11-16) to various outputs (ANALOG 1-4, NONE, AES 11-16). The matrix is currently in the 'Matrix / Fader view' (6). The 'Active Snapshot' is 'SNAPSHOT 1' (10). The 'Mute' button is visible at the bottom right (9). Red callout numbers 1 through 11 are placed over the interface elements corresponding to the list items.

I/O | Gateway Input Priority – Input Fader View

1. Input Priority
2. Input Matrix Channel 1-16
3. Priority 1, 2, 3 (Green background for currently active)
4. Priority drop-down select
 - AVB
 - Analog 1, 2, ... 7, 8
 - AES 1, 2, ... 15, 16
5. DSP Input Mix - Fader view
6. Mixer Inputs (Shows currently active selected input)
7. DSP Select (Faders will mix from selected input to selected DSP)

The screenshot displays the 'I/O' tab in the ArrayIntelligence software. The 'GATEWAY' section shows configuration for 'Gateway_A' (gw_A). The 'Zone' section shows 'Gateway Zone' selected. The 'Input Priority' section shows a matrix of 16 inputs (1-16) with columns for Priority 1, 2, and 3. The 'DSP Input Mix' section shows faders for 16 DSPs (1-16) with columns for LEFT, RIGHT, SUBS, and FILLS. The 'DSP Select' section shows a table of DSPs and their associated inputs.

Input	Priority 1	Priority 2	Priority 3
1	AVB	AES 1	ANALOG 1
2	AVB	AES 2	ANALOG 2
3	AVB	AES 3	ANALOG 3
4	AVB	AES 4	ANALOG 4
5	AVB	AES 5	NONE
6	AVB	AES 6	NONE
7	AVB	AES 7	NONE
8	AVB	AES 8	NONE
9	AVB	AES 9	NONE
10	AVB	AES 10	NONE
11	AVB	AES 11	NONE
12	AVB	AES 12	NONE
13	AVB	AES 13	NONE
14	AVB	AES 14	NONE
15	AVB	AES 15	NONE
16	AVB	AES 16	NONE

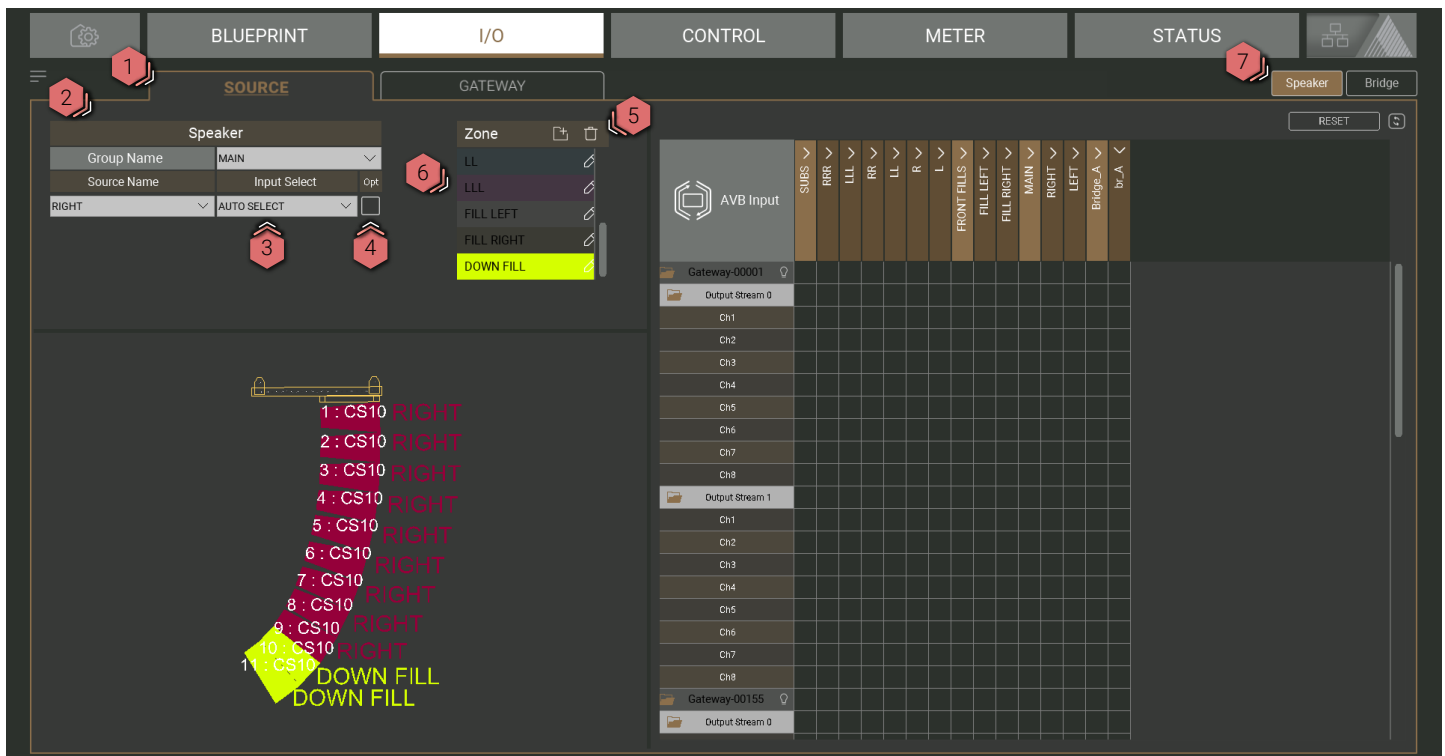
I/O | Gateway Output Routing Matrix

1. XLR Configuration - Select XLR Input / Output to toggle
2. AVB Milan™ / XLR output matrix selection
3. Input / Output Matrix view
4. DSP outputs
5. AVB Milan™ / XLR outputs
6. AVB Milan™ / XLR output matrix patch

The screenshot displays the 'I/O' tab of the ArrayIntelligence software interface. On the left, the 'Gateway' configuration panel shows 'Group Name' as 'Gateway_A' and 'Gateway Name' as 'gw_A'. Below this, a table lists DSP outputs: LEFT, RIGHT, SUBS, FILLS, DSP 5, DSP 6, DSP 7, and DSP 8. The 'XLR Config' section shows a rack of XLR inputs and outputs. The main area on the right is the 'Output Routing Matrix', which is a grid showing connections between DSP outputs (rows) and XLR inputs (columns). The matrix is currently showing a diagonal pattern of green squares, indicating a direct routing. Red callout numbers 1 through 6 are placed on the interface to correspond with the numbered list items.

I/O | Source Configuration

1. Source / Gateway Tab Selector
2. Selects Speaker Groups and Sources created in Blueprint
3. AUTO SELECT or source input FORCE TO ANALOG
 - » AUTO SELECT selects the AVB Milan™ audio input once there is a valid input stream and falls back to analog if not.
 - » If the source is set to FORCE TO ANALOG it will ignore any AVB Milan™ stream and always use the analog input.
4. Enable Optimization if it is available for the selected Source
5. Source Zone creation and selection
6. Click to assign individual cabinets to selected Source Zone
 - » All cabinets in a source are automatically assigned to a generated zone. Users can create custom zones and change these default assignments.
7. Speaker / Bridge window Selector



I/O | Bridge Configuration

1. Group and device selection
2. Bridge Zone creation and selection
3. Assign DSPs to the currently selected Source Zone
4. AVB Milan™ Patch
5. Matrix / Fader view
6. DSP Input Mix - Matrix view (Currently active input per input reads on the left)
7. Level and Mute for currently selected routing assignment

The screenshot displays the 'I/O' tab of the software interface, which is divided into several functional areas:

- Top Navigation:** Includes tabs for BLUEPRINT, I/O (active), CONTROL, METER, and STATUS. On the right, there are 'Speaker' and 'Bridge' buttons.
- SOURCE Section:**
 - Bridge Configuration:** Contains fields for 'Group Name' (Bridge_A) and 'Bridge Name' (br_A). Below this is a table for DSP assignments:

DSP	Zone
DSP 1	LEFT
DSP 2	RIGHT
DSP 3	LEFT
DSP 4	RIGHT
DSP 5	
DSP 6	
 - Zone Selection:** A list on the right shows 'RIGHT', 'LEFT' (highlighted in green), 'RRRR', 'RR', and 'R'. Each has an edit icon.
- Matrix View:**
 - AVB Input Matrix:** A large grid at the bottom left for routing. It has columns for 'SUBS', 'FRONT FILL', 'MAIN', 'Bridge-A', and 'Matrix In' 1 through 15. A 'RESET' button is present.
 - DSP Input Mix Matrix:** A grid on the right showing levels for DSP 1-4 across LEFT, RIGHT, and R/SMT channels. The first row shows a value of 0.0.
- Output Section:**
 - Gateway-00001:** Shows a small 2x2 green matrix.
 - Gateway-00155:** Shows a small 2x2 green matrix.
 - Output Stream 0:** A list of channels (Ch1-Ch7) with a corresponding routing matrix.
- Level and Mute:** On the far right, a vertical level slider is set to 0.0, with a 'Mute' button below it.

