JBL

PROFESSIONAL

VTX SERIES

SYSTEM SOLUTIONS

VTX A8 | User Manual

GENERAL INFORMATION

VTX A8 - User Manual

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JBL PROFESSIONAL

8500 Balboa Blvd

Northridge, CA 91329

USA

Thank you for purchasing JBL VTX Series products

Of all the achievements JBL has made over the years, the VTX Series stands as a milestone in the practical application of creative engineering. The next generation in line arrays, VTX heralds a new era in performance, system integration and user friendliness. Supported by multiple patents in driver, waveguide and suspension technology, VTX is also supported by technologies from HARMAN Professional sister companies for amplification, DSP, control and system management. In addition to high-performance components, VTX is backed by JBL's engineering support — the human factor and technical tools that are key to the proper specification and configuration of the VTX system in any venue, anywhere in the world.

The VTX Series is a result of JBL's continued effort to deliver more powerful, more compact, lightweight and flexible sound reinforcement systems. Designed for portable and fixed-venue system operators alike, VTX features JBL's legendary sound quality coupled with the most advanced sound reinforcement technology and support available. As a member of the HARMAN group, we draw from the expertise and integration of the entire range of HARMAN Pro audio technologies. So, in addition to the best sound possible, VTX offers efficient and intuitive setup, tuning, networking and control to provide a truly professional and advanced system solution.

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1 - DECLARATION OF CONFORMITY

BRAND: JBL Professional

FAMILY NAME: VTX A8/B18 loudspeaker and suspension accessories

MODEL NAMES:

- **VTX A8**
- **VTX A8 AF**
- **VTX A8 AF EB**
- **VTX A8 MF**
- **VTX A8 SB**
- **VTX A8 BP**
- **VTX RC500**
- **VTX A8 VT**
- **VTX B18**
- **VTX B18 VT**
- **VTX B18 ACC**

We, HARMAN International, declare under our sole responsibility that the product, to which this declaration relates, is in conformity with the following standards:

STANDARD	DESCRIPTION	TEST AGENCY
2006/42/EC MACHINE DIRECTIVE	Applies to machinery and lays down essential health and safety requirements ISO12100	Tested at JBL Professional
2014/35/EC LOW VOLTAGE DIRECTIVE	Applies to loudspeaker and lays down essential health and safety requirements. EN60065	Tested at JBL Professional

Frank Lacelle

Compliance Manager - Harman International

2 - SAFETY

Before using a JBL VTX Series system, please review the following for important information on safety and protection of your investment.

2.1 - SAFETY INSTRUCTIONS

1. Read these instructions
2. Keep these instructions
3. Heed all warnings
4. Follow all instructions
5. Do not expose the product to direct rain or sea spray
6. Clean only with a dry cloth
7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat
8. Only use attachments / accessories specified by the manufacturer
9. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart / apparatus combination to avoid injury from tip-over
10. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped
11. Contact JBL Professional for advanced servicing issues
12. CAUTION - DO NOT PERFORM ANY SERVICING UNLESS YOU ARE QUALIFIED TO DO SO
13. **Prolonged exposure to excessive SPL can cause hearing damage:** the loudspeaker is easily capable of generating sound pressure levels (SPL) sufficient to cause permanent hearing damage to performers, production crew and audience members. Caution should be taken to avoid prolonged exposure to SPL in excess of 90 dB
14. Read the System Rigging Manual before installation and use of the product

2.2 - GENERAL HARDWARE INFORMATION

Any hardware used in an overhead suspension application must be load rated for the intended use. Generally, this type of hardware is available from rigging supply houses, industrial supply catalogs and specialized rigging distributors. Local hardware stores do not usually stock these products. Hardware that is intended for overhead suspension will comply with ASME B30.20 and will be manufactured under product traceability controls. Compliant hardware will be referenced with a working load limit (WLL) and a traceability code.

2.3 - IMPORTANT SAFETY WARNING

The information in this section has been assembled from recognized engineering data and is intended for informational purposes only. None of the information in this section should be used without first obtaining competent advice with respect to applicability to a given circumstance. None of the information presented herein is intended as a representation or warranty on the part of JBL. Anyone making use of this information assumes all liability arising from such use.

All information presented herein is based upon materials and practices common to North America and may not directly apply to other

countries because of differing material dimensions, specifications and/or local regulations. Users in other countries should consult with appropriate engineering and regulatory authorities for specific guidelines.

Correct use of all included hardware is required for secure system suspension. Careful calculations should always be performed to ensure that all components are used within their working load limits before the array is suspended. Never exceed the maximum recommended load ratings.

Before suspending any speaker system always inspect all components (enclosure, rigging frames, pins, eyebolts, track fittings, etc.) for cracks, deformations, corrosion or missing/loose/damaged parts that could reduce strength and safety of the array. Do not suspend the speaker until the proper corrective action has been taken. Use only load-rated hardware when suspending JBL suspendable loudspeaker models.

2.4 - INSPECTION AND MAINTENANCE

Suspension systems are comprised of mechanical devices and, as such, they require regular inspection and routine maintenance to ensure proper functionality. Before suspending or pole mounting any speaker system, always inspect all components (enclosure, suspension frames or brackets, pins, eyebolts, etc.) for cracks, deformations, corrosion or missing/loose/damaged parts that could reduce strength and safety of the array. Do not suspend or pole mount the speaker until the proper corrective action has been taken.

Installed systems should be inspected at least annually. The inspection shall include a visual survey of all corners and load-bearing surfaces for signs of cracking, water damage, de-lamination or any other condition that may decrease the strength of the loudspeaker enclosure.

Accessory suspension hardware provided with or for VTX systems must be inspected for fatigue at least annually or as required by local ordinance. The inspection shall include a visual survey of the material for signs of corrosion, bending or any other condition that may decrease the strength of the fastener. Additionally, any eyebolts shall be checked for possible spin-out of the enclosure.

For all other hardware and fittings, refer to the hardware manufacturer's inspection and maintenance guidelines for process.

JBL is not responsible for the application of its products for any purpose or the misuse of this information for any purpose. Furthermore, JBL is not responsible for the abuse of its products caused by avoiding compliance with inspection and maintenance procedures or any other abuse.

Prior to suspending the system, an expert, trained and experienced in suspending speaker systems, should inspect all parts and components.

2.5 - ATTACHMENT TO STRUCTURES

A licensed Professional Engineer must approve the placement and method of attachment to the structure prior to the installation of any overhead object. The following performance standards should be provided to the Professional Engineer for design purposes: Uniform Building Code as applicable, Municipal Building Code as applicable and Seismic Code as applicable. The installation of the hardware and method of attachment must be carried out in the manner specified by the Professional Engineer. Improper installation may result in damage, injury or death.

2.6 - SYMBOLS

The following set of symbols are used in this document:

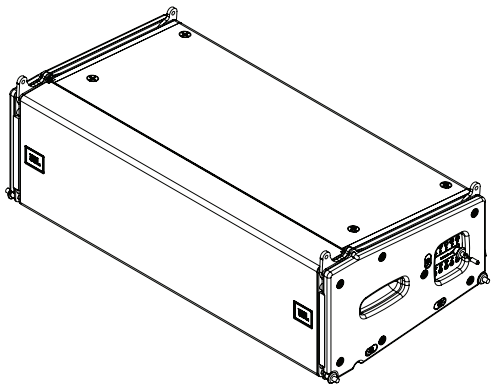
CAUTION: This symbol gives notice of a potential risk of harm to the individual or the equipment. Instruction marked with this symbol must be strictly followed.

TIP: This symbol gives notice of helpful, relevant information about the topic.

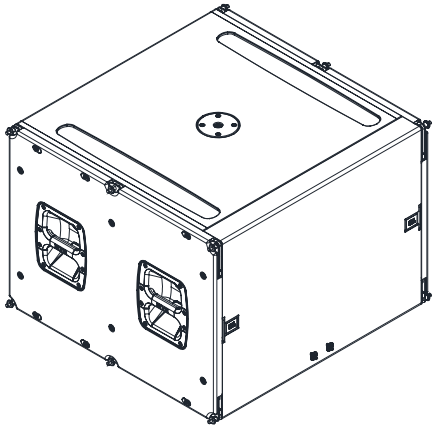
INSTRUCTIONS: This symbol gives notice of instructions that must be followed for proper installation and use of the product.

TOOLS REQUIRED: This symbol gives notice of tools that must be used for proper installation and use of the product.

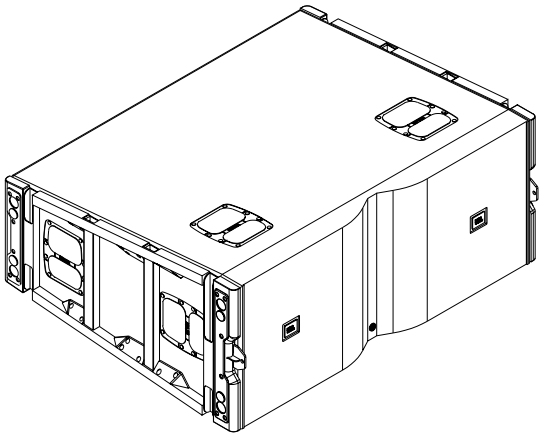
3 - SYSTEM COMPONENTS



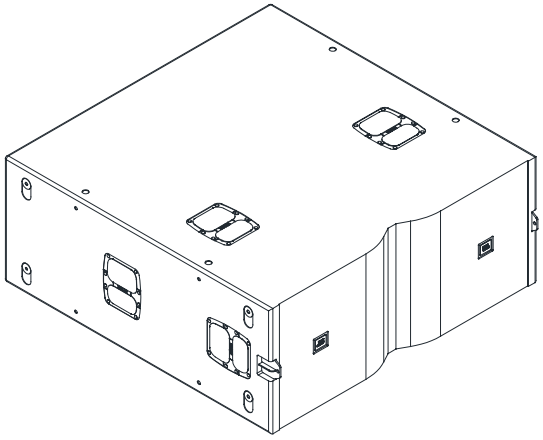
VTX A8



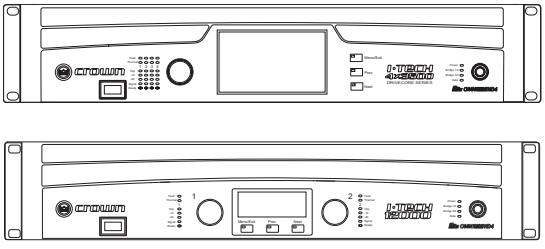
VTX B18



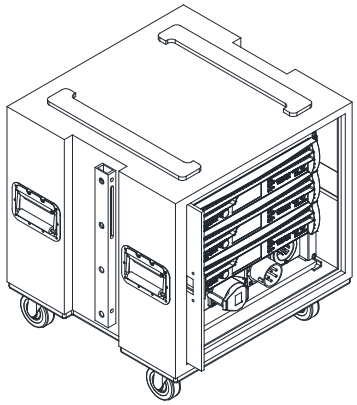
VTX S28



VTX G28



Crown I-Tech HD Amplifiers

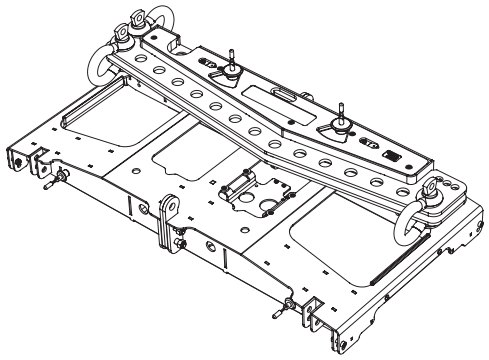


Crown Audio V-Rack

4 - COMPATIBLE ACCESSORIES

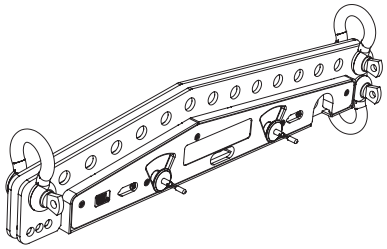
All listed accessories are compatible with the VTX A8 and in some case the VTX B18. For B18 specific accessories refer to the VTX B18 User and Rigging manuals found at www.JBLpro.com.

4.1 - VTX A8 AF - ARRAY FRAME



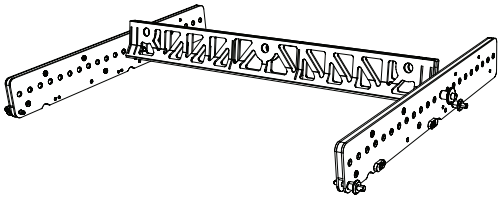
- Compatible with VTX A8 and VTX B18
- Maximum Limit: 24 x VTX A8 / 13 x VTX B18
- 0.5° pick-point resolution
- Built-in storage position for extension bar
- Includes 1 x VTX A8 AF EB extension bar
- Support for 3rd-party laser inclinometers
- Compatible shackle size: 5/8”

4.2 - VTX A8 AF EB - ARRAY FRAME EXTENSION BAR



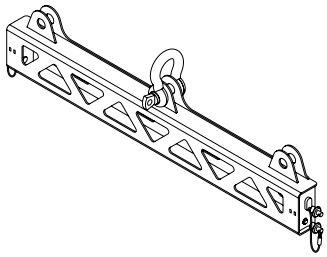
- Extension Bar for use with VTX A8 AF
- Single, front-to-back or side-by-side pick point options
- Includes 3 x shackles and mounting brackets
- Compatible shackle size: 5/8”

4.3 - VTX A8 MF - MINI FRAME



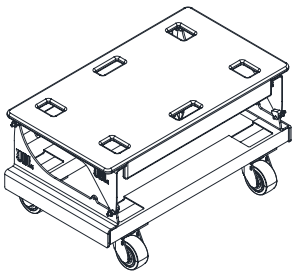
- Compatible with VTX A8 and VTX B18 enclosures
- Maximum Limit: 10 x VTX A8 / 4 x VTX B18
- Single-point and side-by-side pick-point options
- 3-part collapsible design
- Compatible shackle size: 1/2”

4.4 - VTX A8 SB - SUSPENSION BAR



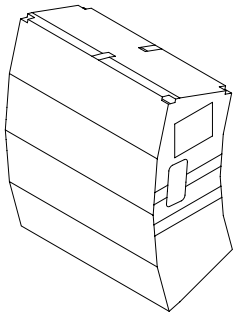
- Compatible with VTX A8 and VTX B18
- Maximum Limit: 24 x VTX A8 / 16 x VTX B18
- Used for pull-back applications
- Shackle Size: 5/8”

4.5 - VTX A8 VT - VERTICAL TRANSPORTER



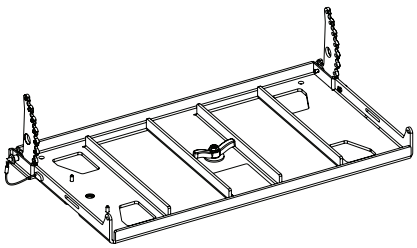
- Vertical transport cart for 4 x VTX A8 enclosures
- Truck-friendly dimensions
- Includes a hard top (VT-TOP)
- Built-in stacking features for easy storage
- Heavy-duty casters

4.6 - VTX A8 VT CVR - SOFT COVER



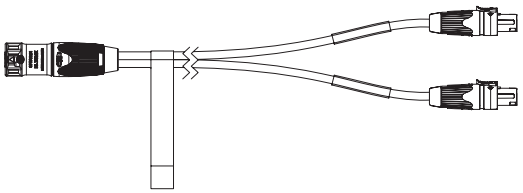
- Heavy-duty soft cover for VTX A8 enclosures
- Covers 4 x VTX A8 enclosures on a VTX A8 VT
- Includes input-panel flaps for testing purposes
- Clear see-through pocket for shipping labels
- Handle cut-outs for easy transportation
- Folds and stores in the VTX A8 VT

4.7 - VTX A8 BP - BASE PLATE



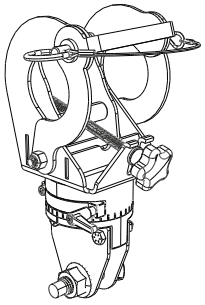
- Used for ground stacking VTX A8
- Maximum Limit: 8 x VTX A8 cabinets
- Connects VTX A8 cabinets to subwoofers
- Universal M20 attachment method
- Tilt range: -15° to +5°

4.8 - VTX NL824 - BREAKOUT CABLE



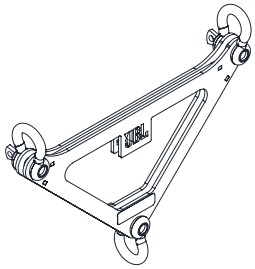
- NL8 to 2 x NL4 Breakout cable
- 1.5m (5') long
- High-quality STX Neutrik connectors
- 4 x 2.5mm^2 speaker cable
- Simplifies wiring for Bi-Amplified systems
- Comes with JBL branded cable strap

4.9 - VTX RC500 - ROTATING CLAMP



- Universal truss/pipe clamp adapter
- Working Load Limit: 500 kg (1100 lbs)
- Adjustable clamping mechanism
- Pipe range: 1" – 2.0"
- Includes bearing for smooth 360° rotation
- 10° rotation marks for horizontal array aiming

4.10 - VTX DELTA - DELTA PLATE

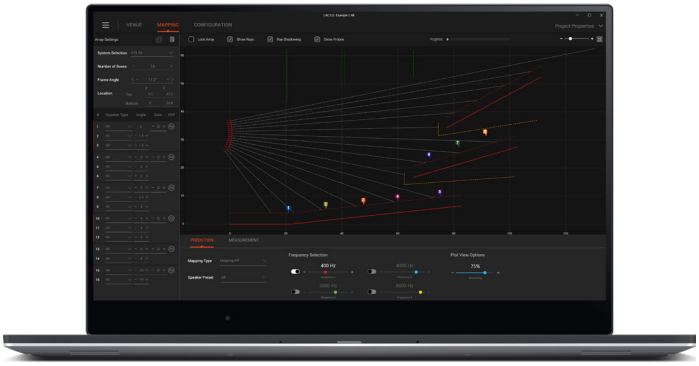


- Universal delta plate accessory for VTX systems
- Allows for +/- 10 degree horizontal adjustments
- Includes 3 x 5/8" shackles
- Working Load Limit: 2,177kg (4,800lbs)

TIP: For B18 specific accessories refer to the VTX B18 User and Rigging manuals found at www.JBLpro.com.

CAUTION: Always use components and accessories specified and approved by JBL Professional. When a cart is used, use caution when moving the cart to avoid injury from tip-over.

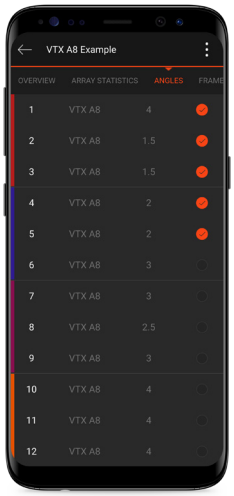
5 - SOFTWARE



5.1 - LINE ARRAY CALCULATOR 3 ™

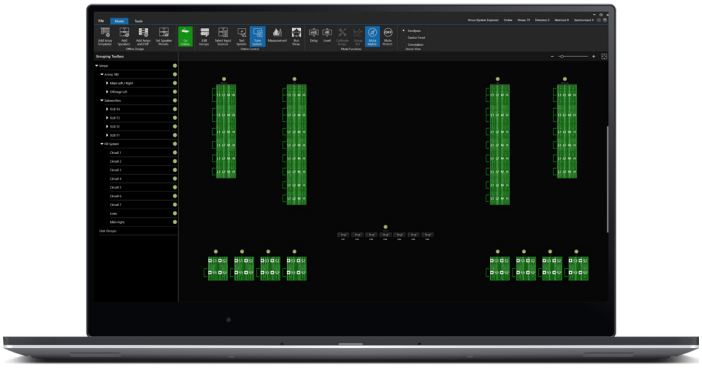
LAC is a simulation software for designing and predicting JBL VTX Series systems. LAC predicts the acoustical performance of line array systems, as well as flown and ground stacked subwoofer arrays. Subwoofer delay values can be generated for electronic delay steering (EDS) using the built-in coverage calculator. Beyond the acoustical prediction, LAC is used for mechanical validation of all used hardware and calculating weight limits and safety warnings.

www.jblpro.com/lac3



5.2 - ARRAY LINK ™

JBL Array Link is a mobile companion app that works in conjunction with JBL's LAC software to assist with deploying JBL VTX Series systems. Array Link uses a QR code system to transfer all mechanical array information from the main LAC application to a mobile phone. All relevant rigging and mechanical options are presented in an easy-to-understand layout. The application is compatible with iOS® and Android™ and can be obtained from the respective app stores.



5.3 - PERFORMANCE MANAGER ™

JBL® Performance Manager™ is a software application designed to configure and control networked audio systems. The workflow paradigm of the Performance Manager interface guides the system designer through the complete system design, configuration and control process. A dedicated show mode provides all the monitoring and control needed to have a complete picture of how the system is performing in real time.

www.jblpro.com/performancemanager

6 - INTRODUCTION

6.1 - VTX A8

The VTX A8 is a next-generation line array element that delivers JBL Professional's flagship VTX A Series technology in a compact solution for small to mid-size rental and installed applications. The VTX A8 was designed to solve the diverse sound reinforcement needs of production companies, rental houses, theaters, houses of worship, as well as production applications requiring front fills, side arrays or other auxiliary support for larger-scale VTX systems. Proprietary JBL woofers and our latest-generation high-frequency transducer and waveguide technology, provides unmatched performance, efficiency, and a consistent 110-degrees of horizontal coverage. The A8 combines two 8" woofers, four 3.5" midrange drivers and two 2" high-frequency drivers in a single low-profile cabinet. Proprietary double-flared low-frequency ports, precisely calculated for greater low-frequency performance extend the usable operating range down to 49Hz. The VTX A8 shares the VTX A Series' patented rigging mechanism and suspension system for streamlined deployment, while a comprehensive suite of accessories open up a world of configuration options.

INSIDE THE INNOVATIONS

For VTX A8, next-generation transducers were engineered from the ground up by JBL to match the physical characteristics of its compact enclosure. Custom-designed low and mid-frequency sections along with flagship VTX A-Series 2" compression drivers deliver higher output, lower distortion and greater low-frequency extension. Physical design refinements integrate more drivers in a smaller, lighter cabinet, for maximum output in a dramatically reduced footprint. It all adds up to big-system JBL sound in a flexible, compact line array system.

3-WAY, 2-CHANNEL DESIGN

The VTX A8 features a 3-way design but utilizes a passive network to drive both the MF and HF sections with a single amplifier channel. Reducing system amplifier count translates to simpler configuration, lighter total weight, less truck space and lower overall costs.

INNOVATIVE RIGGING

The VTX A8 rigging is identical to the A12, for quick, easy deployment of integrated systems. Rigging features an auto-locking mechanism, which allows the selection of angles while components are on the ground; once the system is suspended, the mechanism automatically locks cabinet angles in designated positions. Set angles simply by pulling and placing a pin—it's that easy.

ACCESSORIES

Multiple accessory options provide flexibility in the VTX A8's mounting, integration and installation capabilities. Highlights include a Base Plate that mounts the A8 on top of ground-stacked subwoofers such as the new B18. The truss clamp and mini frame enable the A8 to be mounted on a truss, making it ideal for trade shows or small productions.

6.2 - VTX B18

The VTX B18 is JBL Professional's next-generation single 18" subwoofer, designed to complement VTX full-range sound reinforcement systems. The VTX B18 features JBL's new 2288H 18" woofer, engineered for improved linearity, increased sensitivity and extra-long excursion. The 2288H is based on JBL's Differential Drive, dual voice coil, dual-gap technology, which delivers better heat dissipation, lower power compression and wider dynamic range than conventional single-coil designs. The B18 incorporates JBL's patented Slip Stream™ double-flared exponential low-frequency port design to improve airflow and reduce audible turbulence, even at maximum excursion. The B18 shares the industrial design of the JBL's VTX A-Series products and has the same width and suspension hardware as the VTX A8, allowing the two products to be used together in a variety of flown or ground-stacked configurations. The VTX B18 can be deployed in omni-directional or cardioid configurations, in arrays of up to 16 enclosures.

TRANSDUCER DESIGN

The VTX B18 features JBL's first new 18" high-performance woofer design in a decade, engineered from the ground up to deliver transparent, linear bass response down to 28 Hz. The 18" driver leverages JBL's patented fourth-generation Differential Drive technology to deliver maximum sensitivity and power handling in a light, compact design.

VTX A8 COMPATIBILITY

The B18 rigging system is compatible with the VTX A8 rigging system, allowing B18 subwoofers to be suspended above an A8 array. The VTX B18 rigging system allows for omnidirectional or cardioid configurations in small and large-scale flown or groundstacked arrays. All VTX A8 suspension accessories are compatible and arrays of up to 16 enclosures can be created.

CONTROLLABLE COVERAGE

The VTX B18 can be used in omni-directional or cardioid configurations simply by selecting the appropriate speaker preset and cabinet orientation. Speaker connectors are available on both the front and back, streamlining cable management in either configuration. A switch on the rear input panel allows for selecting between channel 1 or 2 of the NL4 cable, minimizing cable requirements.

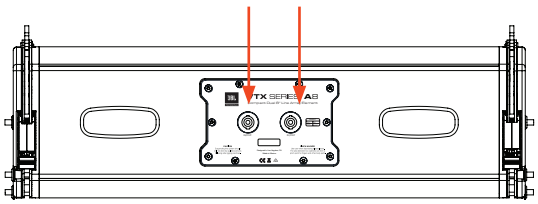
VTX BUILD QUALITY

The VTX B18 adopts the VTX A-Series' signature full-face grill design, which minimizes exposed components and protects the loudspeaker from extreme conditions. The enclosed grill helps the system achieve a higher Ingress Protection (IP55) rating.

7 - CONNECTIONS

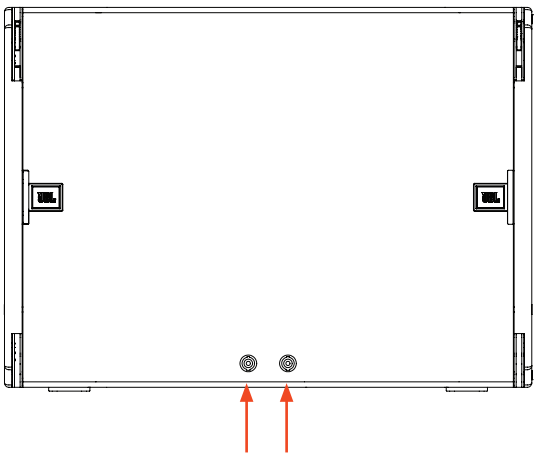
The JBL VTX A8 is equipped with two Neutrik NL4 SpeakON connectors. Both NL4 connectors are wired in parallel and can be used as the system input or as a through connection for daisy-chaining multiple cabinets together. The NL4 connectors are installed upside down so that the NL4 locking pin position can be seen from under the array.

NL4 Connectors : IN/OUT

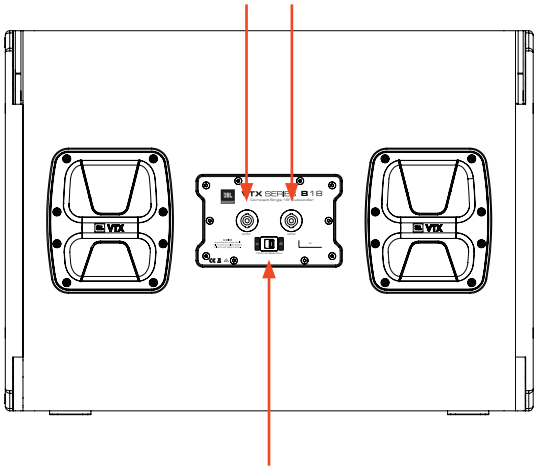


The VTX B18 is equipped with four Neutrik NL4 SpeakON connectors, two at the rear for the cabinet and two at the front grill. All four NL4 connectors are wired in parallel and can be used interchangeably. The NL4 connectors at the front of the B18 are typically used when the B18s are setup in a cardioid configuration and when some of the enclosures are pointed backwards. All NL4 connectors are installed upside down so that the NL4 locking pin position can be seen from under the array.