Numbered callouts (1-7) are placed over the interface to correspond with the steps in the list above:

- 1: Bridge Group Name field
- 2: Zone list (LEFT)
- 3: DSP assignment table
- 4: AVB Input Matrix
- 5: DSP Input Mix Matrix
- 6: DSP Input Mix Matrix (specifically the first row)
- 7: Level slider and Mute button

I/O | AVB Milan™ Patch

1. AVB Milan™ Talkers
2. AVB Milan™ Listeners
3. AVB Milan™ Assignments
 - Green - Fully assigned
 - Orange - Partially assigned (expand Listener Group / Zone to view)
4. Removes all existing AVB Milan™ assignments
5. Refreshes the Matrix

The screenshot displays the AVB Milan™ Patch interface, specifically the I/O tab. The interface is divided into several sections:

- Top Navigation:** Includes tabs for BLUEPRINT, I/O (selected), CONTROL, METER, and STATUS. There are also icons for a speaker and a bridge.
- Left Panel:**
 - SOURCE:** Contains a 'Speaker' section with 'Group Name' (MAIN) and 'Source Name' (RIGHT). Below it is an 'Input Select' dropdown set to 'AUTO SELECT' and an 'Opt' checkbox.
 - Zone:** A list of zones including LL, LLL, FILL LEFT, FILL RIGHT, and DOWN FILL, each with a corresponding icon.
 - Matrix View:** A large grid showing the assignment of sources to zones. The grid has columns for 'SUBS', 'FRONT FILL', 'FILL LEFT', 'FILL RIGHT', 'MAIN', 'RIGHT', and 'LEFT'. The rows are labeled 'Gateway-00001', 'Gateway-00155', 'Output Stream 0', 'Ch1', 'Ch2', 'Ch3', 'Ch4', 'Ch5', 'Ch6', 'Ch7', 'Ch8', 'Output Stream 1', 'Ch1', 'Ch2', 'Ch3', 'Ch4', 'Ch5', 'Ch6', 'Ch7', 'Ch8', and 'Gateway-99036'.
- Right Panel:**
 - AVB Input:** A section with a 'RESET' button and a 'Bridge' dropdown.
 - Matrix View:** A large grid showing the assignment of sources to zones. The grid has columns for 'SUBS', 'FRONT FILL', 'FILL LEFT', 'FILL RIGHT', 'MAIN', 'RIGHT', and 'LEFT'. The rows are labeled 'Gateway-00001', 'Gateway-00155', 'Output Stream 0', 'Ch1', 'Ch2', 'Ch3', 'Ch4', 'Ch5', 'Ch6', 'Ch7', 'Ch8', 'Output Stream 1', 'Ch1', 'Ch2', 'Ch3', 'Ch4', 'Ch5', 'Ch6', 'Ch7', 'Ch8', and 'Gateway-99036'.

Numbered callouts (1-5) are present on the interface, corresponding to the steps in the list above:

1. AVB Milan™ Talkers
2. AVB Milan™ Listeners
3. AVB Milan™ Assignments
4. Removes all existing AVB Milan™ assignments
5. Refreshes the Matrix

AVB Milan™ Audio

Created and maintained by Pro Audio market leaders in the Avnu Alliance®, Milan™ is a standards-based deterministic network protocol for real time media. Milan Certification assures devices will work together for maximum convenience, reliability, and functionality.

Adamson components use a fixed presentation time of 2 ms (network latency), meaning from the talker to the furthest listener in a network chain, a maximum of 2 ms latency is allowed. If the total network latency exceeds 2 ms the audio connection will break. Each CS-Series cabinet and rack-mounted equipment includes switch fabric and introduces a fixed latency. An additional latency is introduced by the talker when creating the stream:

- Vergence Group and CS-Series cabinets: 0.26 ms
- Adamson Gateway and Bridge: 0.14 ms
- Creation of Stream on an Adamson Gateway: 0.12 ms
- Gigabit AVB Switch: 0.12 ms

Below is an example calculation for a setup with an Adamson Gateway converting an analog signal to AVB Milan™, connected to an NDS using AVNU™ certified switches. Six CS7 are connected in daisy-chain to one of the cabinet outputs of the NDS:

Adamson Gateway (Creation of Stream + Switch)	0.26 ms
NDS (Gigabit AVNU™ certified switch)	0.12 ms
CS7	0.26 ms
CS7	0.26 ms
CS7	0.26 ms
CS7	0.26 ms
CS7	0.26 ms
CS7	<u>0.26 ms</u>
Total Latency:	1.94 ms

Adamson recommends daisy-chaining a maximum of six cabinets. This number may be reduced, depending on the network setup and resulting additional latency. The MSRP latency can be inspected for each AVB Milan™ patched endpoint on the status page.

All Adamson CS-Series Loudspeakers are Advanced Milan™ Certified and therefore allow you to send AVB Milan™ signals from an Adamson Gateway, Fletcher Machine or other Milan™ Certified sources. Connections from the Gateway to CS-Loudspeakers and the Bridge can be patched in the ArrayIntelligence software or in the open source AVB Milan™ controller [Hive](#). Adamson ArrayIntelligence software doesn't show any 3rd party AVB Milan™ devices, patching connections from and to these need to be done in an open source AVB patching softwares, such as Hive.

Streaming AVB Milan™ to a Gateway

To be able to stream AVB Milan™ audio into the Gateway a dedicated clock follower needs to be set, as any sending device may act as clock leader in this situation.

To synchronize the clock streams and patch audio connections Hive needs to be used.

1. Select the clock following device in the discovered entities list in Hive.
2. In the entity model inspector go to "clock_domain".
3. In the "dynamic info" select 3. Primary Clock Input stream 2. (or any other Clock or CRF stream that contains the synchronizing clock) as current clock source.
4. In the "Stream Based Connection" view, output stream 2 (the stream of the Gateway containing the clock stream) of the leader needs to be patched to input stream 2 of the follower. If the patch is valid it will be green (primary and secondary connected) with a black dot (valid word clock detected) in the middle.

Once this is done change Hive to "Channel Based Connection" view and patch the desired audio channels. This is possible in both directions.

The screenshot displays the Hive - Pro Audio ATDECC Controller - Version 1.2.9 interface. The main window is divided into several panes:

- Discovered Entities:** A table listing discovered entities. The table has columns: Logo, Compat, Entity ID, Name, Group, Media Clock Master ID, and Media Clock Master Name. The 'Gateway-FOH' entity is highlighted with a red circle and the number 1.
- Entity Model Inspector:** A pane on the right showing the configuration for the selected entity. It includes sections for 'CONFIGURATION.0: Configuration 1', 'AVB_INTERFACE.0: Primary AVB Interface', 'AVB_INTERFACE.1: Secondary AVB Interface', 'MEMORY_OBJECT.0: Manufacturer Logo', 'MEMORY_OBJECT.1: Entity Logo', 'LOCAL.0: en-US', 'CONTROL.0: Identify Control', and 'CLOCK_DOMAIN.0: Clock domain'. The 'CLOCK_DOMAIN.0' section is highlighted with a red circle and the number 2.
- Stream Connections:** A large matrix view showing connections between streams. The matrix has columns for 'Listeners' and 'Talkers'. The 'Gateway-FOH' entity is highlighted with a red circle and the number 4.
- Dynamic Info:** A pane on the right showing dynamic information for the selected entity. It includes sections for 'Id', 'Descriptor Type', 'Descriptor Index', 'Name', 'Localized Name', 'Static Info', 'Clock Sources count', and 'Dynamic Info'. The 'Dynamic Info' section is highlighted with a red circle and the number 3.

CONTROL ►

Architecture

To efficiently control devices, ArrayIntelligence includes a control Page consisting of two different tabs, one tab for Gateway control containing all Gateway Groups and Zones and one for Speaker control containing all Speaker Groups and Zones.

Speaker Zones

- Once creating a speaker on the Blueprint page a speaker zone is automatically created with the same name.
- The automatically created speaker zone always contain all cabinets in an array or in a stack.
- If finer control is necessary additional zones can be created on the I/O page and assigned to individual cabinets.
- To control Bridge DSP the user has to individually create zones and assign these on the I/O page to achieve control.

Speaker Groups

- Once creating a speaker group on the Blueprint page a speaker group is automatically created on the control page.
- The user can create additional speaker groups on the control page.
- Automatically created speaker zones are assigned to the respective speaker group.
- Users can customize the zone assignment on the control page.

Gateway Zones

- Gateway zones need to be added and assigned on the I/O page.
- A Gateway zone can include one or multiple Gateway DSP.

Gateway Groups

- Gateway groups are added and assigned on the control page.

Sub Array

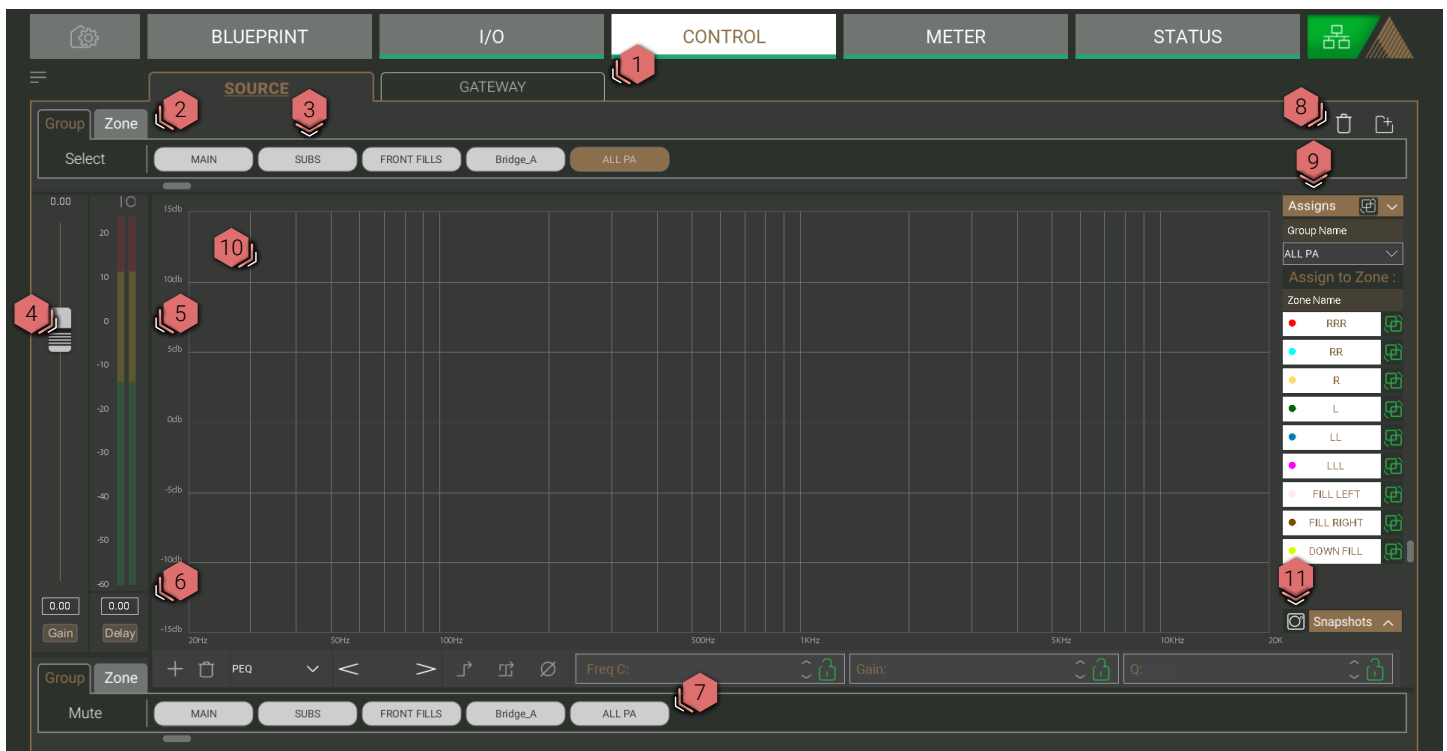
- In optimized subwoofer arrays delay times are send directly to the assigned cabinet and can not be adjusted on the control page individually. If something shall be adjusted individually the user needs to create separate zones or enter values on the Blueprint page. The optimization can be switched on and off per sub array on the I/O page.