Rear NL4 Connectors : IN/OUT



Front NL4 Connectors : IN/OUT

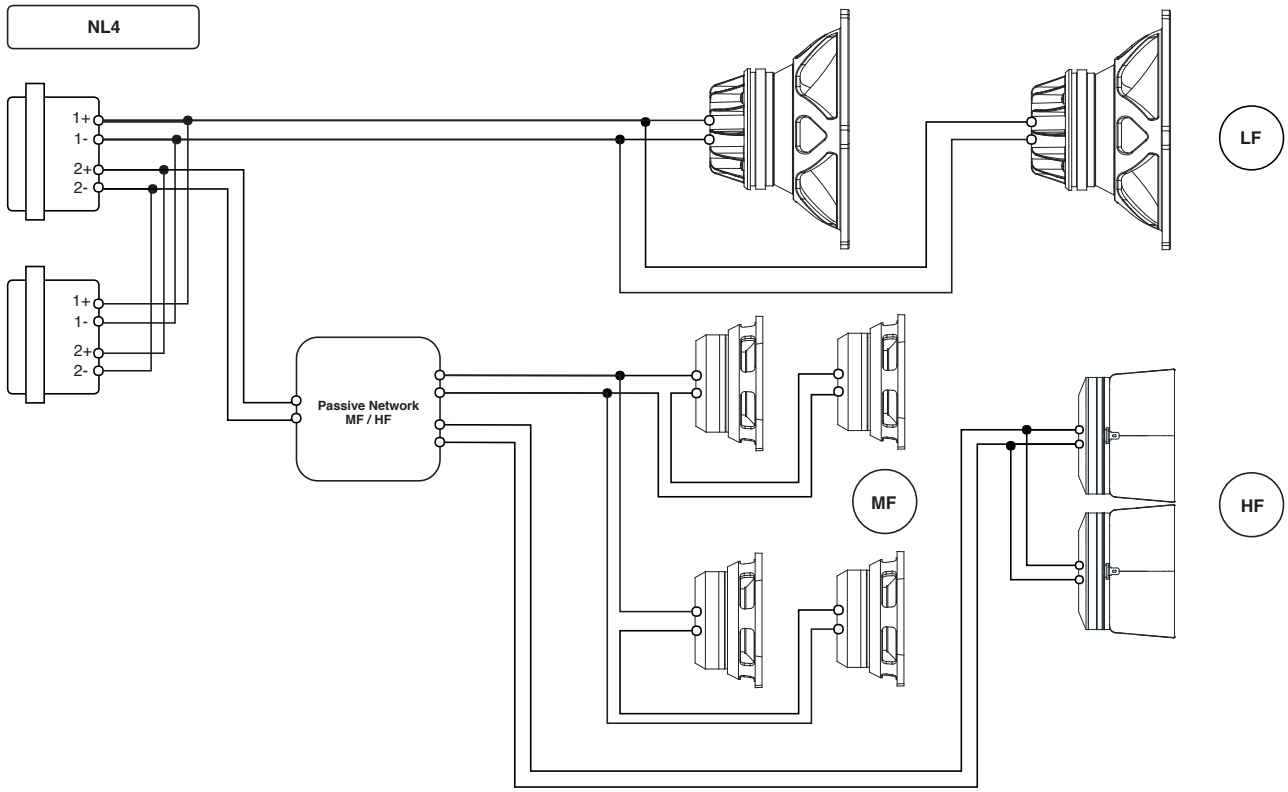


Channel Selection Switch

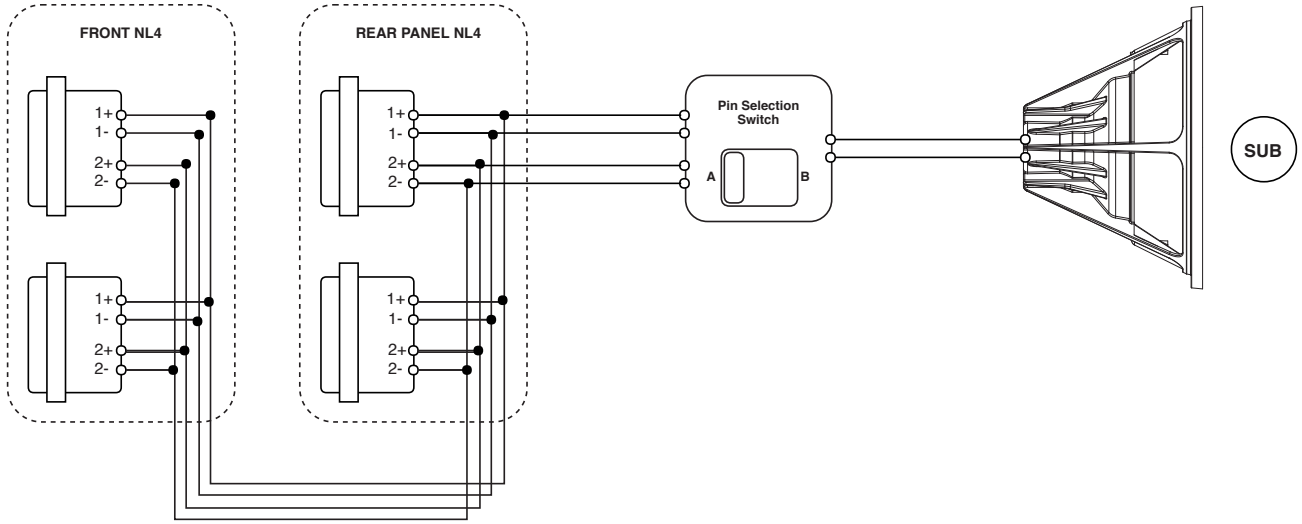
A channel selection switch is available at the rear of the B18 which allows for selecting between Pin-1 and Pin-2 of the NL4 connector/cable. The switch is wired after the four NL4 connectors and affects all connections equally. For more information on the B18 refer to the B18 User Manual.

CAUTION: Always use high-quality insulated speaker cables made by reputable manufactures. Keep cable length as short as possible with sufficient gauge for the application.

7.1 - A8 INTERNAL WIRING



7.1 - B18 INTERNAL WIRING



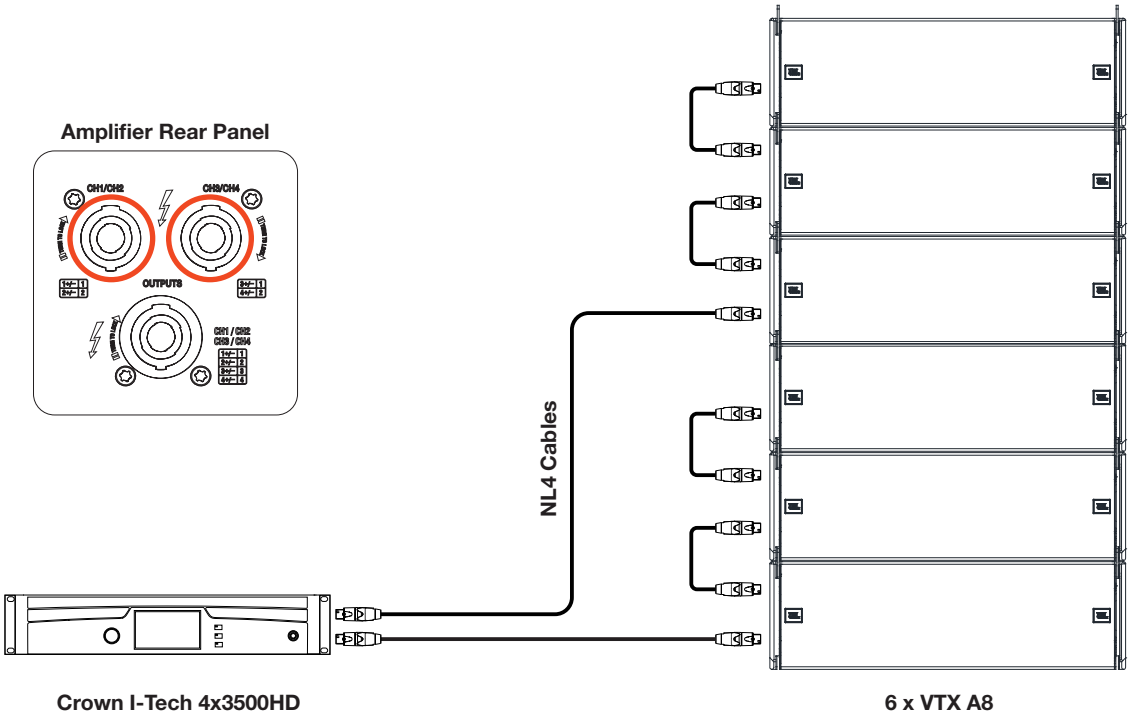
8 - SYSTEM AMPLIFICATION & WIRING

Like all other VTX systems, the VTX A8 and B18 cabinets are powered exclusively by Crown I-Tech HD amplifiers, providing optimum performance and consistency across the world. The Crown I-Tech HD Series amplifiers feature BSS Audio OMNIDRIVEHD™ processing for each amplifier channel, including the acclaimed LevelMAX™ Limiter Suite and support for linear-phase FIR filters. All VTX A8 and B18 processing is performed using the I-Tech HD's internal processing, so no other external DSP is required. The Crown amplifiers include a user-adjustable input section for room correction equalization, array size compensation and circuit adjustments.

Standard JBL presets are available for both the Crown I-Tech 4x3500HD and Crown I-Tech 12000HD. The most up-to-date presets are available for download from the www.jblpro.com website and are always bundled in the latest version of JBL's Performance Manager™ control software.

8.1 - A8 ON CROWN I-TECH 4X3500HD AND NL4 CABLES

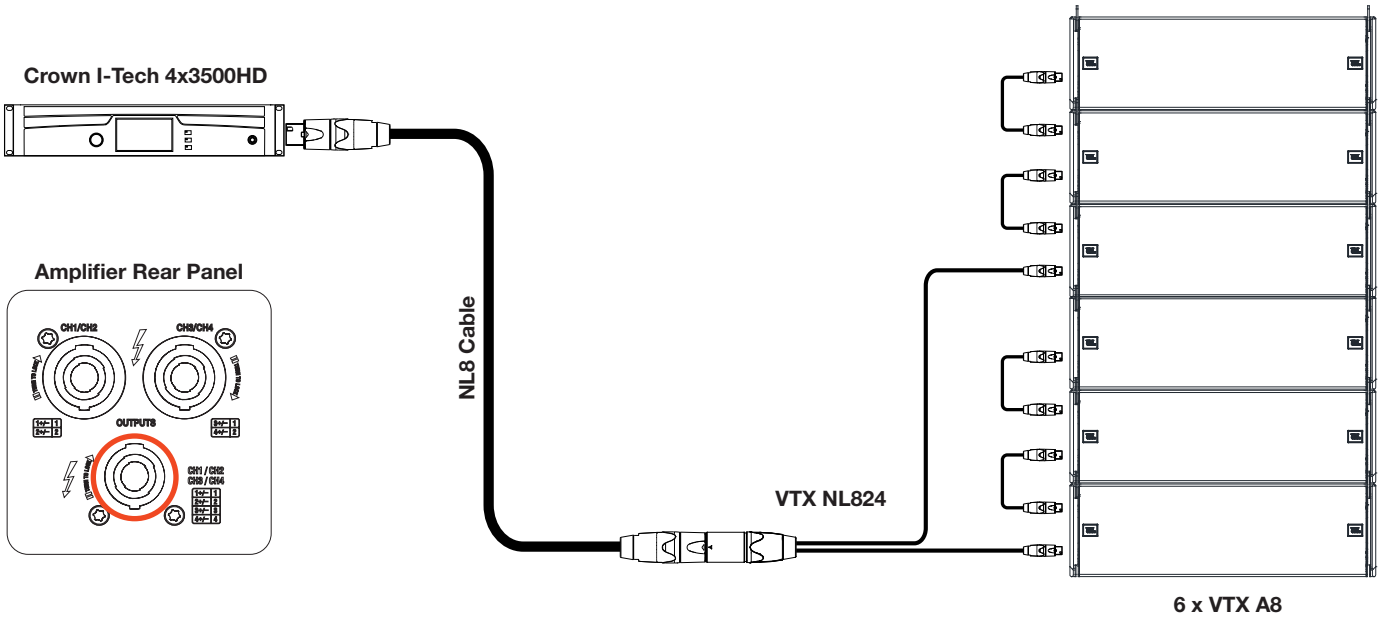
When using Crown Audio I-Tech 4x3500HD amplifiers, up to 6 VTX A8 (3 x per circuit) loudspeakers can be powered per amplifier. Based on the A8 component resource requirements, this allows for optimum power-to-transducer ratio without compromising the maximum SPL capabilities of the system. Circuits of 2 cabinets can be used when higher circuiting resolution is necessary. The example below illustrates how to connect 6 x VTX A8 cabinets to an I-Tech 4x3500HD amplifier using standard 4-contactor NL4 cables.



Amplifier Channels	
Channel 1	A8 LF
Channel 2	A8 MF/HF
Channel 3	A8 LF
Channel 4	A8 MF/HF

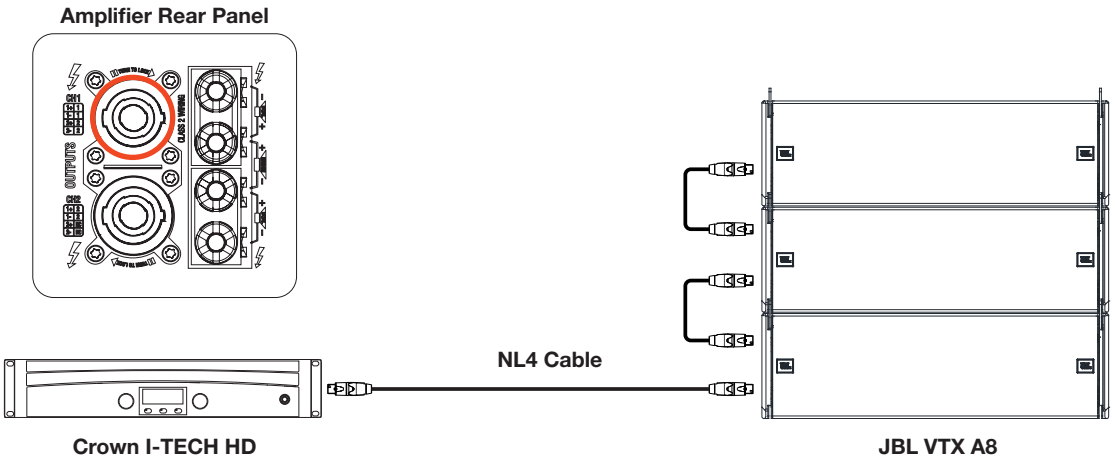
8.2 - A8 ON CROWN I-TECH 4X3500HD AND NL8 CABLES

Standard NL8 cables can be used to connect VTX A8 cabinets to a Crown Audio I-Tech 4x3500HD amplifier using the VTX NL824, NL8 to 2 x NL4 breakout cable. Using this breakout cable, up to 6 x VTX A8 cabinets can be connected to a 4 x channel amplifier using a single NL8 cable, saving cables and simplifying wiring.



8.3 - A8 ON CROWN I-TECH HD (2-CH)

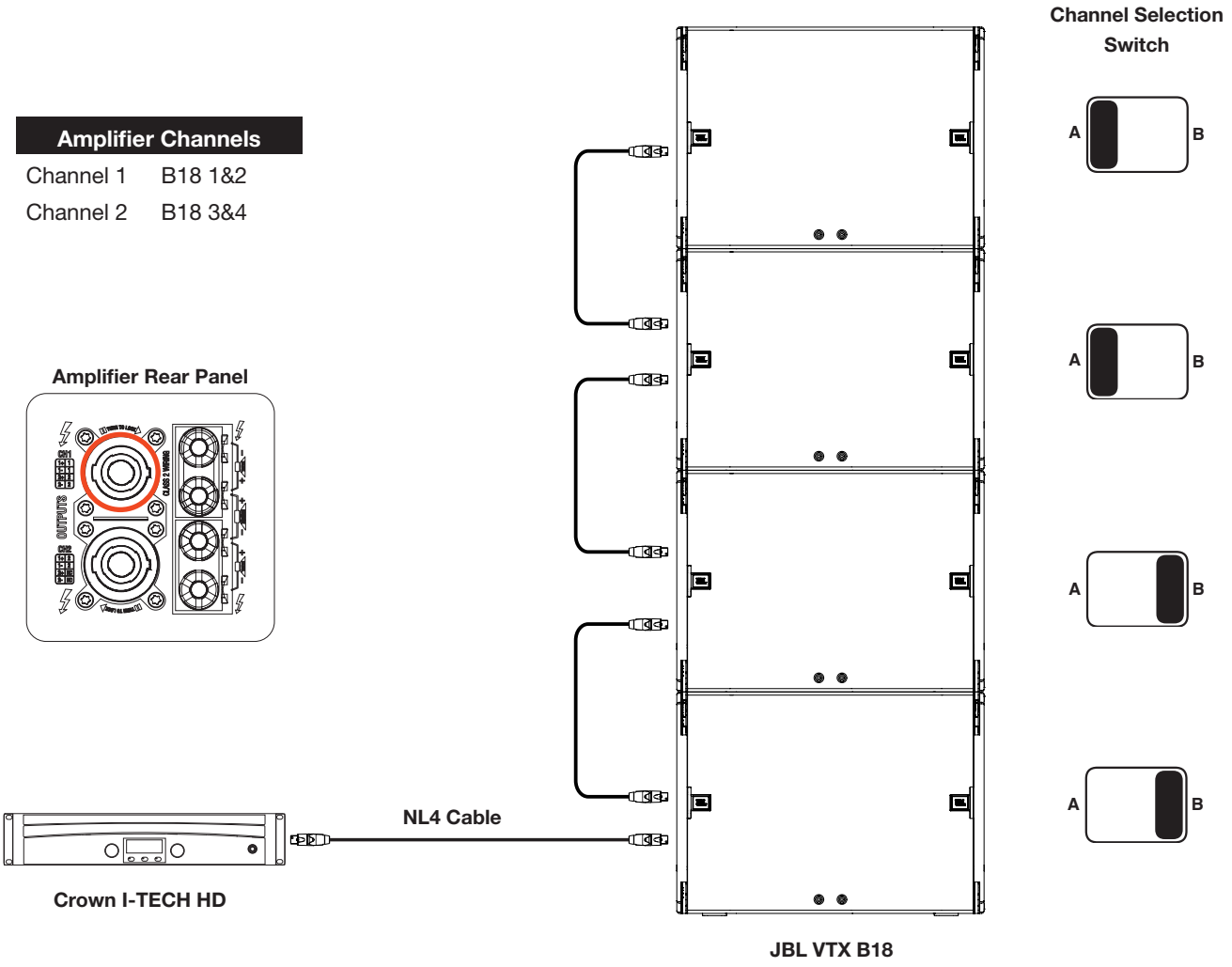
When using Crown Audio I-Tech HD amplifiers (2-Channel), up to 3 VTX A8 loudspeakers can be powered per pair of amplifiers. One Crown I-Tech 12000HD is used for powering the low-frequency section and another for the mid- and high-frequency sections. Based on the A8 component resource requirements, this allows for optimum power-to-transducer ratio without compromising the system's maximum SPL capabilities. Circuits of 2 cabinets can be used when higher circuiting resolution is necessary. The example below illustrates how to connect 3 x VTX A8 cabinets to a 2-channel I-Tech HD amplifier using a standard 4-contactor NL4 cable.



Amplifier Channels	
Channel 1	A8 LF
Channel 2	A8 MF/HF

8.2 - B18 ON CROWN I-TECH 12000HD

When using Crown Audio I-Tech 12000HD amplifiers, up to 4 x VTX B18 (2 x per circuit) subwoofers can be powered per amplifier. Based on the B18 component resource requirements, this allows for optimum power-to-transducer ratio without compromising the maximum SPL capabilities of the system. The example below illustrates how to connect 4 x VTX B18 cabinets to a 2-channel I-Tech HD amplifier using standard 4-contactor NL4 cables. One NL4 cable is used to connect the amplifier to the first B18 cabinet and then standard 4-contactor NL4 jumpers are used to connect all the cabinets together. The channel selection switch at the back of each B18 is used to assign each cabinet to the appropriate amplifier channel. Two B18s are set to A (channel 1, Pin1) and two B18s are set to B (channel 2, Pin 2).



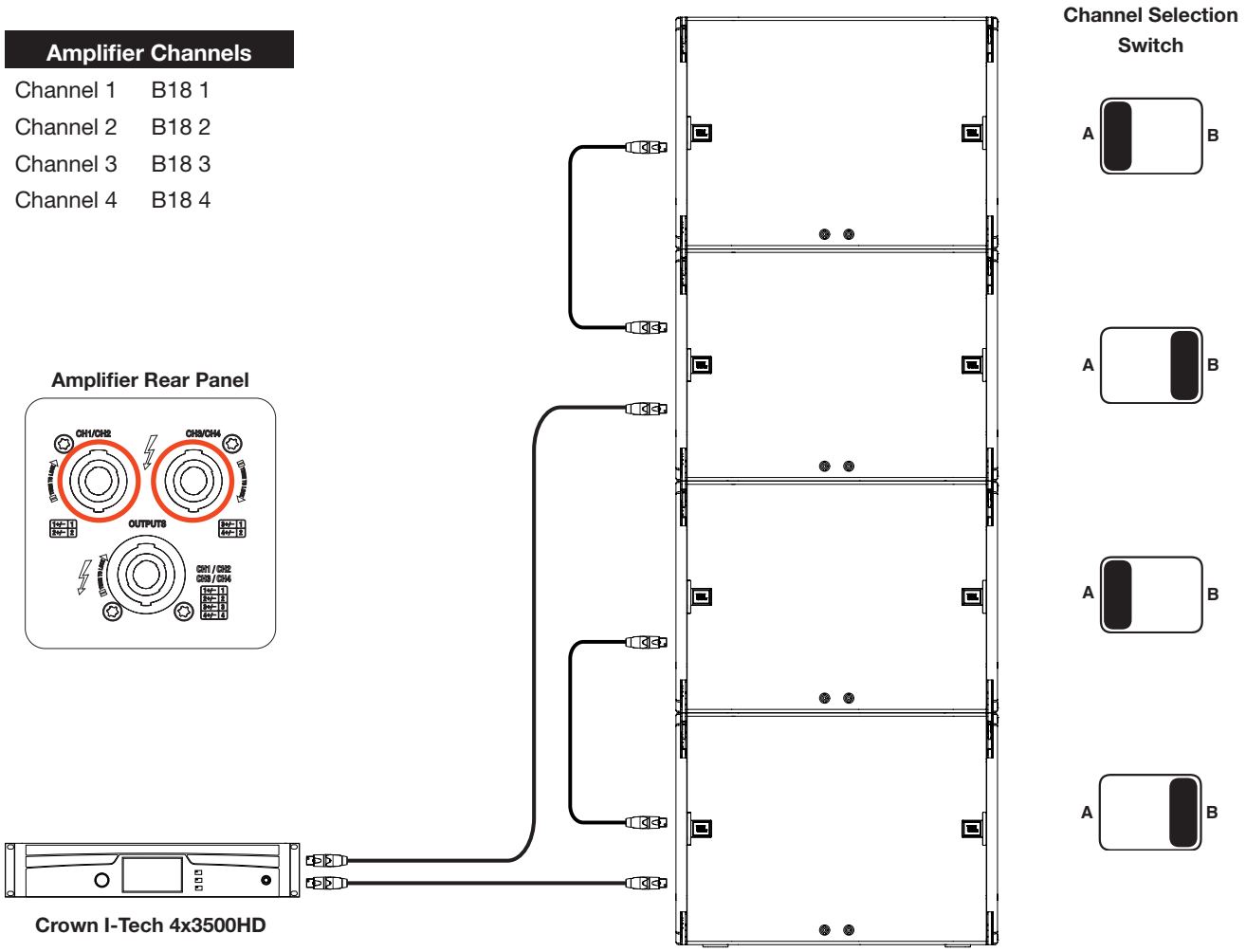
CAUTION: In this configuration, only the Channel-1 NL4 connector can be used on the I-Tech 12000HD amplifier. The Channel-1 NL4 connector is wired to both Channel-1 and Channel-2 were Channel-2 includes only Channel-2.

TIP: Other channel assignments can be implemented when using the 2-channel Crown Audio I-Tech HD amplifiers. Use JBL's HiQNet ® Performance Manager™ control software to assign speaker presets.

8.2 - B18 ON I-TECH 4X3500HD

When using Crown Audio I-Tech 4x3500HD amplifiers, up to four VTX B18 (1 x per circuit) subwoofers can be powered per amplifier. Based on the B18 component resource requirements, this allows for optimum power-to-transducer ratio without compromising the maximum SPL capabilities of the system. The example below illustrates how to connect 4 x VTX B18 cabinets to a 4-channel I-Tech HD amplifier using standard 4-contactor NL4 cables. The channel selection switch at the back of each B18 is used to assign each cabinet to the appropriate amplifier channel.

Amplifier Channels	
Channel 1	B18 1
Channel 2	B18 2
Channel 3	B18 3
Channel 4	B18 4



CAUTION: Make sure the total number of VTX B18 enclosures per circuit / amplifier does not exceed the maximum number recommended.

8.3 - CROWN AUDIO V-RACK

VTX A8 systems are compatible with the Crown Audio V-Rack 12000HD and Crown Audio V-Rack 4x3500HD touring racks. The number of supported cabinets per amplifier and wiring options remain the same as the Crown Audio I-Tech examples illustrated in this document. For more information on the Crown Audio V-Rack products, refer to the V-Rack User Manuals and documentation.

9 - VTX A8 PRESET LIBRARY

The VTX A8 preset library includes standard array and fill (FL) operating modes, along with full-range and 80Hz low-frequency processing modes. The VTX B18 preset library includes 60 and 80Hz operating modes along with cardioid presets for rear facing subwoofer enclosures. VTX presets are exclusively developed for Crown I-Tech HD amplifiers and come bundled with JBL HiQnet® Performance Manager™ control software. Audio Architect presets are also available and can be downloaded from the JBL Pro website. Please see below for a detailed description of VTX A8 operating modes and subwoofer processing options, and refer to the Preset Library setup sheets for preset descriptions, memory locations and output channel assignments.

9.1 - VTX A8 PRESET MODES AND OPTIONS

Two preset modes and two low-frequency processing options are available:

VTX A8 FL: The FL presets (short for FILL) have nominally-flat frequency response and are to be used in situations where one or two A8 cabinets are appropriate, such as distributed front fills. With this preset, the acoustical low-frequency response of the system extends down to 50Hz (full-range).

VTX A8 FL 80: The FL 80 presets have nominally-flat frequency response and are to be used in situations where one or two A8 cabinets are appropriate, such as distributed front fills. With this preset, the acoustical low-frequency response of the system is set to 80Hz and used when subwoofers are available.

VTX A8: This is the standard VTX A8 preset for array use. A high-frequency shelving response is applied to offset LF/MF array buildup for nominally-focused arrays (equal enclosure site angle impact spacing over the desired audience coverage area). With this preset, the acoustical low-frequency response of the system extends down to 50Hz (full-range).

VTX A8 80: This is the standard VTX A8 preset for array use with subwoofers. A high-frequency shelving response is applied to offset LF/MF array buildup for nominally-focused arrays (equal enclosure site angle impact spacing over the desired audience coverage area). With this preset, the acoustical low-frequency response of the system is set to 80Hz. The VTX A8 80 preset will generate the highest A-weighted maximum sound pressure level.

9.2 - VTX B18 PRESET MODES AND OPTIONS

VTX B18 60: The 60Hz preset mode extends the upper frequency response of the B18 to 60Hz. The B18 60 presets is normally used when VTX full-range cabinets (like the A8 or A12) are used in full-range mode and minimal overlap between the subwoofers and full-range cabinets is desirable.

VTX B18 60 REAR: The 60Hz rear preset was designed to work in conjunction with the standard B18 60 preset and used to drive rear-facing B18 cabinets in cardioid configurations.