Optimization

- Optimization is similar to the sub array. The necessary FIR filters are send directly to the cabinets and can be enabled or disabled by the user on the I/O page.

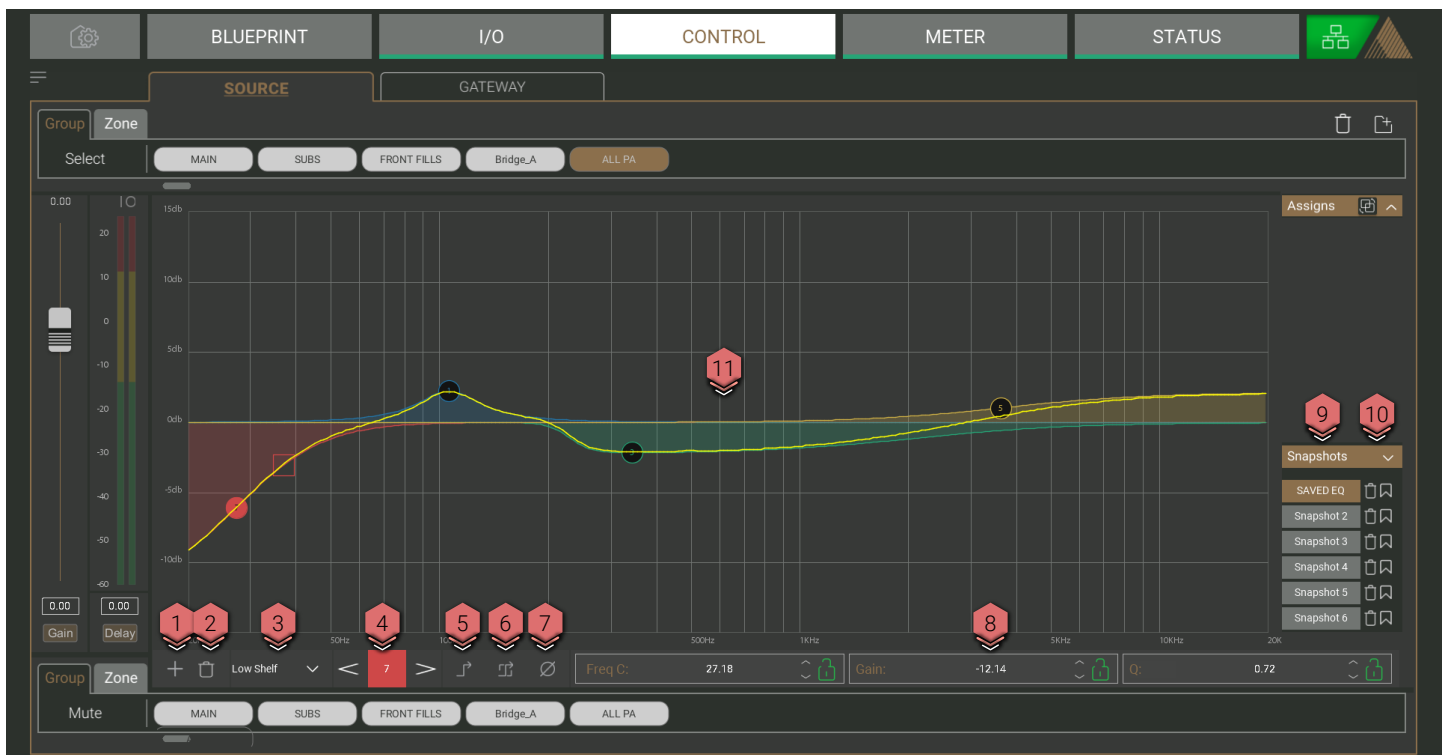
Overview

1. Control page selector – Source / Gateway
2. Control page selector – Control Zone / Control Group
3. Select Group / Zone
4. Gain slider
 - Click above or below to change in 0.5 dB steps
 - In Zone view, value above shows total including influence of all assigned Groups.
 - Click on value below to enter directly
5. Meter – DSP In / Out
6. Delay
7. Zone / Group Mute
- Groups containing muted and unmuted Zones are shown with a red outline
8. Group delete / add
9. Group Assign
 - Select Group with group selector or drop-down
 - Assign Zones to Group
10. EQ window and options
11. EQ snapshot Store
 - Store recallable EQ snapshots for Source Zones, Source Groups, Gateway Zones, and Gateway Groups. Up to 6 recallable snapshots may be stored in banks for each. Snapshots may also be stored as .eq files.
 - Click to store current EQ on next free snapshot or computer location.



EQ

1. EQ Filter Add
2. EQ Filter Remove
3. Filter Type
 - Parametric EQ, High Shelf, Low Shelf, Plateau
4. EQ filter selector
5. Bypass single active filter
6. Bypass all active filters
7. Polarity
8. Filter parameter controls
 - Select parameter box to activate individual fader control or type numerical value
 - Lock symbol allows user to lock the parameter for graphical control.
9. EQ snapshot control
 - Click on an empty snapshot to save current EQ
 - Toggle a saved snapshot on or off by clicking on used snapshot
 - Right click on used snapshot to update to currently active EQ
10. EQ snapshot delete / load from file
 - Select open and combine to merge current EQ with the incoming snapshot, or select overwrite to load the incoming snapshot exclusively
11. Manipulate filters per drag and drop
 - Select the filter by clicking on its circle and manipulate gain and frequency by moving it.
 - Change the Q of the filter by clicking and dragging the rectangle
 - Right click allows to copy and paste individual filters or all currently visible filters.



Array Shaping

Default CS-Series line array presets assume an array length of 7-11 cabinets. Compensation for different array lengths can be achieved by adding the EQ settings below, which are equivalent to the respective array shaping overlays in Lake.

The appropriate array shaping EQ is included in the design templates and EQ snapshot files. Both are included in the ArrayIntelligence download package.

These settings must be added to all cabinets in the array!

CS10(n) Large (12 and more CS10(n)):

- PEQ @ 60 Hz, -1.8 dB, Q: 6.5
- LSF @ 610 Hz, -3 dB, Q: 0.65

CS10(n) Short (4-6 CS10(n)):

- PEQ @ 175 Hz, -1.5 dB, Q: 6.5
- LSF @ 210 Hz, +2 dB, Q: 0.7

CS10(n) Compact (4 CS10(n) on 2 CS119):

- PEQ @ 210 Hz, -2 dB, Q: 6.5
- PEQ @ 425 Hz, -2.5 dB, Q: 7
- HSF @ 4230 Hz, -2.6 dB, Q: 0.5
- PEQ @ 10500 Hz, -2.6 dB, Q: 7

CS7 Short (4-6 CS7):

- PEQ @ 600 Hz, -3.1 dB, Q: 2.2
- LSF @ 310 Hz, +2 dB, Q: 1

Tilt

The tilt filter settings adjust the overall tonal response of your system. The combination of inverse HSF and LSF allow the user to compensate for array curvature, changes in atmospheric condition, or personal taste. Tilt can add warmth to a harsh sounding system or bring clarity to a damp sounding system.

Tilt is prepared as bypassed filters in the tilt group of each design template. The filters can be adjusted to taste.