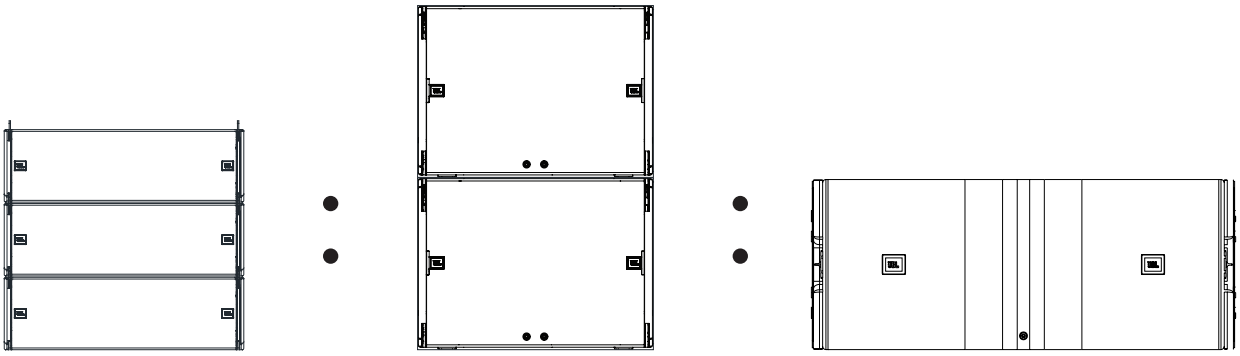
VTX B18 80: The 80Hz preset mode extends the upper frequency response of the B18 to 80Hz. The 80Hz preset is normally used when VTX full-range cabinets (like the VTX A8 or A12) are set to 80Hz, or when additional overlap between the full-range and subwoofer cabinets is desirable.

VTX B18 80 REAR: The 80Hz rear preset was designed to be work in conjunction with the stand B18 80 preset and used for rear-facing B18 cabinets in cardioid configurations.

TIP: The VTX A8 presets provide a well-balanced tonal starting point for a given array size. The Array Size Compensation filter found in the JBL Line Array Control Panel (LACP) can be used to further fine-tune the tonal balance of an array for a given array length. Please refer to the LACP section for more information.

10 - SUBWOOFER OPTIONS

VTX A8 presets are designed for a **3:2** minimum cabinet ratio when used with the VTX B18, and a 3:1 ratio for when used with dual-18" subwoofers line the VTX G28 or VTX S28 . The minimum recommended ratios provide sufficient headroom for both the subwoofers and the full-range cabinets to reach MAX SPL (limiters) at the same time, while maintaining a minimum of 10dB SUB to TOP low-frequency contour. Other ratios can be used depending on the desired tonal balance target, MAX SPL and application.

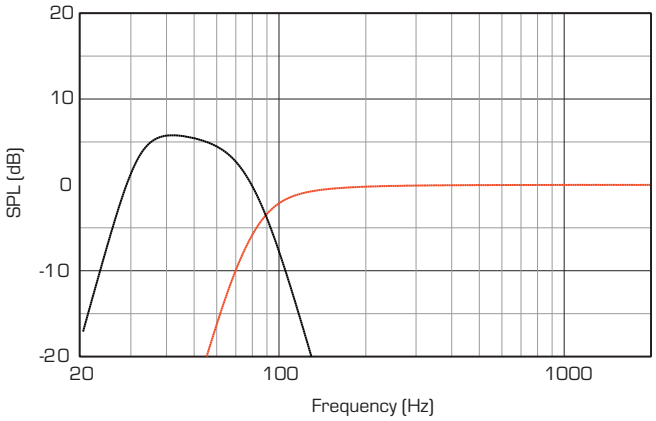


VTX A8 • VTX B18 • VTX S28 / G28

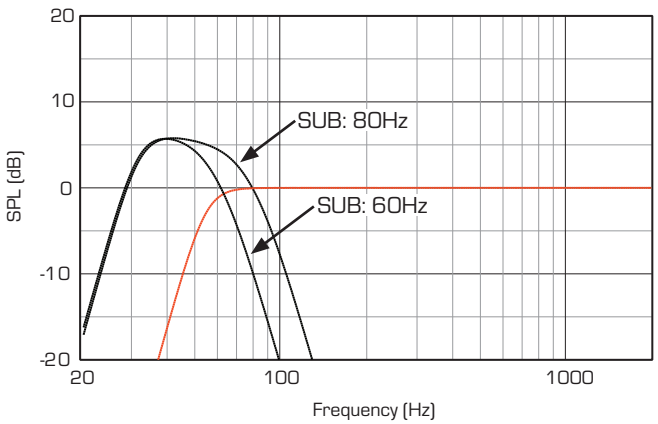
10.1 SUB / LF PRESET OPTIONS

As previously mentioned, there are two LF presets available for the A8 system: one is the VTX A8 (full-range) preset, which extends the frequency response of the system down to 50Hz; the other is the VTX A8 80 (80Hz) preset, which extends the frequency response of the system down to 80Hz. The VTX A8 (full-range) preset is used when the system is operated without subwoofers or when the application calls for extended LF response from the main arrays. If subwoofers are used, the A8's LF region is overlapped with the subwoofers for additional output in the shared range. The VTX A8 80 (80Hz) preset is used only when subwoofers are available and when the highest A-weighted sound pressure level (SPL) is required. The same subwoofer preset option (i.e. VTX B18 80) is compatible for use with either the VTX A8 or VTX A8 80 preset, simplifying preset selection. When multiple A8 arrays are used (i.e. main and side arrays), all VTX A8 arrays should be operated in the same LF mode for headroom consistency.

Example 1: A8 80 | SUB: 80

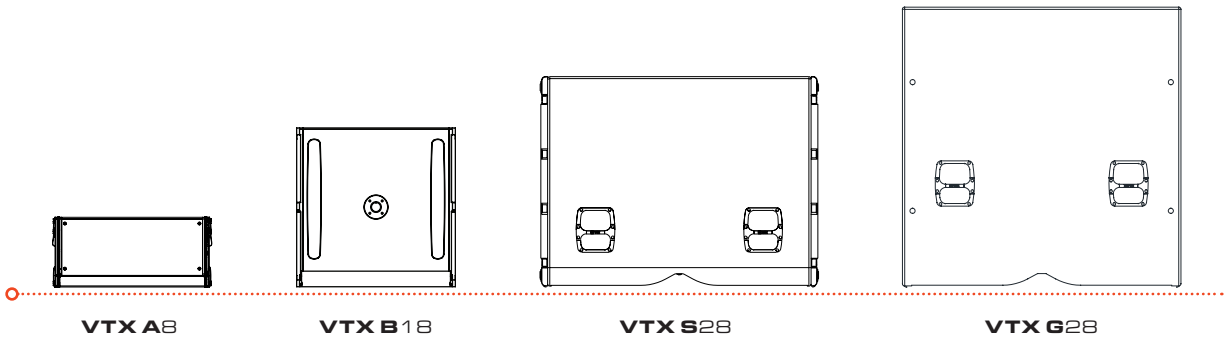


Example 2: A8 FR | SUB: 60 or 80

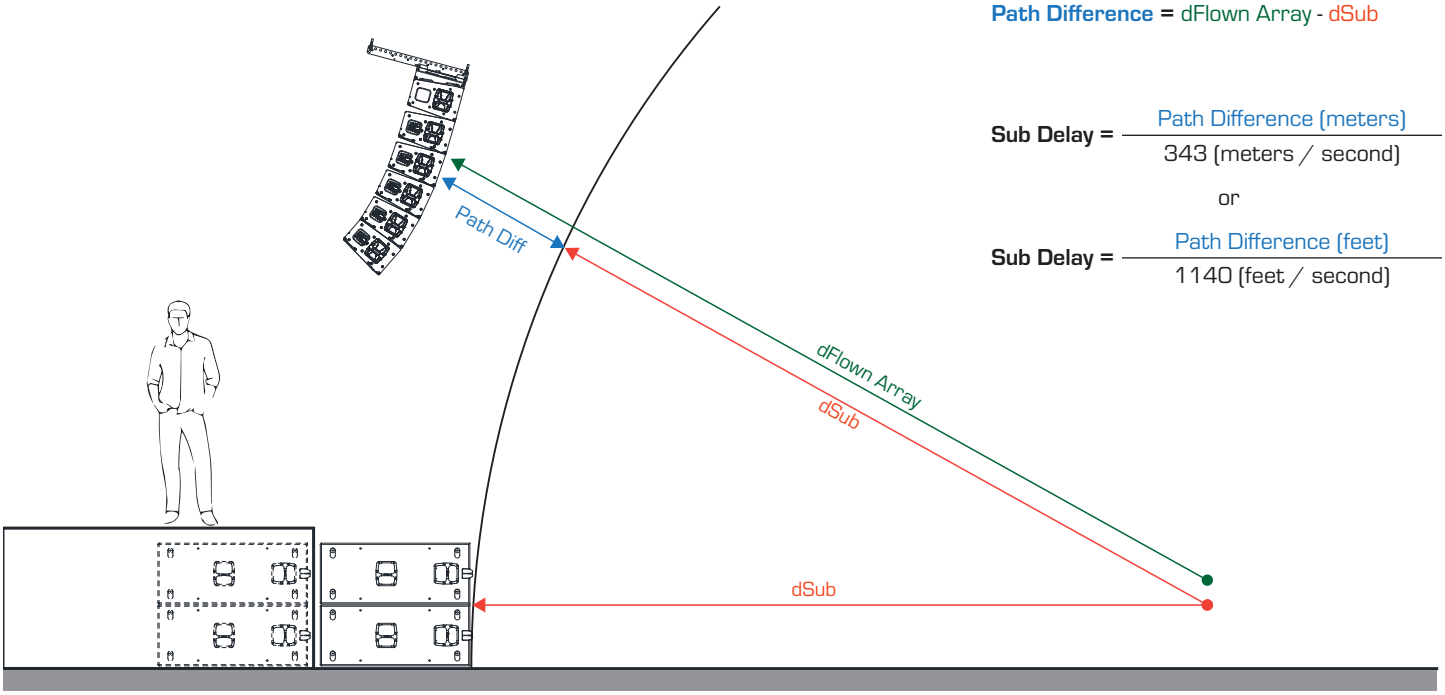


10.4 - TIME ALIGNMENT

The VTX A8 presets provide proper system summation with companion VTX subwoofers (all models) under physically coupled configurations (stacked or suspended) and when used with corresponding B18, G28, S28 and S25 presets. This pre-alignment is done at the factory, allowing any VTX subwoofer to be used with any VTX loudspeaker without needing specific subwoofer presets for each system and configuration.

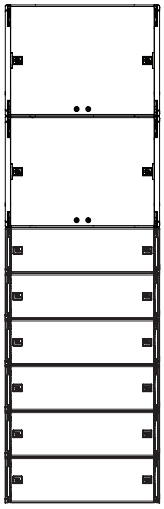


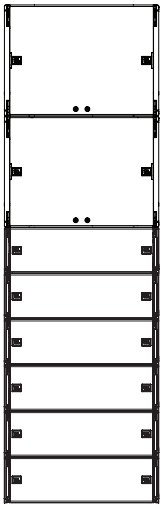
Additional time alignment delay should be added, as necessary, to account for physical path length differences between suspended A8 arrays and ground-stacked VTX subwoofers. If no acoustic measurement system is available, delay values can be calculated based on the geometric path difference between a reference point (i.e. FOH position) and each system. This is an effective method since all VTX presets include a factory pre-delay to correctly align all components. This method is not effective and should not be used when the latency of a system is unknown, such as when different parts of the system follow a different signal path that might affect latency.



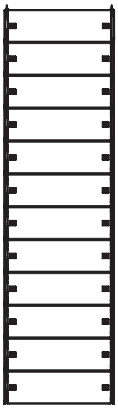
11 - CONFIGURATION EXAMPLES

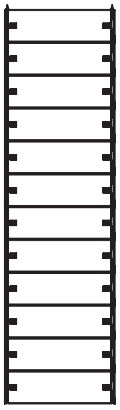
11.1 - SMALL SIZE A8 SYSTEM

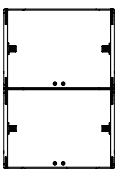


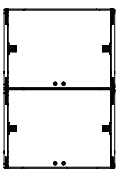


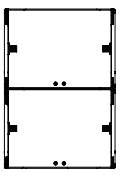
11.2 - MEDIUM SIZE A8 SYSTEM

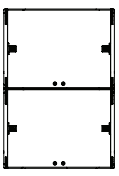


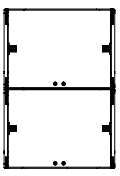


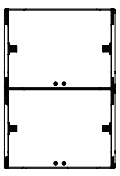




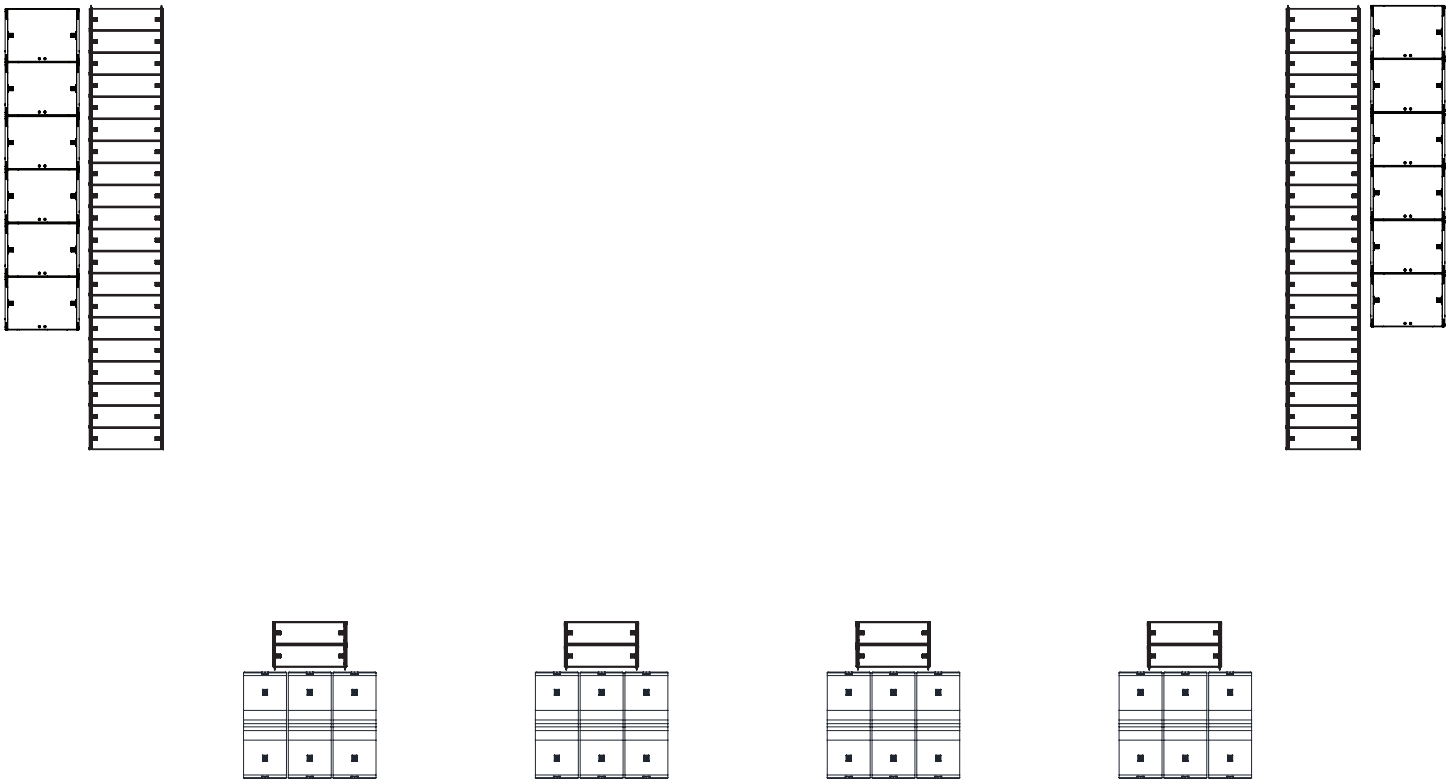




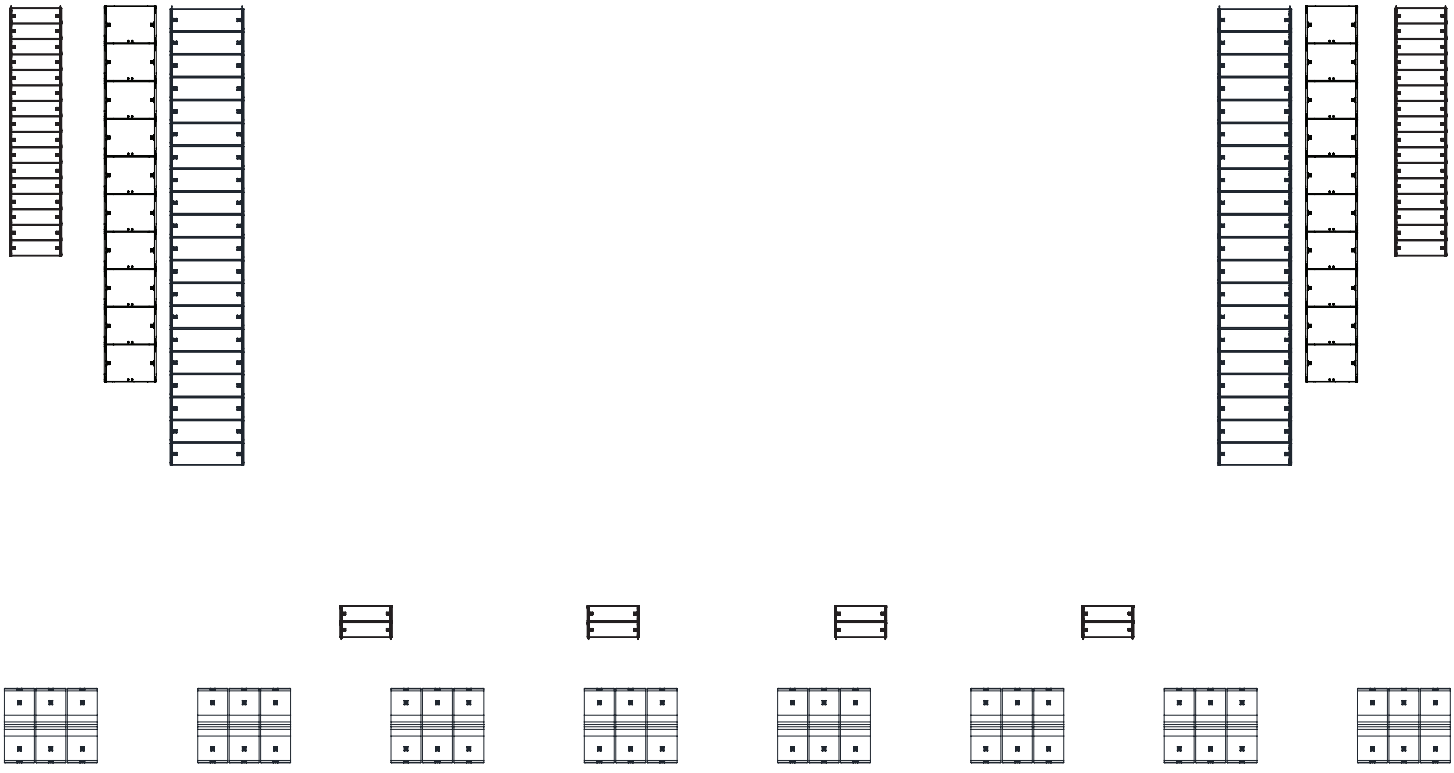




11.2 - LARGE SIZE A8 SYSTEM



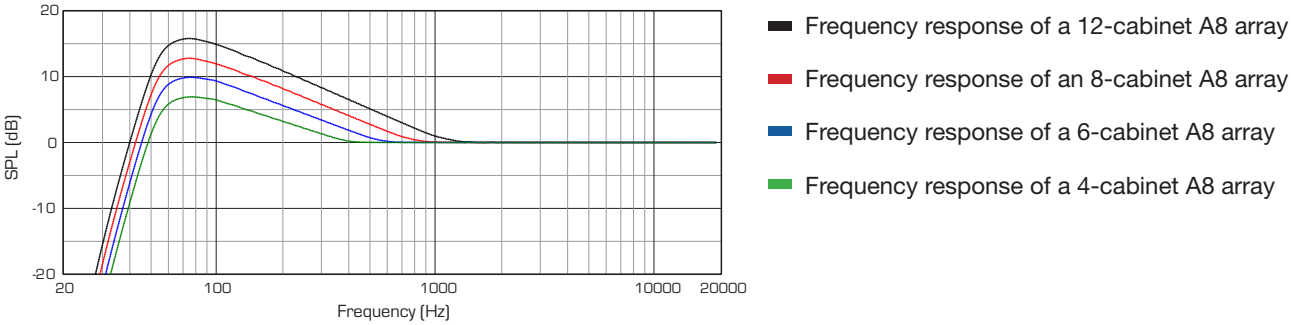
11.2 - LARGE A8 - A12 SYSTEM



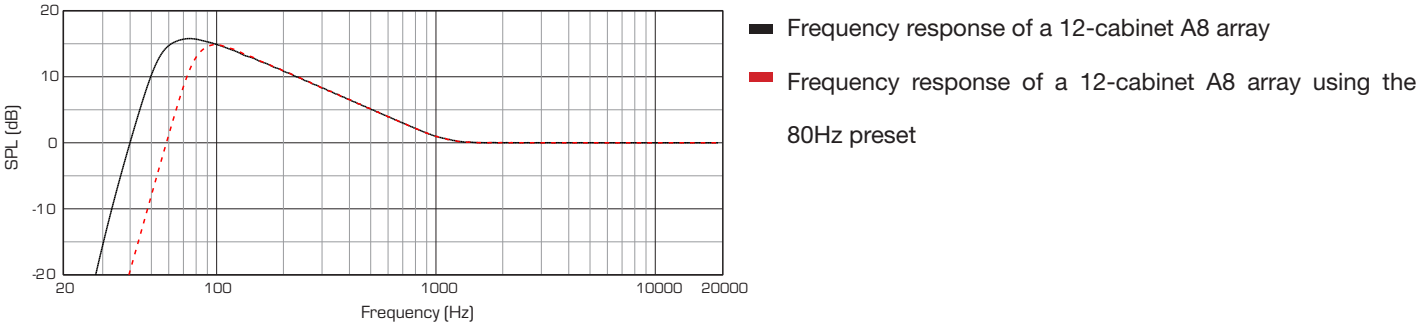
11 - FREQUENCY RESPONSE

The frequency response of a line array is determined by many factors, including the array size (number of boxes), array curvature (box-to-box angles) and the listening distance. JBL factory presets are designed to create a well-balanced tonal starting point for given array conditions. For example, the standard VTX A8 array presets are designed to work optimally with array sizes between 8 - 12 cabinets and equal impact spacing for a flat listening plane. An array with these parameters will generate a flat frequency response in the HF region with a gradual rise in LF energy. The frequency point where the response starts rising depends on the array parameters mentioned above. A relatively short array will start rising lower in frequency, and a longer array will start rising higher in frequency. Below are frequency response examples of A8 arrays using the standard VTX A8 presets and no additional equalization/correction (flat).

Example 1 : A8 Frequency response vs number of cabinets

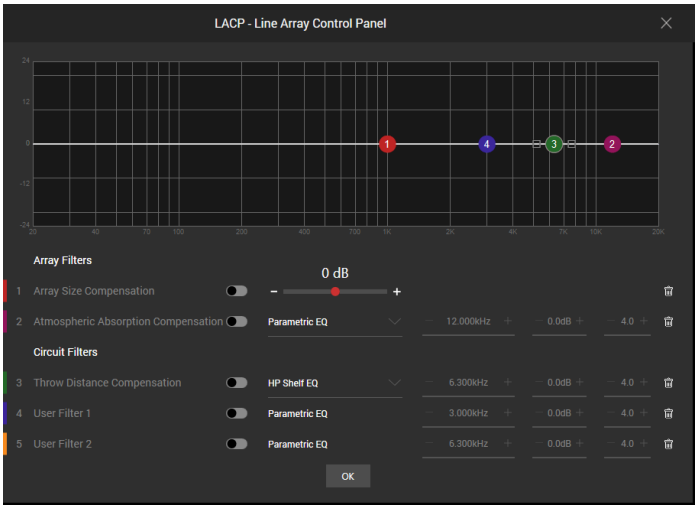


Example 2: Standard preset vs 80 preset



Since the factory preset cannot account for all variables and array configurations, user adjustment of certain DSP parameters is necessary to achieve the desired tonal balance for a given array and application. The LF response of any VTX line array system can be easily adjusted using the Array Size Compensation Filter in the JBL Line Array Control Panel. The Array Size Compensation Filter was specifically designed to compensate for LF/MF buildup with a single, adjustable parameter. Lowering the gain value of this filter will shift the LF rising point lower in frequency — similar to how shortening the length of an array works.

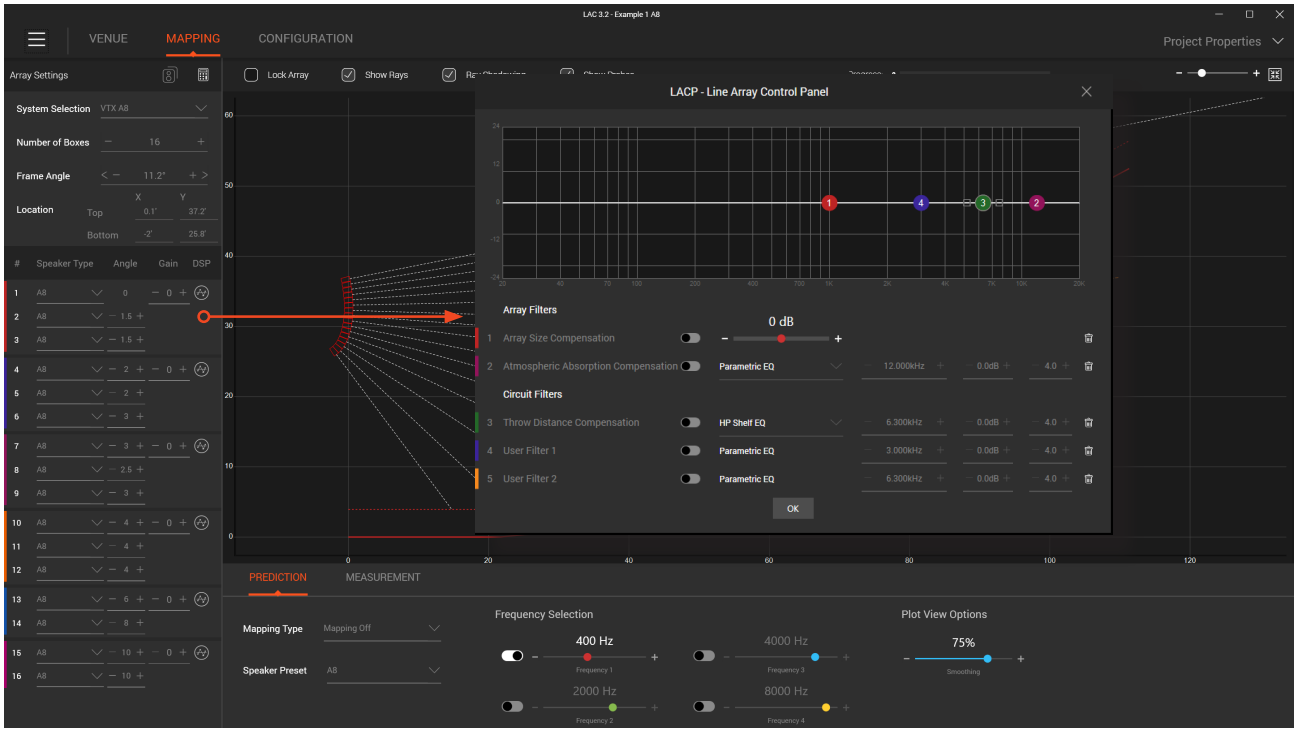
12 - LINE ARRAY CONTROL PANEL



The JBL Line Array Control Panel (LACP) was designed to tailor the tonal balance of a line array using the five included, adjustable DSP filters. Each filter serves a specific, intended purpose and accelerates the tuning process. Two of these filters are grouped across the entire array (global adjustments), and three filters are designated for circuit-specific adjustments. LACP parameters can be modeled using the JBL Line Array Calculator and then applied in real time using the JBL Performance Manager control software.

12.1 - ACCESSING LACP

LACP filters can be modeled in JBL's Line Array Calculator and then imported into JBL's Performance Manager for application to actual devices. To access LACP within the Line Array Calculator, first create circuit groups by using the included grouping feature. The created groups should represent the actual array amplification. This will allow for realistic and accurate DSP adjustments. After creating the circuit groups, click on the LACP button under the DSP column. Global filters, like Filter 1 and 2, are automatically applied to all circuit groups in the array.