Positive Tilt (more HF, less LF), adjust the filter gain (X) to taste:

- LSF @ 260 Hz, Q: 0.5, -X dB
- HSF @ 3700 Hz, Q: 0.5, +X dB

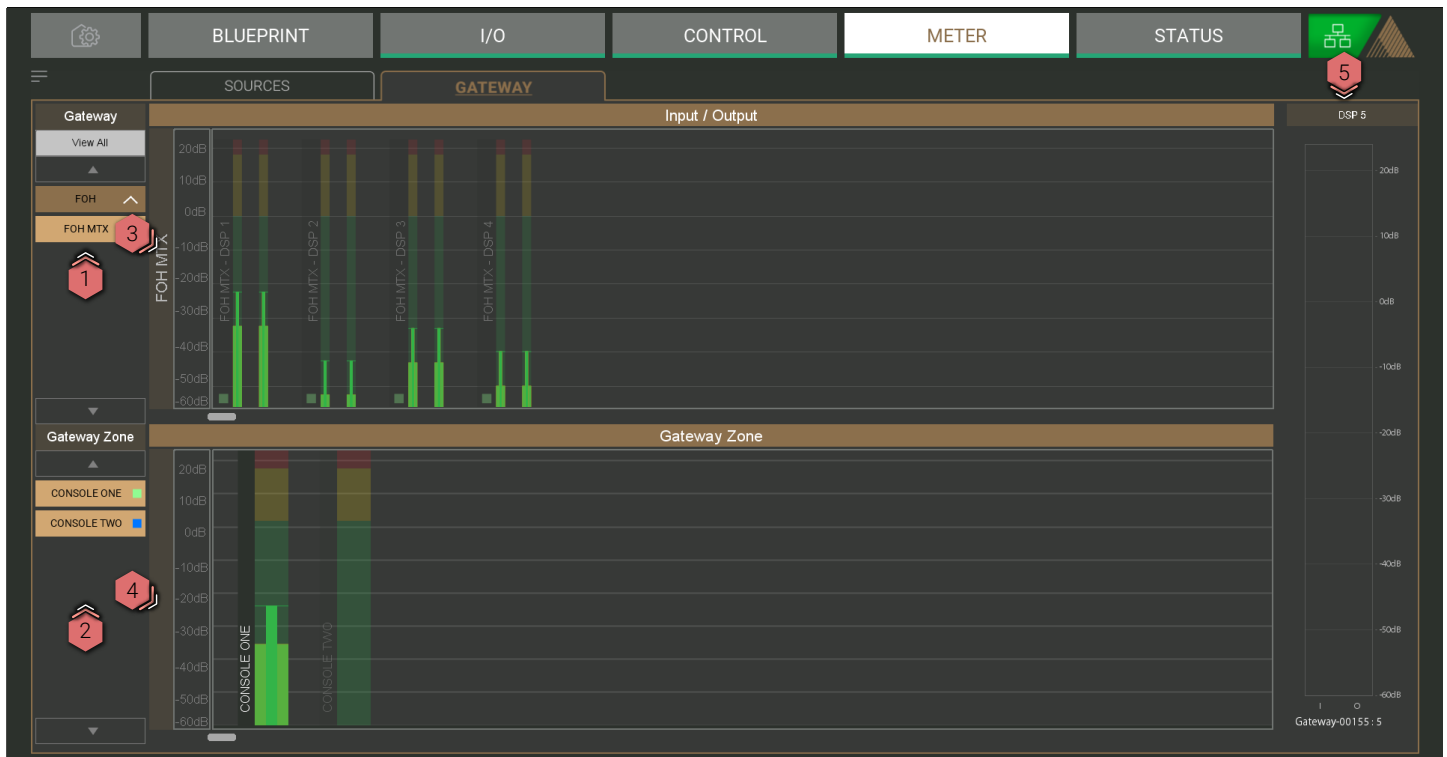
Negative Tilt (more LF, less HF), adjust the filter gain (X) to taste:

- LSF @ 260 Hz, Q: 0.5, +X dB
- HSF @ 3700 Hz, Q: 0.5, -X dB

METERING ➤

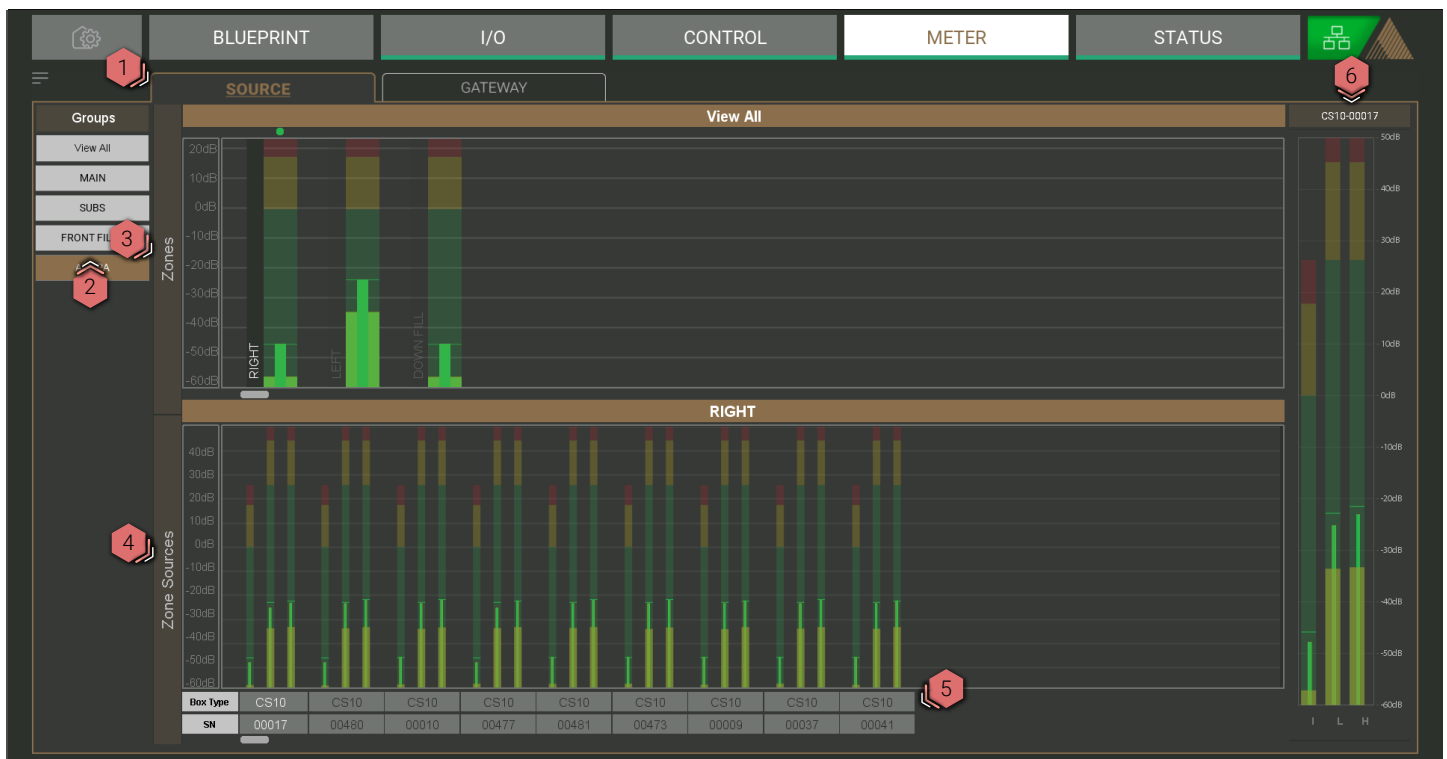
Metering - Gateway

1. Meters - Gateway
2. Gateway Zone selection
3. DSP Meters
 - Click to spill to Inspector
4. Gateway Zone Meters
 - Click to spill DSPs in Zone
5. Inspector
 - Input and Output Meters



Metering - Sources

1. Source or Gateway Meters page selection
2. Source Group selection
3. Source Zone Meters
 - Click to spill Sources below
4. Selected Zone Sources
 - Click to spill Source to Inspector
5. Device type and ID
6. Source Inspector
 - Input, LF Output, and HF Output Meters



STATUS ➤

Status - Overview

1. Source, Bridge, and Gateway device selection
 - Devices out of Sync will be indicated with red dots
2. Sync enable
 - Select to enable Sync functions for selected device
3. Device info for selected device
4. Temperature, Power, AVB Streaming, and Inclinator graphs
5. Sync options

The screenshot displays the STATUS tab of the ArrayIntelligence interface. The interface is divided into several sections:

- Top Navigation:** Includes tabs for BLUEPRINT, I/O, CONTROL, METER, and STATUS (highlighted). A SYNC button is located on the right.
- Left Sidebar:** Contains three main categories: Source, Bridge, and Gateway. Each category has a list of devices with status indicators (green for sync, red for out of sync).
- Design Info:** A table listing devices under the MAIN and RIGHT sections. Devices CS10 #1 through CS10 #11 are listed. CS10 #10 and CS10 #11 are marked as 'DOWN FILL'.
- Device Info:** A detailed view of the selected device (CS10). It includes fields for Name, Type, Serial Number, Firmware Version, IP Address, MAC Address, Stream & Ch#, MSRP Latency, and Power (0.64 ms).
- Sync Table:** A table showing the sync status of the selected device.
- Monitoring Graphs:** A section at the bottom right containing four graphs: Temperature, Power, Streaming, and Inclinator. The Temperature graph shows a stable line around 60°C over time.

Red callout numbers 1 through 5 are placed on the interface to correspond with the numbered list items in the overview section.

Status - Sync

1. Sync Devices pop-up window
2. Import / Export from all devices
3. Import / Export from selected devices
4. Start / Cancel Sync operations
5. Sync Table for selected device (click to collapse table)
 - Parameters out of Sync will be highlighted in red, and can be expanded to view discrepancy between data in AI and data on Device

The screenshot displays the 'Status - Sync' interface in the ArrayIntelligence software. The interface is divided into several sections:

- Source:** A list of devices (CS10 #1 to CS10 #11) with status indicators (green for 'RIGHT', yellow for 'DOWN').
- Bridge:** A section for managing bridges, currently showing 'Bridge_A'.
- Gateway:** A section for managing gateways, currently showing 'FOH' and 'FOH MTX'.
- Design Info:** A table showing device details for CS10 #1 to CS10 #11.
- Device Info:** A detailed view of a selected device (CS10), showing fields like Name, Type, Serial Number, Firmware Version, IP Address, MAC Address, and Stream & Ctrl.
- Sync Table:** A table showing the sync status of the selected device (CS10). It includes a 'Sync Devices' pop-up window with options for 'Import From All Devices', 'Export To All Devices', 'Import From Selected Devices', and 'Export To Selected Devices'. The 'Start' button is highlighted.
- Graphs:** A graph showing 'Temperature <C>' over time, with a legend and 'Show All' button.