12.2 - FILTER 1 - ARRAY SIZE COMPENSATION

Filter 1 is used to correct for LF/MF buildup when the array size/shape differ from that for which the factory preset was designed. LF adjustments should be applied to all cabinets within the array; therefore, filter 1 is automatically applied globally. Filter 1 is a continuously variable low-shelving filter, and its parameters (corner frequency and slope) are adjusted based on the applied gain value. Array buildup is different for each configuration, and Filter 1 is optimized to correct for this effect using only one parameter (Gain).

12.3 - FILTER 2 - ATMOSPHERIC ABSORPTION COMPENSATION

Filter 2 is used to compensate for atmospheric conditions due to large variations in temperature and humidity, which can have an impact on overall HF energy. Filter 2 is applied globally and can be used to quickly brighten or darken an array. This filter can also be used for artistic purposes to adjust overall system tonal balance.

12.4 - FILTER 3 - HF THROW DISTANCE COMPENSATION

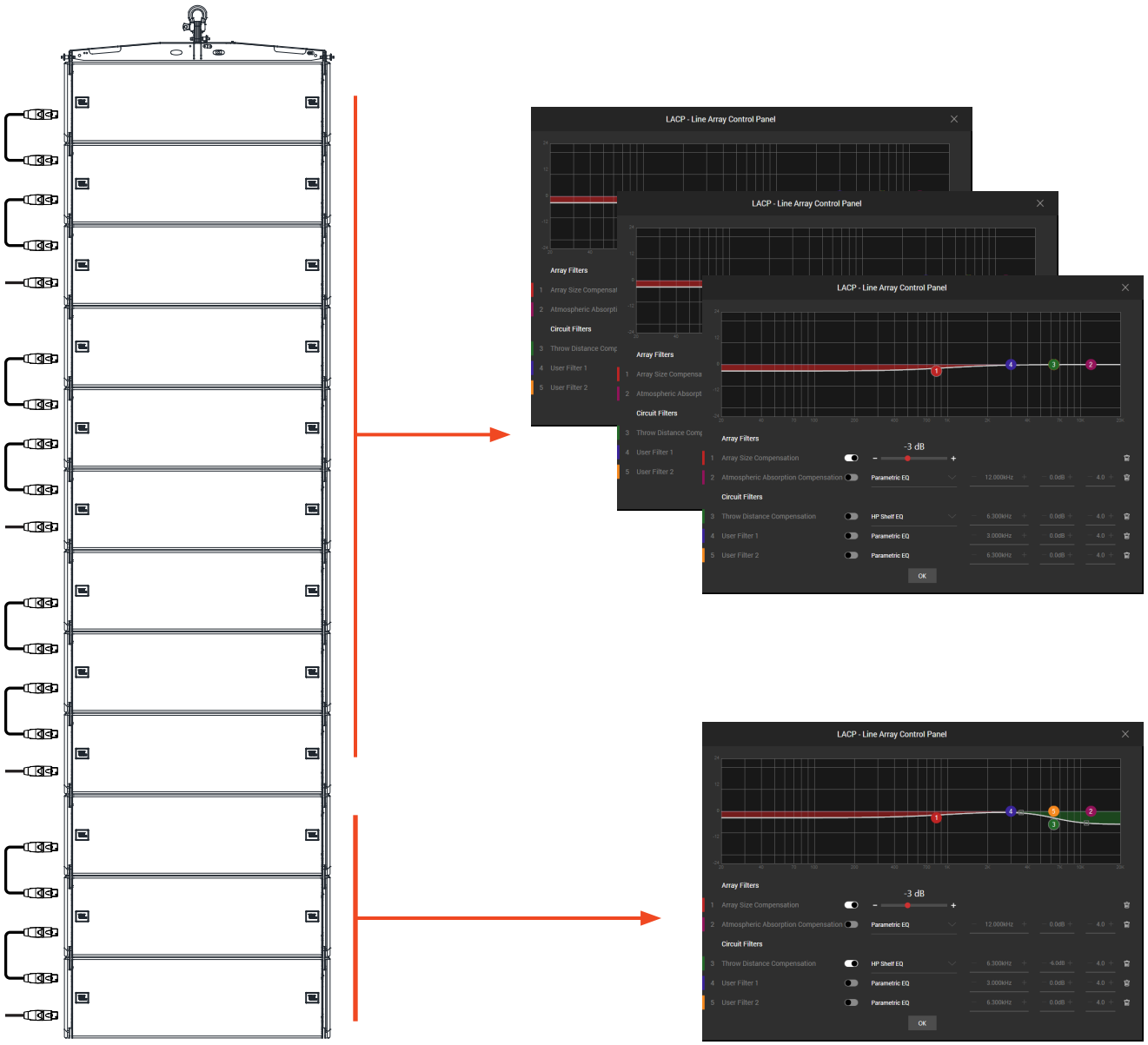
Filter 3, along with gain shading, is used to correct for distance offsets between different sections of an array. The Type, Frequency and Q parameters are linked across the entire array, but the Gain parameter is adjustable per circuit group. This filter can be used to reduce HF energy close to an array and increase HF energy to areas further away, where air absorption has a bigger impact.

12.5 - FILTER 4 & 5 - USER PEQ 1 & 2

Filters 4 and 5 are User PEQs, which can be applied to individual circuit groups. The Frequency and Q parameters are not linked across circuits and, for this reason, it is recommended that User PEQ 1 & 2 are used only for moderate gain changes of frequencies above 1kHz.

12.6 - EXAMPLE USING LACP

This example is for a 12-cabinet VTX A8 array. The standard A8 preset is used with the Array Size Compensation filter set to –3dB to offset LF buildup and achieve a flatter frequency response. As seen from the illustration below, Array Size Compensation is globally applied to all array circuits. The bottom circuit includes some HF attenuation using HF Throw Distance Compensation (Filter 3) to correct for proximity differences. Using some simple adjustments to the LACP filters will get an A8 system to a very good staring point. Any further required adjustments will be dependent upon the room and specific application.



TIP: The LACP parameters used in LAC to predict an array can be easily applied to an actual array in Performance Manager. For information on how to import LACP parameters in Performance Manager, please refer to the Performance Manager documentation.

13 - TESTING VTX A8

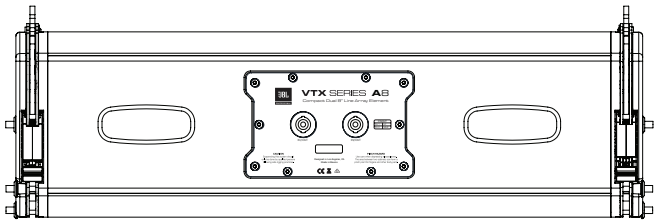
Speakers need to be periodically checked and maintained in order to assure long-term performance and reliability, and the VTX A8 is no exception. While the system is designed for utmost reliability, it is important to confirm that the system is operating within specified tolerances to ensure optimal performance for years to come. Below are two methods that can be used to check and verify proper transducer performance in a VTX A8 system.

13.1 - USING A DMM (DIGITAL MULTIMETER)

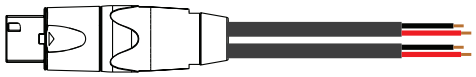
This method is best suited for when the speaker system is in the shop. A DCR (DC resistance) test with a multimeter can give a very accurate reading of how many transducers are properly wired together and within their standard operating tolerances. This test is appropriate for individual boxes and not groups.

With the A8 speaker unplugged from any amplifiers, set a DMM to the resistance **(Ω)** setting and place the probes across the Pin1+/- and Pin 2+/- leads. Record the values indicated on the DMM for each pair of leads and refer to the chart below to either confirm correct readings or investigate out-of-tolerance DCR readings. Note that a passive network is used between the MF and HF sections, any major deviations from the values listed belows should be further examined by removing the input panel and testing the individual components.

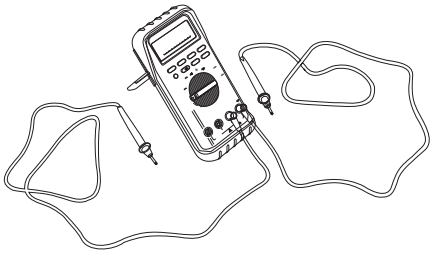
A8 MF/HF Section (Pin 2)		
	DCR	Tolerance
All drivers functioning	6.5 Ω	+/- 0.2 Ω
Any driver shorted	0.2 Ω	-



A8 LF Section (Pin 1)		
	DCR	Tolerance
All woofers functioning	5.2 Ω	+/- 0.2 Ω
1 x woofer open	10.1 Ω	+/- 0.2 Ω
2 x woofer open	OL	-
Any driver shorted	0.2 Ω	-



B18		
	DCR	Tolerance
B18 functioning	4.5 Ω	+/- 0.2 Ω
Driver shorted	0.2 Ω	-

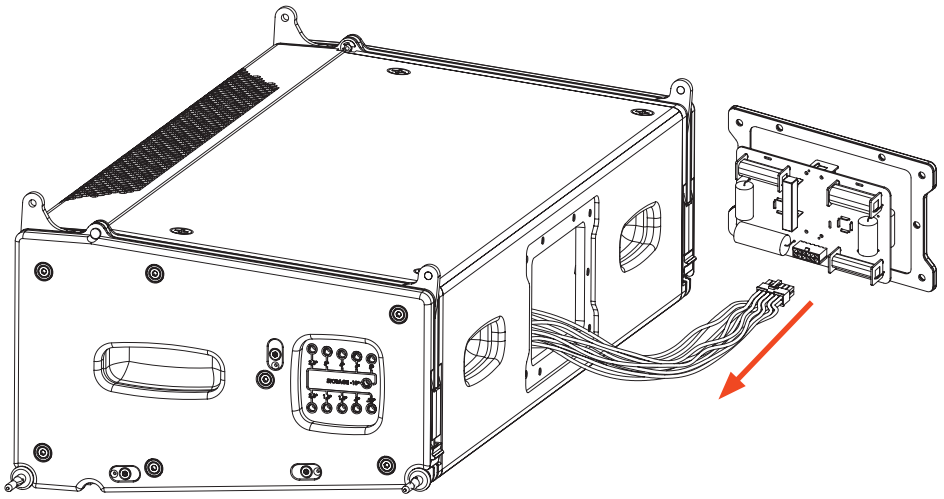


Notes:

- The DCR numbers listed above assume cold (room temperature) transducers. If taken right after use, and when the transducers are warm, the numbers will vary. For best results test the speakers cold.
- The DCR value of a transducer gives an accurate representation of its electrical state. Any mechanical defects are not characterized by this test. Refer to the VTX A8 service manual for instructions on how to perform a rub-and-buzz test using a sine wave generator.

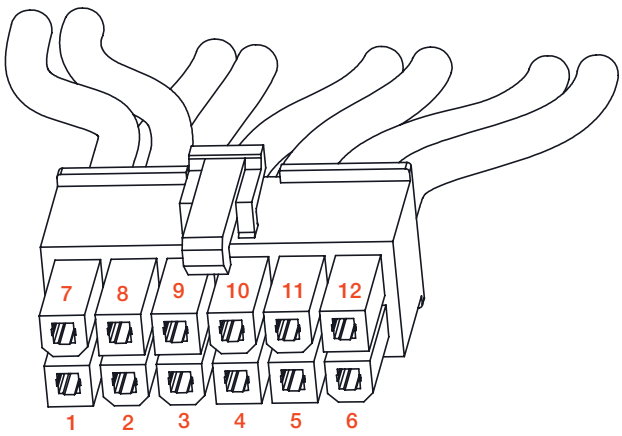
13.1 - TESTING INDIVIDUAL COMPONENTS

Testing the individual sections of an A8 enclosure requires removing the input panel and bypassing the passive network. To do that first remove the 10 x T15 screws holding the panel, and then slide the input panel out of the A8 enclosure. Once the panel has been removed, disconnected the Molex™ connector from the board as illustrated below.



The Molex™ connector includes 12 connection pins which can be used to test the individual sections of the A8 speaker using a DMM. The pin assignments of the Molex™ connector are listed below and note that the locking tab of the connector should be oriented facing up. The test leads of a DMM can be inserted in the connector pins to take the measurements. The DCR values of each section should be within tolerance of the values listed below. Since each pair of MF transducers are wired in series, if an open (overload) is measured, one or both of the transducers might be defective.

Pins	Section	DCR	Tolerance
Pins 1 & 2	LF Right	10.1 Ω	+/- 0.2 Ω
Pins 7 & 8	LF Left	10.1 Ω	+/- 0.2 Ω
Pins 3 & 4	MF Right	12 Ω	+/- 0.2 Ω
Pins 9 & 10	MF Left	12 Ω	+/- 0.2 Ω
Pins 5 & 11	HF 1	20 Ω	+/- 0.2 Ω
Pins 6 & 12	HF 2	20 Ω	+/- 0.2 Ω



TOOLS REQUIRED: A TORX size 15 screwdriver is required to remove the screws holding the input panel onto the A8 enclosure. A high-quality Digital Multi Meter is required for measuring the transducers.

13.2 - USING PERFORMANCE MANAGER

When in the field, the ***Test System Mode*** in the Performance Manager software can be used to test an A8 system. This test method is quick and especially useful for determining whether all the speaker cables, including cabinet-to-cabinet NL jumpers, are properly functioning.