» Design Templates

Adamson offers design templates for smaller systems to help users quickstart with AI Software. These templates include stage, room and cabinet information with array shaping, tilt filter and presets prepared.

The data can easily be edited to match the actual dimensions and system configuration. All parts of the system are time-aligned when positioned in the same distance to the listener.

Please contact software.support@adamsonsystems.com for any questions regarding the AI Software or design templates.

How to use the design templates

1. Connect your computer to the devices to be controlled.
2. Make sure all cabinets are updated to the latest firmware. ⚙️
3. Select the design template that best matches your application.
4. Open the template as a new design in the ArrayIntelligence Software.
5. Adjust the design if necessary.
6. Navigate to "Assign" in the speaker tab on the Blueprint page or the global assign page on the home tab and assign the virtual speakers to the online devices.
7. Go online by pressing the ArrayIntelligence logo in the top right corner.
8. Navigate to the CONTROL page for immediate control of your system.

Point Source Mini

Files

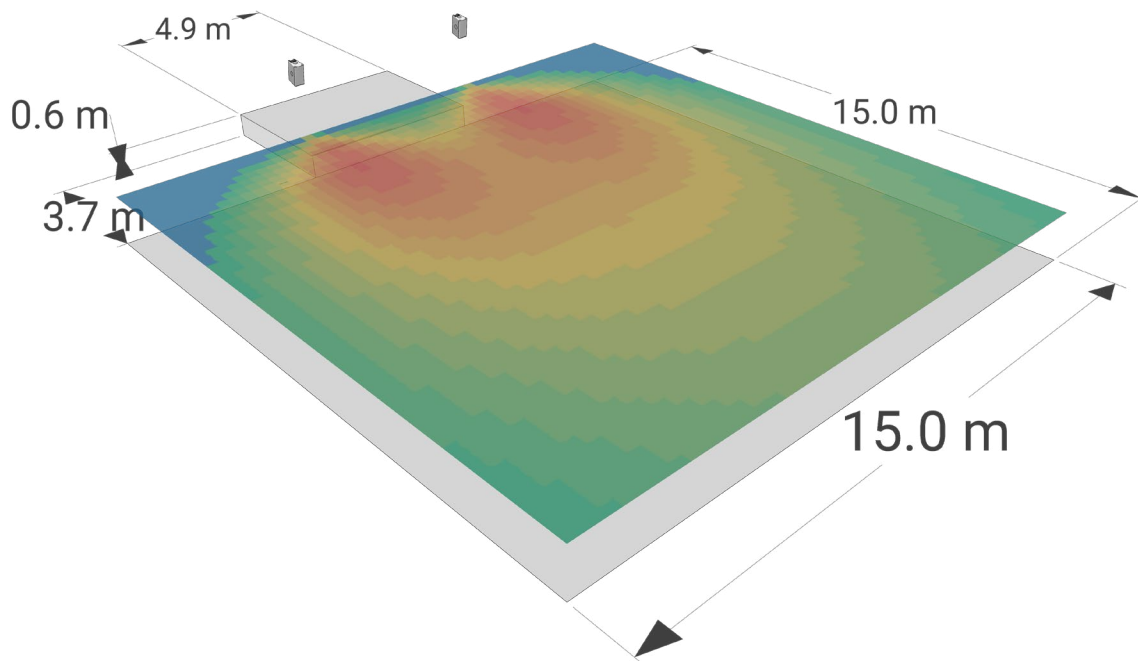
- CS7p 70x40 Mini - 2x CS7p 70°x40°
- CS7p 100x50 Mini - 2x CS7p 100°x50°
- CS10p 70x40 Mini - 2x C10p 70°x40°
- CS10p 100x50 Mini - 2x C10p 100°x50°

Presets

- All point source cabinets use the full range preset.

Groups, Zones, EQ Overlays

- **All** group including **Top L** and **Top R** zones.
- **Tilt** group including **Top L** and **Top R** zones with bypassed tilt -1 filters prepared



Point Source Small

Files

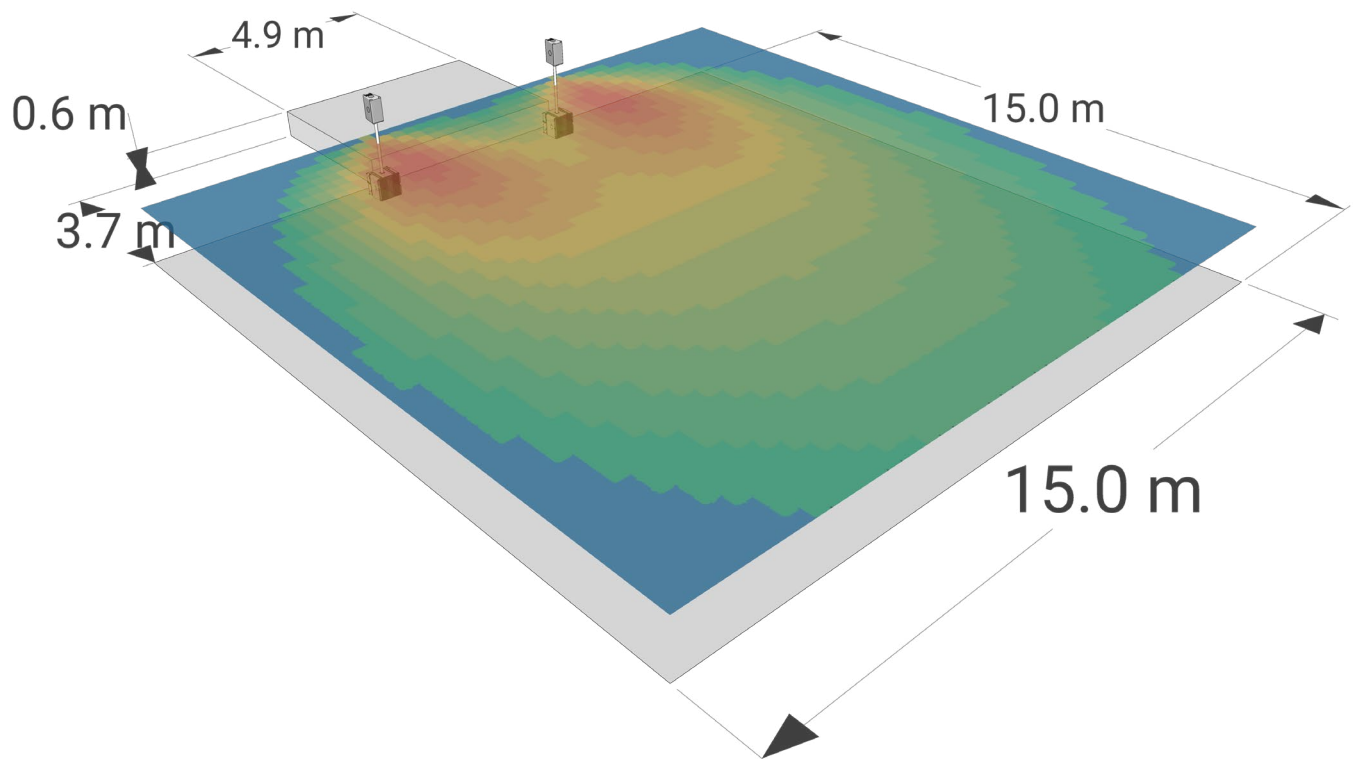
- CS7p 70x40 Small - 2x CS7p 70°x40°, 2x CS118
- CS7p 100x50 Small - 2x CS7p 100°x50°, 2x CS118
- CS10p 70x40 Small - 2x CS10p 70°x40°, 2x CS119
- CS10p 100x50 Small - 2x CS10p 100°x50°, 2x CS119

Presets

- All point source cabinets use the High Pass (Xo) preset.
- All subwoofers use the standard omni directional preset.

Groups, Zones, EQ Overlays

- **All** group including all zones.
- **Tilt** group including all zones with bypassed tilt -1 filters prepared.
- **Tops** group including **Top L** and **Top R** zones.
- **Subs** group including **Sub L** and **Sub R** zones.