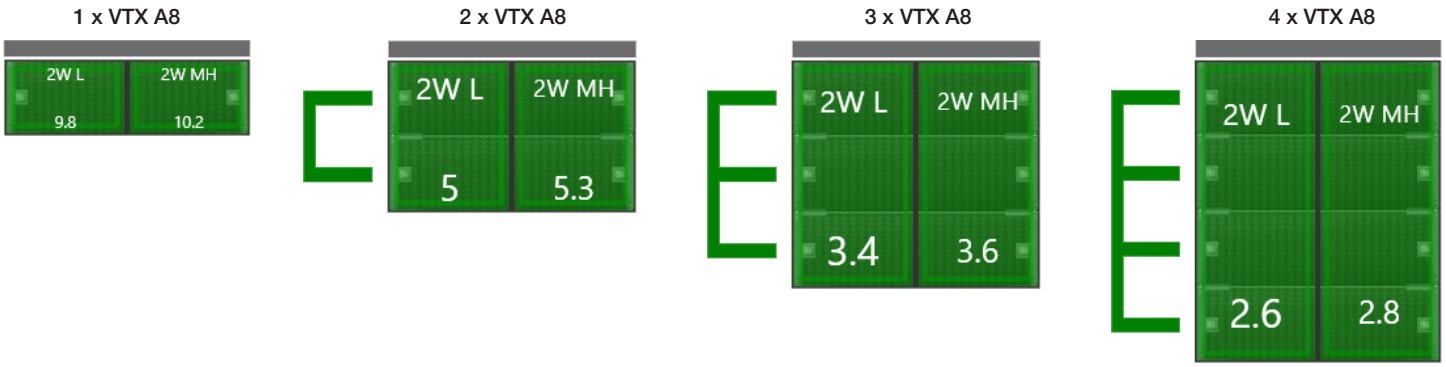
To perform the test, Performance Manager uses the I-Tech HD's built-in noise generator in conjunction with the amplifier's current draw and voltage sensing capabilities to generate a nominal load impedance reading for each amplifier output channel. Since broadband pink noise is used as the test stimulus, the returned value is considered to be an impedance value, and it will differ from the resistance values given earlier in this document (which are taken using DC voltage as the stimulus). `

STEPS:

1. To start the test make sure Performance Manager is online and connected to the devices.
2. Navigate to the Test System Mode and make sure all the speakers are muted.
3. Switch the Noise Generator to the ON position and change the level to a value between -30dB and -10dB. Values lower than -30dB may not be sufficient to trigger a reading.
4. Unmute the speaker or a bandpass to start the measurement. The measured value is displayed on the speakers.

13.3 - PERFORMANCE MANAGER READINGS

Below are the expected impedance values for circuits of A8 cabinets. The measurements below were taken at room temperature with a cable length of 25m (82'). Acceptable tolerance is +/- 0.5 Ω.



Due to variances in temperature, cable length, wire gauge and usage, the measurements recorded by Performance Manager are more susceptible to drifting based on conditions. However, condition variations like temperature are common across all similar circuits of a system. More important than the individual component values is consistency across similar circuits. For example, all 3 x Box circuits for an array should measure similarly. If one is off by several ohms then there is likely something wrong with that specific circuit.

14 - SPECIFICATIONS

14.2 - VTX A8

SYSTEM	
Frequency Range (-10 dB):	49Hz - 19kHz (Preset: VTX A8)
Coverage Pattern (-6dB)	
Horizontal:	110 degrees nominal (300Hz - 18kHz)
Vertical:	Varies with array size and configuration
System Input Power Rating[1]	
LF :	600W Continuous (IEC/100 hour)
MF/HF :	390W Continuous (IEC/100 hour)
Maximum Peak Output[2]:	139dB (Preset: VTX A8)
System Amplification:	Crown Audio I-Tech HD (all models) Crown Audio I-Tech 4x3500HD
Required Amplifier Channels:	2-Channels Bi-Amp (LF/MHF)
Number of Cabinets per Circuit:	3 x VTX A8
System Impedance	
LF :	8 ohms
MF/HF :	8 ohms

TRANSDUCERS	
Low Frequency :	2 x JBL 258J, 8in diameter, dual 2.5in diameter voice coil, Neodymium Differential Drive
Mid Frequency :	4 x JBL 2163H, 3.5in diameter, 2in diameter voice coil, Neodymium Magnet
High Frequency :	2 x JBL 2423K, 2in diameter annular diaphragm, 2in diameter voice coil, Neodymium Magnet

ENCLOSURE	
Construction :	18mm and 15mm,11-ply Baltic birch plywood, Black DuraFlex™ finish, integral recessed handles
IP Rating[3] :	IP55 (IEC 60529)
Suspension :	Captive suspension plates, quick-release pins, auto-locking mechanism for setting angles
Inter-enclosure Angle :	0.25, 0.5, 1, 1.5, 2, 2.5, 3, 4, 6, 8, 10
Grill :	Powder-coated 14-guage hex-perforated steel with acoustically transparent black cloth backing
Connectors	
Type :	Neutrik® SpeakON® NL-4 (2x)
Pin Assignments :	Pins 1 ± (LF), Pins 2 ± (MF/HF),
Dimensions (H x W x D) :	226.60mm x 761.29mm x 375.16mm 8.92in x 29.97in x 14.77in
Net Weight :	29.5 kg (65 lbs)

Footnotes:
1: IEC Standard: IEC shaped noise with 6dB crest factor based on nominal impedance and a duration of 100 hours. Continuous is defined as 2x RMS.
2: Peak, unweighted SPL, measured under full-space conditions at 1 meter using broadband pink noise with a 12dB crest factor and specified preset.
3: Front face at 0 degree or greater down angle to allow the cabinet to drain water. Suspension components fully weather rated for indoor or covered outdoor conditions where humidity is nominally under 50% and not local to bodies of corrosive materials.

JBL continually engages in research related to product improvement. Some materials, production methods and design refinements are introduced into existing products without notice as a routine expression of that philosophy. For this reason, any current JBL product may differ in some respect from its published description, but will always equal or exceed the original design specifications unless otherwise stated.

14.2 - VTX B18

SYSTEM	
Frequency Range (-10 dB):	28 Hz - 80 Hz (Preset: VTX B18 80)
Coverage Pattern Options[1]:	Omni-directional or Cardioid
System Input Power Rating[2]:	1300W Continuous (IEC/100 hour)
Maximum Peak Output[3]:	135dB (Preset: VTX B18 80)
System Amplification:	Crown Audio I-Tech 12000HD Crown Audio I-Tech 4x3500HD
Required Amplifier Channels:	1-channel
Number of Cabinets per Circuit	
IT-12000HD:	2 x VTX B18
IT-4x3500HD:	1 x VTX B18
System Impedance[4]:	8 ohms

TRANSDUCERS	
Low Frequency :	1 x JBL 2288H, 18in diameter, dual 4in diameter voice coil, neodymium Differential Drive

ENCLOSURE	
Construction :	18mm and 15mm ,11-ply Baltic birch plywood, Black DuraFlex™ finish, integral recessed handles
IP Rating[5] :	IP55 (IEC 60529)
Suspension :	Captive suspension plates, quick-release pins, spring-loaded mechanism
Grill :	Powder-coated 14-guage hex-perforated steel with acoustically transparent black cloth backing
Connectors	
Type :	Neutrik® SpeakON® NL-4 (2x at the rear and 2x at the front)
Pin Assignments :	Selectable between Pins 1 ± and Pins 2 ±
Dimensions (H x W x D) :	551.68mm x 761.29mm x 736.6mm 21.72in x 29.97in x 29.0in
Net Weight :	68 kg (150 lbs)

Footnotes:
1: Based on speaker preset selection and cabinet orientation/configuration.
2: IEC Standard: IEC shaped noise with 6dB crest factor based on nominal impedance and a duration of 100 hours. Continuous is defined as 2x RMS.
3: Peak, unweighted SPL, measured under **half-space** conditions at 1 meter using broadband pink noise with a 12dB crest factor and specified preset.
4: Nominal impedance within the stated frequency range of the product. Minimum impedance is 5.6Ω is 150Hz.
5: Front face at 0 degree or greater down angle to allow the cabinet to drain water. Suspension components fully weather rated for indoor or covered outdoor conditions where humidity is nominally under 50% and not local to bodies of corrosive materials.

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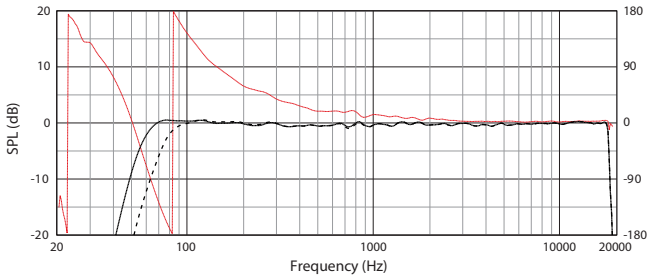
15 - ACOUSTIC MEASUREMENTS

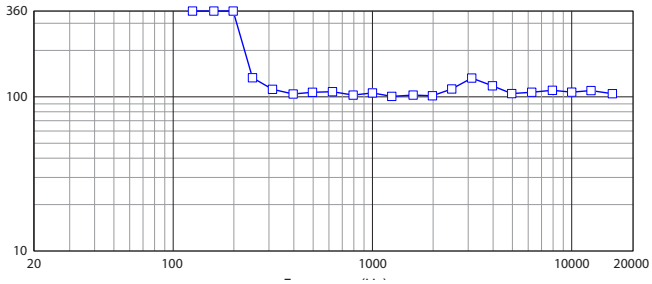
15.1 - VTX A8

FREQUENCY RESPONSE



VTX A8 FL VTX A8 FL 80 VTX A8 Phase

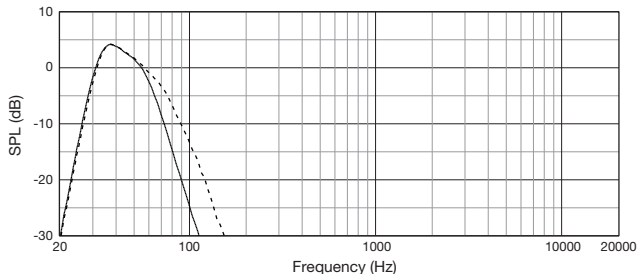
BEAMWIDTH



Horizontal Beamwidth (-6dB)

15.2 - VTX B18

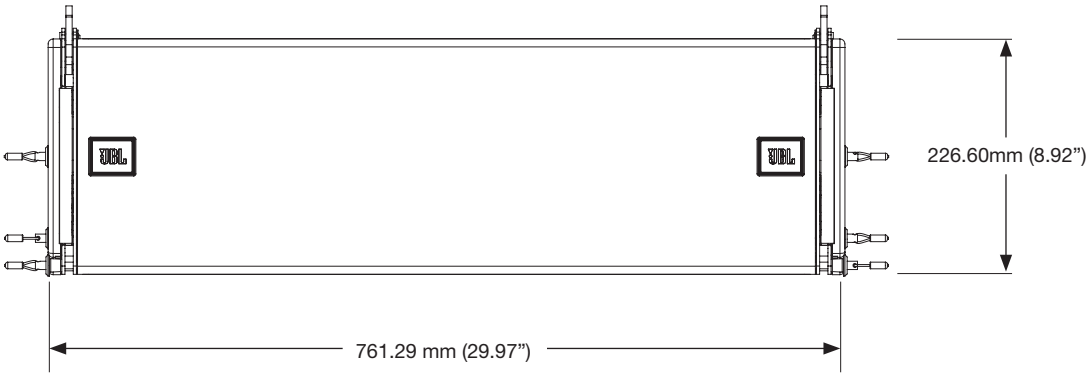
FREQUENCY RESPONSE

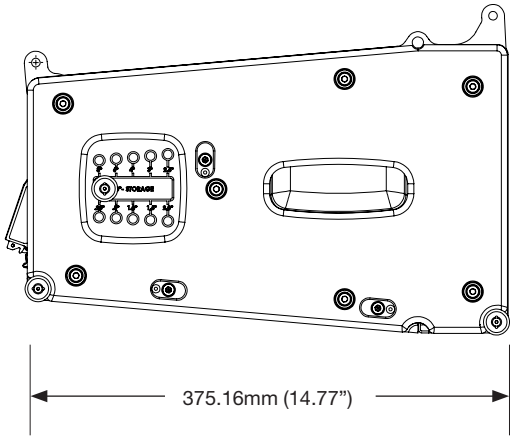


VTX B18 60 VTX B18 80

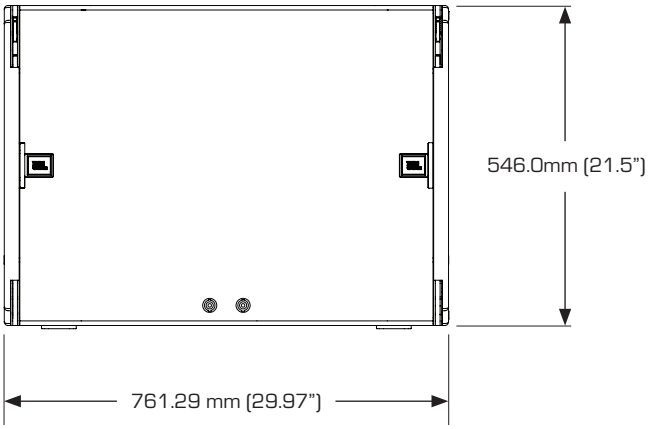
16 - DIMENSIONS

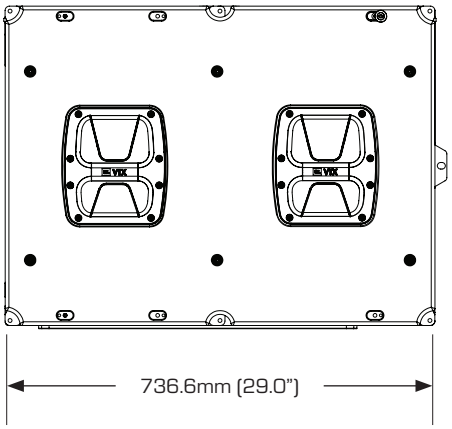
16.1 - VTX A8





16.2 - VTX B18





17 - CONTACT INFORMATION

Harman Professional Headquarters
8500 Balboa Blvd.
Northridge, CA 91329
USA
+1 (800) 852-5776
www.jblpro.com

Worldwide Customer Service:
Monday - Friday
8:00am - 5:00pm PCT
(800) 8JBLPRO (800.852.5776)
support@jblpro.com
www.JBLservice.com

HARMAN USA Technical Support:
Monday - Friday
8:00am - 5:00pm
+1-844-776-4899
hprotechsupportusa@harman.com
www.harman.com

Harman Professional London
Harman, Westside
Hemel Hempstead, HP3 9TD
London, UK
+44 (0)1707 668034
www.harman.com

Harman Professional Singapore
108 Pasir Panjang Road
#02-08 Golden Agri Plaza
Singapore 118535
+65 6870-5000
www.harman.com

Harman Professional Shenzhen
20F, China Merchants Port Plaza, #1
Gongye 3rd Road, Shekou, Nanshan Dist.
Shenzhen, 518067, China
+86 755 8634 3702
www.harman.com

Harman Professional India
Prestige Technology Park
Jupiter 2A Block, 4th Floor
Marathahalli Ring Road
Bangalore 560103, India
+918049365905
www.harman.com

Professional Contacts, Outside the USA:
Contact the JBL Professional Distributor in your area.
A complete list of JBL Professional international distributors is provided at our U.S.A. website: www.jblpro.com

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