Point Source Medium

Files

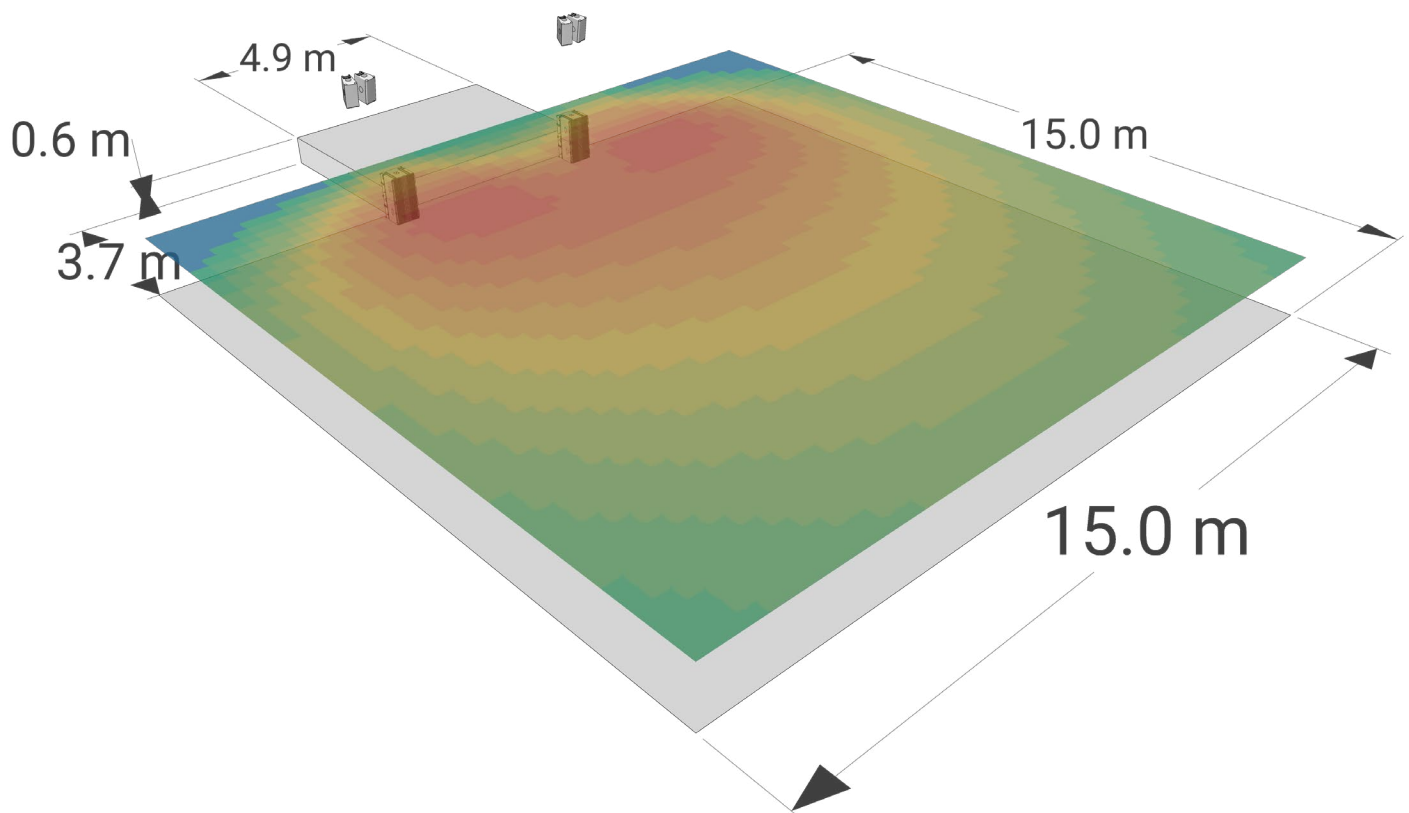
- CS7p 70x40 Medium - 4x CS7p 70°x40°, 4x CS118
- CS7p 100x50 Medium - 4x CS7p 100°x50°, 4x CS118
- CS10p 70x40 Medium - 4x CS10p 70°x40°, 4x CS119
- CS10p 100x50 Medium - 4x CS10p 100°x50°, 4x CS119

Presets

- All point source cabinets use the High Pass (Xo) preset.
- All subwoofers use the standard omni directional preset.

Groups, Zones, EQ Overlays

- **All** group including all zones.
- **Tilt** group including all zones with bypassed tilt -1 filters prepared.
- **Tops** group including **Top Out L**, **Top In L**, **Top In R** and **Top Out R** zones.
- **Subs** group including **Sub L** and **Sub R** zones.



Line Source Compact

Files

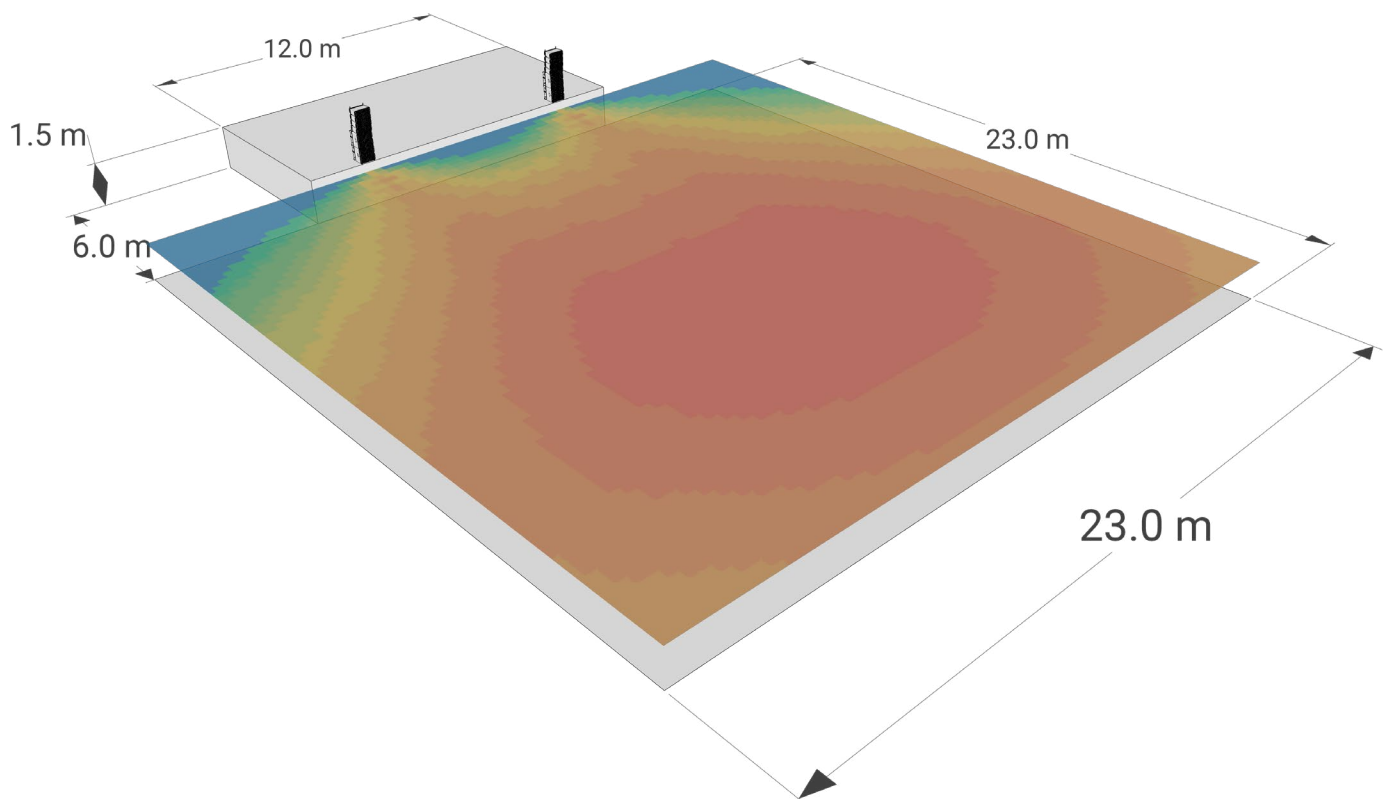
- CS7 Compact - 8x CS7, 4x CS118
- CS10 Compact - 8x CS10, 4x CS119
- CS10n Compact - 8x CS10n, 4x CS119

Presets

- All line source cabinets use the standard preset.
- All subwoofers use the standard omni directional preset.

Groups, Zones, EQ Overlays

- **All** group including all zones.
- **Tilt** group including all zones with bypassed tilt -1 filters prepared.
- **Arrays** group including **Array L** and **Array R** zones with array shaping (short for CS7; compact for CS10 and CS10n) prepared.
- **Subs** group including **Sub L** and **Sub R** zones.



Line Source Short

Files

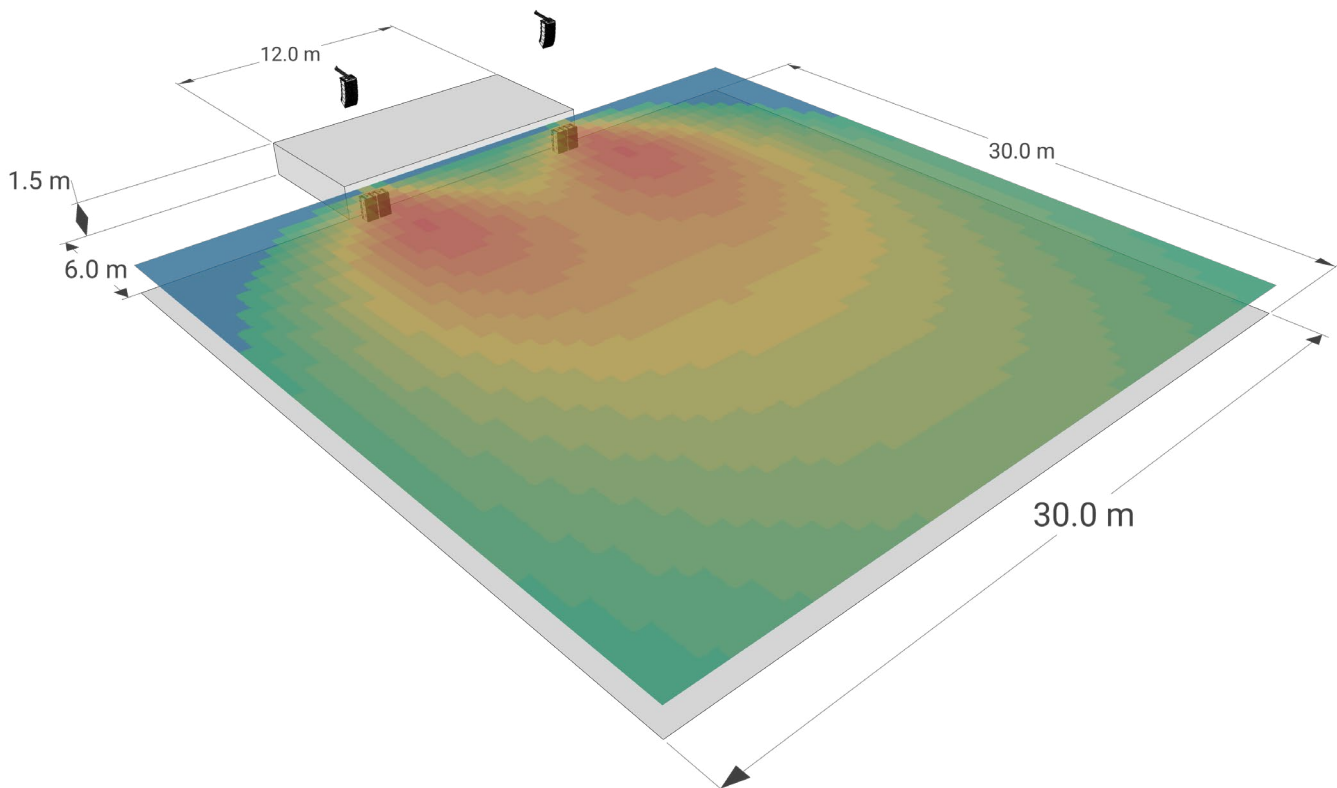
- CS7 Short - 12x CS7, 8x CS118
- CS10 Short - 12x CS10, 8x CS119
- CS10n Short - 12x CS10n, 8x CS119

Presets

- All line source cabinets use the standard preset.
- All subwoofers use the standard omni directional preset.

Groups, Zones, EQ Overlays

- **All** group including all zones.
- **Tilt** group including all zones with bypassed tilt -1 filters prepared.
- **Arrays** group including **Array L** and **Array R** zones with the array shaping (short) prepared.
- **Subs** group including **Sub L1**, **Sub L2**, **Sub R1** and **Sub R2** zones.



► Frequently Asked Questions (FAQ)

Why is ArrayIntelligence software not starting?

- Please make sure that all 3rd party applications are installed properly.
- Please install and start ArrayIntelligence with administrator access.
- Try to delete "AutoSaveOption", "AutoUpdateSetting" and "WindowSize" from "C:\Program Files\Adamson_ArrayIntelligence"
- If all of the above doesn't help, please uninstall ArrayIntelligence using the "Uninstall.exe" (by default this is found in "C:\Program Files\Adamson_ArrayIntelligence") on your computer. Delete all associated files, restart your computer and reinstall ArrayIntelligence.

The firmware update process is aborted and I get an error message, what can I do?

- Connect the devices and your computer using ethernet cables and suitable switches. For firmware updates, standard gigabit and AVNU™ certified switches can be used. Up to eight devices can be daisy-chained.
- Make sure ArrayIntelligence is allowed through the firewall (Windows Security -> Firewall & network protection -> Allow an app through firewall -> Change settings button -> Activate for all "Java(TM) Platform SE binary") and there is no active virus scanner on the used interface to avoid connection issues.
- Select the correct network interface used for the firmware update (MENU -> Tools -> Network Interface). After changing the interface the software needs to be restarted for the firmware update to work.
- Set the interface to obtain an IP address automatically.
- Clear user data on the devices to be updated.

Firmware update seemed to have worked but the device comes back with the old firmware, how do I solve this?

- Select the correct network interface used for the firmware update (MENU -> Tools -> Network Interface). After changing the interface the software needs to be restarted for the firmware update to work.
- Set the interface to obtain an IP address automatically.
- If the two steps above don't solve your issue or your cabinet is on firmware version 1.112 or earlier please contact support@adamsonsystems.com.

How does optimization increase the quality of line arrays?

- The optimization algorithm calculates a set of FIR filters per cabinet, based on the mechanical array design and virtual microphones placed throughout the audience plane(s) along the main axis of the array. These filters adapt the frequency response over the audience area and allow to optimize aspects that can not be adjusted by pure mechanical design (i.e. low frequency beam steering, air absorption in long distance, etc).

Is it necessary to mechanically splay an optimized array?

- Yes, it is essential to create a good mechanical array design first (i.e. aiming for a Y-weighted 6 dB corridor from the start to the end of the target audience area), as optimization is neither intended nor capable to fix a poor design, but to further improve a proper design.

What are the best initial settings for optimization?

- Ideally the SPL drop over distance of lower frequency's and higher frequency's should follow the same trends. As low frequency's are out of the scope of optimization adjusting the target curve of the optimization to the low frequency drop over distance often achieves tonally balanced results .
- For flat or inclining audience areas with front areas much closer to the array than the back, a target curve setting that follows the Y-Weighted SPL drop over distance of the mechanical splayed array, is often a good starting point.
- For Theaters or other venues with stands or balconies, where audience areas are relatively equidistant to the array, leaving the target curve flat or with 1-2 dB drop over distance is often a good starting point.
- The target curve can be reset by right clicking and selecting reset to average in the drop-down.
- Arrays that are set to a flat target curve can lead to a difference between higher frequency and low frequency drop off over distance. This may lead to a loss of directivity when getting close to the array and harsh sound in the back. In this case the target curve should be set to more drop off per distance.
- The headroom slider should only be changed if headroom limits appear.

Does optimization change the way the array needs to be time aligned?

- No. The optimization filters are combined with the output crossover filters and do not affect phase for low frequency's, hence the latency and time alignment for optimized arrays remains the same compared to non-optimized arrays

Can I store multiple optimization settings to compare them?

- No. Currently ArrayIntelligence only allows for one set of optimization per array to be stored per .bpt file. The easiest way to compare different optimization settings to each other is to store each optimization in a new .bpt file and loading these.

How do I review optimization results?

- 2D optimization results can be evaluated by selecting the desired graph (Audience SPL (per virtual microphone position), Non-Audience SPL (per virtual microphone position), Variance (frequency dependant differential between virtual mic positions), and Bar Chart (distribution of average SPL at all mic position)) in the 2D optimization tab, by selecting Post.
- When viewing Audience SPL in the bottom graph, click on a point in the Cross Section view on the top graph to highlight the frequency response of the selected point.
- Optimized SPL results can be viewed in the 2D SPL tab and clicking "Optimized".
- 3D optimization results can be viewed by clicking the OPT button in 3D view and running a simulation.

Where is optimization enabled and disabled for the speakers?

- Once an optimization has been accepted and stored in Blueprint, it can be enabled in the I/O page -> Speaker tab. Speaker with an available optimization will be indicated as such, and can be toggled by clicking the "Opt" box. To affect output of physical device they need to be assigned and online.

Can I use optimization to enhance the performance of externally amplified systems using Bridges?

- No. Optimization is only available for CS-Series and Vergence Group line source cabinets.

Why am I not seeing all connected devices when the detect function is switched on while assigning speakers?

- The detect function only works when network port 1 of the device is used as the "input", and port 2 is used as the "output". If the devices are not cabled in this manner, disable the detect function to discover the devices.

How can I see if AES3 or AVB Milan™ audio signals coming into the gateway are used.

- In the priority list on the Gateway I/O page, only the signal currently in use receives a green background. This means the clock is valid.
- In the input matrix or fader view, if an AES3 or Milan™ audio signal does not have a valid clock and there is no fall back signal selected the input reads "none".
- A locked AES3 input signal is shown by a steady blue light on the front of the gateway.

Can I send multiple AES3 sources (e.g. mixing desks) into the Gateway?

- Yes, there is an asynchronous sample rate converter on each input of the Gateway, allowing to mix up to eight different AES3 clock sources.

Can I mix multiple Gateway DSP outputs to the same AVB Milan™ / AES3 / Analog output?

- No, there is no output mixing. Outputs can only be patched to one or multiple device outputs.

How do I patch the AES3 outputs of a Bridge?

- The Bridge has no option to change the output patching. AES3 out 1+2 always contain the data from DSP 1+2 and so on.

What is required to patch AVB Milan™ audio?

- An AVB Milan™ capable network connection (including AVNU™ certified switches) is required to create audio streams between AVB Milan™ Talkers (such as an Adamson CS Gateway) and AVB Milan™ Listeners (such as an Adamson CS cabinet).
- AVB Milan™ Streams from third party devices must be patched using [Hive](#), an open-source AVB Milan™ AVDECC controller.

Why do I need to manually select the (correct) network interface to patch (or assign) AVB Milan™ audio?

- AVB Milan™ requires the AVDEEC service to run, which can only use one network interface per computer.

Why can I patch AVB Milan™ audio, but there is no signal?

- You are required to have at least one AVB Milan™ talker and one AVB Milan™ listener.
- To be able to patch AVB Milan™ audio successfully you need to select the network interface used for the connection to the AVB Milan™ network.

Is there a time difference between AVB Milan™ and analog input signals for the cabinets?

- There is a 2 ms latency increase when using AVB Milan™ instead of analog input for speakers. This is due to the specified presentation time in the AVB Milan™ protocol

Why do I have to assign control and patch audio separately?

- To establish a connection between the virtual devices created in Blueprint and the physical devices connected through the network, they need to be assigned. This will allow you to control cabinets, Bridges and Gateways through Zones and Groups on the Control page and receive Metering and Status for connected and assigned devices once online. This control data uses the [AES70 protocol](#).
- Patching audio is done on the I/O page or in Hive and uses the [AVB Milan™](#) protocol. This will establish an audio connection from any AVB Milan™ talker to AVB Milan™ listener(s).

How do I assign ground amplified cabinets to bridge outputs?

- Currently there is no automatic creation of Bridge Zones or assignment. Please create Source Zones and Groups, assign them to your Bridge DSP according to your System setup and patch the AES outputs of the Bridge to Amplifier Inputs accordingly.

How to implement Array Shaping or Tilt EQ in ArrayIntelligence?

- On the Control page, EQ snapshots can be recalled and stored, this is the easiest way of loading Array Shaping and Tilt filters into your array / system. The respective filters are included in the ArrayIntelligence package.

What is the name of the software in task manager?

- In the task manager ArrayIntelligence is called "Java(TM) Plattform SE binary"

» Release Notes

ArrayIntelligence 1.2, Build Date June 12, 2024 »

Updates

General:

- Added Sub Array Optimization to calculate delay times for optimized sub array opening angle.
- Added VGt.
- Changed default point source presets to high pass.
- Changing the order of groups or zones now reflects on all other pages.

Menu:

- New calculation for inclinometers. Faster response, automatic setting for vertical and horizontal orientation of cabinets.
- Inclinometer calibration. If placed screen down on a flat surface inclinometers can be calibrated and the factory value can be recalled.
- Added a warning pop-up and an indicator in device browser if devices with outdated firmware are connected.
- The device browser can be sorted in alphabetical order and by switch port.
- Added a field to read firmware default preset.
- Implemented Room (.rm) import and export.

Blueprint:

- Implemented store function for 2D SPL, allowing to store and compare up to 4 curves.
- Global assign page can now be opened from assign tab.
- Assign tab horizontal list only shows currently selected cabinets by default.
- Added an unassign all button to clear all assignments.
- Implemented Print User Sheet with a new first page to display global device count.
- Added Delta Time Simulation

I/O

- Changed the default I/O routing of the gateway. Priority 3 is now using Analog 1-8 on input router 1-8 and DSP 1-8 are routed to Analog Outputs 1-8.
- Loading a file stored with AVB Milan™ patch warns the user if the patch is changed.
- Added new Gateway snapshot list and the option to delete snapshots.

Control:

- Added +/- buttons to control gain in 0.5 dB steps and delay in 0.25 ms steps for optimized touch screen use.
- Added mute lock function. It automatically activates when going online. Once activated it prompts the user to confirm muting and un-muting.
- New function to copy and paste all active filters of the selected group / zone.

Status:

- Complete zones and groups can be selected when collapsed.
- Added the ability to switch cabinets to standby. Select a cabinet and click "ON" or "Standby" or select multiple and click on "Power".
- Sync Table is unfolded per default if a cabinet is out of sync.

Resolved Issues

General:

- New file or loading a file didn't always blank all data contained in the previous file.

Menu:

- Identify buttons were not properly latching.

Blueprint:

- Venue
 - » Using tab goes through values in correct order.
 - » Arc surfaces couldn't have negative radius for 2d calculator.
 - » Reworked the ref axis tab and behavior.
 - » Surface and object linking issues resolved.
- Component
 - » Fixed issues with entering values and changing properties in the edit window.
 - » Importing from speakers into an empty design deleted mirror.
 - » Undo / redo didn't work for changes made on component page.
 - » Going online didn't always lock all aspects of Blueprint to be edited.
 - » Fixed issue with deleting gateways.
 - » DXF export for speakers didn't result in the right amount of cabinets for some subwoofer setups.
- Assign
 - » Added clear indication for front and back orientation in cardioid subwoofers.
 - » Renamed switch ports were not stored in the .bpt file.
 - » Renaming a device that was assigned lead to unassignment.
 - » Reassigning Gateways with different hardware lead to wrong zones, groups and sync problems.
- Optimization
 - » Non Audience SPL mic positions did not show in optimization cross section and couldn't be selected.
- Simulation
 - » Resolved issues with 2D simulation scaling, zooming and curve display.
 - » 3D SPL simulation for CS7p 100x50 was not functional.
 - » Max value setting for 3D simulation was not working.
 - » 3D SPL Graph has been cleaned and reordered.
 - » Vertical SPL did not work properly.
 - » Stage on different Reference Axis lead to wrong simulation.
- Mechanical
 - » Using the moving point extender in front mode gave load warnings for arrays that are actually fine.
 - » IS10n had wrong rigging options

I/O:

- AVB patch display was very unstable after changing pages or loading files.
- AVB patch did not load correctly from .bpt file if a Bridge was involved.
- Changing "OPT enabled" status while being offline did not change the setting when going back online.

Control:

- It was possible to add more than 25 filters per endpoint through all assigned groups and zones. Now there is a warning prompt and no more filters are possible.
- In some instances entered values were copied to the filter selected next.
- Loading an EQ snapshot that is different from the currently active has a new pop-up allowing to overwrite, merge or abort.

Metering:

- Bridge zones did not show on the Metering page.
- When using the windows scaling feature for the used screen in some instances the Metering page didn't show.

Status:

- Cabinets in standby caused a fault message for out of range rail voltage.
- Resolved sync issues for Gateways and Bridges.
- Filter ID could be identical for multiple filters which caused sync issues.
- Sync table was missing an entry for optimization mismatch.
- When syncing a loaded file to an unchanged system it sometimes resulted in sync mismatch.

Known Issues

General:

- Display does not scale properly with different screen resolution and multiple screens. Ideally 1920x1080 pixels or 1920x1200 pixels should be used.
- Opening .bpt files from earlier versions of ArrayIntelligence or Blueprint can lead to unexpected behavior. It is recommended to rebuild the file especially for CS-Cabinets, Gateways and Bridges.
- AVB Milan™ patch is stored in the .bpt file per cabinet. Using different hardware or changing hardware positions for the same design will not load the AVB Milan™ patch correctly.

Blueprint:

- Component
 - » Speaker gain for individual point source cabinets does not affect simulation results. Gains changed in the speaker do.
 - » When using subwoofers in combination with line source cabinets, the crossover frequency can't be selected and cardioid combinations are impossible. **Workaround:** Design line source cabinets and subwoofers as individual speakers.
 - » Ground stacked subwoofers can have angled positions while that is physically impossible.
 - » E219 shows as 1340mm wide while it is 1440mm wide in reality.
 - » Changing cabinet from a non CS-Series cabinet to a CS-Series cabinet doesn't create a group on the Control page for the speaker group.
- Optimization
 - » Optimization results can only be viewed directly after running optimization and not be loaded from a .bpt file.

I/O:

- » AVB Milan can't be patched from Fletcher Machines.
- Gateway
 - » Patching AVB Milan™ from Gateway to Gateway or third party AVB Milan™ devices needs to be done in Hive, including selecting the right clock source for the following device and patching the clock stream.
 - » Mute of Gateway input channels in the Gateway input matrix is a fade out.

Control:

- Moving a plateau filter for low frequencies can cause audible artifacts.

Included Files

Design Templates V1.3

- No change.

Presets

- Added VGt Cardioid and Omni.
- No change for all CS-Series Presets.

Firmware V3.31

- Implemented new inclinometer calculation and calibration.

Array Shaping and Tilt Snapshots V1.0

- No change.

Version History

ArrayIntelligence 1.1, Build Date September 22, 2023

Updates

General:

- New Header bar graphical layout to simplify workflow and responsiveness.
- New online / offline logo.
- Update to product nomenclature for consistency.
- Added IS5c, IS7c, IS219 and IS213
- Improved AES70 discovery.
- Improved overall stability.
- Improved the stability when opening files from older versions.

Menu:

- The Global Assign feature on the main page has been overhauled and functionality to assign Gateways and Bridges has been added.
- Updated and simplified menu structure.
- Added a warning to restart the software after changing the network interface.

Blueprint:

- Detect orders correctly by switch port.
- Added renaming feature for switches.
- Updated the visual appearance of the edit window for sub arrays.

I/O

- Added ability to select multiple Gateway input matrix fields by pressing "ctrl" key and clicking on the field.

Control:

- Updated the polarity switch to be red.

Resolved Issues

General:

- Fixed issues with loading files from earlier versions.
- In some instances the export didn't work, when Bridge zones were assigned and the Bridge was connected.
- Resolved issues with firmware update or clearing user data crashing the software.

Menu:

- If devices are connected and disconnected in some instances the device browser needed to be updated manually to show and connect to all devices.
- Resolved issues with the remember directory functions for users not logged in as administrator in Windows.

Blueprint:

- Venue
 - » Opening files created in previous versions containing stages the height of the stage showed and behaved wrong.
 - » When in the stage tab, the edit window disappeared after changing from 2D view to 3D view and back.
 - » Arc Quad surfaces were not fully visible in 2D mode.
 - » Linking function didn't work between "quad" and "tri" surfaces and was not as stable as in Blueprint AV.
- Component
 - » When changing any array to or from CS-Series, angles were reset.
 - » Changing a cabinet type in an array was not changing all lower cabinets.
 - » Moving a sub array using the offset function moved the array twice.
 - » Cross section rays of line source did not highlight recent edits on cabinet angle in red and there was no red dots on 2D SPL.
 - » Deleting a source that has been assigned caused crash of the software.
 - » Changing preset / pattern on certain products would not apply properly.
 - » Changing gain or delay for mirrored sources didn't update visually on component and simulation page.
- Assign
 - » The renaming function for switch ports did not store the new name in the .bpt file.
- Optimization
 - » The frequency constraint for optimization didn't work.
 - » When selecting a new speaker for optimization while the resolution was set to "High" this setting didn't apply to the new speaker until the resolution switch was toggled.
- Simulation
 - » 3D simulation window was freezing in some instances.
 - » Simulation meter didn't show SPL values but only nominal SPL reduction.
 - » 2D SPL prediction for subwoofers were not correct in some instances.
 - » Vertical SPL simulation was not working properly.
 - » CS7p 50x100 froze 3D simulation.
- Mechanical
 - » The mechanical view of arrays was not always using all the space it could.
 - » It was impossible to enable or disable view options.

I/O:

- Selection view of sources was missing a reset button.

Control:

- Switch Zones / Groups didn't update the status of the polarity switch.
- Changing polarity didn't work for source groups and was not stored in the .bpt file.
- Manually entering a value for frequency in the control page was setting the filter incorrectly.
- Manually entering a value for gain set the next filter clicked to the same value.
- Editing the frequencies for plateau filters was inconsistent.
- Gateway grouping in some instances led to sync errors and missing data.

Metering:

- Using multiple Gateways the input / output meter section for the complete Gateway showed only one set of meters.

Status:

- Fixed an issue where temperature data for CS119 didn't update.
- Gateway sync errors would not show a global alarm.
- Fixed an issue where different order of groups would lead to sync issues while it should not.

Included Files

Design Templates V1.3

- No change.

Presets

- No change.

Firmware V2.69

- Clock handling for AES3 signals going into the gateway has been improved.

Array Shaping and Tilt Snapshots V1.0

- No change.

ArrayIntelligence 1.0, Build Date June 14, 2023

Included Files

Design Templates V1.3

- First public release of Design Templates.

Presets

- First public release of presets.

Firmware V2.67

- First public release of Firmware.

Array Shaping and Tilt Snapshots V1.0

- First public release of Array Shaping and Tilt snapshots.